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**The role of rule-governed behavior in histrionic and compulsive
personality disorders**

Schneidmiller, Sara Weber, Ph.D.

The University of North Carolina at Greensboro, 1987

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THE ROLE OF RULE-GOVERNED BEHAVIOR
IN HISTRIONIC AND COMPULSIVE
PERSONALITY DISORDERS

by

Sara Weber Schneidmiller

A Dissertation Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Ph.D.

Greensboro
1987

Approved by

Rosemary O. Nelson

Dissertation Adviser

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at The University of North Carolina at Greensboro.

Dissertation Advisor Rosemary O. Nelson

Committee Members Stanley
Francis McConnell
Jacquelyn W. White
Ed Shell

June 23, 1987
Date of Acceptance by Committee

June 2, 1987
Date of Final Oral Examination

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Behavioral descriptions of the histrionic and compulsive personality disorders as well as cognitive and bio-social learning theories of these disorders appear to be consistent with the hypothesis that these disorders might be related to dysfunctional rule-governed behavior. Specifically, it was suggested that the histrionic personality disorder might be related to deficits in rule-governed behavior, while the compulsive personality disorder might be related to excesses in rule-governed behavior. It was further hypothesized that rule-governed behavior among compulsive subjects would increase in the presence of punishment contingencies.

College students who showed predominantly histrionic or compulsive personality styles on the Millon Clinical Multiaxial Inventory and control subjects were trained on an operant task involving a multiple schedule in one of two rule conditions (Positive Only vs. Positive Plus Response Cost). Following training, there was an extinction phase to determine whether apparent schedule responding was actually under the control of rules.

Results indicated an effect of diagnosis upon sensitivity to extinction, with histrionics showing the highest sensitivity to extinction and compulsives showing the lowest sensitivity to extinction. These findings were

consistent with the experimental hypothesis that compulsives would show more rule-governed behavior than histrionics or control subjects, while histrionics would show greater control by direct contingencies of the behavior than either compulsives or control subjects. There were no significant main effects of type of rule or significant interactions between diagnosis and type of rule. Thus, the hypothesis that compulsives alone would show greater insensitivity to extinction in a punishment condition than when only positive outcomes are involved was not supported. Protocol analysis of concurrent verbalizations did not support rule-governed behavior as the mechanism for diagnostic differences in sensitivity to extinction since compulsives did not show higher proportions of rule statements than histrionic or control statements. While lack of diagnostic differences in rule statements does not permit the exclusion of other theoretical interpretations of the present results, the possibility of differences in rule-governed behavior cannot be discounted on the basis of the present study since this analysis dealt only with the form rather than the function of concurrent verbalizations.

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TABLE OF CONTENTS

	Page
APPROVAL PAGE	ii
ACKNOWLEDGEMENTS.	iii
LIST OF TABLES.	vi
LIST OF FIGURES	x
 CHAPTER	
I. INTRODUCTION	1
Histrionic Personality Disorder.	9
Compulsive Personality Disorder.	29
Rule-Governed Behavior	56
Statement of Purpose	77
II. METHOD	85
Subjects	85
Experimental Design.	89
Setting and Apparatus.	90
Procedure.	90
Dependent Variables.	96
III. RESULTS.	100
Acquisition Data	100
Extinction Scores.	102
Talk Aloud Protocol Analysis	110
Questionnaire Data	112
IV. DISCUSSION	114
Diagnosis and Sensitivity to the Extinction Schedule.	114
Type of Rule	118
Rule-Governed Behavior in Histrionic and Compulsive Personality Disorders	122
Limitations of the Present Study	128
Theoretical Implications and Conclusions.	129
BIBLIOGRAPHY.	133

APPENDIX A.	INFORMATION ABOUT QUESTIONNAIRE PRIOR TO CONSENT FORM.	139
APPENDIX B.	MILLON CLINICAL MULTIAXIAL INVENTORY . . .	141
APPENDIX C.	DEBRIEFING STATEMENT FOR SCREENING	145
APPENDIX D.	ADDITIONAL CREDIT.	148
APPENDIX E.	SUBJECT QUESTIONNAIRE FOR POSITIVE ONLY CONDITION	150
APPENDIX F.	SUBJECT QUESTIONNAIRE FOR POSITIVE PLUS RESPONSE COST CONDITION	152
APPENDIX G.	DEBRIEFING STATEMENT	154
APPENDIX H.	TABLES	157
APPENDIX I.	FIGURES.	201

LIST OF TABLES

TABLE	Page
1. Table of Means and Standard Deviations of Millon Clinical Multiaxial Inventory (MCMI) Scale Scores of 1063 Introductory Psychology Students.	158
2. Correlations Between Millon Clinical Multiaxial Inventory Scores and Extinction Scores.	159
3. Summary Table of the Analysis of Variance Performed on Schedule Sensitivity Scores During Acquisition	161
4. Table of Means of Schedule Sensitivity Scores During Acquisition.	162
5. Summary Table of the Repeated Measures Analysis of Variance of Ratio Extinction Scores in the First and Third Phases of Extinction . . .	163
6a. Table of Means of Ratio Extinction Scores During the First Extinction Phase.	164
6b. Table of Means of Ratio Extinction Scores During the Second Extinction Phase	165
6c. Table of Means of Ratio Extinction Scores During the Third Extinction Phase.	166
7a. Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores During the First Extinction Phase.	167
7b. Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores During the Second Extinction Phase	168
7c. Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores During the Third Extinction Phase.	169
8a. χ^2 Summary Table for the First Extinction Phase	170

8b.	χ^2 Summary Table for the Second Extinction Phase	170
8c.	χ^2 Summary Table for the Third Extinction Phase	171
9a.	χ^2 Summary Table for Rule Conditions During the First Extinction Phase	172
9b.	χ^2 Summary Table for Rule Conditions During the Second Extinction Phase.	172
9c.	χ^2 Summary Table for Rule Conditions During the Third Extinction Phase	173
10a.	χ^2 Summary Table for Talk Conditions During the First Extinction Phase	174
10b.	χ^2 Summary Table for Talk Conditions During the Second Extinction Phase.	174
10c.	χ^2 Summary Table for Talk Conditions During the Third Extinction Phase	175
11a.	Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores in the Positive Only Condition During the First Extinction Phase	176
11b.	Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores in the Positive Only Condition During the Second Extinction Phase.	176
11c.	Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores in the Positive Only Condition During the Third Extinction Phase	177
11d.	Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores in the Positive Plus Response Cost Condition During the First Extinction Phase.	177
11e.	Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores in the Positive Plus Response Cost Condition During the Second Extinction Phase	178

11f.	Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores in the Positive Plus Response Cost Condition During the Third Extinction Phase.	178
12a.	Summary Table of the Analysis of Variance Performed on Talk Aloud Description of Behavior Scores.	179
12b.	Summary Table of the Analysis of Variance Performed on Talk Aloud Consequence- Related Scores	179
12c.	Summary Table of the Analysis of Variance Performed on Talk Aloud Antecedent- Related Scores	180
12d.	Summary Table of the Analysis of Variance Performed on Talk Aloud Counting Scores.	180
12e.	Summary Table of the Analysis of Variance Performed on Talk Aloud Rule Statement Scores	181
12f.	Summary Table of the Analysis of Variance Performed on Talk Task-Aversiveness Scores	181
12g.	Summary Table of the Analysis of Variance Performed on Talk Aloud Task-Irrelevant Scores	182
12h.	Summary Table of the Analysis of Variance Performed on Total Amount of Talk During Talk Aloud.	182
13a.	Table of Means of Talk Aloud Description of Behavior Scores	183
13b.	Table of Means of Talk Aloud Consequence- Related Scores	184
13c.	Table of Means of Talk Aloud Antecedent- Related Scores	185
13d.	Table of Means of Talk Aloud Counting Scores.	186

13e.	Table of Means of Talk Aloud Rule Statement Scores	187
13f.	Table of Means of Talk Aloud Task- Aversiveness Scores.	188
13g.	Table of Means of Talk Aloud Task- Irrelevant Scores.	189
13h.	Table of Means of Talk Aloud Total Amount of Talk	190
14a.	Summary Table of the Analysis of Variance Performed on Post-Experimental Questionnaire Item 7	191
14b.	Summary Table of the Analysis of Variance Performed on Post-Experimental Questionnaire Item 8	192
14c.	Summary Table of the Analysis of Variance Performed on Post-Experimental Questionnaire Item 9	193
14d.	Summary Table of the Analysis of Variance Performed on Post-Experimental Questionnaire Item 10.	194
14e.	Summary Table of the Analysis of Variance Performed on Post-Experimental Questionnaire Item 11 (Positive Plus Response Cost Only).	195
15a.	Table of Means of Post-Experimental Questionnaire Item 7	196
15b.	Table of Means of Post-Experimental Questionnaire Item 8	197
15c.	Table of Means of Post-Experimental Questionnaire Item 9	198
15d.	Table of Means of Post-Experimental Questionnaire Item 10.	199
15e.	Table of Means of Post-Experimental Questionnaire Item 11 (Positive Plus Response Cost Only).	200

LIST OF FIGURES

FIGURE	Page
1. Subject scores in histrionic, compulsive, and control groups above and below the overall median score in the first phase of extinction.	202
2. Subject scores in histrionic, compulsive, and control groups above and below the overall median score in the second phase of extinction.	203
3. Subject scores in histrionic, compulsive, and control groups above and below the overall median score in the third phase of extinction.	204

CHAPTER I
INTRODUCTION

Personality disorders are thought to be quite common. For example, in field trials of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) (American Psychiatric Association, 1980), personality disorders made up almost 50% of the psychiatric sample examined (Turkat & Levin, 1984). Despite the prevalence of personality disorders as a whole, there has been little systematic research to develop an understanding of personality disorders. Failure to develop an adequate body of research concerning personality disorders has been attributed to the lack of an adequate definition of the concept of personality disorder and to the lack of an adequate classification system (Turkat & Levin, 1984). It has been observed that there is, as yet, no consensual definition of personality (Adams, 1981; Turkat & Levin, 1984). With no unifying definition of personality, it is not surprising that there have been problems in developing a valid and reliable classification system for personality disorders (Turkat & Levin, 1984). A problem which is related to the lack of an adequate classification system concerns the changing definitions of personality disorders over time, as can be

observed by comparing the changes in nomenclature from DSM-I to DSM-II and finally to DSM-III. A final issue is the distinction between normal personality traits or patterns and disorders of personality.

With the advent of DSM-III, there has been a renewed interest in research concerning personality disorders. While the reliability of classification of personality disorders utilizing this instrument can be considered only fair (Spitzer, Forman, & Nee, 1979), the DSM-III has attempted to improve the extremely low reliability of personality disorder classifications of the DSM-II (Kreitman, Sainsbury, & Morrissey, 1961) through operationalizing the definitions of these disorders. A second factor in the resurgence of interest in personality disorders results from the changed status of personality disorders with the advent of the DSM-III. Prior to DSM-III, personality disorders have historically been in a tangential position in diagnostic systems (Millon, 1981), despite the prevalence of such disorders. Prior to the present classification system, personality disorders have been categorized in the official nomenclature with other miscellaneous and secondary syndromes. With DSM-III's multiaxial system, personality disorders have assumed a new importance in the diagnosis of clinical syndromes.

DSM-III defines personality disorders and distinguishes personality disorders from personality traits in the following manner:

Personality traits are enduring patterns of perceiving, relating to, and thinking about the environment and oneself, and are exhibited in a wide range of important social and personal contexts. It is only when personality traits are inflexible and maladaptive and cause either significant impairment in social or occupational functioning or subjective distress that they constitute Personality Disorders. The manifestations of Personality Disorders are generally recognizable by adolescence or earlier and continue throughout most of adult life, though they often become less obvious in middle or old age...The diagnosis of a Personality Disorder should be made only when the characteristic features are typical of the individual's long-term functioning and are not limited to discrete episodes of illness.

Millon (1981) further elaborates upon the distinction between personality disorders and personality traits as follows:

Central to our understanding of these terms is the recognition that normality and pathology are relative concepts; they represent arbitrary points on a continuum or gradient, since no sharp line divides normal from pathological behavior.... Despite the tenuous and fluctuating nature of the normality-pathology distinction, three features may be abstracted from the flow of behavioral characteristics to serve as differentiating criteria; these are an adaptive inflexibility, a tendency to foster vicious or self-defeating circles, and a tenuous emotional stability under conditions of stress.

Millon (1981) further distinguishes personality patterns from behavior reactions. While personality patterns are considered to be composed of intrinsic, deeply

embedded and pervasive ways of functioning, behavior reactions are expressed in a narrow range of situations or are weakly anchored to the person's characteristic way of functioning.

