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To the Graduate Council:

I am submitting herewith a dissertation written by Anthony F. Tasso entitled "Suggestion and Suggestibility: A Factor Analysis." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

Michael R. Nash, Major Professor

We have read this dissertation and recommend its acceptance:

Richard A. Saudargas, Laurence P. James, Robert G. Wahler

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

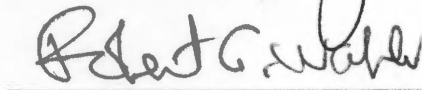
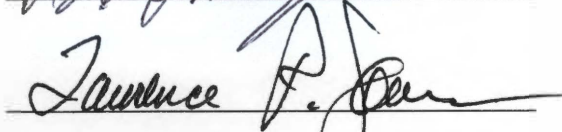
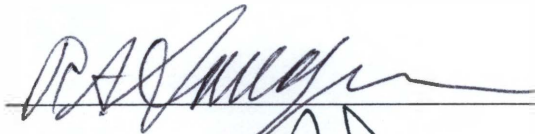
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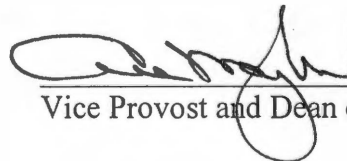


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and recommend its acceptance:



Acceptance for the Council:



Vice Provost and Dean of Graduate Studies

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SUGGESTION AND SUGGESTIBILITY:
A FACTOR ANALYSIS

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Anthony F. Tasso

August 2004

DEDICATION

This dissertation is dedicated to my parents:

Alberto and Geraldine Tasso

The first and most important teachers of my life.

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First and foremost I want to thank Dr. Michael Nash for teaching me so much about psychology, science, and life. Thank you for showing me that a world exists outside of New Jersey. Thanks also goes to my committee: Dr. Robert Wahler for his interest and support, Dr. Richard Saudargas for his cheer and encouragement, and Dr. Laurence James for his patience in teaching me about factor analysis.

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ABSTRACT

The aim of this study was to examine the domains of suggestion and suggestibility using factor analytic methodologies. Previous investigations, all of which were carried-out between forty and sixty years ago, yield equivocal results. The present study used nine behavioral measures of suggestibility and hypothesized that three distinct factors would emerge. It was hypothesized that hypnosis, Chevreul pendulum, and body-sway would load on the first factor, the odor test, progressive weights, and placebo responsiveness on the second factor, and conformity, persuasibility, and interrogative suggestibility to load on the third factor. 110 college students participated in the study. Factor analyses failed to result in three factors, meaning our *a priori* hypothesis of three distinct factors had to be rejected. Furthermore, two and three-factor models were also rejected. Thus, no clearly delineated factor structure of suggestibility emerged, indicating that the domain of suggestibility seems to be neither a single attribute or trait, nor does it appear to consist of a related group of abilities. Implications of findings and areas for future research are discussed.

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CHAPTER 1

INTRODUCTION

Historically the constructs of suggestion and suggestibility figured prominently in social (e.g., Hull & Forster, 1930; MacDougall, 1908; Milgram, 1963; Orne, 1962), clinical (e.g., Freud, 1910; Janet, 1919/1925), forensic (e.g., Burt, 1931), personality (e.g., James, 1902, Maslow, 1939), cognition/sensation (e.g., Hull, 1933; Wundt, 1892), physiological (e.g., Pavlov, 1941), as well as behavioral and medical psychologies (Barber, 1959). Indeed, some of the early applications of factor analytic methodologies addressed the domain of response to suggestion (Eysenck & Furneaux, 1945; Grimes, 1948). Contemporary interest in suggestibility has actually accelerated over the past 20 years, with theorists invoking the concept of suggestion to explain aspects of perception, experience of pain, hypnosis, eyewitness testimony, psychotherapy outcome, placebo response, and memory distortion in adults and children (Ceci & Bruck, 1993; Gheorghiu et al., 2001; Holliday, Reyna, & Hayes, 2002; Kirsch, 2000; Kirsch & Council, 1992; Loftus, 1979; Moreno, Garcia, & Pareja, 1999; Shobe & Kihlstrom, 2002; Wachtel, 1993; Wells & Turtle, 1987).

Still, it has been over 40 years since an attempt has been made to determine the domain of suggestibility - - Are there different kinds of suggestibility? Is suggestibility a single attribute, or many? If the latter, how many? More often, suggestion is defined by what it does *not* yield (e.g., *not* a real memory, *not* a real perception, *not* a real response to medication). Further, the six factor analytic studies to date (all carried-out between 40

and 60 years ago) offer only very modest leads as to what the structure of suggestibility might be (Eysenck & Furneaux, 1945; Grimes, 1948; Benton & Bandura, 1953; Stukát, 1958; Duke, 1961; Hammer, Evans, & Bartlett, 1963). Given the frequency with which contemporary psychology is leaning on the constructs of suggestion and suggestibility, and given the more powerful statistical tools now available to plumb the structure of a construct, it seems timely to undertake a fresh empirical look at what the domain of suggestibility is, and what it is not.

The purpose of this study is to empirically examine the domain of suggestibility. I will first describe, in some detail, the early studies that did in fact empirically investigate the area. I will then describe the rationale for selecting the nine measures of suggestibility that will be used in the factor-analysis. Finally, I will describe the study's methodology.

History of the Concept of Suggestion and Suggestibility

The interest in suggestion and suggestibility has had a pattern of boom or bust over the years. In the late 1700s, Franz Anton Mesmer of France began using the technique of "animal magnetism," or "mesmerism," which, according to Mesmer, was a method by which a person suffering with presumably serious physical and psychological disorders could be "treated." Mesmer posited that fluid-like substances pervade the universe, and disruptions in those fluids caused human illness. Even the most serious of disorders, according to Mesmer, could be "cured" via the redistribution of the fluids in the afflicted individual. However, an investigation by Benjamin Franklin and a French Royal Commission found no support for the theory of mesmerism (Franklin et al.,

1785/1970). After a series of well-controlled, brilliantly designed scientific experiments, the commission concluded that patient response to Mesmer's procedures had nothing to do with magnetism and everything to do with imagination.

In the next century, Bernheim (1886) reacted to Charcot's (1882) theory that hysteria and hypnosis are the result of neurological impairments. Bernheim claimed that neither hysteria nor hypnosis were the result of neuropathy but were the product of suggestion. Bernheim (1889) went on to say that there were three necessary components for suggestion: 1) the introduction of an idea into the brain, 2) the acceptance of the idea, and 3) the realization of the idea.

The focus of suggestion research in the early 1900s was on defining the terms and understanding the mechanisms of "suggestion" and "suggestibility." According to MacDougall (1908), submission to a person of power and authority was the underpinning of suggestion. Towne (1916) postulated that "mental influence" causes the person to think, behave, and feel without the utilization of rationality. Whipple (1924) defined suggestion as the credulous acceptance of even flawed information, usually without conscious awareness. For some, a message must be given for a suggestion to occur (MacDougall, 1908) – for others, not (Binet, 1900; Whipple, 1924).

Many early researchers postulated that the concept of suggestibility is a unitary trait, something which, if one "has" the trait, it pervades most areas of one's personality. Binet (1900) discussed the nature of such a trait while working with grade school children in Paris. Tarde (1907) stated the extent to which one is suggestible accounts for his or her acquisition of personal attitudes and ideals. Furthermore, while some early studies found empirical support for a general, unitary trait, or "g" factor of suggestibility

(Averling & Hargreaves, 1921; Otis, 1923), theory was skeptical (Allport, 1937), while other research completely failed to replicate the notion of a “g” factor of suggestibility (Brown, 1916; Estabrooks, 1929; Scott, 1910).

It became clear (at least to Hull, 1933) that suggestibility was not a unitary trait. For Hull (1933) there were two kinds of suggestibility with their two distinct components. Prestige suggestions, according to Hull, entailed direct suggestive communication given personally by an experimenter in which explicit changes in behavior were continuously suggested to the person. Hull stated that non-prestige suggestions consisted of “depersonalized” suggestions, meaning that no direct suggestive statement was conveyed to the participant. According to Hull, an example of a prestige suggestion is the body sway test, in which the participant, who is standing straight with his or her eyes closed, is given direct suggestions that s/he is falling forward (Hull, 1929). The Cherveul pendulum test would be yet another example. Hull cited the progressive weight test, which was developed by Binet (1900), as an example of a non-prestige suggestion. This task consists of a series of 15 identical looking boxes. However, the first five boxes are progressively heavier while boxes six through fifteen are the same in weight. The participant is to lift each box, one at a time, and report any discernable difference in weight. A person is considered to have responded to the suggestion if any reported differences in weight is made on the last ten boxes.

The first comprehensive factor-analytic investigation of the domain of suggestibility was by Eysenck and Furneaux (1945). Eysenck and Furneaux’s experimental sample consisted of 60 army veterans, all of whom were patients at a hospital for “nervous disorders.” The patients were further screened to assure that their

IQ level was roughly between 90 and 110. Using 12 suggestibility tests, Eysenck and Furneaux derived two factors. The first factor accounted for 55 percent of the variance, while the second accounted for 20 percent. Measures that loaded on this first factor were body sway test, arm levitation, and Chevreul pendulum (see Table 1). Eysenck and Furneaux (1945) labeled this first factor “primary suggestibility,” which they stated was a direct, ideomotor type of suggestion. The second factor, which they called “secondary suggestibility,” involved indirect sensory or perceptual suggestions without directive communication by the experimenter. This type of suggestibility has also been referred to as “gullibility” (Eysenck & Furneaux, 1945). Suggestibility measures that loaded on this second factor were the progressive weights and odor tests.

Eysenck and Furneaux’s (1945) analysis revealed that the tests which demark the first factor hold together reasonably well (intercorrelation coefficient + .50). The body sway test and hypnosis measures had the highest loadings on this first factor. On the other hand, the second suggestibility factor’s mean intercorrelation coefficient was only +.15, with the inkblot suggestion test and odor test loading highest on this factor. The correlation between the two factors was +.02.

Grimes (1948), using a sample of 233 orphan boys (ages 8-15), administered 16 tests related to suggestibility and conducted a factor analysis. Roughly three of the tests used by Grimes (1948) were the same used by Eysenck and Furneaux (1945). Results revealed weak correlations between the measures of suggestibility. Furthermore, there was a failure of an emergence of any clear, delineated suggestibility factor. So unlike Eysenck and Furneaux (1945), Grimes’s study revealed no clearly demarked suggestibility factor.

Table 1 (continued)

Tests Used	Eysenck & Furneaux (1945)	Grimes (1948)	Benton & Bandura (1953)	Stukat (1958) (8 y. o.)	Stukat (1958) (11 y.o.)	Stukat (1958) (adult)	Duke (1961)	Hammer et al. (1963)
Hand-Sway, personal influence								
Hand-Sway, Autosuggestion								
Placebo							2	
Dot Placement								
Fidelity of Report							2	
Esthetic Preference								
Otis Reports								
Vibration Suggestion			X					
Arm Movement			X	1	1	1	1	1
Static Ataxia			X					
Hand Rigidity				X				
Teacher Ratings				3		3		
Contradictory Tests				X	3	3		
Auditory Test				3	3			

Benton and Bandura (1953) used 9 tests on 50 undergraduate students (25 males, 25 females). Six of the measures of suggestibility were the same as Eysenck and Furneaux (1945) and one test was the same as in Grimes (1948). Results indicated not even a hint of a first factor (as per Eysenck & Furneaux, 1945, and to an even lesser degree, Grimes, 1948), nor did any other factor emerge. In this sense the Benton and Bandura (1953) findings were more similar to Grimes (1948) than to Eysenck and Furneaux's (1945) two-factor results.

Stukát (1958) conducted three independent factor-analytic studies using samples of children, adolescents, and adults. Results of the children study, which consisted of 15 suggestibility measures, one IQ test, and five teacher-rating measures, (21 variables total) to 67 children (37 boys and 30 girls with a mean age 8.6 years-old) revealed a first factor. The highest loading measures on this first factor were the body sway and arm lowering tests. There was minimal evidence of a second suggestibility factor. The highest loadings on this factor were teacher-rating scales of independence and perceived social status among their peers. This is moderately similar to Eysenck's (1947) theoretical concept of prestige, or tertiary, suggestibility, which is defined as change in behavior or attitude following a persuasive message from a person of authority or prestige. There was negligible evidence of a third factor of suggestibility. The measures of suggestibility that loaded highest on the third factor were two measures of sensory-perceptual experiences. This third factor is related to Eysenck and Furneaux's (1945) second, or indirect, suggestibility factor.

Stukát's (1958) second study consisted of 184 girls (mean age 11 years-old) and 24 variables. As with the previous sample, a first suggestibility factor emerged, with the

highest loadings being the body sway and arm lowering tests. However, weak intercorrelations between other measures makes an argument for additional suggestibility factors untenable.

The third study conducted by Stukát (1958) used 90 adults as the participants with 17 variables. The results using the adult sample were similar to the two child samples: A first factor emerged. The body sway and arm levitation had the highest loadings (arm *lowering* was the test used in the two child studies). There was weak support for a second factor, with contradictory suggestions, colors test (having participants state the specific color of a hue and then receiving false feedback regarding their answer), a co-judge suggestion, and indistinct words task (measure of susceptibility to a co-judge's expressed opinion in judging vague stimuli) loading the highest. No other clearly delineated factor emerged.

In an unpublished doctoral dissertation, Duke (1961) conducted a factor-analytic study using 10 suggestibility measures with 91 army veterans living in a residential facility for persons who were "not sick enough to be hospitalized, yet not well enough to live outside an institutional setting (pg. 31)." The mean age was 58.5 years-old with an age range from 34 to 72. Results revealed intercorrelations of + .36 within the first suggestibility factor, which was of the ideo-motor kind. The correlation among the second factor was only +.145 (this correlation increases to +.21 if the progressive weights and lines tests are removed from the statistical analysis). No additional factors were evident.

The last factor-analytic investigation on the domain of suggestibility was conducted by Hammer, Evans, and Bartlett (1963). Thirteen measures of suggestibility

were used on 73 undergraduate college students (24 male, 49 female). The results of this study revealed two distinct factors. The first suggestibility factor, which they called “ideomotor,” had arm bending, thumb press, and Chevreul’s pendulum loading highest (see Table 1). The second factor, which they called “vividness of imagery,” was defined as an acceptance of the suggested state or condition. Measures that loaded on this factor were the heat illusion tests and the heat imagery test.

What can be concluded from these early investigations is that the phenomena of suggestibility are anything but decisive. Several (though not all) of the studies found a first factor with some degree of coherence (Eysenck & Furneaux, 1945, Stukát, 1958; Duke, 1961; Hammer et al., 1963). However, even this finding is not robust. Both Grimes (1948) and Benton and Bandura (1953) found no such factor, while others found it to be faint at-best (Stukát, 1958). The nature of this first factor appears to be a responsiveness to direct communication of the desired response (i.e. body sway and Cherveul’s pendulum). Beyond this first factor the findings are even less coherent. The most we can say is:

- 1) Suggestibility appears to not be one thing. A person’s response depends, to a great deal, on the types of suggestion rather than on a singular ability.
- 2) Response to direct, explicit communication of the target response may tap into one type of ability.
- 3) However, non-direct suggestive situations (i.e. progressive weights, placebo response) appear to tap into abilities that are somewhat distinct

from the direct suggestive situations. Even so, they may (or may not) constitute their own set of abilities.

All of this must be qualified by the fact that the factor-analytic studies to date vary in design quality and sample selection. Eysenck and Furneaux (1945) tested only hospitalized male army veterans. Because they were patients in a hospital for “nervous disorders,” it is presumed that they were ill. The prospect of psychological and neurological impairment would seem highly likely. Its relevance to suggestibility would seem similarly important. Nevertheless, the nature and extent to which the participants were ill was unreported. In similar fashion, Duke’s (1961) population consisted of institutionalized army veterans with a mean age of over 58 years-old that were suffering with both physical and psychological ailments. As with Eysenck and Furneaux (1945), this population makes a generalization of findings impossible. Generalization of findings due to sample selection is a potential problem for Grimes (1948) as well. Grimes’ sample consisted of orphaned boys between the ages of 8-15. It is plausible that this population was being raised in an environment in which stimulation and nurturance was sparse. Furthermore, the study was restricted only to boys, so a generalization of findings to females and adults is not possible.

Another problem with the past studies was the fact that there was little chance for replication. The one reason was that the different studies used different measures as well as different samples (see Table 1). Although there was some overlap in measures used between Eysenck and Furneaux (1945) and Benton and Bandura (1953), the participants were much different (hospitalized army patients and college students). Furthermore, as mentioned before, population samples consisted of hospitalized army veterans (Eysenck

& Furneaux, 1945), institutionalized veterans (Duke, 1961), orphaned boys (Grimes, 1948), school aged children, girls, and adults (Stukat, 1958), as well as college students (Benton and Bandura, 1953; Hammer et al., 1963).

Another limitation with some of the previous studies is in test selection. For example, Stukát's (1958) studies entailed several measures of suggestibility that appear to be outside the domain of suggestibility. Such tests were the use of IQ as a variable, vaguely described teacher-rating scales of students' level of suggestibility, and the use of illusion tests. It appears that perhaps Stukát's test selection was too inclusive, and likely less theory driven. Grimes (1948), too, had questionable measures of suggestibility in his study such as lengthy pencil and paper tests that appear loosely tied to suggestibility.

The sample size in some of the earlier factor-analytic studies can also be brought into question. It has been suggested that the minimum acceptable ratio of variables to sample size in a factor-analysis is 5 participants to 1 variable, although a larger ratio is more desirable (Grimm & Yarnold, 2000). The first of the three Stukát (1958) studies consisted of a participant to variable ratio of 3:1. Although Stukát's (1958) factor-analysis with the 11 year-old participants had an adequate variable to participant ratio (8:1), the sample selection consisted of only girls.

An inevitable (but important) limitation of this 40 year-old literature is the absence of contemporary measures of suggestibility. First, the only factor-analytic study that used hypnosis as a measure of suggestibility was Eysenck and Furneaux (1945). However, their measure of hypnotic responsiveness predates the development of standardized measures of hypnotizability such as the Stanford Hypnotic Susceptibility Scale, Forms A and B (Weitzenhoffer & Hilgard, 1959). Second, absent from the earlier

studies were measures of social influence and conformity now commonly used (i.e. Asch, 1951). Third, interrogative suggestibility, an important measure of suggestibility in forensic and cognitive psychology research, had not been developed into a standardized measure until 1984 (Gudjonsson, 1984).

Because the construct of suggestibility continues to be invoked in the forensic and cognitive psychology literature it is more important than ever to more clearly examine the nature of a construct that is attracting so much attention. If the past literature were more in order such an examination would be merely a timely update. This is not the case. In fact, the extant literature is not only old, it is in disarray. It is in fact possible that suggestibility has no meaningful factor structure whatsoever; or, that it is multi-factored; or, that it is best explained by a single factor. Hence, I prepare to undertake a factor-analytic study of suggestibility which examines a broad range of the construct's domain, employ sound psychometric techniques, and to utilize relevant measures of suggestibility.

Present Study

The purpose of this present research was to further examine the domain of suggestibility. There were three criteria for test selection (see Table 2). The first criterion was to use measures of suggestibility that have been used before. This was done to assess if these classic measures of suggestibility yield different or similar results as they did when they were used previously. Therefore, several of the tests used in this study have been examined in some of the previous factor-analytic studies. The second criterion in test selection was determining measures of suggestibility that have

Table 2**Present Study Test Selection Criteria**

Measure Chosen	1 st Selection Criterion- Prior Use	2 nd selection criterion- Contemporary Relevance	3 rd Selection Criterion Purported Factor Spread
1) Hypnotizability	Yes (Eysenck & Furneaux, 1945)	Yes	First Factor
2) Progressive weights	Yes (Eysenck & Furneaux, 1945; Grimes, 1948; Benton & Bandura, 1953; Stukát, 1958 Duke, 1961)	No	Second Factor
3) Persuasibility	No	Yes	Third factor
4) Chevreul Pendulum	Yes (Eysenck & Furneaux, 1945; Stukát, 1953; Duke, 1961; Hammer et al., 1963)	No	First Factor
5) Odor Test	Yes (Eysenck & Furneaux, 1945; Grimes, 1948; Duke, 1961)	No	Second Factor
6) Body Sway Test	Yes (Eysenck & Furneaux, 1945; Benton & Bandura, 1953; Stukát, 1958; Duke, 1961)	No	First Factor
7) Interrogative Suggt.	No	Yes	Third Factor
8) Placebo Response	Yes (Grimes, 1948; Duke, 1961)	Yes	Second Factor
9) Conformity Test	No	Yes	Third Factor

contemporary relevance. Careful consideration was used in the test selection process to assure that which is being measured is pertinent to the current notion of the domain of suggestibility. The third criterion of test selection is to use measures that would provide some spread across the three putative suggestibility factors (i.e. direct, indirect, and tertiary) that have emerged in some of the previous studies. This was done by selecting tests that have loaded on one of the three factors in some earlier studies as well as selecting newer, contemporary measures that would potentially cover these areas.

The suggestibility measures used in the present study that have been used in at least one of the six factor-analytic studies reviewed are 1) progressive weights test, 2) Chevreul pendulum, 3) odor test, and 4) postural/body sway test. Earlier findings found that Chevreul pendulum and the postural, or body sway, tests typically loaded on the first factor (Eysenck & Furneaux, 1945; Duke, 1961; Hammer et al. 1963). However, there were mixed findings on other studies (Benton & Bandura, 1953; Stukát, 1958). Progressive weights has loaded on the second factor on Eysenck & Furneaux (1945) and yielded mixed finding in other studies (Grimes, 1948; Benton & Bandura; 1953; Stukát, 1958; Duke, 1961). The odor test loaded on the indirect factor (Eysenck & Furneaux, 1945; Stukát, 1958; Duke, 1961) and failed to load on any particular factor for Grimes (1948).