With the exception of conditioning studies of the antisocial personality disorder, the study of personality disorders has been nearly absent in the behavioral psychology literature. The relative lack of theoretical formulation and empirical study of personality disorders within the behavioral literature has been attributed to the emphasis which behaviorism places upon situational determinants of behavior, as opposed to personality determinants. However, as noted by Turner and Hersen (1981), behavioral consistency, which is inherent in the concept of personality disorder, is not antithetical to all behavioral theory or theorists (e.g., Eysenck, 1970). One exception to this exclusion of personality disorders from behavior theory is provided by Bandura and Walters (1963) who employed the principles of operant conditioning and observational learning to account for personality development. These authors suggest that an individual's repertoire of behaviors is acquired through direct and vicarious contingencies, with maintenance determined by schedules of reinforcement to which these behaviors have been subjected. They suggest that most social behavior is controlled by combined schedules of reinforcement which are

comprised of a mixture of variable interval and variable ratio schedules. Such schedules are capable of maintaining both low and high rates of responding over long periods of time. According to Bandura and Walters, "One may suspect the most troublesome behavior has been rewarded on a combined schedule by which undesirable responses of high magnitude and frequency are unwittingly reinforced." Turner and Hersen (1981) further elaborate to suggest that the behavior patterns which have been described as personality disorders might be acquired under such combined schedules and generalize to other situations through stimulus generalization. According to these authors,

Habit hierarchies of behaviors are likely produced with a particular behavior being dominant in more than one hierarchy. Consequently, this dominant behavior (or group of behaviors) may be elicited in many diverse social situations. If this is so, then we have the mechanism to account for behavioral consistency.

Millon (1969,1981) proposes a theory of personality disorders which incorporates learning theory concepts along with hereditary, dispositional factors, to account for personality disorders. Millon suggests that personality disorders reflect learned coping patterns which are complex forms of instrumental behavior. According to Millon, such strategies reflect types of reinforcers that individuals have learned to seek or avoid (pleasure vs. pain), where individuals seek to obtain them (self vs. others) and the manner in which individuals have learned to behave in order

to elicit or escape them (active vs. passive). Essentially, Millon suggests that inherent dispositional factors, such as temperament, interact with environmental factors in the development of these learned patterns of behavior. Also, Millon maintains that such factors interact in a reciprocal fashion, thereby influencing the environment, serving to further maintain coping strategies.

Another behavioral concept which might help to account for the behavioral consistency, or inflexibility, of personality disorders is that of rule-governed behavior (Skinner, 1966, 1969). According to a radical behavioral perspective, all behavior is considered to be ultimately contingency shaped. However, rule-governed behavior is not controlled directly by the consequences specified by the rule, but instead is under the control of rules, which serve as discriminative stimuli. Thus, rule-governed behavior is thought to be influenced not only by the individual's history of contingencies related to that behavior, but also by the individual's learning history with respect to contingencies for rule formulation and rule following. Thus, the concept of rule-governed behavior might account for behavior which is apparently not maintained by ongoing contingencies of reinforcement for that behavior. In general, it has been suggested that rule-governed behavior might be less sensitive to changes in contingencies of reinforcement. Since one of the hallmarks of personality

disorders is the inflexibility of behavior, such behavioral disturbances might reflect excesses in rule following which preclude contact with or sensitivity to changing environmental contingencies. At the same time, relative insensitivity to rules as discriminative stimuli might result in other forms of disorders since rules have a positive social function.

This proposal reviews literature regarding two personality disorders, the histrionic and compulsive personality disorders, and suggests a rule-governed behavioral account of histrionic and compulsive personality disorders. Histrionic and compulsive personality disorders were chosen as topics of research since these two disorders have been conceived by different theoretical perspectives to represent dichotomous personality disorders. For example, Millon suggests that the histrionic personality is a strategy which results from an active seeking of positive reinforcement from others, while the compulsive personality is a pattern involving passive avoidance of punishment from both self and others. Similarly, Shapiro (1965) describes histrionic cognition as being global, diffuse, and impressionistic; in contrast, compulsive cognition is seen as being sharply focused, with a failure to shift to a mode of attention which permits impressionistic, intuitive perception. Finally, Eysenck's (1959) model suggested that the histrionic disorder can be viewed as a disturbance of

the neurotic extravert, while the compulsive personality is considered to be a disturbance of the neurotic introvert. Thus, according to this view, histrionic and compulsive personality disorders are seen as occupying opposite ends of an introversion-extraversion continuum. While some research has not supported the conceptualization of the compulsive as neurotic (Paykel & Prusoff, 1973), the view that these personality disorders represent opposite ends of the introversion-extraversion dimension has received empirical support (Cain & Hawkins, 1963; Cain & Hope, 1964; Marago & Smith, 1981; Paykel & Prusoff, 1973).

Histrionic Personality Disorder

While accurate data regarding prevalence are unavailable at the present time, the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) (American Psychiatric Association, 1980) suggests that the histrionic personality disorder is considered to be fairly common, particularly among women. While data regarding the prevalence of the histrionic personality disorder in the general population are unavailable, field studies of the DSM-III (Kass, Spitzer, & Williams, 1983) and a study by Koenigsberg, Kaplan, Gilmore, & Kooper (1985) suggest that among a clinical population, 3-4% of subjects were diagnosed as histrionic. Despite the high prevalence of histrionic personality disorder, there has been little systematic empirical research of this disorder. Therefore, histrionic personality disorder remains a poorly understood clinical entity (Turkat & Levin, 1984).

One deterrent to the development of systematic empirical research of the histrionic personality disorder is the terminological confusion which surrounds this disorder. Historically, this disorder has been referred to as hysteria, hysterical character, and hysterical personality. Further confusion results from the inconsistency in the use of the term "hysteria." As Chodoff and Lyons (1958) note,

the term "hysteria" has been used in at least five senses, including: (a) a pattern of behavior habitually exhibited by certain individuals who are said to be hysterical personalities; (b) a particular kind of psychosomatic symptomatology called conversion hysteria or conversion reaction; (c) a psychoneurotic disorder characterized by phobias and/or certain anxiety manifestations called anxiety hysteria; (d) a particular psychopathological pattern; and (e) a term of approbrium. Of particular concern is the confusion which exists in the literature between the hysterical personality and conversion reaction or hysterical neurosis. Much of this confusion has its roots in classical psychoanalytic theory which suggested a link between hysterical personality and hysterical neurosis (Wittels, 1930). For example, Freud (1931) suggested that if the hysterical character develops a neurosis, it is likely to be in the form of hysterical conversion symptoms.

While the terms hysteria, hysterical conversion, and hysterical personality have tended to be somewhat loosely defined, resulting in overlapping meanings and changes in description and definition over time (Pollack, 1981), empirical research supports the differentiation between hysterical personality and hysterical conversion neurosis. While psychoanalytic theorists such as Marmor and Reich have posited that hysterical conversion symptomatology is dependent upon the existence of a premorbid hysterical

personality and can be viewed as an exacerbation of hysterical personality traits, empirical studies have disputed the existence of a one-to-one relationship between hysterical conversion reactions and hysterical personality. For example, in a review of 17 patients with unequivocal conversion symptoms, Chodoff and Lyons (1958) found that only three patients showed evidence of hysterical personality. Slater (1943) found hysterical personalities in only 27% of soldiers hospitalized with conversion reaction. Other studies have indicated a somewhat stronger relationship between the histrionic personality and conversion symptoms. For example, Lewis and Berman (1965) found more than 50% of 57 cases of conversion reaction patients were diagnosed as having hysterical personality. In a similar vein, Lazare and Klerman (1968) found that among hospitalized depressed females, those patients diagnosed as hysterical personalities had more nonpsychiatric hospitalizations than nonhysterical depressed patients; moreover, of a list of 21 dissociative and conversion symptoms, 20 were found more frequently in the group diagnosed with hysterical personality. Based upon a review of literature concerning the association of hysterical personality and hysterical conversions, Pollack (1981) concluded that these studies "are generally not indicative of any one-to-one correspondence between hysterical conversion symptoms and hysterical traits.

However...hysterical personality does have a greater-than-chance relationship to conversion disorders." Similarly, Alarcon (1973) concluded that hysterical conversion and hysterical personality can be viewed as independent but related phenomena. The DSM-III (1980) is likely to clarify much of the terminological confusion since a clear distinction between hysterical personality and hysterical conversion is achieved through the reclassification of hysterical personality to histrionic personality disorder.

The understanding of the histrionic personality disorder has been hindered not only by terminological confusion, but also by the lack of a valid and reliable classification system for personality disorders (Turkat & Levin, 1984). Diagnostic reliability of the DSM-II was considered to be extremely low (Kreitman, Sainsbury, & Morrissey, 1961). DSM-III has been considered to be an improvement over the DSM-II in that the DSM-III operationalized some of the more vague criteria in DSM-II. For example, the DSM-II criterion of "emotional instability" was changed to "irrational angry outbursts." While DSM-III shows promise in providing improved classification of personality disorders, personality disorders as described in the DSM-III attain the lowest reliability of the major nosological categories (Spitzer, Forman, & Nee, 1979).

Clinical Description

Despite difficulties in reliable classification of the histrionic personality disorder in particular, and personality disorders in general, there does appear to be considerable consistency in clinical descriptions of the histrionic, or hysterical, personality in the literature. Furthermore, factor analytic studies have supported the notion of the histrionic personality as a clinical entity.

The DSM-III (1980) describes the histrionic personality disorder as follows:

The essential feature is a Personality Disorder in which there are overly dramatic, reactive, and intensely expressed behavior and characteristic disturbances in interpersonal relationships. Individuals with this disorder are lively and dramatic and are always drawing attention to themselves. They are prone to exaggeration and often act out a role, such as the "victim" or "princess" without being aware of it. Behavior is overly reactive and intensely expressed. Minor stimuli give rise to emotional excitability, such as irrational, angry outbursts or tantrums. Individuals with this disorder crave novelty, stimulation and excitement and quickly become bored with normal routines. Interpersonal relationships show characteristic disturbances. Initially, people with this disorder are frequently perceived as shallow and lacking genuineness, though superficially charming and appealing. They are often quick to form friendships, but once a relationship is established they can become demanding, egocentric, and inconsiderate; manipulative suicidal threats, gestures, or attempts may be made; there may be a constant demand for reassurance because of feelings of helplessness and dependency. In some cases both patterns are present in the same relationship. These people's actions are frequently inconsistent and may be misinterpreted by others. Such individuals are typically attractive and seductive. They attempt to control

the opposite sex or enter into a dependent relationship. Flights into romantic fantasy are common; in both sexes overt behavior often is a caricature of femininity. The actual quality of their sexual relationships is variable. Some individuals are promiscuous; others naive and sexually unresponsive; but still others have apparently normal sexual adjustment.

As is apparent by the DSM-III description of the histrionic personality, a broad range of behaviors is thought to be included within this disorder, including particular behavioral, cognitive, and interpersonal styles. Alarcon (1973) noted that at least 28 different characteristics have been used to describe the histrionic personality. Based upon this review, Alarcon delineated a 7-point profile of the hysterical personality from the standpoint of manifest characteristics. Features included in this profile included histrionic behavior, emotional lability, dependency, excitability, egocentrism, seductiveness, and suggestibility. In a review of the literature of the histrionic personality, Chodoff and Lyons (1958) identified seven traits which appeared repeatedly throughout the literature that characterize the histrionic personality, including vanity and egocentricity, exhibitionism, labile and excitable affectivity, emotional shallowness, sexual provocativeness, fear of sexuality, and dependently demanding. It should be noted that in independent reviews of the clinical literature, Alarcon, and Chodoff and Lyons derived strikingly similar clinical

profiles of the histrionic personality. These two reviews differed in Alarcon's inclusion of the trait of suggestibility, which Chodoff and Lyons had described as being most likely a somewhat outdated characteristic and the inclusion of the trait of fear of sexuality by Chodoff and Lyons.

Evidence for the construct validity of the histrionic personality is provided by factor analytic studies by Lazare, Klerman, and Armor (1966, 1970) which investigated the empirical basis of three personality patterns derived from psychoanalytic theory, i.e., oral, obsessive, and hysterical. In their initial study, Lazare et al. identified three factors, identified as oral, hysterical, and obsessive personality, which accounted for 90% of the common variance. In this study, seven traits were found which loaded significantly on the hysterical personality factor, including emotionality, exhibitionism, egocentricity, sexual provocativeness, dependence, aggression, and oral aggression. The traits of fear of sexuality and suggestibility did not have significant loadings. A second study by Lazare et al. again indicated factors of oral, hysterical, and obsessive personality. Defining traits of the histrionic personality were similar to those found in the initial study, with the exception of lack of significant loading on the trait of dependency and the emergence of a new trait, obstinacy, which significantly

loaded on the hysterical factor. In his review of the histrionic personality, Pollack (1981) concluded that "factor analytic work done with the Lazare-Klerman Trait Scales offers the best statistical evidence to date for the existence of a hysterical trait constellation generally consistent with theory and clinical description."

While there are few studies, other than those utilizing factor analytical techniques, to support empirically most traits which are considered to define the histrionic personality, there are some data which support the trait of emotional lability as a characteristic feature of the histrionic personality. Slavney, Breitner, and Rabins (1977) administered the Visual Analogue Mood Scale to measure variability of mood in 40 female hospital employees and students. Subjects were administered this scale four times a day over a 6-hour period for five consecutive days. Also, subjects were asked to rate their best and worst moods over their lifetime and over the 5-day period of the study. The Hysteroid-Obsessoid Questionnaire was then administered. Findings indicated that positive correlations were found between hysterical traits and both variability of mood and current and lifetime range of mood. In a replication using a sample of normal men (Rabins & Slavney, 1979), a similar relationship was found between emotional variability and hysterical traits. A third study (Slavney & Rich, 1980)

demonstrated greater variability of mood in histrionics than psychiatric controls among hospitalized subjects.

In summary, while difficulties exist in the reliable classification of the histrionic personality disorder, empirical validity of the construct of histrionic personality has been established through factor analytic studies. There is considerable consistency in the clinical description of the histrionic personality.

Theories of Etiology and Maintaining Variables

Several theories have been proposed to account for the etiology and maintenance of histrionic behaviors. The purpose of this section is to provide a brief review of psychodynamic, cognitive, and biosocial learning theories of the histrionic personality.

Psychodynamic Theory. The concept of histrionic personality in modern psychological literature arose from the development of psychoanalytic theory which was based on Freud's treatment of hysterical neurosis, or conversion disorders. Initially, character traits associated with conversion disorders were mentioned only in passing (Lazare, 1971). Abraham's (1921/1953, 1924/1953) proposal of the relationship between symptoms and illness and stages of libidinal development and dominant points of fixation, however, laid the groundwork for further interest in the relationship between character and libidinal development

(Lazare, 1971). While Abraham did not actually address the concept of the hysterical character, he suggested that hysterical (conversion) symptoms were related to a failure at the early genital (phallic) stage of development.

The first psychoanalytical description of the hysterical character was provided by Wittels (1930) who emphasized the existence of a hysterical character which was independent of the symptom formation. Unlike Abraham, who proposed that conversion symptoms were related to the phallic stage of development, Wittels maintained that the hysterical character was the result of developmental failure at the "pregenital" (oral) stage. Thus, Wittels viewed the hysterical character as being less healthy than proposed by Abraham. The point of fixation of libidinal development continued to be the primary debate concerning the histrionic personality in the psychoanalytic literature during the following thirty-five years.

Freud (1931) further elaborated upon the relevance of libidinal development and character disorders. In his 1931 paper, "Libidinal Types", Freud distinguished among three main libidinal types, i.e., the erotic, the obsessional, and the narcissistic types. The erotic type appears to be most relevant to the histrionic personality in that Freud stated, "It seems easy to infer that when persons of the erotic type fall ill, they will develop hysteria." Lazare (1971) states that Freud's description would be most consistent with

placing the erotic type at the pregenital, or oral, stage of development.

Reich (1933) furthered the debate concerning the degree of libidinal development of the hysterical character, declaring that "the hysterical character is determined by a fixation on the genital phase of infantile development, with its incestuous attachment." Ferenczi concurred, stating that "to the extent to which other genital mechanisms are found in the hysterical character they no longer belong specifically to this character type."

Marmor (1953) challenged the position taken by Reich and Ferenczi along three lines of argument: (a) by demonstrating that many orally-determined mechanisms and symptoms form part of the presenting picture of the hysteric; (b) by pointing to the "immaturity" and instability of its ego structure and its close relationship to addictions, depressions, and schizophrenia; and (c) by pointing to the difficulties in treating the hysterical character, despite the notion that hysterics should be easy to treat because of the relatively advanced libidinal developmental level.

Some resolution of this debate was achieved through the writings of Easser and Lesser (1965) and Zetzel (1968). Easser and Lesser (1965) made the distinction between the hysterical character and the "hysteroid" which they viewed as being on a continuum. These authors suggested a bimodal

distribution in which patients exhibiting hysterical mechanisms might be divided. It was suggested that the hysterical character was similar to that described by Reich as resulting from phallic-oedipal fixations, while the hysteroid was more similar to Marmor's conception of the hysterical personality as being fixated at a more primitive, oral level of development. The view of the hysterical character encompassing subtypes differing in level of development was furthered by Zetzel (1968) who described four sub-groups ranging from most analyzable to least analyzable. It was felt that the important distinction between these groups was the distinction between instinctual development and ego achievement. Thus, like Easser and Lesser, Zetzel's classification ranged from histrionics who were thought to be at the phallic-oedipal level to histrionics who were thought to be at more primitive levels of development.

Lazare (1971) furthers the conception of the histrionic as including different levels of development. Lazare states that "hysterical patients throughout the continuum share traits in common but the traits are apt to be more exaggerated and more sharply defined in the sicker group." Lazare suggests that the sicker hysteric shows more generalized impulsivity and emotional lability, while such impulsivity and emotional lability are confined to areas of conflict in the healthy hysteric. Lazare described the

healthy hysteric as "ambitious, competitive, buoyant, and energetic." Oral aggression and "pouty contrariness" were thought to be more characteristic of the sicker hysteric. Lazare related the predominance of oedipal conflicts over oral ones to the healthy hysteric, while the sick hysteric was thought to suffer from more infantile fixations with oral problems predominating.

While the issue of libidinal development in the etiology of histrionic personality has been the subject of an extensive body of literature within the psychoanalytic writings, empirical studies related to psychodynamic issues in the histrionic personality were not found in the literature. Nevertheless, psychoanalytic concepts of the hysterical personality have served as the basis for a cognitive theory of the histrionic personality disorder.

Cognitive Theory of Histrionic Personality. Shapiro (1965) suggested that repression, which was considered to be the specific defense mechanism of hysterical neurosis, is closely related to the process and mode of cognition. Shapiro extended this observation to develop a theory of cognition of the hysterical style. According to Shapiro, "It is likely that the qualities of memory and the conditions of forgetting are closely related to the mode of prior learning and attention." In his formulation of the cognitive style of histrionics, Shapiro suggested that the mode of cognition of the hysteric is conducive to forgetting

and the operation of repression, stating that "the nature of hysterical thinking provides the groundwork for forgetting and makes it, in fact, inevitable."

Shapiro (1965) describes hysterical cognition in the following manner:

I am suggesting that hysterical cognition is global, relatively diffuse, and lacking in sharpness, particularly in sharp detail. In a word, it is impressionistic. In contrast to the compulsive's active and prolonged searching for detail, the hysterical person tends cognitively to respond quickly and is highly susceptible to what is immediately impressive, striking or merely obvious.

According to Shapiro, manifestations and consequences of this style of cognition include the hysterical incapacity for persistent or intense intellectual concentration; the distractibility or impressionability that follows from it; and the nonfactual world in which the hysterical person lives. Furthermore, repression may be facilitated by this style in two ways. First, the original cognition is not sharply, factually defined and is not likely to be logically coordinated with other facts. Secondly, the relative incapacity for sharply focused attention and concentration and the passive, impressionistic, distractible nature of the cognitive style may be assumed to hold for the recollection process as well. Thus, both acquisition and recollection of material may be impaired, leading to the characterization of the hysteric as being influenced by immediate subjective experience. Shapiro suggests that the relative absence of

complex cognitive integration is reflected in the immediacy and peremptoriness of affect. Shapiro states that,

...it appears that these people are characterized by a too-quick and insufficient organization, refinement, and integration of mental contents... The insufficiency of integrative processes and development causes their affects to be explosive, abrupt and labile, on the one hand, and relatively undifferentiated, gross, and black or white on the other.

Millon (1981) presents a similar description of the cognitive functioning of histrionics, as follows:

Histrionics orient their attention to the external world...their perceptions and cognitions tend to be fleeting, impressionistic, and underdeveloped. This preoccupation with incidental and passing details prevents experiences from being digested and embedded within the individual's inner world. In effect, histrionics show little integration and few well-examined reflective processes that intervene between perception and action; behaviors are emitted before they have been connected and organized by the operation of memory and thought. The disadvantages of this hyperalertness to external stimuli may outweigh its advantages... There is little opportunity to develop inner skills and few memory traces against which future experience can be evaluated. Indiscriminate and scattered responsiveness leaves the person devoid of an inner reservoir of articulated memories and a storehouse of examined ideas and thoughts. In short, an excessive preoccupation with external events perpetuates the histrionic's "empty shell" and further fosters dependence on others as the only source of guidance.

Several lines of research tend to support these descriptions of the histrionic cognitive style as being undifferentiated, diffuse, and susceptible to immediately impressive external stimuli. For example, Witkin, Dyk, Fattuson, Goodenough, and Karp (1962) found that hysterics

demonstrated a poor ability to differentiate themselves from their environment and to differentiate internal from external stimuli on a variety of tasks, including measures of psychomotor activity, logical analysis, and person perception. Witkin et al. concluded that hysterics perceived in global, diffuse ways and manifested a weak differentiation of self from environment, a sensitivity to external stimuli, and a confusion as to what is internal or external. This pattern is also supported by a study by Lawrence and Morton (1980) in which high Hysteria scores are correlated with low differentiation on the Embedded Figures Test. Furthermore, the tendency for histrionics to respond to external stimuli is supported by findings that histrionics tend to be extraverted (Barrett et al., 1966; Caine & Hawkins, 1963; Caine & Hope, 1964; Paykel & Prusoff, 1973).

A factor analytic study by Marago and Smith (1981) provides further support for Shapiro's cognitive theory of the histrionic personality disorder. Results of this study, which examined both cognitive and overt behavior patterns, revealed a cluster of hysterical traits, which included external locus of control, field dependence, altruism, and extraversion, all of which were positively correlated with each other. Taken together, these studies appear to support a description of a histrionic cognitive style marked by undifferentiated, diffuse, global perceptual style and a

particular sensitivity to external stimuli. Thus, these studies appear to provide empirical support for many of the features of the cognitive style of histrionics as described by Shapiro (1965) and Millon (1981).

Millon's Biosocial Learning Theory. As previously described, Millon's (1969, 1981) theory of personality disorders suggests that such persistent, yet defective strategies are derived in terms of the types of reinforcements (positive/pleasure vs. negative/pain) an individual has learned to seek, the sources (self vs. others) the person has learned to provide these reinforcements, and the instrumental behaviors (passive vs. active) the person has learned to employ to achieve them. Millon describes the histrionic, or what he has termed the "gregarious" personality, to be an active-dependent strategy. Millon describes this strategy as follows:

These individuals use others as their primary source of reinforcement but engage busily in manipulative maneuvers to secure the attention and approval they seek. They are typically sociable, charming, demonstrative, affectionate, and clever, ever ready to change their tune to attract praise or avoid hostility.

Millon (1981) described the distinguishing features of the histrionic gregarious type in the following manner:

This pattern is typified by a gregarious, facile, and superficially charming social lifestyle. There is a persistent seeking of attention, stimulation, and excitement, usually expressed in seductive, immaturely exhibitionistic and self-dramatizing behaviors. Interpersonal relationships are characteristically shallow,

frivolous and fleeting. A general intolerance of delay and inactivity often results in impulsive and over-reactive behaviors. Thought processes are typically insubstantial, unreflected and scattered. Labile emotions are notable by their easy and short-lived enthusiasm followed by rapid boredom.

While Millon (1981) generally emphasized the importance of biological disposition in interaction with the environment in determining the probability that certain kinds of behavior will be learned, he stated that biological disposition was probably less important than environmental determinants in the development of the histrionic personality. Millon described conditions for learning histrionic behavior as including (a) minimal parental punishment (e.g., parents rarely criticize or punish the child); (b) positive reinforcement which is contingent upon performance of parentally approved behavior; and (c) irregularity in positive reinforcement. In other words, Millon states that "parents rarely punish their children, distribute rewards only for what they approve and admire, but often fail to bestow these rewards even when the child behaves acceptably." He further maintains that "these experiences appear to create behaviors that are designed primarily to evoke rewards, create a feeling of competence and acceptance only if others acknowledge and commend one's performances, and build a habit of seeking approval for its own sake."

Since the future histrionic becomes dependent upon evoking rewards and approval from others, Millon maintains that no internal set of consistent standards can be developed. Instead, a "hyperflexibility" or quick adaptiveness to changing circumstances is developed. Millon asserts that "such youngsters are devoid of any internal and stable belief system to which they are committed." Thus, the type of cognitive style described in the preceding section develops as a result of this particular learning history.

Summary and Evaluation

Despite the prominence of the histrionic personality in the psychoanalytic literature, relatively little is known about this disorder. Difficulties with terminology and classification have deterred systematic research of the histrionic personality disorder. While the DSM-III has helped to clarify the terminology by replacing the term hysterical personality with histrionic personality disorder to clarify the distinction between histrionic and conversion disorders, its operational definition of histrionic personality is not sufficiently specific to yield high diagnostic reliability. Despite difficulties with classification, clinical descriptions of the histrionic personality appear to be quite consistent. Factor analytic studies have helped to establish the validity of the

construct of histrionic personality. While a large body of literature pertaining to development of psychoanalytic theory regarding the etiology of the histrionic has developed over the past 65 years, there has been little empirical study of this theory. One concept of the psychoanalytic view, namely, that the histrionic personality is the basis for development of conversion disorders has not received a great deal of empirical support since there is not a one-to-one correspondence between conversion disorders and histrionic personality. However, the notion that repression is the defense mechanism responsible for hysterical symptoms has lead to the development of Shapiro's concept of the hysterical cognitive style. Many aspects of histrionic cognition have received empirical support. However, Shapiro's analysis failed to describe the mechanism by which histrionic cognition developed. Millon has provided a biosocial learning theory which suggests that the histrionic cognitive and behavioral style results from a learning history characterized by lack of parental punishment and contingent, but inconsistent parental reinforcement of approved behavior. This concept has yet to be evaluated through empirical research.