Additional laboratory suggestibility measures--ones that have not been used in the above-mentioned studies, were also used. The first one was a persuasion measure based on the paradigm developed by Steele (1971). This measure consists of participants reading two vignettes (one at a time) about a crime, the perpetrators' social history, and the mental health assessment of the perpetrator. The participants were then instructed to

give what they thought to be an appropriate sentence. Participants are then presented the “actual sentence,” given by a fictitious judge, and told to reevaluate and resentence the criminal. The measure reveals two persuasibility scores: direct (the pre-post change in the jail sentence for vignette #1) and indirect (the difference between pre-treatment sentencing during vignette #1 and pre-treatment sentencing for vignette #2). Previous research reveals that the magnitude of indirect persuasiveness tends to be stronger than direct persuasiveness (Steele & Ostrom, 1974; Saltzstein & Sandberg, 1975). Although past findings on measures of nonstandardized persuasibility are equivocal (Grimes, 1948; Stukát, 1958) it is hypothesized that this test will load on the third, or “social influence” factor of suggestibility as denoted by Eysenck (1947).

Another measure which will be used in the Gudjonsson Suggestibility Scale, or GSS, which is a measure of interrogative suggestibility (Gudjonsson, 1984; Gudjonsson, 1987a). Interrogative suggestibility, which is akin to leading-questions (Loftus, 1979), has been defined as “the extent to which, within a closed social interaction, people come to accept messages communicated during formal questioning, as the result of which their subsequent behavioral response is affected (Gudjonsson & Clark, 1986). This is the type of questioning common in police interrogations. Previous studies found this form (i.e. leading questions) to load on the indirect form of suggestibility factor (Eysenck & Furneaux, 1945) while it failed to load on other factors in some studies (Benton & Bandura, 1953; Stukát, 1958). Gudjonsson (1987b) provide support for the independence of the phenomenon of interrogative suggestibility.

Hypnotic responsiveness is another measure of suggestibility that was used in the present study. The literature suggests that there is a strong, positive relationship

between direct suggestive measures and hypnotic responsiveness. Early research found a strong positive correlation between the body sway test and hypnotic responsiveness (White, 1930; Hull, 1933; Eysenck & Furneaux, 1945), whereas other research found non-significant to mixed findings (Gwynn & Spanos, 1996). Some claim that little differentiates hypnosis and suggestion (Barber, 1969; Wagstaff, 1991; Kirsch, 1997). Kirsch and Braffman (2001) go so far as to state that “hypnotic suggestibility is simply nonhypnotic suggestibility augmented by a readiness to respond and modified by the changes in expectancy and motivation produced by the hypnotic context (pg 60).” Most of the literature suggests that the relationship between “nonhypnotic” suggestibility and hypnotic responsiveness is tenuous at-best, and more likely are independent entities (Bowers, 1983; Edmonston, 1989; Hilgard, 1973; 1991; Evans, 1989). Furthermore, the position presented by Kirsch and Braffman negates the fact that most empirical findings suggest that there is no unitary “trait” of suggestibility. Therefore a statement such as “waking suggestibility” fails to capture the essence of suggestibility or hypnotizability.

Moore (1964) found mixed results in his examination of the relationship between measures of social influence and hypnotic responsiveness. He found a nonsignificant negative correlation between persuasibility and hypnotizability, and a significant, albeit small, positive correlation between influencibility and hypnotic responsiveness.

However, a reexamination of those data by Woody, Drugovic, and Oakman (1997) shed new light on the relationship. Woody et al. (1997) found that social influence correlated highly with some of the easier hypnosis items (postural sway, hands moving, and arm rigidity). However, no significant relationship was found between social influencibility and the more difficult hypnotic items.

Another component of the present study is the development of a new placebo test. Placebo response has been shown to load on the indirect suggestibility factor for Duke (1961) but not for Grimes (1948). It has been postulated that the placebo response affects an individual on many levels, including sensory, cognitive, and emotional levels (Lundh, 2000). Although it has been posited that the underlying mechanism of placebo reactivity is essentially nothing more than the phenomenon of “waking” suggestibility (Baker & Kirsch, 1993; Trouton, 1957; Kirsch, 2000), other research findings fail to detect any connection between placebo responsiveness and other forms of suggestibility (Evans, 1989). Woody et al. (1997), using a spectral analysis, found that placebo reactivity is related to the easier hypnotic items, but was unrelated to the more difficult items.

When reviewing the literature on measures of placebo responsiveness, most studies, including the ones used in the early factor analyses (Grimes, 1948; Duke, 1961), used placebos that were inert, ingestible substances, such as sugar pills. The present authors sought to develop a measure of placebo reactivity without it needing to entail the participant ingesting a substance. Therefore, the way in which placebo reactivity was measured in the present study was via a “white-noise” test. Participants were told that listening to a “digitally enhanced compact-disc” would produce a physiologically stimulating or “energizing” effect. However, there was nothing unique or modified about the CD as it contained only white-noise. Baseline and post-treatment measures of participants’ perceived levels of physiological arousal were taken to assess the level of placebo responsiveness.

Based on previous theory and research we hypothesized that three factors would emerge, with three suggestibility measures loading on each (see Table 2). Our hypothesized first factor (which is of the ideo-motor type) consists of body-sway, Chevreul pendulum, and hypnosis. The hypothesized second factor, which is of the indirect type, consists of the odor test, progressive weights, and placebo response. “Social influence,” or pressure from a group or persons of prestige and power, is our third hypothesized factor. Expected to load on this factor are conformity, persuasion, and interrogative suggestibility.

The method by which these different suggestibility measures were analyzed was via factor-analysis. The next procedure was to test our hypothesized three-factored model. Although research has yielded equivocal findings (Eysenck & Furneaux, 1945; Grimes, 1948; Benton & Bandura; 1953; Stukát, 1958; Duke, 1961; Hammer et al. 1963), we hypothesized three factors with three suggestibility measures/variables loading on each of the factors. Hence, the Confirmatory Factor Analysis (CFA) was used to determine if there are indeed three measures on each of the three hypothesized factors. All CFA procedures were performed using AMOS (Analysis of Moment Structures), version 4 (Arbuckle & Wothke,1999).

CHAPTER 2

METHODS

Participants

Participants were enrolled in introductory psychology classes. They all received extra credit for participation in the second part of the study (the laboratory component of the study). The group measure of hypnotizability was done as part of a classroom experiential procedure and therefore participants did not receive extra credit for their participation in hypnosis.

1) Hypnotizability. The first component of the study entailed an assessment of participants' hypnotic responsiveness. Hypnotizability scores were obtained via group hypnosis as part of an experiential procedure during undergraduate General Psychology courses. The Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor & Orne, 1962) was the hypnotic responsiveness measure. This was conducted independently of the laboratory component (a different experimenter was used and participants were not informed of the connection between the hypnotizability measure and the laboratory component).

The laboratory part of the study was the second phase. Participants were recruited from the General Psychology class in which the group hypnotizability measure was conducted. Each participant received extra credit for their participation. The guise under which the laboratory suggestibility measures were taken was that the study was a measure of "sensory and perceptual sensitivity." This part of the study used a different

experimenter than the one that conducted the hypnosis. The experimenter instructed the participants that the various tests that will be employed are different ways in which their sensitivity to various stimuli will be measured. The tests were as follows.

2) Progressive Weights. This test, which was first introduced by Binet (1900), was presented as a “weight-discrimination” measure, consisted of presenting the participant with 15 identical looking boxes. The instructions read to participants was as follows: “The first test will be a measure of your ability to detect subtle differences in weight. Here is a series of weights, 15 of them. I want you to lift them, one after another, like this [the experimenter illustrates by taking a box between the thumb and finger and lifts it some 10cm. from the table]. As you lift each weight, I want you to tell me whether it is heavier, lighter, or the same as the one just right before it. All you have to say is either “heavier,” “lighter,” or “the same.” Remember you are to compare each weight with the one you lifted just before. For example, when you lift the 4th box, you are to say whether it is heavier, lighter, or the same as the 3rd box.

Each of the 15 boxes are identical in looks. The weight of the boxes were: Box 1, 20 gms, Box 2, 40 gms, Box 3, 60 gms, Box 4, 80 gms, and Boxes 5 through 15 were 100 gms. The scoring for this particular test was calculated as the sum of the number of times a participant identified identical weighing boxes as “heavier” or “lighter.” Thus, the scoring is based on responses to boxes 5-15, and the range of possible scores was 0 to 10.

3) Persuasion Test. This test was introduced as a measure of “perceptual sensitivity to details.” The persuasion test is based on the work of Steele (1971). The degree to which participants are persuaded was measured by first having a participant read a vignette of a case which described a woman who was arrested for arson. The

vignette included the precipitating event, social history of the perpetrator, and the mental health evaluation. The mental health assessment noted in its conclusion that the person “should be held fully responsible for her actions.” The case history was approximately 1,000 words.

Following the reading of the vignette, the participant was instructed to determine an appropriate prison term, with the possible sentence ranging from 1-10 years. Once the participant’s sentence was noted, the “actual sentence,” giving by a fictitious judge, was presented. The sentence giving by the judge was an overly harsh 9.5 years. Previous research revealed that the majority of participants gave sentences of less than 5 years (Steele & Ostrom, 1974). Following the presentation of the judge’s harsh sentence, participants were told to reconsider their original sentencing based, amongst other things, the sociocultural and psychological factors fueling their decision. They are then instructed to reflect on their first sentencing and to, once again, indicate what they believe to be a “just sentence.”

The first story was followed by a vignette of a second offense (bomb threat) committed by a second party. As with the first, this case was again approximately 1,000 words, which was followed by the participant giving an appropriate jail sentence. This was followed by a fictitious judge again giving a harsh sentence of 9.5 years. The participant is once again instructed to reconsider all factors and resentence the defendant.

The test of direct persuasion was scored as the difference between the participant’s initial sentence and their second sentence. For example, if a participant gave an initial sentence of 4 years and then following hearing the “actual sentence” gave a second jail term of 6 years, the score for direct persuasion would be “2.”

Indirect persuasion was also measured using the participants sentences given on the two vignettes. Indirect persuasion is based on the difference between the initial sentence given on vignette number 1(arson) and the initial sentence given on vignette number 2 (bomb threat). For example, if a participant gives an initial sentence on the arson case a jail sentence of 4 years and then gives an initial sentence for the bomb threat (case # 2) a term of 9 years, the score for indirect persuasion would be “5.”

The scoring for the measure of persuasibility will be the aggregate of the direct and indirect measures persuasibility. For example, if the direct persuasion score is “2” and the indirect score is “5,” the participant’s score would be “7.”

4) Chevreur Pendulum. This test was introduced as a measure of “hand-eye physical sensitivity.” The apparatus consists of a bob tied to the end of a string. The participant was told that if the pendulum is held over a ruler and s/he looks steadily at the bob it would soon begin to swing along the length of the ruler. The participant was told that this swinging phenomenon would occur despite his or her stringent attempt to keep the pendulum steady. Next, the experimenter demonstrates this phenomenon. Once the participant starts, the experimenter gave continuous and strong suggestions for the pendulum to swing. Scoring is based on the amount, in inches, the pendulum swung. For example, if, based on the experimenter’s judgment, the pendulum swung 4 inches, the score would be “4.”

5) Odor Test. This test is introduced as a measure of “sensitivity of smell.” The apparatus consists of 6 dark colored bottles in which the contents inside are not visible. The bottles were labeled in the following order: rose, tangerine, peppermint, jasmine,

grapefruit, and vanilla. The first three bottles contained the odor that it is labeled. The final three bottles contained only water.

The participant was told that once the top is removed, the bottle, starting two feet from the participant's face, will slowly be brought to his or her nose. The participant was then told to tell the experimenter as soon as the scent can be detected. Scoring was the number of times a participant reported smelling an odor from one of the three bottles containing water. For example, if someone reported detecting a smell of grapefruit from bottle 4 and vanilla from bottle 6, then the score would be "2."

6) Body Sway Test. This was introduced as a measure of "physical sensitivity." The participant was to stand up while the experimenter positioned him or herself behind the participant. The protocol for this test is the one used on the Stanford Hypnotic Susceptibility Scale, Form A (SHSS:A; Weitzenhoffer & Hilgard, 1959). Essentially, the participant was told to think about swaying backward despite his or her stringent attempt to remain still. The experimenter, whose hands were approximately one foot behind the participants' back, gave continuous suggestions to sway backwards and fall onto the hands of the experimenter.

The scoring was changed from the dichotomous "pass" or "fail" measure of the SHSS:A to a possible score of "zero," "one," or "two." A score of two was given if the participant fell back completely into the experimenter's hands of the experimenter, and a score of one was given if the person swayed back but not completely into the experimenter's hands. A score of zero was given if the participant failed to sway. The reason for the alteration in scoring was to move away from the dichotomous scoring to

make this test's scoring criteria more congruent with the scoring possibilities of the other tests in this study.

7) Interrogative Suggestibility Test. The measure of interrogative suggestibility was the latest version of the Gudjonsson Suggestibility Scale, or GSS II, (Gudjonsson, 1987). The test was introduced as a measure of the participant's "ability to sustain attention and focus on details." Essentially the participants were told that they are to listen carefully to a story because they will have to report everything they could remember. After the story was read by the experimenter, the participant was to answer 20 questions directly related to the story. However, 15 of the items were "suggestive;" meaning they contained false premises (the questions were not able to be answered by the content of the story). After answering the questions, the experimenter told the participant that too many mistakes were made and that s/he needed to answer the questions again, but this time with an attempt for "greater accuracy."

The GSS II provides three suggestibility scores: yield, shift, and total. Yield scores are the number of suggestive items to which the participant initially responds. The range of possible yield scores is 0-15. A shift score is a change in a response from the original reply. As with yield, the range of possible shift scores is 0-15. The total suggestibility score is the sum of yield and shift. Thus, the possible range of the total suggestibility score is 0-35.

8) Placebo Test. The placebo measure used was created by the authors of this study. This test was a non-intrusive placebo measure in which the participant did not need to ingest any type of substance. Instead, the person is told that the "white noise" on a compact disc (CD) has been digitally enhanced to energize a person's physiology. In

other words, persons were told that this CD will increase their physiological reactivity. However, the CD is made of generic white noise, with counterbalanced fluctuations in pitch, oscillating from the left ear to the right year. This was done to increase the “mysticism” of the white noise.

The CD and its cover were shown to the participant. The CD cover reads as follows: WHITE NOISE ENERGY! Energize your mind and body. Warning: do not use for more than 2 hours.

The placebo test was introduced as a measure of “physiological sensitivity.” The first assessment consisted of asking participants these five questions:

- a. how much energy do you have right now? (1 meaning no energy, 5 meaning a lot of energy)
- b. How alert do you feel right now? (1-5)
- c. How fast does your heart feel like it’s beating right now (do not allow the person to take their pulse)? (1-5)
- d. Do you have butterflies in your stomach right now?

After the responses were recorded the following was read to participants:

This next test will measure your body’s physiological sensitivity. This CD has been digitally enhanced to energize a person’s nervous system. The sound waves on this CD match with a person’s brain waves, which, in turn, will produce an overall energizing affect on your body. It has been digitally enhanced waves, which, as you might know, creates an energizing effect. In other words, listening to this CD will produce a variety of energizing physical effects.

The reason I asked you those questions before is that you will have the those very same experiences once I place the headphones on you and you begin to listen to this CD. You will begin to feel the effects of listening to this CD in a relatively short period of time, like a minute or so. You will stop having the energizing effects as soon as the headphones are removed.

Headphones were then placed on the participant and the white noise was turned on. After listening for approximately 90 seconds, and while still listening to the noise with the headphones on, the experimenter read each of the four questions back to the participant, and repeated the person's initial score. For example, "before, when I asked you how much energy you have, you said "2." Now, with 1 meaning no energy and 5 meaning a lot of energy, how much energy do you have right *now*?" This was done for each of the five questions.

There were two placebo effects scored. The first was the participant's score on the second set of questions minus the first set of questions (baseline). For example, if a person's baseline report on question one (how much energy do you have right now?) was 2 and their response following treatment was 4, the score for that specific question would be "2." This was done for each of the four questions. The second placebo effect score was the overall difference between the aggregate of the four baseline scores and the aggregate of the four treatment scores. For example, if a baseline total score was 10 and the treatment total score was 23, the total placebo effect score would be "13."

9) Conformity Test. This test was based on the Asch's classic studies of conformity (Asch, 1951; 1955). After the participant completed the above mentioned tests, the experimenter told him or her that they had to go to the next room to partake in

the final test, which was introduced as a measure of “visual judgment and perceptual sensitivity.” S/he was told that the reason for going to the next room because this task will be done in a group.

As they reach the second room, three “participants” are waiting in the room, seated around a table. The people are not participants but confederates. There was a planted note waiting for the experimenter. The note, which was written from a fictitious experimenter, is read out-loud, and states the following: “What took you so long to finish [experimenter laughs to insinuate that this was in a joking manner]. We [the confederates] finished and I [the “experimenter”] could not wait any longer. Would you conduct this part of the study? Thanks....Angela.” This was done to control for the possibility of a participant possibly questioning the authenticity of the purpose of this laboratory study.

The actual experiment proceeded exactly as Asch’s (1951) study. The experimenter told the four participants (three of which are confederates) that they were to announce which of the three lines presented on a card is identical to the standard line presented on a separate card. Eighteen sets of cards were presented, one at a time. On six of the sets (trials 1-2, 5, 10-11, and 14) the confederates answered correctly. However, on 12 of the sets (trials 3-4, 6-7, 8-13, and 15-18) the confederates unanimously answered incorrectly; meaning they chose an obviously incorrect line as the one which was thought to be the identical line.

The participants were to announce the answered choice out-loud, one at a time, in the order in which they are seated. The true participant (non-confederates) was always strategically seated in the last location. This was done to assure that the participant knew

the confederates answers, and hence, ensured pressure to conform. Scoring was the number of times the participant conforms to the majority responses (the confederates) and answers incorrectly just as the confederates did. For example, if a participant answered 7 of the 12 incorrectly, just as the confederates did, then his or her score was “7.”

A concern of the authors was that the participants, all of whom were undergraduate psychology students in a General Psychology course, might be familiar with the Asch studies. This was controlled for in several ways. The first was that the Social Psychology section was the final chapter covered in the General Psychology course. Furthermore, the deadline for the participation in extra credit research was reached before this chapter is covered. Hence, all participants' data were collected substantially before the Social Psychology study was covered. The other ways in which possible participant awareness of the purpose of the study was assessed was by asking them at the completion of the experiment two simple, straightforward questions: a) have you ever heard of or read about any of these tests that you participated in? b) have you ever heard of Solomon Asch or his research? Yet another way in which we controlled for possible confounds was by sending an experimenter into the participants' psychology course classroom and asking if anyone who participated in the experiment: a) was aware of the various measure of the “sensory and perceptual sensitivity study,” and b) if they talked with any other students who participated in the study. If any participant was aware of the true reason for the study then their data was excluded from the final statistical analysis.

CHAPTER 3

RESULTS

Data Management

The data collection process consisted of two phases: The in class group hypnosis, and the laboratory phase in which the participants individually performed the remaining eight measures. All data used in the final analysis consisted of participants who completed both the group hypnosis and laboratory measures. Six participants failed to fully complete their hypnosis protocols and therefore their data from the entire procedure could not be used. Furthermore, on twelve different times there were problems with the confederates during the group conformity measure. Eight times a confederate failed to show-up on time for the procedure and therefore that particular participant's data was not used. Also, four different times a confederate responded incorrectly during the conformity procedure, which resulted in the exclusion of those participants' data from the final analyses.

Distributions of Each Item

There were 110 participants in the study (33 males & 77 females) with a mean age of 19.15 years-old and a standard deviation of 1.04 years-old. Table 3 displays the distributions of each of the nine variables.

Table 3
Distributions of Variables

	N	Min	Max	X	SD
Progressive Weights	110	0	9	3.92	1.70
Persuasion 3 (total)	110	0	10.5	3.73	3.18
Chevreur Pendulum	110	0	2	.63	.58
Odor Test	110	0	3	1.70	1.15
Body Sway	110	0	2	.94	.76
Gss-Total	110	2	26	15.14	4.83
Placebo Total	110	0	6	1.51	1.44
Conformity (group)	110	0	12	1.67	2.44
Hypnosis Total	110	0	11	5.60	2.81
Valid N (listwise)	110	0	0		

of the skewness of variables such as persuasion, Cheverul pendulum, odor test, interrogative suggestibility, placebo, and conformity, we converted the scores to z-scores. Once converted, any case with a standard deviation of three or more was considered to be an outlier. Four outliers emerged, and analyses with these four cases removed revealed no different results. We therefore conduct the final analyses with outliers included.

Correlation Matrix

Table 4 depicts the correlation matrix of the nine suggestibility measures. Results of the matrix reveal low intercorrelations between variables. There were only three statistically significant correlations (all of which were at the .05 level), with the strongest relationship being persuasion with interrogative suggestibility (+.228), and the other two other significant correlations being persuasion with hypnotic responsiveness (+.188) and body sway with interrogative suggestibility (+.188).

Confirmatory Factory Analysis of Hypothesized Three-Factor Model

The next procedure was to test our hypothesized three-factored model. Although research has yielded equivocal finds, we have three hypothesized factors with three suggestibility measures/variables loading on each of the factors. Hence, the Confirmatory Factor Analysis (CFA) will determine if there are indeed three measures on each of the three hypothesized factors. All CFA procedures were performed using AMOS (Analysis of Moment Structures), version 4 (Arbuckle & Wothke,1999).