Compulsive Personality Disorder

The compulsive personality disorder has been discussed in the literature since the early 1900's when Freud (1908) delineated a particular constellation of traits, i.e., obstinacy, parsimony, and orderliness, which constitute what he termed the anal retentive or anal character type. Essentially, this personality type is characterized by excessive concern with detail, organization, and routine (Adams, 1981). It is considered to be a fairly common disorder, particularly among men, according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) (American Psychiatric Association, 1980). The prevalence of the compulsive personality disorder was highlighted by Honigmann (1967) who argued that, in the Western culture, the compulsive personality is one of the predominant social character structures, embodying much of the view of the Protestant Work Ethic and capitalist social and economic organization. Paykel and Prusoff (1973) further elaborated upon this notion, stating that many of the traits which are characteristic of the compulsive personality (i.e., perseverance, industriousness, thriftiness, self-control) are highly regarded and rewarded within capitalistic, technological societies. While the exact prevalence of this disorder in the population has not been determined, an estimate of its prevalence among a

clinical population indicated that one percent of this population, regardless of Axis I disorder, received a diagnosis of compulsive personality (Koenigsberg, Kaplan, Gilmore, & Cooper, 1985).

Difficulties in terminological confusion and classification, similar to those discussed concerning the histrionic personality, have hindered the understanding of this disorder. Several terms have been used interchangeably to describe the compulsive personality disorder, including anal personality, obsessive personality, obsessive-compulsive personality, and anankastic personality. The present terminology adopted by the DSM-III (1980) is that of "compulsive personality" and serves as a descriptive label which does not imply any particular etiology or theoretical formulation. The primary terminological confusion in the literature results from the use of the term obsessive-compulsive to indicate both a character structure (compulsive personality disorder) and a neurosis (obsessive-compulsive neurosis) (Turkat & Levin, 1984). Therefore, a distinction between these two terms must be made. The obsessive-compulsive neurosis is characterized by the persistent intrusion of undesired thoughts (obsessions), urges, or actions (compulsions) that are experienced as being exceedingly difficult to stop. In contrast, the compulsive personality disorder refers to a characteristic behavior pattern which largely defines an individual

lifestyle, independent of the presence of particular symptomatology (Pollack, 1979).

Empirical research has supported the distinction between the compulsive personality disorder and the obsessive-compulsive neurosis. For example, a factor analytic study by Sandler and Hazari (1960) found two relatively independent orthogonal personality constellations or dimensions which were similar to clinical distinctions between compulsive personality traits and obsessive-compulsive symptomatology. However, there is some empirical evidence which suggests that compulsive personality and obsessive-compulsive disorders are not totally independent. For example, using psychiatric ratings and performance on personality inventories, Rosenberg (1967) found that of a sample of 47 obsessive-compulsives, 25 were judged to have compulsive premorbid personalities. Paykel and Prusoff (1973) suggested that obsessive-compulsive patients with compulsive premorbid personalities represent a small, and not necessarily typical, segment of patients with obsessive-compulsive personalities. In his review of empirical data relevant to this issue, Pollack (1979) concludes, "Clearly there is no necessary one-to-one relationship between obsessional personality and obsessional neurosis, despite the occasional finding that more obsessive-compulsive neurotics than would be expected by chance show evidence of a premorbid obsessional personality."

Not only has terminological confusion hindered the development of systematic research of the compulsive personality, but difficulties in classification have also interfered. While the DSM-III attempts to improve classification by providing more specific diagnostic criteria, as previously mentioned, the diagnostic reliability of personality disorders can be considered only "fair" ($k = .61$ in joint interview method, $k = .54$ in test-retest interview method) based upon DSM-III field trials (Spitzer, Forman, & Nee, 1979). An independent study by Mellsoy, Varghese, Joshua, and Hicks (1982) indicated that diagnostic agreement concerning presence vs. absence of a personality disorder by three psychiatrists in clinical settings was even lower than obtained in the DSM-III field trials ($k = .41$). Furthermore, for the specific category of compulsive personality, the agreement was even lower ($k = .20$).

Despite terminological confusion resulting from the overlapping terminology for obsessive-compulsive neurosis and compulsive personality disorder, and difficulties in reliable classification of compulsive personality disorder, the clinical description of this personality disorder has shown a great deal of consistency. The following sections discuss clinical descriptions of the compulsive personality, empirical data about compulsive personality characteristics, theoretical perspectives of the compulsive personality

disorder, and empirical research concerning each of these theoretical perspectives.

Clinical Description

Based on his review of the literature, Pollack (1979) concluded that despite some ambiguities and inconsistencies in the clinical literature concerning the compulsive personality, there is considerable consistency in the descriptions of characteristics of this personality type. Of particular importance is the fact that similar descriptions are found even when comparing psychoanalytical descriptions of the anal character with descriptions of the compulsive personality which are less psychoanalytically based. Ingram (1961), for example, compared the descriptions of the compulsive personality (termed by Ingram as "obsessive") found in leading psychiatric texts with descriptions of the anal character found in psychoanalytic papers of Freud, Abraham, and Jones and found that these descriptions outlined many similar features. From this review, Ingram concluded that for descriptive purposes, distinction between these two terms was unnecessary.

DSM-III (1980) describes the compulsive personality disorder in the following manner:

The essential feature is a Personality Disorder in which there generally are restricted ability to express warm and tender emotions; perfectionism that interferes with the ability to grasp "the big picture"; insistence that others submit to his or her way of doing things;

excessive devotion to work and productivity to the exclusion of pleasure; and indecisiveness.

Individuals with this disorder are stingy with their emotions and material possessions. For example, they rarely give compliments or gifts. Everyday relationships have a conventional, formal, and serious quality. Others often perceive these individuals as stilted and "stiff."

Preoccupation with rules, efficiency, trivial details, procedures, or form interferes with the ability to take a broad view of things. For example, such an individual, having misplaced a list of things to be done, will spend an inordinate amount of time looking for the list rather than spend a few moments to recreate the list from memory and proceed with accomplishing the activities. Time is poorly allocated, the most important tasks being left to the last moment. Although efficiency and perfection are idealized, they are rarely attained.

Individuals with this disorder are always mindful of their relative status in dominance-submission relationships. Although they resist the authority of others, they stubbornly insist that people conform to their way of doing things. They are unaware of the feelings of resentment or hurt that this behavior evokes in others. For example, a husband may insist that his wife complete errands for him regardless of her plans.

Work and productivity are prized to the exclusion of pleasure and the value of interpersonal relationships. When pleasure is considered, it is something to be planned and worked for. However, the individual usually keeps postponing the pleasurable activity, such as a vacation, so that it may never occur.

Decision-making is avoided, postponed, or protracted, perhaps because of an inordinate fear of making a mistake. For example, assignments cannot be completed on time because the individual is ruminating about priorities.

Empirical Research about the Compulsive Personality Disorder

Several studies have sought to demonstrate the validity of the construct of compulsive personality disorder.

Gottheil (1965) investigated the extent to which mental

health professionals agree in their use of the terms anal and oral character. Subjects were asked to complete questionnaires in the manner of typical oral and typical anal characters. The degree of consistency within categories was highly significant, suggesting that mental health experts possess similar conceptions of these personalities.

Several statistical studies have investigated the validity of the anal character or compulsive personality disorder. For example, Finney (1961, 1963) and Beloff (1957) found the traits of obstinacy, parsimony, and orderliness to be correlationally related in children. A factor analytic study by Lazare, Lerman, and Armor (1970) supported the construct of compulsive personality disorder. In this study, items relating to emotional constriction, obstinacy, orderliness, parsimony, perseverance, rejecting attitude, rigidity, self-doubt, and strict ego were found to form a cluster which the authors termed "obsessional."

In summary, despite relatively poor reliability in the classification of compulsives, the clinical descriptions of the compulsive personality disorder appear to be quite consistent. Furthermore, clinicians appear to show a consensus regarding perceptions of the anal personality. Factor analytic studies have also supported a cluster of attributes comprising the compulsive personality which are consistent with clinical descriptions found in the

literature. Taken together, these findings would suggest that classification difficulties are related to either the ability to assess such traits in individuals or lack of sufficiently specific classification criteria rather than the validity of the construct of the compulsive personality. In his review of empirical research, Pollack (1979) concluded,

The obsessive-compulsive personality as a cluster of traits appears to possess considerable empirical validity and to fairly closely adhere to clinical descriptions and predictions. This is true despite the fact that an array of measurement approaches and specific measurement instruments have been employed in an attempt to correlate measures of anality with various behavioral indices.

The following section presents various theories of the compulsive personality disorder and research regarding each of these theories.

Theories of Etiology and Maintaining Variables

Psychoanalytic Theory. The concept of a personality comparable to what is now known as the compulsive personality was first introduced by Freud in 1908 in a paper entitled, "Character and Anal Eroticism." In this paper, Freud observed that the qualities of obstinacy, orderliness, and parsimony form a characteristic cluster of traits and suggested that these traits are connected with the anal stage of psychosexual development. Freud suggested the possibility that constitutional influences might result in

an especially intense inborn sensitivity in the anal zone that by itself or in interaction with experiences during the toilet training phase would result in the development of a predominantly anal adult personality orientation.

Experiences such as overly strict toilet training were considered to be causal factors in the development of the anal personality.

The concept of the anal personality was further developed by Jones (1918/1938) who added the traits of procrastination, sensitivity to interference, marked concentration beyond that seemingly called for by the task at hand, boring social qualities, difficulty in having others take over responsibility, inability to enjoy a pleasurable situation unless everything is in order, and being easily "put out." Abraham (1921/1927) added the traits of ambivalence, doubting, indecisiveness, and uncertainty to this description.

The term "compulsive character" was first introduced by Reich (1933/1949) who suggested that compulsive character traits might only partially result from anal eroticism. While such traits as pendency, collecting things, circumstantiality, a tendency to rumination, and thriftiness were viewed as reaction formations to the pleasure associated with producing feces, other traits such as reactions of guilt, indecision, doubt, and distrust were seen as not being truly derivative of anal eroticism despite

their occurrence in personality at about the same period of psychosexual development. This shift away from emphasis upon toilet training and anality is also seen in the writings of other psychoanalysts such as Erikson and Horney, who emphasized the role of ego development in the formation of the compulsive personality (Ingram, 1961).

Erikson (1963) de-emphasized the role of experiences involving toilet training as causal factors in the development of anality. Instead, Erikson suggested that during the second stage of development, which was termed the state of muscular-anal development, the child faces issues of autonomy vs. shame and self-doubt. Erikson maintained that if the child failed to develop basic trust adequately, the child's exercise of choice, of having and taking, of giving up and letting go is likely to be conflictual. This might result in the child's fearing shame and criticism and therefore seeking to win parental affection by suppressing or repressing affect unacceptable to the parents. The child may attend instead to the details and minutiae of childhood tasks. The child learns to isolate thoughts from emotions and to repress resentment over unmet dependency needs, developing counterdependent and obsessive defenses (Ingram, 1982).

In a similar vein, Horney rejected the role of instinct cathexis to erogenous zones in determining personality, emphasizing ego development rather than psychosexual

development. Horney regarded anxiety which occurs in reaction to a hostile environment as the causal force behind neurotic processes. Neurotic perfectionism was considered to be the dynamic structure coordinating, influencing, and rigidifying the other traits which cluster to form the compulsive personality disorder. According to Horney, childhood histories of perfectionistic neurotics, or compulsive personalities, are characterized by the child being the recipient of unfair treatment by parents who are often self-righteous and authoritarian. It is thought that it is not the unfair treatment per se which leads to the development of compulsive personality disorder, but rather the parents' pretenses of fairness and general infallibility. Since the child is unable to perceive the parents' position accurately, the child's "center of gravity" shifts closer to the parents. Thus, the standards for right and wrong or good and bad are set by the parents. By adopting these standards and by identifying with them, the child hides weakness behind others' standards. The child is not appreciated for who he or she is but for having become identified with parental standards, resulting in angry, rebellious feelings (Ingram, 1982). According to Horney, the compulsive maintains an idealized self-image through compartmentalization and externalization of feeling and through arbitrary rightness, which serves to eliminate the sense of doubtfulness from within. Horney maintains

that a uniform trait in the diagnosis of the compulsive personality disorder is the quest for self-control in order to control disruptive impulses of violence and rage.

Empirical research of psychoanalytic concepts of the compulsive personality. A number of studies have investigated the role of anal conflicts in the development of anal, or compulsive personality. For example, several studies have examined the relationship between toilet training practices and the development of anal traits. Pollack (1979) provides a review of these studies, which focused primarily on the age toilet training was initiated, the age it was completed, and the degree to which it may have been inordinately lax or severe. The designs typically involved the collection of retrospective accounts of mothers of the toilet training period and related these accounts to anal orientation as assessed by teacher and parent ratings, response to anality questionnaires, and performance on behavioral tests. Pollack concluded that "A review of these studies offers, at best, meager support for the hypothesized relationship between toilet training practices and the development of anal or obsessive-compulsive character structure." However, while studies regarding toilet training per se did not generally support the Freudian hypothesis, some indirect support might be derived from studies which demonstrated positive relationships between parental anal orientation and anal orientation of their

children (e.g., Hetherington & Brackbill, 1963). Pollack (1979) states that this "is not inconsistent with the idea that the effect of a rigid, obsessional parental orientation could very well be maximal before or during the toilet training phase, when unresolved anal conflicts in one or both parents are stirred up anew, leading to increased anxiety and more pronounced recourse to obsessional behavior as a defense against the impact of the stressful circumstances." Another conclusion suggested by Pollack is the possibility that compulsive behavior is socially learned through modeling of significant others throughout childhood.