Table 4
Correlation Matrix

	progressive weights	persuasion 3 (total)	chevreul pendulum	odor test	body sway	gss-total	placebo total	conformity (group)	hypnosis total
progressive weights	1.000	-.041	.044	.025	.024	.143	.047	.044	-.078
		.668	.650	.796	.801	.136	.627	.646	.419
		110	110	110	110	110	110	110	110
persuasion 3 (total)	-.041	1.000	.055	.038	-.181	.228	.089	.072	.188
			.668	.691	.058	.017	.357	.457	.049
			110	110	110	110	110	110	110
chevreul pendulum	.044	.055	1.000	.029	.082	.170	.029	.054	.029
				.762	.392	.076	.765	.577	.767
				110	110	110	110	110	110
odor test	.025	.038	.029	1.000	.083	-.042	.021	.109	.011
					.386	.661	.827	.258	.911
					110	110	110	110	110
body sway	.024	-.181	.082	.083	1.000	.188	.114	.008	.096
						.049	.237	.930	.320
						110	110	110	110
gss-total	.143	.228	.089	-.042	.188	1.000	.167	.180	.065
							.080	.060	.501
							110	110	110

Table 4 (continued)

	Correlations	progressive weights	persuasion 3 (total)	chevreul pendulum	odor test	body sway	gss-total	placebo total	conformity (group)	hypnosis total
placebo total	Pearson Correlation	.047	.089	.029	.021	.114	.167	1.000	.094	.073
	Sig. (2-tailed)	.627	.357	.765	.827	.237	.080	*	.326	.447
	N	110	110	110	110	110	110	110	110	110
conformity (group)	Pearson Correlation	.044	.072	.054	.109	.008	.180	.094	1.000	.110
	Sig. (2-tailed)	.646	.457	.577	.258	.930	.060	.326	*	.251
	N	110	110	110	110	110	110	110	110	110
hypnosis total	Pearson Correlation	-.078	.188	.029	.011	.096	.065	.073	.110	1.000
	Sig. (2-tailed)	.419	.049	.767	.911	.320	.501	.447	.251	*
	N	110	110	110	110	110	110	110	110	110

* Correlation is significant at the 0.05 level (2-tailed).

Our *a priori* hypothesis consists of three suggestibility measures loading on three distinct factors. Table 5 displays the suggestibility measures hypothesized to load on each of the three hypothesized factors.

AMOS requires a selection of one particular variable to remain “constant” to each factor – a variable/suggestibility measure that must remain wedded to its particular hypothesized factor. Chevreul pendulum was constant for factor 1, the odor test for factor 2, and interrogative suggestibility was constant for factor 3. These were determined based on previous research and/or theory.

Table 5
Hypothesized Three-Factor Model

First Factor	Second Factor	Third Factor
Chevreul Pendulum	Odor Test	Interrogative Suggestibility (GSS-Total)
Body Sway	Progressive Weights	Conformity
Hypnosis	Placebo	Persuasion

Figure 1 depicts our *a priori* three-factor model of suggestibility. Although we hypothesized specific variables loading on specific factors, a different factor-loading emerged. Loading on the first factor were Chevreul pendulum and progressive weights, the second factor consisted of the odor test, hypnosis, and persuasion, while the third factor's loadings were conformity, interrogative suggestibility, placebo, and body sway. The correlation of .84 between factor one and factor two indicates that the two factors are essentially measuring the same thing, making a three-factor model unwarranted. The correlation between factors 1 and 2 negates the need to examine the tenability of the three-factor model any further due to the rejection of the three-factor model. Because of the high correlation between factor one and factor two, the three-factor model cannot be confirmed, which means our hypothesis must be rejected. Suggestibility cannot be best explained by a three-factor model.

Exploratory Analyses

Although our *a priori* hypothesis cannot be confirmed, in attempts to clarify the domain of suggestibility we decided to further examine the measures by testing a two-factor model. To conduct a two-factor analysis one variable was chosen to remain constant in each of the two factors. Chevreul pendulum and the odor test were chosen as the constant variables, which means they were forced to load on their respective factor. Figure 2 shows the best-fitting two-factor model according to Bayesian Information Criterion (BIC) goodness-of-fit measures. BIC favors parsimonious models (such as two factors) and has a lax exclusionary criteria for the variables fitting into the model. Loading on the first factor were Chevreul pendulum, body sway, progressive weights,

Chi Sq = 16.578
df = 24

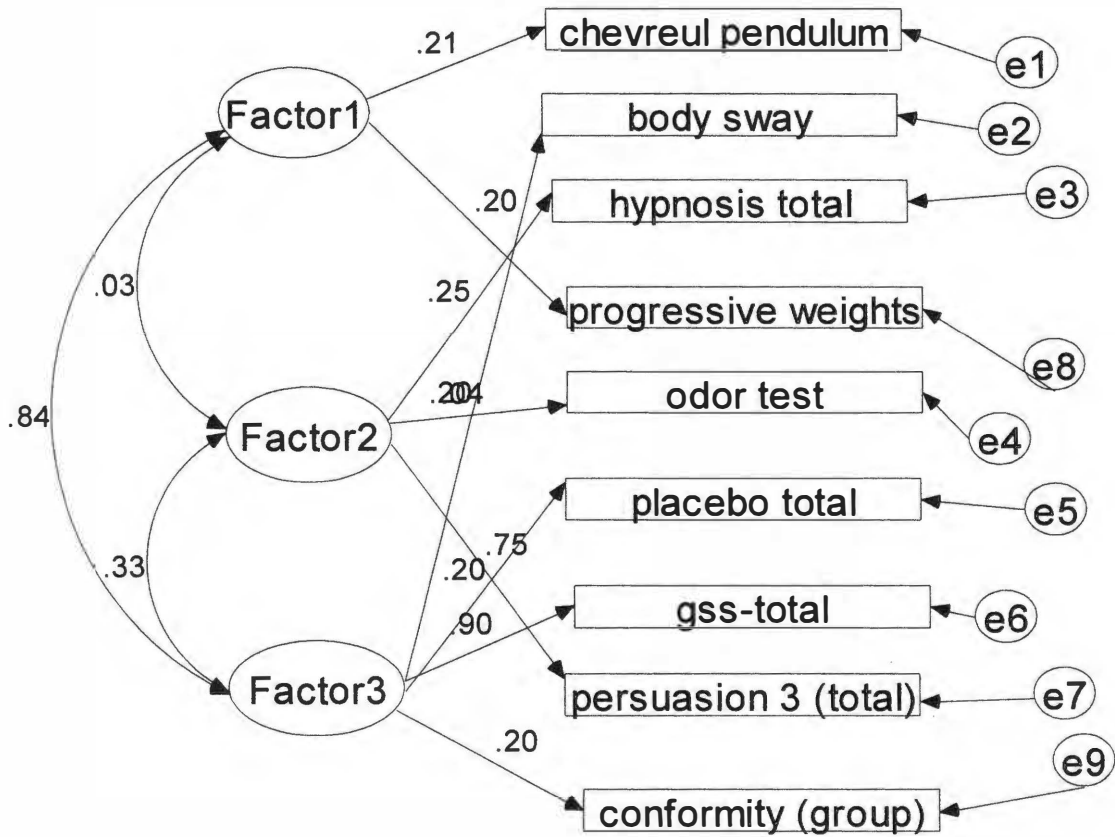


Figure 1

Three factor model

Chi Sq = 17.988
df = 26

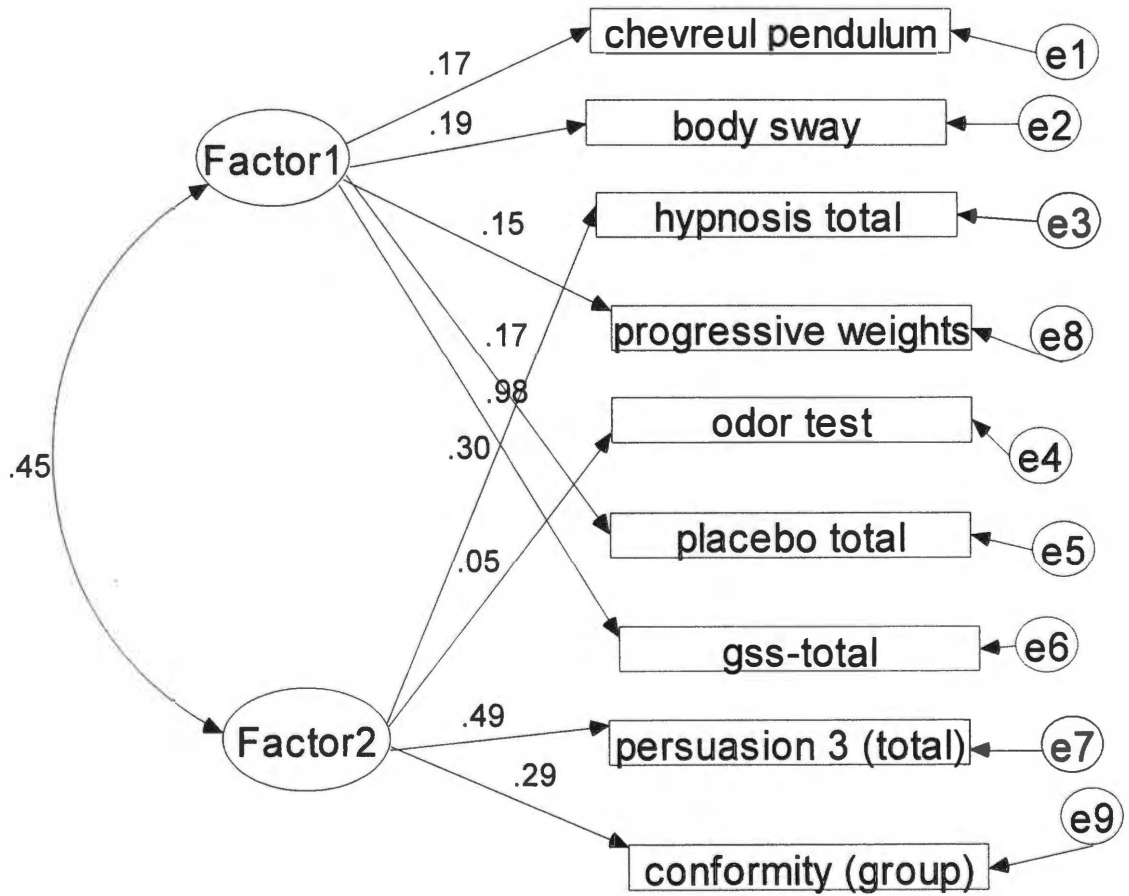


Figure 2

First Two-factor Model

placebo, and interrogative suggestibility. The second factor entailed hypnosis, the odor test, persuasion, and conformity. The correlation between the two factors of .45 is in the acceptable range, indicating that each factor is accounting for variance independent of one another. Also, with the Chi-Square (Chi Sq) of 17.988 being less than the degrees of freedom (df) of 26, the model fits well with a probability of .876.

Table 6 depicts the regression weights for this two-factor model.

Although this particular two-factor model has an adequate goodness-of-fit, when taking a closer examination of the regression weights, none reach statistical significance (see Table 7 for regression weight significance levels). The regression weight (path weights) significance levels range from .717 (persuasion) to .180 (body sway), which indicates no variable even broaches significance. Due to the lack of statistical significance on the path weights, we are forced to reject this particular two-factor model. (It should be noted that Chevreul pendulum and the odor test do not have regression weight significance levels due to these measures being chosen as the constant variables for their respective factor. Analyses were conducted varying the constant variables, all of which yielded no change in results).

There was one other two-factor model considered. Figure 3 depicts this best-fitting two-factor model according to the Relative Fit Index (RFI) goodness-of-fit, which (as compared to the BIC) has greater likelihood for exclusion of variables in service of a better fitting model. The correlation between the two factors of .30 indicates these factors are even more independent than the above-mentioned two-factor model. A Chi Sq of 19.066 and df of 27 denotes a good fitting model (p value .868). Loading on the first factor were Chevreul pendulum, body sway, placebo, interrogative suggestibility, and

Table 6

Standardized Regression Weights for First Two-Factor Model

Standardized Regression Weights: (Group number 1 – Default model)

		Estimate
Pendulum	← Factor 1	.175
Body Sway	← Factor 1	.192
PlacTot	← Factor 1	.173
Per3	← Factor 2	.488
Odor	← Factor 2	.054
HypTotal	← Factor 2	.297
GssTotal	← Factor 1	.977
Weights	← Factor 1	.146
Conform	← Factor 2	.285

Table 7

Regression Weights Significance Levels for First Two-Factor Model

Regression Weights: (Group number 1 – Default model)

		Estimate	S.E.	C.R.	P label
Pendulum	← Factor 1	1.000			
Body Sway	← Factor 1	1.441	1.076	1.339	.180
PlacTot	← Factor 1	2.487	1.951	1.275	.202
Per3	← Factor 2	25.113	69.306	.363	.717
Odor	← Factor 2	1.000			
HypTotal	← Factor 2	13.501	37.462	.360	.719
GssTotal	← Factor 1	46.893	45.569	1.029	.303

Chi Sq = 19.066
df = 27

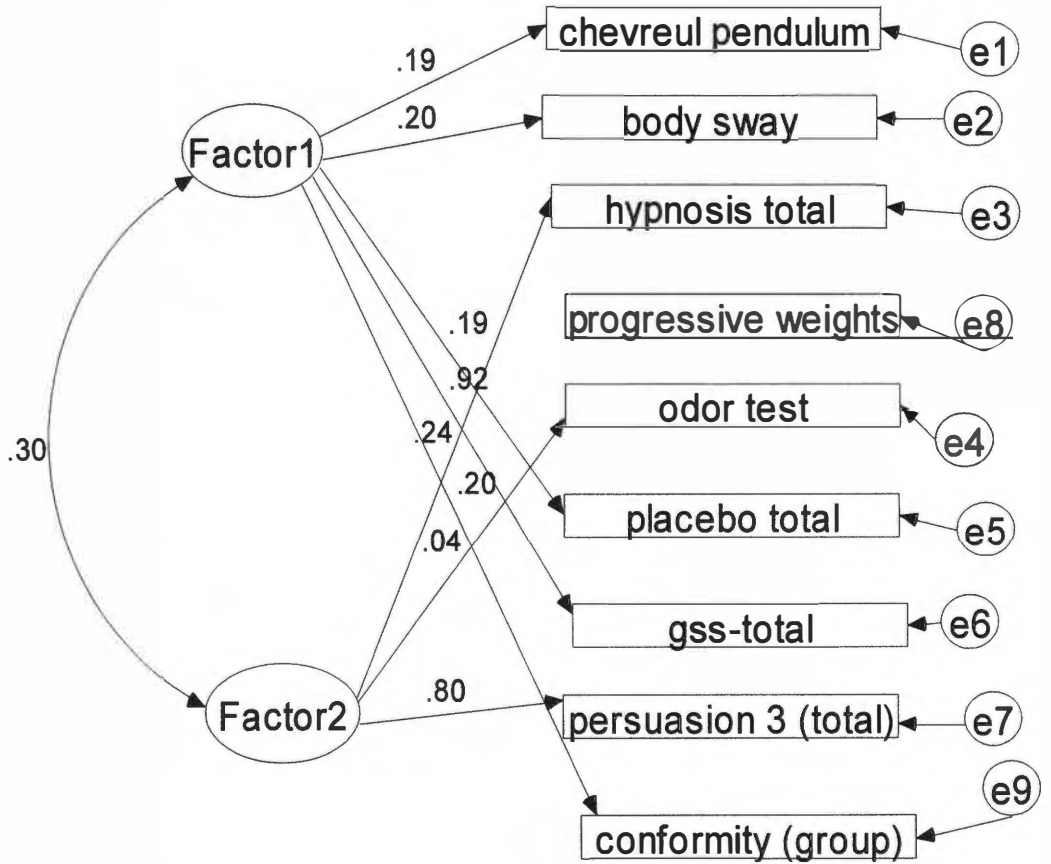


Figure 3

Second Two-factor Model

conformity. The second factor entailed hypnosis, the order test, and persuasion.

Progressive weights does not fit into this model and is therefore eliminated.

Table 8 shows the regression weights for this (the second) two-factor model.

Table 9 reveals the significance levels of the regression weights for each of the suggestibility measures loading on this particular two-factor model (with the exceptions of the constant variables, Chevreul pendulum and odor test, as well as progressive weights, which did not load on this model). Regression weight significance levels on this two-factor model range from .754 (persuasion) to .182 (conformity). As with the first two-factor model, no suggestibility measure loaded on a factor significantly (none at the .05 level). This indicates that this second two-factor model must be rejected. Furthermore, this means that the domain of suggestibility cannot be explained by a two-factor model.

We next decided to test a one-factor model of suggestibility. Although a one-factor explanation of suggestibility (as with a two-factor model) was not an *a priori* hypothesis, we further examined the domain of suggestibility to help elucidate the thought that if a one-factor model is the best way in which to explain the domain of suggestibility than it would essentially negate the need for a nomenclature to describe the various “types” of suggestion. For example, if hypnotic responsiveness loaded similarly to persuasion and interrogative suggestibility, than we can say each method of suggestion has the same impact, therefore simply using the term “suggestion” for each of the measures would suffice.

Figure 4 shows the best fitting one-factor model according to the Akaike Information Criterion (AIC) and Browne-Cudeck Criterion (BCC) goodness-of-fit

Table 8**Regression Weights for Second Two-Factor Model**

Standardized Regression Weights: (Group number 1 – Default model)

Estimate

Pendulum	← Factor 1	.187
Body Sway	← Factor 1	.197
PlacTot	← Factor 1	.189
Per3	← Factor 2	.797
Odor	← Factor 2	.040
HypTotal	← Factor 2	.237
GssTotal	← Factor 1	.920
Conform	← Factor 1	.198

Table 9

Regression Weights Significance Levels for Second Two-Factor Model

Regression Weights: (Group number 1 – Default model)

		Estimate	S.E.	C.R.	P label
Pendulum	← Factor 1	1.000			
Body Sway	← Factor 1	1.387	1.041	1.332	.183
PlacTot	← Factor 1	2.531	1.942	1.303	.193
Per3	← Factor 2	54.654	174.396	.313	.754
Odor	← Factor 2	1.000			
HypTotal	← Factor 2	14.357	42.609	.337	.736
GssTotal	← Factor 1	41.221	36.583	1.127	.260
Conform	← Factor 1	4.490	3.364	1.335	.182

Chi Sq = 24.234
df = 29

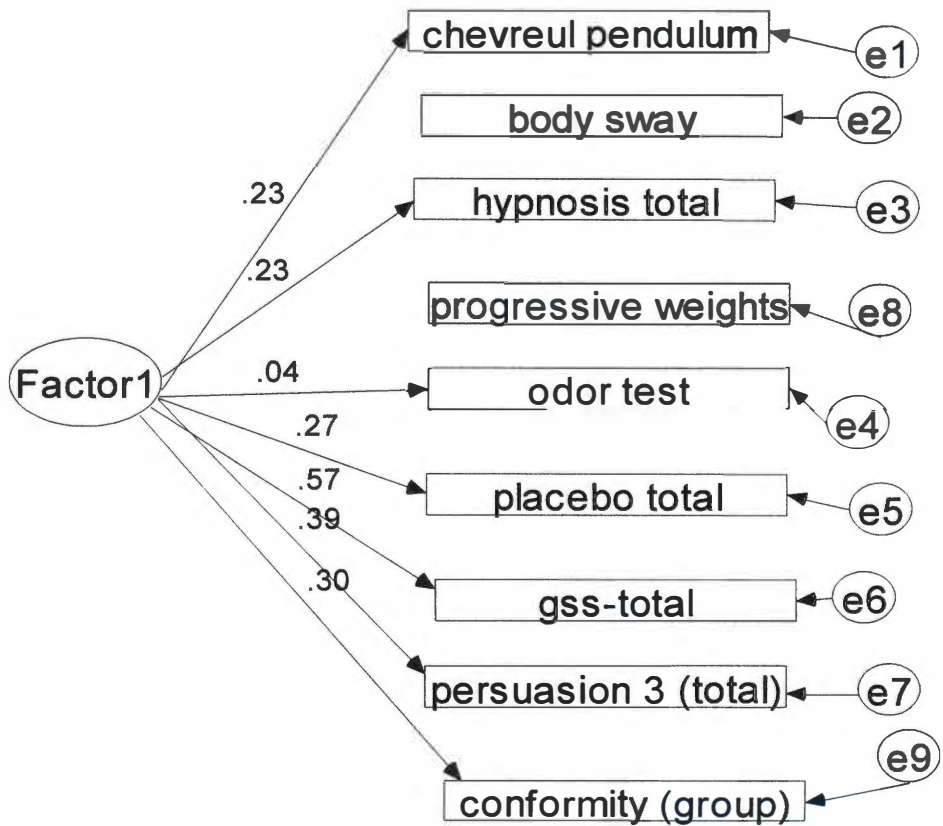


Figure 4

One-factor Model

measures. With a Chi Sq of 24.234 and df of 29, this one-factor model fits, with a p value of .717. However, both progressive weights and body sway do not fit and therefore are eliminated from the model.

Table 10 depicts the regression weights of this model, ranging from .36 (odor test) to .569 (Gudjonsson interrogative suggestibility).

Table 11 depicts the significance levels for the regression weights of the one-factor model (except for the odor test, which was the constant variable for this particular model). No suggestibility measure had statistically significant regression weights on this one-factor model, which forces us to reject the one-factor model. This means that the domain of suggestibility cannot be explained by a single factor.

In sum, our hypothesis that the domain of suggestibility can be explained in a three-factor model is disconfirmed. Not surprisingly then, a one or two-factor model is not equal to the task. No clearly delineated factor structure emerged. Indeed, the nature of the covariance among our suggestibility measures was so scattered that the prudence of tagging them as indexing the same putative latent disposition must be drawn in to question. In a sense, suggestibility seems neither to be “one attribute” nor even a bundle of related attributes. Indeed, when researchers and theorists invoke the operation of suggestion to explain aberrations in memory, sensation, attitude, judgment, and medical status, they probably ought to be mindful that they are describing a rather narrow, situation-specific reactivity, not a disposition.