Other studies have investigated anal traits of orderliness, parsimony, and obstinacy. Rosenberg (1953) compared the performances of psychotherapy patients with obsessive-compulsive tendencies with a normal control group on a visual memory task that involved choosing from a multiple-choice format a design which had been previously presented tachistoscopically. Findings indicated that compulsives tended to favor more symmetrical choices. This was interpreted as the need to impose order, uniformity, and congruity on visual perception. Other studies have supported the trait of parsimony, or stinginess. For example, in a verbal conditioning study, Noblin (1962) found that anal subjects were best motivated by monetary reinforcers while food was a more effective reinforcer for orals. Lerner (1961) found that stamp collectors were

either significantly more sensitive or selectively insensitive to anally tinged words than neutral words than were control subjects. In a study investigating the trait of indecisiveness, Rosenwald, Mendelsohn, Fontana, and Portz (1966) compared the performance of male college students on a geometric form identification task under two conditions. In one condition, the subjects' hands were placed in a feces-like medium; in the other, in water. Inefficient or blocked performance under the more unpleasant condition was interpreted as indicative of anally linked anxiety and was found to be positively related to indecisiveness.

Several studies using a verbal operant conditioning paradigm have investigated the relationship between psychoanalytic character types and obstinacy (Cooperman & Child, 1971; Noblin, Timmons, & Kael, 1966; Timmons & Noblin, 1963). In each of these studies, subjects were identified as oral or anal based upon responses on the Blacky Pictures test. Subjects were given a Taffel-type operant conditioning task under various reinforcement conditions. In the initial study, Timmons and Noblin presented subjects with a choice between first person and third person pronouns on each trial, consistently reinforcing the choice of one type of pronoun using "mild affirmatory words." Results indicated differential responding by orals and anals, with the reinforced response increasing during the treatment phase and decreasing during

extinction for the orals, and a reverse pattern for the anals. That is, it appeared that mild affirmatory words served as punishers for anal subjects. Using a similar paradigm, Noblin, Timmons, and Kaell (1966) compared responses of orals and anals in conditions involving positive verbal reinforcement (mild affirmatory words) and punishment (mildly critical words). For anal subjects, mildly affirming words were associated with a decrease in the responses, while critical words led to an increase in responses. Oral subjects showed a reverse pattern. However, it is noteworthy that five anal and two oral subjects who verbalized the contingencies of reinforcement were not included in the analysis in either of these two studies. Cooperman and Child (1971) attempted to compare the differential effects of "positive and negative reinforcement" on oral and anal character types using mechanical and social consequences. However, terminological confusion regarding positive reinforcement, negative reinforcement, and punishment leads to somewhat ambiguous results. The authors termed a punishment condition "negative reinforcement" while considering a negative reinforcement condition (termination of an aversive buzzer) to be positive mechanical reinforcement. Thus, conditions of personal positive reinforcement, mechanical negative reinforcement, and personal and mechanical punishment were actually compared. In this study, an increase in responses

during all reinforcement conditions was found for both oral and anal subjects, while a decrease in responses was found in each of the punishment conditions for both oral and anal subjects. The authors suggested that lack of replication of earlier findings might have been the result of a younger, perhaps less authoritative-appearing experimenter. However, another factor which the authors discounted, which might be of importance, is that awareness of subjects of experimental contingencies was not assessed; and, therefore, subjects who were able to verbalize the contingencies were not excluded.

In summary, while studies investigating psychoanalytic concepts of the anal personality do not necessarily support the etiological importance of toilet training experiences, more general childhood experiences with parents who tend to be compulsive themselves might be important in causing compulsive personality or anality. In general, studies provide support for anal traits such as orderliness, parsimony, indecisiveness, and obstinacy.

Cognitive Theories of Compulsive Personality. Shapiro (1965) described three aspects of the compulsive personality cognitive style, including a distinctive way of thinking marked by "rigidity", a certain mode of tense activity, and distortions of the experience of autonomy. Shapiro further suggests that rigidity is related to inattention to new facts or different points of view. This restriction of attention is considered to be a crucial feature of the

compulsive's intellectual rigidity. Attention in the compulsive is notably intense and sharp, although limited in range and mobility. According to Shapiro,

These people not only are concentrating, they seem always to be concentrating. And some aspects of the world are simply not to be apprehended by a sharply focused and concentrated attention. Specifically, this is a mode of attention that seems unequipped for the casual or immediate impression, that more passive and impressionistic sort of cognitive experience...

Shapiro further suggests that this cognitive mode involves an impairment of the normal volitional mobility of attention. While the noncompulsive can shift between a sharply directed and more impressionistic mode of attention, the compulsive is unable to shift modes of attention.

A second aspect of compulsive cognition outlined by Shapiro is the mode of activity. Shapiro describes this style as pivoting around work activity. There is an experience of tense deliberateness, a sense of effort, and of trying. Shapiro describes the compulsive as being driven and suggests that the compulsive "functions as his own overseer, issuing commands, directives, reminders, warnings, and admonitions concerning not only what is to be done and what is not to be done, but also what is wanted, felt, and even thought."

The third aspect of compulsive cognition is the distortion of reality such that the compulsive does not recognize that such commands and directives are issued

wholly on his own authority and by his own free choice.

Shapiro states that

...the obsessive-compulsive always feels that he is reminding himself of some compelling objective necessity, some imperative or higher authority than his personal choice or wish, which he is obliged to serve...These people are keenly aware of various kinds of external expectation, of the threat of possible criticism, or the weight and direction of authoritative opinion, of rules, regulations and conventions, and perhaps above all, of a great assemblage of moral or quasi-moral principles.

Thus, there is a distortion of the experience of autonomy.

Shapiro provides the following example of how such an orientation might affect the process of decision making.

When he is confronted by the necessity for a decision, even one which may be trivial from a normal standpoint, the obsessive-compulsive person will typically attempt to reach a solution by invoking some rule, principle, or external requirement which might, with some degree of plausibility provide a "right" answer...If he can find some principle or external requirement which plausibly applies to the situation at hand, the necessity for a decision disappears as such, i.e., it becomes transformed into the purely technical problem of applying the correct principle.

In summary, Shapiro suggests that the compulsive's cognition is characterized by intellectual rigidity which results from an impairment of the ability to shift modes of attention. To maintain such sharp attention, a certain mode of activity, which can be described as tense and driven, must be maintained. Furthermore, Shapiro suggests that there is a distortion of the experience of self-direction such that the compulsive views his or her activity as being

under external sources of control such as rules and moral principles rather than under his own volitional control.

Reed (1969, 1977a, 1977b) proposes another aspect of the cognitive style which would appear to be quite consistent with Shapiro's observations of intellectual rigidity with its sharp focus of attention and the mode of activity which is necessary to maintain this type of attention. Reed proposed that "superior memory" of compulsives might actually reflect an impairment in the ability to structure and integrate experience spontaneously which leads to an intellectualizing and analytic examination of the data. Reed states, "He is relatively incapable of the intuitive acceptance of input. In other words, he is more consciously attentive to stimuli." Reed further suggests that the compulsive compensates for this inability to structure and integrate experiences spontaneously through increased attention to stimuli, rehearsal of ambiguous (not readily categorizable) experiences more than is warranted, and through the overstructuring of input and maladaptive over-defining of categories and boundaries.

Empirical research of the cognitive style of compulsives. Several studies have investigated cognitive characteristics of the compulsive personality disorder. Reed (1969) investigated the overstructuring of input and over-definition of categories in a study which compared the performance of normal, compulsive, and psychiatric control

subjects on a classification task. It was found that compulsives tended to allocate fewer members to any one class, and, therefore, required more classes. Reed concluded that as a group, compulsives were handicapped by an inefficient over-classifying tendency. Furthermore, Reed suggested that compulsives "lacked spontaneity in their approach to the material and reported doubts and decision difficulties which seemed to be closely related to their over-structuring." In another study, Reed (1977b) examined the hypothesis that the compulsive's inability to structure and integrate experience spontaneously leads to greater attentiveness to stimuli and rehearsal of ambiguous experiences through various memory tasks. Compulsives and psychiatric controls were compared on performance of the WAIS Information subtest, WAIS Digit Span subtest, and retention of details of insoluble problems after a two-week interval. Findings indicated that in a test of long-term recall of general factual information (WAIS Information) compulsives failed to demonstrate superior recall over controls. However, compulsives were superior to controls on the Digit Span subtest, which Reed interpreted as indicative of greater attention to the test stimuli. Also, on the insoluble problems test, compulsives showed superior memory for problems which they were not instructed to rehearse, but not for problems for which rehearsal was encouraged. Thus, compulsives showed a greater tendency to rehearse ambiguous

material, even when this is not indicated or necessary. Finally, Reed (1977a) examined the role of overstructuring in the cognitive characteristic of indecision among compulsives. It was hypothesized that the less structured the task, the more indecision the compulsive would experience and therefore, the slower his performance. Reed compared performance on a structured numerical task (WAIS Arithmetic subtest) and on a more open-ended numerical task (10 numerical items from a "series" test). As predicted, the compulsive's performance was higher than that of the controls on the structured arithmetic test, where concentration and a deductive approach were demanded, but inferior to that of controls on the more "open-ended" tasks. It was suggested that on the latter task, the compulsive was hampered by his or her over-classificatory approach, which involves him or her in the over-production of competing hypotheses. Thus, these studies provide convergent evidence supporting the notion of over-structuring of stimuli by compulsives.

Marago & Smith (1981) utilized factor analytic techniques to investigate cognitive aspects of the compulsive personality. Marago and Smith found that the core of both male and female compulsive clusters was the Difficult-Easy World conception found in the Locus of Control Scale. The authors interpreted this finding as being consistent with the conceptualization of the

compulsive as one whose need for structure and control has caused him or her to develop a system that allows him or her to feel that he or she can understand and control events to an inordinate degree. In the female sample, introversion was found, while in the male sample, low sensation-seeking accompanied this high subjective estimate of control.

According to Marago and Smith, "both these characteristics are consistent with the hypothesis that the compulsive is one who seeks to minimize extraneous stimuli in order to maintain the integrity of the system used to predict and control." Females tended to show field-dependence. The authors suggested that this might indicate that the female compulsive "could be conceived of as an individual who maintains structure at the conceptual level in defense against a basic lack of differentiation at the perceptual level." Thus, Marago and Smith interpreted their findings as being generally supportive of cognitive styles proposed by Shapiro and Reed.

Millon's Biosocial Learning Theory of the Compulsive Personality Disorder. As previously discussed, Millon (1981) proposes a scheme in which personality is derived in terms of the types of reinforcers an individual has learned to seek, the sources the person has learned which provide these reinforcers, and the instrumental behaviors (active/passive) the person has learned to achieve them. Millon suggests that the compulsive, or what he terms

"conforming" personality, can be characterized as a strategy which is passive-ambivalent. That is, this strategy involves passively seeking reinforcement from both within oneself and from others. Millon describes the conforming personality as follows:

These individuals have been intimidated and coerced into accepting the values and desires of others. By a disciplined self-restraint they inhibit their own desires and deny their feelings; they learn to remain passive and to conform to the expectations of their environment in a prudent, controlled, and perfectionistic way.

According to Millon (1969,1981), the primary determinants of the compulsive style are rooted in interpersonal experience and reflect the behaviors the child learns as a means of coping with these experiences. Thus, Millon de-emphasizes the role of constitutional factors in determining this personality style. Millon suggests that the compulsive style develops under the following conditions: Parents of future compulsives are likely to expect their children to live up to their expectations and condemn them only if they fail to achieve the standards imposed. Overcontrol may result from contingent punishment. According to Millon, future compulsives receive their praise not irregularly but consistently and experience mostly negative or punitive reactions. Millon suggests that this contingent punishment might be considered to constitute overcontrol. According to Millon, "they become experts in learning what they must not do so as to avoid punishment and

condemnation, whereas histrionics learn what they can do so as to achieve attention and praise. Future compulsives learn to heed parental restrictions and rules; for them the lines of disapproved behaviors are set rigidly. However, as a consequence of experiencing mostly negative injunctions they have little idea of what is approved." Millon states that "the children learn instrumentally to avoid punishment by obediently acquiescing to parental demands and strictures. They are 'shaped' by fear and intimidation to conform to the expectations and standards set down by their elders." Also, the compulsive may learn through imitation, modeling their parents' standards and values.

While emphasizing the conforming aspects of the compulsive personality, Millon asserts that "lurking behind a surface conformity are intense oppositional feelings which occasionally break through controls." Thus, the compulsive is seen as being characterized by a "mixture of subservience and hostility that is constrained by a fear of social disapproval and humiliation."

Millon conceptualizes the compulsive's learning history as being restricted in range and insufficient. That is, the compulsive learns how to avoid punishment by following rules, but does not learn to obtain reinforcers through means which are not proscribed by such rules. Millon suggests that the compulsive personality is perpetuated through three processes, including pervasive rigidity, guilt

and self-criticism, and the creation of rules and regulations.

Summary and Evaluation

While the understanding of the compulsive personality disorder has been hindered by terminological confusion resulting from its overlapping use with the term obsessive-compulsive disorder and difficulties in classification, there has been considerable consistency across theoretical perspectives in the clinical description of the compulsive personality disorder. Furthermore, research has supported both the distinction between obsessive-compulsive disorder and compulsive personality disorder and the existence of a clustering of traits consistent with those noted in clinical descriptions. The psychoanalytic view suggests that the anal, or compulsive, personality results from overly rigid toilet training experiences, but experimental research has not supported the role of toilet training per se. Studies supporting the relationship between the degree of anality of parents and children suggests that early childhood experiences relating to overcontrol by parents rather than toilet training might be related to the development of this personality disorder. Psychoanalytic personality traits of orderliness, parsimony, and obstinacy have received some empirical support, despite failure of studies consistently

to support classical psychoanalytic theory of the etiology of this disorder.