Table 10

Regression Weights for One-Factor Model

Standardized Regression Weights: (Group number 1 – Default model)

Estimate

PlacTot	← Factor 1	.274
GssTotal	← Factor 1	.569
Conform	← Factor 1	.300
Odor	← Factor 1	.036
HypTotal	← Factor 1	.231
Per3	← Factor 1	.392
Pendulum	← Factor 1	.225

Table 11

Regression Weight Significance Levels for One-Factor Model

Regression Weights: (Group number 1 – Default model)

		Estimate	S.E.	C.R.	P label
PlacTot	← Factor 1	9.679	37.507	.258	.796
GssTotal	← Factor	67.148	259.099	.259	.796
Conform	← Factor 1	17.915	69.330	.258	.796
Odor	← Factor 1	1.000			
HypTotal	← Factor 1	15.877	61.731	.257	.797
Per3	← Factor 1	30.487	117.666	.259	.796
Pendulum	← Factor 1	3.177	12.359	.257	.797

CHAPTER 4

DISCUSSION

We thought that factor analytic analyses of nine measures of suggestibility would result in three distinct factors. We thought wrong. Subsequently (although not our *a priori* hypothesis), we thought that perhaps our suggestibility measures would load on two factors. Once again, we were wrong. Finally, we thought that since both three and two factor models failed to emerge, that our data would possibly be best explained by a single-factor model. If this were the case it could be argued that that the various “types” of suggestibility all measure the same thing and the domain of suggestion and suggestibility can and should be explained by a single-factor model. If this were true then attempting to differentiate between various “types” of suggestion (i.e. hypnosis, persuasion) is not only superfluous, but misguided. Although not expected, we thought such a finding would not only amend the disarray of the domain of suggestibility but also allow us to disregard the oft-confusing semantics of the suggestibility nomenclature. However, this was not to be. As with the three and two factor models, the data failed to support a unitary, one-factor model of suggestibility. Therefore, no clearly delineated factor-structure emerged. Each measure of suggestibility appears to be independent of one another. Hence, the domain of suggestibility cannot be explained by any factor structure but must be considered with careful attention to the specific type of measurement.

While several of the earlier studies found some indication of a first factor of the direct, explicit behavioral expression of a desired suggestive response (Eysenck & Furneaux, 1945; Stukát, 1958; Duke, 1961; Hammer et al., 1963), the present study found no evidence of such a factor. Therefore, the results of this study are more similar to the findings of Grimes (1948) and Benton and Bandura (1953), which both found little evidence of a delineated factor structure.

The finding that no factor structure emerged is interesting and highly important. For example, that there was a weak relationship between hypnosis, body-sway, and Chevreul pendulum was quite unexpected. A commonality of these types of suggestion is the directive, ideomotor, behavioral aspect of each. Previous research found Chevreul's pendulum and body-sway to load on the same factor (Stukát, 1958; Duke, 1961) while Eysenck and Furneaux (1945) found all three to load on the same factor. The present study found a correlation of .082 between body-sway and Chevreul pendulum, .096 between body-sway and hypnosis, and .029 between Chevreul pendulum and hypnosis, respectively. What must be inferred from this study is that although the directive, ideomotor, aspects of these suggestions may tap into a particular type of ability, there are clearly unknown aspects to these suggestions. Despite what is common to each, they are still clearly independent suggestive measures that tap into each of the suggestions.

Our hypothesized second factor consisted of the odor test, progressive weights, and placebo reactivity – suggestibility measures which (presumably) tap into non-directive abilities. Studies in which such a factor emerged found it to be weak at-best (Eysenck & Furneaux, 1945; Stukát, 1958; Duke, 1961; Hammer et al., 1963). Of the

three hypothesized second factor measures, we found correlations of .025 (progressive weights with the odor test), .047 (progressive weights with placebo reactivity), and .021 (placebo reactivity with the odor test). What is clear (as with our purported first factor) is that each of these non-directive suggestive measures are indeed independent of one another, and hence apparently tap into unique (indirect) suggestive mechanism(s).

Our third hypothesized factor was that of “social influence” and consisted of persuasion, conformity, and interrogative suggestibility. This hypothesized factor entailed measures of group pressure (conformity); the simulated pressure of police-like interrogations via interrogative suggestibility; and suggestive experiences of that from a fictitious judge in the form of persuasive suggestions, which is similar to Eysenck’s (1947) concept of prestige, or tertiary, suggestibility. Stukát (1958) made some attempts to assess a person’s level of responsiveness to this type of suggestion (i.e. the color test, contradictory tests, co-judge suggestions), although these measures lacked the rigid operationalization of more contemporary tests (i.e. Gudjonsson, 1984; Gudjonsson, 1987a).

Our results related to our third hypothesized factor (which entailed the use of contemporary measures) were quite similar to the previous two hypothesized factors: little to no correlation. Persuasion correlated .072 with conformity, while interrogative suggestibility correlated .180 with conformity. The strongest relationship amongst any of the measures was interrogative suggestibility with persuasion, with an $r = .228$ ($p = .05$). However, it is important to note that the shared variance between these two measures was only 5%, which indicated that this hypothesized factor (as with previous ones from this

study) did not form a coherent factor; hence, these measures of suggestion can also be considered independent.

On closer analysis, it is worth while to consider the differences between the present findings and each of the previous factor-analytic investigations. Eysenck and Furneaux (1945) conducted the first factor-analytic investigation of the domain of suggestibility. Their study consisted of 12 suggestibility measures administered to 60 army veteran participants (presumably, though not explicitly stated, all male) who were in a hospital for “nervous disorders.” Eysenck and Furneaux (1945)’s study yielded two factors, which they called primary and secondary suggestibility.

The present study used 5 of the same suggestibility measures as Eysenck and Furneaux (1945): Chevreul’s pendulum, the odor test, progressive weights, body-sway, and hypnosis. Whereas they found Chevreul’s pendulum, body-sway, and hypnosis to load on one factor, and the odor test and progressive weights to load on the second, we did not find these measures to hold together. One possible reason for the differences is participant selection. Eysenck and Furneaux (1945) used hospitalized army veterans with presumably multiple physical and psychological ailments, which might have limited behavioral variance. We used college students. Secondly, the measurement of hypnotic responsiveness is different. While Eysenck and Furneaux (1945) did measure hypnotic responsiveness, it predated standardized measures of hypnotizability. The present study used the well-researched and normed Harvard Group Scale of Hypnotic Susceptibility (Shor & Orne, 1962). Hence, differing populations and measures make replication impossible.

Three years after Eysenck and Furneaux (1945), Grimes' (1948) did a factor analysis using 16 suggestibility measures on orphaned boys with an age range of 8-15 years. Grime's (1948) study revealed weak correlations between suggestibility measures and therefore no clearly delineated factor structure emerged.

Our present study used three of the same suggestibility measures as Grimes (1948): the odor test, progressive weights, and placebo responsiveness. One difference between Grimes (1948) and the present study is participant selection. Grimes (1948) consisted of boys in an orphanage, with an age range of 8-15 years; therefore such a population's results can pertain to only this very selective subgroup of the greater population. Secondly, some of the suggestibility measures used by Grimes (1948) are questionable. For example, the Otis test (Otis, 1923) was used to measure the children's responsiveness to social pressure. The Otis test is pencil and paper measure of the way in which a person responds to implicit pressure from a person of prestige and non-prestige. A problem is that this is a lengthy test, using often-confusing language, could have presumably made it difficult for young boys to maintain engagement throughout the duration of the examination. Thirdly, although both Grimes (1948) and the present study use measures of placebo responsiveness, the placebo measures were different. Grimes' (1948) placebo measure entailed participants engaging in a pencil and paper speeded task, then ingesting sugar pills to "enhance their strength and prevent tiredness," which was followed by the participants' engaging in the task once again. Their placebo responsiveness is the difference between the first trial (baseline) and the second trial. As a speeded test, a possible limitation of this measure is practice effect given the fact that participants performed the task twice. A second potential problem that that since sugar

acts as a central nervous stimulant, the “placebo” might not be placebo at all but could have actually enable the participants to perform the task at a faster rate, which would show a greater effect for the measure.

Benton and Bandura (1953) were the first suggestibility investigators to use factor-analysis with college students participants. They used nine measures of suggestibility on 50 college student participants. Their findings yielded no factor structure of suggestibility, which differs from Eysenck and Furneaux (1945), yet agrees with Grimes (1948), as well as the present study. Benton and Bandura (1953) and the present study had two overlapping measures: progressive weights and body-sway. Although Benton and Bandura (1953) barely meets the necessary minimum requirement for participant-variable ratio for factor analytic studies (Grimm & Yarnold, 2000) their study does possess other limits. One obvious limitation is the lack of contemporary suggestibility measures given the fact that study is fifty years old. The second limitation is a lack of what we described as our second criterion for test selection, that of contemporary relevance. Absent from Benton and Bandura (1953) are measures such as hypnosis, placebo responsiveness, and any measures of our hypothesized (though disconfirmed) third factor of social influence from either group pressure (i.e. Sherif, 1936; Asch 1951; 1955), or from persons of prestige or power (i.e. persuasion).

Stukát (1958) conducted three independent factor analytic investigations on the domain of suggestibility. The first study entailed 21 variables administered to 67 children with a mean age of 8.6 years. Results revealed a first factor (of the ideo-motor kind) and minimal evidence of two additional factors. There were three overlapping measures with this first Stukát (1958) study and the present study: Chevreul’s pendulum,

progressive weights, and body-sway. Stukát's (1958) second study consisted of administering 24 tests to 184 girls with a mean age of 11 years. Results suggested a first factor, again of the ideo-motor, behavioral type. However, no additional factors emerged. The same three measures used in the first Stukát study (1958) and in our study were also used in Stukát (1958)'s second study. Stukát (1958)'s third study entailed the use of 17 measures with 90 adults. There were four measures used both in this third Stukát (1958) study and our study: Chevreul's pendulum, the odor test, progressive weights, and body-sway. The adult Stukát (1958) study revealed a first factor of the ideo-motor type and weak evidence of a second factor.

There are several limitations of Stukát (1958)'s studies when compared to the present study. One critical limitation was the ratio of participants to variables. Stukát (1958) had studies with participant to variable ratios as low as 3:1 and 5:1. Furthermore Stukát (1958)'s test selection must be called into question. Measures such as teacher rating scales and IQ tests are at-best tenuously related to the domain of suggestibility. Therefore, in comparison to our study, Stukát (1958)'s three studies lack an adequate number of participants and appropriate test selection.

Duke's (1961) study, which entailed administering 10 suggestibility measures to 91 institutionalized army veterans, had results that revealed strong support for a first factor (of the ideo-motor type) and some, albeit weaker, evidence of a second factor of the indirect type. Five measures used by Duke (1961) were also used in our study: Chevreul's pendulum, the odor test, progressive weights, body-sway, and placebo responsiveness. Duke (1961)'s study, which have similar populations and results as Eysenck and Furneaux (1945), had several limitations. One is an absence of "social

influence” or group pressure suggestive measures (i.e. Sherif, 1936; Asch, 1951).

Another limit of Duke’s (1961) is that, with the exception of placebo responsiveness, there were no suggestibility measures with contemporary relevance.

The final factor analytic investigation was conducted by Hammer et al. (1963), which entailed administering 13 measures to 73 undergraduate college students. The only overlapping measure was Chevreul’s pendulum. Their results revealed a first and second factor. Limits of the Hammer et al. (1963) study were the lack of breadth of contemporary measures of suggestibility (i.e. hypnosis, placebo), as well as an insufficient sample size.