Shapiro's cognitive theory of compulsive personality suggests that this cognitive style includes an over-restriction of attention, an intense mode of activity to maintain this attention, and a distortion of perception of self-direction or autonomy. Consistent with Shapiro's notions of sharply focused attention and mode of activity, Reed suggests that the compulsive personality results from an inability to structure and integrate input spontaneously. Thus, cognitive strategies of restriction of attention and over-structuring of information serve to compensate for this inability to structure and integrate spontaneously. Research has supported Reed's hypothesis as well as supporting a cluster of traits consistent with the cognitive style outlined by Shapiro. While Shapiro and Reed's theories provide a description of cognitive functioning of the compulsive, they do not suggest etiological variables which might account for this type of cognitive functioning. Millon's conceptualization of the compulsive as a conforming character presents a somewhat different picture of this disorder than the psychoanalytic view of the compulsive as being obstinate. However, there are several lines of commonality between Millon's conceptualization and psychoanalytic views. For example, Millon conceptualizes that underlying the conforming surface is a core of hostile

rebellion. This view would seem to be consistent with Horney's conception of compulsives' angry acceptance of parental values and mores. This view would also be consistent with a classical psychodynamic view of conforming behavior as a defense reaction against unacceptable, hostile impulses. Millon proposes that the compulsive's subservient, conforming attitude and creation and following of rules and regulations might serve as means by which the compulsive can avoid the threat of punishment. However, there is little empirical evidence either to support or refute this assertion.

Rule-Governed Behavior

It has been suggested that a more thorough understanding of rule-governed behavior might provide solutions to clinical problems, including personality disorders, which have historically been outside the domain of behaviorists (Zettle & Hayes, 1982). The following section presents a radical behavioral view of rule-governed behavior, as well as discussing the relevance of the concept of rule-governed behavior to an analysis of histrionic and compulsive personality disorders.

Rule-governed behavior is behavior which is not controlled directly by its past consequences, but instead is under the control of rules. Skinner (1969) has defined rules as discriminative stimuli, or "contingency-specifying" stimuli. Such behavior is under the control of dual contingencies (Zettle & Hayes, 1982). While one set of contingencies applies directly to the behavior which the rule specifies, a second set of contingencies is verbal in nature and therefore effective through the mediation of others. Thus, while rule-governed behavior is to some extent under the control of direct contingencies, rule formulation (e.g., providing "reasons" for behavior) and rule following are under the control of the verbal community.

The concept of rule-governed behavior is particularly important in the understanding of behavior disorders since rule-governed behavior is never exactly like the behavior shaped by contingencies (Skinner, 1969). While the behavior might resemble that which follows exposure to the contingencies, the controlling variables are different; and rule-governed behavior will, therefore, not necessarily change in the same way in response to other variables (Skinner, 1969). According to Skinner, contingencies of behavior not only shape behavior, but also alter the probability of the recurrence of that behavior. In contrast, while rules may alter the topography of a response, they may not alter the probability of the response in the same manner as contingencies. Thus, the probability of the occurrence of behavior which is rule-governed is influenced not only by the contingencies of that behavior, but also by the socially mediated contingencies of adherence to rules. The value of rules is determined by the history of the listener relevant to consequences of following similar rules (Zettle & Hayes, 1982). This concept is particularly important since, as Skinner (1969) points out, discriminative stimuli including rules are often more easily observed than the actual contingencies they specify. Thus, responses which are under the control of rules may take precedence over responses shaped by the contingencies.

An understanding of rule-governed behavior involves both functional units for the speaker and for the listener (Zettle & Hayes, 1982). Therefore, descriptions of functional units for the speaker, as described by Skinner (1957, 1969), and for the listener, as described by Zettle and Hayes, follow.

Functional units for the speaker. Skinner (1957) outlines two functionally defined types of rules for the speaker. A tact is a verbal operant in which a response of a given form is evoked or strengthened by a particular object or event or their properties. A tact is considered to be under tight stimulus control and is relatively insensitive to the motivational state of the speaker. Another type of verbal operant is the mand, a term derived from such terms as "demand", "countermand", and "command." Skinner (1957) defines a mand as "a verbal operant in which the response is reinforced by a characteristic consequence and is therefore under the functional control of relevant conditions of deprivation." Thus, a mand differs from a tact primarily in that the response is under the control of conditions of reinforceability of the speaker.

Functional units of rules for the listener. Zettle and Hayes (1982) point out that a complete analysis of rule-governed behavior involves not only functional units for the speaker, but also for the listener. They have outlined three functional units of rule-governed behavior of the

listener. These units are pliance, tracking, and augmenting. Zettle and Hayes have defined pliance as "rule-governed behavior which is primarily under the control of apparent speaker-mediated consequences for a correspondence between the rule and the relevant behavior." Pliance can be determined by the sensitivity of the listener's behavior to variables affecting speaker-mediated consequences. For example, Zettle and Hayes suggest that the ability to monitor compliance, the ability of the speaker to deliver consequences, and the importance of consequences to the listener might affect pliance.

A second functional unit for the listener described by Zettle and Hayes is tracking. Tracking is defined as rule-governed behavior which is "under the control of the apparent correspondence between the rule and the way the world is arranged." Whether a listener engages in tracking would be a function of the listener's history regarding the extent to which rules reflect actual contingencies of the specified behavior rather than the listener's history of speaker-mediated consequences for rule following.

The third functional unit for the listener outlined by Zettle & Hayes is termed augmenting. Augmenting is defined as "rule-governed behavior under the control of apparent changes in the capacity of events to function as reinforcers or punishers." For example, listening to poetry might generate emotional reactions which alter the probability

that certain events will function as reinforcers or punishers.

Since the analysis of rule-governed behavior involves both functional units for the speaker, formal aspects of speech, and functional units for the listener, the analysis of such behavior is quite complex. For example, from the speaker's perspective, the statement, "It's getting late now" may actually be a mand (meaning "We have to leave") which is presented in tact-form. From the listener's perspective, the rule-governed behavior might take the form of either pliance or tracking. For example, in the case of tracking, the listener might express agreement that the time was indeed late. In the case of pliance, the listener would prepare to leave since in the past similar statements have been discriminative stimuli for speaker mediated consequences.

Given the complexity of rule-governed behavior, it would not be surprising to find rather global behavioral effects as a function of an individual's learning history regarding each of the above functional units of rule-governed behavior (e.g., failure to discriminate between mands and tacts, failure to develop appropriate tracking). Self-rules might increase the generality of behavioral effects of a maladaptive learning history regarding rule-governed behavior. Rules which come to control behavior can be formulated not only by others, but also by the person

whose behavior comes under the control of the rule. The following section discusses self-rules, a concept which might be particularly important in examining the role of rule-governed behavior in histrionic and compulsive personality disorders.

Self-rules. Skinner (1969) notes that we extract rules from contingencies of reinforcement to which we have been exposed or have had the chance to study the system which arranges them; we do so because following rules is more expedient than the process of having behavior shaped by its contingencies. According to Skinner, we might expect only rare formulation of a rule to guide one's own behavior since, if one is already complying with a set of contingencies, a rule is unnecessary. However, formulation of a rule may occur because it might allow one to respond more expediently or to respond at a later time when contingency-shaped behavior has weakened. Also, the verbal community places social contingencies upon reporting one's own behavior and the reasons for its occurrence. Skinner states that while the description which is thus generated is not yet a rule, the person may use the same description to "mand his own behavior (as a form of self control), to make resolutions, to formulate plans, to state purposes, and thus to construct rules." Thus, there are two reasons why rules would be formed when behavior is already complying with a set of contingencies. First, it might allow the person to

respond more effectively; second, the formulation of rules has a history of reinforcement through the mediation of other persons. As noted by Zettle and Hayes, the verbal community may retrospectively require individuals to state self-rules which they have followed and reinforce a correspondence between their behavior and the rules which they have stated. Thus, rule-following that is maladaptive might occur due to social contingencies even in the absence of natural contingencies of reinforcement of the behavior.

Maladaptive Rule-Governed Behavior

Two general mechanisms of psychopathology might include dysfunctional rule formulation and dysfunctional rule-following with respect to both public and self rules (Zettle & Hayes, 1982). For example, according to Zettle and Hayes, one common error in rule-formulation is the formulation of self-rules which appear to be based on facts, but in fact, are not. Such rules generally are in fact-form and may successfully produce tracking, producing such behaviors as self-deception and rationalization. Also, Zettle and Hayes suggest that other self-rules may function as plies. Since pliance produces an insensitivity to immediate environmental contingencies, pliance may be maladaptive when there is no need for insensitivity.

Maladaptive rule-following, as well as maladaptive rule formulation, might contribute to psychopathology. Two ways

in which dysfunctional rule-following might occur include inaccurate discrimination of rules and pathological following of accurately discerned rules (Zettle & Hayes, 1982). For example, Zettle and Hayes suggest that a person who seems to set up others in authority roles might result from an inability to distinguish tacts from mands, possibly as a result of their similarity in form in the listener's past learning history. It was suggested that such a tendency, if generalized across speakers, could result in a "passive-dependent" pattern if tracks were followed as plys, or a "passive-aggressive" pattern if counterpliance occurred. Zettle and Hayes state,

Any disorder in the tendency to interpret others would certainly have pervasive and profound effects, perhaps leading to typical patterns of maladaptive behavior which have traditionally been referred to as "personality disorders." Behaviors denoted by a personality disorder may resemble traits (e.g., in their cross situational consistency), but they may also be conceptualized as a response class under the control of aspects of rules which are pervasive and part of all interpersonal interactions. Thus, a single core difficulty could have quite general effects.

Not only may dysfunctional behavior result from errors in rule discrimination or formulation, but difficulties might also result from faulty rule-following. For example, Zettle and Hayes suggest that a person whose pliance has been achieved through a history of highly aversive means, which Millon (1981) suggests is characteristic of the psychosocial history of compulsives and antisocial

personalities, may later tend to show counterpliance in response to reasonable plys resulting in "difficulty relating to authority." Also, Zettle and Hayes suggest that individuals who have a learning history involving a highly inconsistent environment might never learn to follow tracks well. As these authors point out, such difficulties might occur with self-rules as well as public-rules. For example, persons who have inabilities to show appropriate self-pliance or who show self-counterpliance may have difficulties when insensitivity to immediate contingencies is necessary to come under control of more remote contingencies, resulting in behavior which might be considered to be "impulsive." Impulsivity is one of the defining characteristics of the histrionic personality disorder. At the other extreme, mands may produce tracking, resulting in excessive moralistic behavior or conformity, which is characteristic of the behavior of persons labelled compulsive personalities. Zettle and Hayes (1982) state, "Disorders of rule-following include such things as (a) showing excessive counterpliance to plys; (b) showing little or no pliance; (c) failing to track adaptive rules, and (d) tracking destructive rules. All of these can involve either public or self-rules."

As previously stated, dysfunctional rule formulation or rule following might produce rather global effects which would result in patterns of behavior described by the term

personality disorders. While it is beyond the scope of the present paper to account for all aspects of histrionic and compulsive behavior by postulating particular mechanisms of dysfunctional rule-governed behavior, examples of how dysfunctional rule formulation or rule following might account for some of these symptoms are provided.

Dysfunctional Rule-Governed Behavior and the Histrionic Personality Disorder

As previously mentioned, dysfunctional rule-governed behavior might account for many of the characteristics associated with the histrionic personality disorder. In general, it is suggested that histrionics might show a deficiency in rule following, and therefore be particularly sensitive to changing environmental contingencies and insensitive to rules. Zettle and Hayes (1982) suggest some mechanisms through which deficiencies in rule-governed behavior might occur, such as exposure to an inconsistent or unpredictable environment leading to a failure to learn to follow tracks well or inability to show proper self-pliance. As Zettle and Hayes point out, "This lack of self-pliance can be destructive when some insensitivity to immediate contingencies is needed in order to come under the control of more remote consequences." Another possible mechanism which might account for the predominance of contingency-shaped over rule-governed behavior might be a failure of the

individual to extract rules from contingencies of reinforcement. As previously discussed, Skinner (1969) suggested that rules are formulated even when one is already complying with a set of contingencies because this behavior might lead to more effective responding either at the present or at a later when the contingency-shaped behavior has weakened. Therefore, one might expect that an individual's history of reinforcement for rule formulation through more effective responding might influence whether rules are formulated. Also, Skinner described the role of the verbal community in reinforcing rule-formulation and rule following. In the absence of social contingencies for accurate rule formulation and following, one might expect relatively few rules to be formulated which could later control one's behavior. In conclusion, mechanisms which might lead to deficits in rule-governed behavior include failure to learn to follow tracks, inability to show proper self-pliance, and a failure to extract rules from contingencies of reinforcement. The notion that histrionics are relatively insensitive to rules as discriminative stimuli and therefore overly sensitive to changing environmental stimuli is consistent both with behavioral and cognitive characteristics of this disorder and the learning history which has been suggested by Millon (1981) to be characteristic of individuals with this disorder.

Skinner (1969, 1974) describes the manner in which many classical distinctions can be reduced to the distinction between rule-governed and contingency-shaped behavior. Three of these distinctions would appear to be relevant in relating rule-governed behavior to aspects of histrionic behavior and cognition as described above, including those of (a) deliberation vs. impulse; (b) ultimate vs. proximate gains; and (c) intellect vs. emotion. Skinner (1969) describes these distinctions as follows:

Deliberation vs. impulse - Deliberate or reasoned behavior is marked by either an examination of possibly relevant rules and the selection of one or more to be obeyed or by an examination of current contingencies and the derivation of a rule on the spot. Acting on impulse is not preceded by behavior of this sort.

Ultimate vs. proximate gains - Rules tend to bring remote consequences into play; without rules, only immediate consequences affect behavior.

Intellect vs. emotion - Rule-governed behavior may be cold and Stoical; contingency-shaped behavior is likely to be hot and Epicurean.

One general aspect of the histrionic personality disorder which might be particularly amenable to a rule-governed analysis is the notion that histrionics orient their attention to the external world (Millon, 1981; Shapiro, 1965), leading to descriptions of the histrionic as behaving as though an "empty organism" (Millon, 1981), and demonstrating shallow interpersonal relationships (Millon, 1981), emotional shallowness (Chadoff & Lyons, 1958), and hyperalertness to external stimuli (Millon, 1981). This

notion has received empirical support through studies which have demonstrated that the histrionic has an external locus of control (e.g. Lazare et al., 1966, 1970). These observations would appear to be consistent with the notion that histrionics might have deficits in rule-governed behavior. Individuals who do not appear to deliberate or examine relevant rules might appear to be "empty" or "shallow" to a verbal community which reinforces providing reasons for behavior. Also, such descriptions would be consistent with observations of apparently inconsistent behavior produced by changing environmental contingencies rather than behavioral consistency which would result from rule-governed behavior.

A second aspect of the histrionic personality disorder which might be hypothesized to result from dysfunctional rule-governed behavior is the description of histrionics as showing characteristic impulsivity or susceptibility to transient events (Millon, 1981; Shapiro, 1965). Specific related behaviors include a general intolerance of delay and inactivity resulting in impulsive and overreactive behavior (Millon, 1969, 1981), emotional lability (Millon, 1969, 1981; Chadoff & Lyons, 1958; Alarcon, 1973), and stimulus-seeking behavior (Millon, 1969). In a similar vein, Millon (1981) noted that histrionics show "little integration and few well-examined reflective processes that intervene between perception and action; behaviors are emitted before

they have been connected and organized by the operation of memory and thought." Shapiro (1965) suggests that "the hysterical person tends cognitively to respond quickly and is highly susceptible to what is immediately impressive, striking , or merely obvious." Taken together, these two aspects of the histrionic personality present a picture of an individual who shows a relatively high level of sensitivity to changing contingencies of behavior, sensitivity to immediate vs. remote contingencies of behavior, little apparent deliberation of possibly relevant rules, and deficits in perseverance.

Thus, it appears that a predominance of contingency-shaped vs. rule-governed behavior might account for many of the behaviors which are descriptive of the histrionic. The learning history which is proposed by Millon (1969, 1981) to characterize the histrionic personality is also consistent with this view. Conditions of learning which Millon has proposed lead to histrionic behavior include minimal punishment, positive reinforcement which is contingent upon performance of parentally approved behavior, and irregularity in positive reinforcement. Millon (1981) states that "parents rarely punish their children, distribute rewards only for what they approve and admire, but often fail to bestow these rewards even when the child behaves acceptably." These conditions would appear to be consistent with Zettle and Hayes' description of conditions

which might lead to a failure to follow rules in that reinforcement is inconsistent and unpredictable. Also, inconsistent consequences of behavior would make extraction of rules difficult. Thus, while quite speculative, it would appear that the psychosocial history of histrionics outlined by Millon would be consistent with an analysis of histrionic behavior which suggests that some aspects of this behavior might reflect deficits in rule-governed behavior.

Dysfunctional Rule-Governed Behavior and the Compulsive Personality Disorder

Many of the behaviors or traits characteristic of the compulsive personality disorder, as well as the learning history which has been suggested to characterize this disorder, are consistent with the notion that dysfunctional rule-governed behavior might account for many aspects of the compulsive personality disorder. It is suggested that many of the symptoms of the compulsive personality disorder might result from excesses in rule-governed behavior which preclude contact with or sensitivity to changing environmental contingencies. Zettle and Hayes (1982) suggest several relevant mechanisms of dysfunctional rule-governed behavior. First, rules might not be accurately formulated. This would appear to be particularly relevant in the context of self-rules. While self-rules may be effective in constituting a self-control procedure, self-

rules may be dysfunctional in several ways. First, self-rules may be generated which appear to be tacts, but which in fact are not. For example, in the case of an impure tact, the actual contingencies are not those pointed to by the rule, but instead are under the control of particular stimulation or deprivation. A second type of inaccurate self-rule might occur when rules are in tact form, but are actually intraverbals and thus produce tracking. For example, the statement, "It's terrible to make a wrong decision" might produce tracking, even though "terrible" is not a stimulus object or property. A second mechanism of dysfunctional rule-governed behavior which is relevant to the compulsive personality disorder is the failure to distinguish tacts from mands accurately. This would apply to both public rules and self rules. Finally, even if rules are distinguished accurately, they may be followed pathologically. For example, a tendency to follow mands with counterpliance might result in apparently obstinate behavior, while responding to mands (perhaps presented in tact-form) with tracking might be reflected in excessively moralistic behavior or extreme conformity. In a similar vein, tacts might be responded to with pliance, producing behavior which might appear subservient or dependent. Thus, formulation of inaccurate self-rules, excessive rule formulation, inability to distinguish tacts from mands, and pathological rule following might produce many of the traits

characteristic of the compulsive personality disorder. In general, it is suggested that the inflexibility, rigidity, and conformity to rules characteristic of the compulsive personality disorder would suggest an overall excess in rule-governed behavior resulting in an insensitivity to changing environmental contingencies. Three aspects of the compulsive personality disorder which would seem to be particularly relevant to a discussion of rule-governed behavior include rigidity (Millon, 1981; Shapiro, 1965), a conforming pattern (Millon, 1969, 1981), and indecisiveness (Shapiro, 1965; Reed, 1977).

One of the hallmarks of the compulsive personality disorder is the rigidity which is associated with this disorder. Rigidity might be expressed in numerous ways, including cognitive and intellectual rigidity, rigid adherence to rules and regulations, and other inflexible patterns of responding. Essentially, rigidity would seem to imply an insensitivity to changing contingencies which would be consistent with a hypothesis which suggests that the behavior of compulsives is to a greater extent than usual under the control of rules. Wulfert, Shull, Hayes, and Greenway (1986) found that subjects who scored highly on a paper-and-pencil test of rigidity (Rigidity Inventory, Rehfisch, 1958) showed greater perseverance of an operant response during extinction than did subjects with lower rigidity scores. While situational determinants (minimal

vs. accurate rule) were also found to influence perseveration during extinction, rigidity scores were found to be associated with greater perseveration of the operant response during extinction regardless of the type of rule. Thus, these authors concluded that "current situational determinants do not control responding in a vacuum. Subjects come into the experiment with different behavioral tendencies resulting presumably from pre-experimental variables." The authors further suggested that paper-and-pencil inventories, such as the Rigidity Inventory, might provide an indirect assessment of learning history with respect to rules.

Millon (1981) suggests that the compulsive personality disorder is characterized conforming behavior, with an underlying core of intense oppositional feelings which occasionally break through the controls. In a similar vein, Horney characterized the compulsive as demonstrating angry acceptance of parental values and mores. Earlier psychodynamic theorists emphasized the characteristic of obstinacy (e.g., Freud). Thus, the compulsive is seen as demonstrating either primarily conforming behavior with occasional "breakthroughs" of oppositional behavior, or obstinate, oppositional behavior alone. Both views would be consistent with the conceptualization of the compulsive's behavior as being excessively rule-governed. For example, if the listener is unable to distinguish tacts from mands,

the person might respond to tacts as plys. According to Zettle and Hayes (1982), such a person might tend to place others in an authority role. Responses might then take the form of either pliance or counterpliance. Thus, one instance of conforming behavior might be the occurrence of pliance in response to a tact. Conversely, counterpliance in response to a tact might be considered obstinacy. Failure to distinguish tacts from mands might also result in mands producing tracking. According to Zettle and Hayes, this tendency is likely to be reflected in such things as excessively moralistic behavior or extreme conformity. Thus, a single mechanism, the failure to distinguish between tacts and mands accurately, might produce topographically different behaviors of conformity, obstinacy, and moralistic behavior, all of which are characteristic of the compulsive personality disorder. Other mechanisms, such as dysfunctional rule following and inaccurate formulation of self-rules, might also result in these behavior patterns.

A third characteristic trait which might be related to rule-governed behavior is that of indecisiveness. Reed (1977) suggested that one factor which might contribute to the indecisiveness of compulsives is the overproduction of competing hypotheses. Thus, the compulsive might engage in excessive rule formulation. Reed's hypothesis would seem to be consistent with Skinner's (1969) distinction between deliberation and impulse. According to Skinner, "deliberate

or reasoned behavior is marked by either an examination of possibly relevant rules and the selection of one or more to be obeyed or by an examination of current contingencies and the derivation of a rule on the spot." Thus, indecisiveness might result from the compulsive's tendency to formulate rules or to engage in examination of relevant rules.

Shapiro's (1965) description of the compulsive's decision-making process seems to be very consistent with this notion. According to Shapiro, when confronted with the necessity for a decision, the compulsive person "will typically attempt to reach a solution by invoking some rule, principle, or external requirement."

Thus, many of the characteristics of the compulsive personality behavior might be considered to result from oversensitivity to rules as discriminative stimuli, as well as a resultant insensitivity to changing environmental contingencies. Millon's (1981) description of the learning history which might characterize the compulsive would seem to be quite consistent with this notion. According to Millon's theory, compulsive personality is likely to develop when parents expect their children to live up to their expectations and condemn them only if they fail to achieve the standards imposed. Punishment is likely to be harsh, although contingent. According to Millon, parents of compulsives praise their children not irregularly but consistently. Consequences of behavior are primarily in the

form of punishment. Millon describes this method of contingent punishment as "overcontrol." Millon suggests that as a function of this overcontrol, compulsives learn to heed parental restrictions and rules and that lines of disapproved behaviors are set rigidly. It would seem likely that rule-governed behavior, both with respect to parental rules and self-rules would be negatively reinforced through avoidance of punishment. According to Millon, the compulsive learns to avoid punishment by following rules, but does not learn to obtain reinforcers through means which are not proscribed by these rules. Since one effect of rules is to restrict the range of behavior, Millon's conceptualization of the compulsive's learning history as being restricted in range and insufficient is quite consistent with a rule-governed analysis. Therefore, it would appear that both observations of behaviors characteristic of the compulsive personality and Millon's portrayal of the learning history characteristic of the compulsive would be consistent with a hypothesis which suggests that compulsives exhibit dysfunctional rule-governed behavior in the form of excessive sensitivity to rules along with an insensitivity to changing environmental contingencies.

Statement of Purpose

The purpose of the present study was to investigate the possible role of rule-governed behavior in histrionic and compulsive personality disorders in an analogue population. An analogue population, comprised of normal subjects and subjects who showed histrionic and compulsive traits on a pencil-and-paper personality measure (Millon Clinical Multiaxial Inventory), would appear to be justified on two grounds. First, an analogue population was preferred to a clinical population since subjects drawn from a clinical population would in most cases have primary Axis I (DSM-III) diagnoses which might have confounded the results. Second, a predominant view in the literature is that normal vs. disordered personality can be considered to be along a continuous dimension (Millon, 1969, 1981). For example, DSM-III (1980) differentiates between personality traits and personality disorders primarily on the basis of impairment of social or occupational functioning or subjective distress. In a similar vein, Millon (1981) states that "they represent arbitrary points on a continuum or gradient, since no sharp line divides normal from pathological behavior." Millon also suggests that personality patterns differ from personality disorders primarily in terms of adaptive inflexibility and subjective distress. Therefore, it is suggested that utilization of an analogue population

would be more likely to underestimate rather than overestimate differences in rule-governed behavior.

In the present study, rule-governed vs. contingency-shaped behavior were assessed using a paradigm developed by Hayes, Brownstein, Haas, and Greenway (1986). In this paradigm, rule-governed behavior can be differentiated from contingency-shaped behavior which occurs in the presence of a rule. Scheduled responding is established on an operant task in the presence of a rule which describes the contingencies, followed by an extinction phase. Specifically, Hayes et al. provided extensive training on a MULT DRL/5 FR/18 schedule followed by extinction. In the accurate rule condition of the Hayes et al. study, apparent schedule sensitivity was produced during the training phase since subjects differentially responded to the MULT schedule. However, when this phase was followed by extinction, approximately half of the subjects who had been given an accurate rule during training showed a resistance to extinction. It would appear that while responses to accurate rules might be indistinguishable from behavior which is under the control of the schedule contingencies, introducing a change in contingencies such as extinction can differentiate between true schedule sensitivity and rule-governed behavior.

In the present study, rules which accurately and quite specifically described the contingencies of reinforcement

were used since previous studies (Hayes et al., in press; Wulfert, Shull, Hayes, & Greenway, 1986) have indicated that accurate rules generate greater insensitivity to changing contingencies during extinction than either minimal or inaccurate rules. Therefore, the utilization of accurate rules appeared most likely to demonstrate differences in rule-governed behavior in the present study.