Although Hammer et al. (1963), Benton and Bandura (1953), and the present study all used college students as participants, there are differences in findings. Benton and Bandura (1953)’s findings of no factor structure were more in line with the present study’s findings, but Hammer et al. (1963) findings of two factors stands in stark contrast. One problem in comparing the three studies’ findings is that replication was not possible. All three used different measures and had different numbers of participants. Also, an obvious limitation of both previous studies was a lack of contemporary measures of suggestibility. Both Benton and Bandura (1953) and Hammer et al. (1963) had a small number of participants. Also, there were no sufficient measures of our hypothesized third factor, that of group or prestige suggestions (i.e. Sherif, 1936; Asch, 1951; 1955).

Limitations

One limit of the present study is the participant selection. The participants consisted solely of college undergraduates with a mean age of 19.15 years (s.d. = 1.04).

Although the present study possess some of the same inherent limits regarding generalizability of findings as some of the previous factor analyses (Benton & Bandura, 1953; Hammer et al., 1963) due participant selection, it does have several advantages. One is the breadth of suggestibility measures. Our study used a wide array of measures assessing participants' response to an array of suggestive measures. Secondly, the present study utilized contemporary measures of suggestion that the two previous 40-50 year-old studies were understandably unable to do. Lastly, we had a solid participant to variable ratio (12:1), which allowed for greater statistical power.

Although we used a wide range of measures of suggestibility, there were some left out. For example, tests used in previous factor analytic studies that were not used in ours such as the heat illusion test (Eysenck & Furneaux, 1945; Grimes, 1948; Hammer et al., 1963), progressive lines (Grimes, 1948; Stukát, 1958; Duke, 1961; Hammer et al., 1963), or tactile and auditory tests (Stukát, 1958) were left out in order to use more contemporary suggestibility measures. Furthermore, an important measure of social influence that was operationalized following the last factor analytic study (Hammer et al., 1963) was Milgram's (1965, 1974) controversial obedience studies. Although present ethical guidelines would prevent such experiments to be performed today, perhaps a modified Milgram-like study would have been useful in assessing participants' obedience levels.

Another limit of the present study is the absence of self-report measures. None of the previous factor analytic investigations (including the present study) used self-report measures of suggestibility. This is a problem. Although the relationship between attitudes and behavior is weak (Wicker, 1969), it would still be important to examine that

association within the domain of suggestibility using some of the frequently self-report measures (i.e. Crowne & Marlowe, 1960; Winkler, Kanouse, & Ware, 1982; Bearden, Netemeyer, & Teel, 1989; Gudjonsson, 1989).

Another limit and area in need of future research is the need to conduct factor analyses with different populations. For example, a timely update and extension of studies with children (Grimes, 1948; Stukát, 1958) with appropriate suggestibility measures such as the Video Suggestibility Scale for Children (Scullin & Ceci, 2001) would enable us to better understand the ways in which children respond to this age-specific type of interrogative suggestibility. Also, further investigations with elderly or disabled persons (i.e. Eysenck & Furneaux, 1945; Duke, 1961) as well as adults (i.e. Stukát, 1958) are needed in order to not only reexamine earlier studies but to extend and elucidate the domain of suggestibility.

Conclusion

The focus of suggestibility research in the early 1900s was to determine if the domain of suggestibility was unitary trait – to see if a person was “suggestible” or not. Some early research supported this notion (Binet, 1900; Tarde, 1907), others did not (Brown, 1916; Estabrooks, 1929; Scott, 1910). Our findings are more in line with later studies. We can say that, based on our study, suggestibility cannot be considered a unitary trait. The way a person responds to one type of suggestion (i.e. progressive weights) is not the way in which a person responds to another type (i.e. hypnosis). Hence, suggestibility appears to be a non-singular construct. Based on our work it does not appear to have a common latent disposition. We can safely say that the notion of a

“g” factor of suggestibility is not supported by the current empirical findings of this study.

Besides negating the notion of suggestibility being a unitary trait, we also must reject the notion that the domain of suggestibility can be broken down into a clearly delineated factor structure. Although some previous studies found a somewhat coherent structure for at least suggestions of the behavioral, ideo-motor type (Eysenck & Furneaux, 1945; Stukát, 1958; Duke, 1961) we did not. We found no clearly delineated factor structure. The putative notion that a person’s response to a direct, explicit suggestion is the same across such types of suggestions was not substantiated. An evident conclusion from our study is that people respond differently to each type of directive suggestion. Thus, for example, one cannot say that suggestions of the direct, ideo-motor type tap into one specific singular type of ability. Although there might be similar mechanism(s) in operation with such directive suggestions, there are clearly also other, independent abilities at play for each specific suggestion.

The same holds true for other types of suggestive phenomena, namely the indirect type (i.e. the odor test, progressive weights, placebo response). These types of suggestions did not hold together as they did in some of the previous studies (Eysenck & Furneaux, 1945; Stukát, 1958; Duke, 1961; Hammer et al., 1963). The abilities that are activated in such indirect suggestions appear different for each suggestion. This means, for example, that the abilities tapped into for placebo responsiveness are for the most part very highly specific to that type of suggestion. Whatever commonalities there are between these types of suggestions appear to be less salient than their differences.

The same also can be said for the “social influences” types of suggestions (i.e. Eysenck, 1947). These types of suggestions, which entail suggestions from a person of prestige (persuasion), pressure from the experimenter (interrogative suggestibility), and group pressure (conformity) also are independent of one another. The abilities tapped into during each suggestion appear to be unique to that specific suggestion. The way in which a person responds to one is indeed different than the way s/he responds to other types of suggestions.

Should we be surprised by these findings? Perhaps not. On closer examination of each suggestibility measure both ostensible and subtle differences are evident. Body sway, for example, consists of (besides the suggestive elements) somatosensory information such as kinesthesia, or an awareness of one’s body parts. A person’s sense of balance (via vestibular sensory information) also must be taken into account when examining this particular suggestion. In comparison to Chevreul pendulum, where the kinesthetic focus is primarily on the hand-eye interplay, which is quite different from body sway. Hypnosis, for example, has many different suggestive items, each with their own unique underpinnings. Beyond the various groupings of hypnotic suggestions (i.e. challenge, cognitive, sensory), there is tremendous variability for any given suggestion, such as arm rigidity (Winkel & Nash, 2003). Therefore, despite the directive, ideo-motor aspects of each of these three hypothesized first factor suggestions, there is great differences between them, which could possibly account for people’s differing way of responding to each.

Similar hypothesized differences can be made for the disconfirmed “indirect” suggestibility factor. Whereas progressive weights entails classic psychophysics, such as

just-noticeable difference, or the smallest detectable difference in stimuli (i.e. the boxes' weight), the odor test involves olfactory sensory information. People's ability vary in these two areas, which could account for response differences between these measures found in the current study. Furthermore, Perez and Nash (2004) found that participants vary greatly in response to sensory suggestions. In regards to placebo response, phenomena such as classical conditioning (Wickramasekera, 1980; Turkkan, 1989), response expectancy (Kirsch, 1985), or physiological substrates like endorphins (Levine, Gordon, Jones, & Fields, 1978) all may (or may not) play crucial roles in placebo responsiveness. Hence, different mechanisms for different suggestive measures can account for different responsiveness.

There are also possible mediating variables which could account for the lack of cohesiveness of our third hypothesized factor, that of "social influence" from groups or prestige. Asch (1951) found that individual differences such as personal confidence, emotional withdrawing tendencies, a sense of doubt, and whether or not a person is concerned about being perceived as different were all related to participants' responsiveness to conformity. Persuasive responsiveness would also encompass similar variables. In regards to suggestibility similar to interrogative suggestibility, it has been found that factors such as intelligence (Gudjonsson, 1988, 1990) as well as comprehension of verbal information (Beaumont, 1987) play figural roles in responsiveness. Therefore, as with the other measures, there are numerous possible reasons for the barely negligible correlations between varying measures of suggestibility.

Such findings have great contemporary relevance. One area is hypnosis. Although some propose there is little difference between hypnotic responsiveness and

“nonhypnotic” suggestive situations, and that suggestion is the basis for hypnotic responsiveness (Barber, 1969; Wagstaff, 1991; Kirsch, 1997; Braffman & Kirsch, 1997, 1999) our results found hypnotic responsiveness (as with other measures of suggestibility) to be an independent phenomenon. This is in line with previous studies (Bowers, 1983; Edmonston, 1989; Hilgard, 1973, 1991; De Pascalis, 1989; Evans, 1989; De Pascalis, et al., 1998). Whereas other studies found a positive relationship between hypnotic responsiveness and singular items on standardized hypnosis scales like body-sway (White, 1930; Hull, 1933; Eysenck & Furneaux, 1945), we did not. Hypnosis is not simply “nonhypnotic” suggestibility and must be looked at as an independent phenomenon, which is related to a set of unique (yet unknown) abilities.

Memory is another area. Primarily based on the body of work of Elizabeth Loftus, the plasticity of human memory has been well established in the scientific literature (Loftus, 1979, 1993; Loftus & Pickerell, 1995; Gudjonsson, 1984, 1987, 1989; Gudjonsson & Clare, 1995; Hyman, Husband, & Billings, 1995; Malinoski & Lynn, 1999; Heap & Nash, 2001). Furthermore, the “hypermalleability” of memory has also been demonstrated within the hypnotic situation (Nash et. al., 1986; Nash, 1987; McConkey, 1992; Kihlstrom, 1994; Lynn, et at., 2000). The previous findings, as well as this present study, highlight the sensitivity of memory to suggestion. Based on our findings (as well as others) it is imperative to acknowledge the variability of suggestive responsiveness and it’s potential impact on one’s memory and recall.

The role of suggestion in regards to placebo responsiveness is also of great importance. Placebo responsiveness is a phenomenon that researchers in both psychotherapy and medical fields often attempt to control, understand, and manage (Ross

& Buckalwe, 1983; Critelli & Neuman, 1984). Although it has been stated that little differentiates hypnotic and placebo responsiveness (Baker & Kirsch, 1993; Trouton, 1957; Kirsch, 2000) the findings of this (and previous) studies suggest otherwise. It has been demonstrated that relationship between placebo and hypnosis is at-best tenuous (McGlashan, Evans, & Orne, 1969; Spanos, Perlini, & Robertson, 1989) and our findings reveal that not only are these two types of responses unique ($r = .073$), but it is clearly unrelated to others forms of suggestion as well (the highest correlation with placebo responsiveness was interrogative suggestibility, $r = .167$). Placebo (as with other methods of suggestion) must therefore be considered as a singular phenomenon with its own set of abilities and mechanisms of operation.

Suggestibility is not one thing. Someone cannot be said to be “suggestible” or “nonsuggestible.” Nor should someone make references to “waking” or “nonwaking” suggestibility. This nomenclature is nondescriptive at-best, and likely meaningless. We know that suggestion and suggestibility are constantly at play and account for a large portion of who we are and what we do. For this reason, when discussing the nature of way(s) in which people respond to a direct or indirect form of communication it is imperative to explicate how the suggestive information is being communicated, and in which way a person is responding. Judicious use of the terms suggestion and suggestibility is essential to not only accurately understand exactly how a person is responding to a suggestion but also to better understand the nature of suggestibility of everyday life.

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