In general, it was predicted that compulsive subjects would show greater resistance to extinction than either histrionic or normal control subjects, thereby indicating an insensitivity to changing contingencies produced by rule-governed behavior. Conversely, histrionics were expected to show greater sensitivity to extinction than either compulsive or normal control subjects, indicating greater control by contingencies than rules.

Since Millon (1981) proposes that histrionics tend to seek positive reinforcement while compulsives tend to seek avoidance of punishment, the type of contingencies specified by the rule (positive reinforcement vs. punishment) is suggested to be a potentially important variable in determining the extent to which rule-governed behavior supersedes control by contingencies. Using the above paradigm, the present study compared sensitivity to schedules of reinforcement vs. rule-governed behavior in histrionic, compulsive, and normal control subjects in two conditions. In the first condition, the rule specified

positive contingencies (i.e., points delivered contingent upon the specified behavior). In the second condition, the rule specified positive contingencies as well as a response cost contingency in which subjects would lose points if their responses were not sufficiently accurate. It was predicted that when response cost contingencies were specified in the rule, compulsives would show greater perseveration of the operant response during extinction than when only positive contingencies were stated. Differences in extinction for the two rule conditions were not predicted for histrionic or control subjects.

While differences in sensitivity to the extinction schedule would be indicative of possible differences in rule-governed behavior among diagnostic groups or rule conditions, such findings would be open to numerous interpretations. To examine further the relationship between rules, or verbal behavior, and extinction effects, the present study utilized a concurrent verbalization, or Talk Aloud procedure developed by Ericsson and Simon (1984). In this procedure, subjects are given instructions to state aloud covert verbalizations. Experimental sessions are audiotaped and transcribed to permit verbal protocol analysis. Hayes (1986) suggested that such procedures might be appropriate for the analysis of rule-governed behavior. According to Hayes, concurrent verbalizations might not influence task performance for two reasons. First,

verbalizations might be task irrelevant, representing either a separate response system or verbal behavior which is controlled by task-relevant variables but which does not influence these variables in turn. A second reason might be that concurrent verbalizations do not influence task performance because the behavior is already under the control of these rules. According to Hayes, if task-relevant verbalizations do not influence task performance, verbalizations could be assumed to accurately present covert verbalizations. Otherwise, the addition of new verbal stimuli would be expected to, at least subtly, influence task performance. According to Hayes,

Unless other nonverbal processes perfectly mirror rule-governance, we seem led to the surprising conclusion that when task-relevant concurrent verbalization can be shown not to alter task performance, this verbalization corresponds to functional self-stated rules. In short, like Sherlock Holmes' famous case of the silent dog, it is the lack of an effect that shows the effect.

According to Hayes, there are several means for demonstrating that concurrent verbalizations are task-relevant, including demonstration of an effect of manipulations on performance which violate the usual concurrent talk aloud conditions (i.e., asking subjects to slow down greatly reports of self-talk or requiring subjects to make inferences about their self-talk) or showing that the use of verbal protocols as external rules for other subjects will alter task performance.

In the present study, talk aloud instructions, as developed by Ericsson and Simon (1984), were given to half of the subjects in each diagnostic and rule condition. Data were then analyzed to determine the effects of the talk aloud procedure upon schedule sensitivity during acquisition and upon measures of extinction. Verbal protocols were then analyzed in several categories, including behavior descriptions, consequence-related statements, antecedent-related statements, counting, task-aversiveness, rule statements, and task-irrelevant. Talk aloud procedures were not expected to influence schedule sensitivity during acquisition or sensitivity to extinction. Specific predictions were made for four of the verbal protocol dependent measures. It was predicted that histrionic subjects would make more consequence-related statements, task-aversiveness statements, and task-irrelevant statements than compulsive subjects. Compulsive subjects were expected to make more rule statements than histrionic subjects.

Several experimental hypotheses were proposed. First, since it has been suggested that the histrionic personality disorder might reflect a deficit in rule-governed behavior, subjects who scored highly on the histrionic scale were expected to show less perseveration of the operant response during extinction than either compulsive subjects or normal control subjects. Thus, it was expected that histrionics would show greater sensitivity to changing schedules of

reinforcement compared to compulsives and normals in both rule conditions. Similarly, since the compulsive personality disorder has been suggested to reflect excesses in rule-following which preclude sensitivity to environmental contingencies, it was expected that subjects who scored highly on a compulsive scale would persevere in following rules during extinction to a greater extent in both rule conditions than either those who scored highly on the histrionic scale or normal control subjects. Since accurate rules were used, no differences were predicted for subjects in the conditioning phase of the study. Finally, since Millon (1981) has speculated that histrionics tend to seek positive reinforcement while compulsives' behavior serves to avoid punishment, it was expected that rules which stated a response cost contingency would result in greater perseveration during extinction compared to positive contingencies only for compulsive subjects, but not for histrionic subjects. No main effects of talk aloud condition or interactions of the talk aloud condition with diagnosis or rule conditions were predicted. Specific predictions were made for four of the verbal protocol categories. Since histrionics have been conceptualized as being more sensitive to changing schedules of reinforcement, it was predicted that histrionics would make more consequence-related statements. Also, since histrionics have been described as having a low tolerance for tedium and

becoming easily bored (DSM-III, 1980; Millon, 1981, 1985), it was predicted that subjects who scored highly on the histrionic scale would make more task-irrelevant statements and statements concerning aversiveness of the task than compulsive subjects. Since compulsives have been conceptualized in the present paper as demonstrating excessive rule-governed behavior, it was predicted that subjects who scored highly on the compulsive scale would make more rule statements than histrionic subjects.

CHAPTER II

METHOD

Subjects

During the first four weeks of each of two semesters, subjects enrolled in Introductory Psychology courses at UNC-G were invited to participate in a screening session for participation in experiments. A total of 895 subjects participated in the screening sessions. While students were told that such screening was not mandatory, participation in screening would possibly permit access to participation in other studies for which they would receive research participation credits to help meet course requirements. Screening of subjects was done in large groups in an auditorium classroom setting. At the beginning of each screening session, each subject was given a packet of materials containing a general consent form, an information statement about the questionnaire (Appendix A), a copy of the Millon Clinical Multiaxial Inventory (Appendix B), a computerized scoring sheet, a debriefing statement (Appendix C), and an additional credits form (Appendix D). Subjects were provided as much time as needed to complete the questionnaire.

The Millon Clinical Multiaxial Inventory (MCMI) (Millon, 1982) was used to identify eligible subjects. The

MCMII is a self-administered written inventory consisting of 175 true/false items. The MCMII provides scores on twenty clinical scales, including eight "Personality Patterns (Axis II)" which are derived from Millon's theory of personality (1969,1981), three "Pathological Personality Disorders" scales, which were designed to describe patients who "clearly evidence a chronic or severe pathology in the overall structure of personality", and nine scales designed to assess "Clinical Symptom Syndromes" based on DSM-III Axis I disorders. Additionally, two scales are included to correct for "denial versus complaint" and a "random or confused" pattern of responding. MCMII Scales 4 and 7 were of particular interest for the present study. Millon (1982) described Scale 4 ("Histrionic-Gregarious") as follows:

The active-dependent pattern, noted in Scale 4 and the DSM-III as histrionic, is characterized by a superficial and indiscriminate search for affection and stimulation. Despite capricious and manipulative behaviors, there is a deep fear of genuine autonomy and an intense need for social attention and approval.

The compulsive personality disorder, which Scale 7 ("Compulsive-Conforming") of the MCMII was purported to assess, was described as

The passive ambivalent pattern...is characterized by a mixture of subservience and hostility that is constrained by a fear of social disapproval and humiliation. Lurking behind a surface conformity are intense oppositional feelings which occasionally break through controls.

Millon (1982) reports test-retest reliability and external validity data for the MCMI. Test-retest reliability using a clinical population was reasonably high for the personality pattern scales, with five-week retest reliabilities ranging between .61 and .85. Test-retest correlations were .85 for Scale 4 ("Histrionic-Gregarious") and .77 for Scale 7 ("Compulsive-Conforming"). Convergent validity of the MCMI personality scales was established through correlations with other diagnostic inventories, including the MMPI, the Psychological Screening Inventory, and the Symptom Distress Checklist (SCL-90).

In the MCMI, raw scores on the twenty scales are transformed into base rate (BR) scores, a conversion which Millon (1982) stated is predicated on estimated prevalence data. Millon has selected two cutting lines in which BR scores of 75 or above would indicate the "presence" of a trait or disorder. A BR score of 85 or above would be considered to represent the "most prominent syndrome." While profile interpretation is the primary method of evaluating MCMI results, Millon stated that a single-scale approach to interpretation is valid, although confidence in the probability of a correct diagnostic judgement should be guided by each scale's valid-to-false-positive ratio (Scale 4 = 88:8, Scale 7 = 78:15 at BR>85).

The MCMI was developed for use within a clinical population. According to Millon (1982), normative data and

transformation scores for the MCMI are based entirely on clinical samples and are only applicable to persons who evidence symptoms or are engaged in psychotherapy. In the absence of appropriate normative data for nonclinical populations, Millon (1982) cautioned against the use of the MCMI as a screening tool for nonclinical populations.

Therefore, use of this instrument for the present study required the establishment of normative data for a college student population. Normative data were established for BR scores of each of the MCMI scales based upon questionnaires given to 1063 students enrolled in introductory psychology classes at the University of North Carolina at Greensboro (481 of these students participated in screening for the present study, 582 participated in screening for a prior study). Means and standard deviations for each of these scales are present in Table 1 (Table 1 and all subsequent tables are located in Appendix H).

Cut-off scores for the present study were one standard deviation above the mean BR score for each scale. Subjects were selected for participation in the present study if BR scores were above 96 for Scale 4 (histrionic analogue group) or 76 for Scale 7 (compulsive analogue group) and if these scores exceeded all other scale scores. Subjects selected for the normal control group had profiles with no BR scores in excess of one standard deviation of the mean BR score for each scale. Subjects who met these criteria were contacted

by the examiner to determine whether they would consent to participation in the present study. MCMII Scale 4 and Scale 7 scores are presented for each subject in Table 2.

Seventy-nine subjects participated in the present study. Data were retained for analysis of extinction effects only if subjects met criteria for acquisition of the multiple schedule, including a schedule sensitivity score $< .25$ (described in detail in a later section) and earning points in three of the last four 2-minute intervals in each schedule during acquisition. Data of 19 subjects, including 6 histrionic, 9 compulsive, and 4 control subjects, were omitted due to failure to meet acquisition criteria, leaving 20 subjects in each diagnostic group. All but three subjects in the present study were female. The compulsive group included three male subjects.

Experimental Design

The experimental design was a 3 (personality type) \times 2 (type of rule) \times 2 (talk condition) between-subjects design. Twenty subjects who met the criteria for each of the personality types (i.e., histrionic, compulsive, and normal control groups) were randomly assigned to one of two rule conditions (i.e., Positive Only and Positive Plus Response Cost) and to one of two talk conditions (i.e., Talk Aloud and No Talk), with five subjects per cell. In this way, main effects and interactions of personality type, type of

rule, and talk condition could be assessed. Dependent measures, which are described in greater detail in a further section, included a ratio measure of schedule sensitivity during training, a ratio measure of extinction effects and eight dependent measures for Talk Aloud protocol analysis.

Setting and Apparatus

Subjects were seated in a small (1.8m x 2.7m) room containing a chair, a table, and the experimental apparatus. The apparatus consisted of a computer monitor and two normally open momentary contact buttons (i.e., telegraph keys) which were mounted on a small board. The monitor and buttons were attached to a microcomputer in an adjoining room. During the experiment, the monitor displayed a 5 x 5 matrix of 4 by 3.5 cm boxes with a small plus (+) sign in one of the boxes. An intercom was available for communication with the experimenter, and a small microphone which was attached to an audiotape recorder in the adjoining room was mounted on the wall.

Procedure

Experimental procedures in the present study were identical to those described for the accurate rule condition in a study by Hayes, Brownstein, Haas, and Greenway (1986) with three exceptions. First, since beginning a new session might have, in some way, signalled a possible change in contingencies to extinction and thus increased sensitivity

to extinction, subjects in the present study were run in two 48-minute sessions rather than three 32-minute sessions. After the first 16 minutes of the second session, the contingencies changed to extinction. A second change was the introduction of the Positive Plus Response Cost condition. The third change was the introduction of the Talk Aloud condition for half of the subjects. Since, with these exceptions, identical procedures were used, the following description of procedures closely parallels that provided by Hayes et al. (1986).

Subjects were run individually in two 48-minute sessions, with a 5-minute break between sessions. At the beginning of the first session, the following instructions, as developed by Ericsson and Simon (1984), were read aloud to Talk Aloud subjects, with pauses for subjects to perform practice tasks included in the instructions:

In this experiment we are interested in what you say to yourself as you perform some tasks that we give you. In order to do this we will ask you to TALK ALOUD as you work on the problems. What I mean by talk aloud is that I want you to say out loud everything that you say to yourself silently. Just act as if you are alone in the room speaking to yourself. If you are silent for any length of time I will remind you to keep talking aloud. An audiotape of this study will be made. Do you understand what I want you to do?

Good, before we turn to the real experiment we will start with a couple of practice problems. I want you to talk aloud while you do these problems. First, I will ask you to multiply two numbers in your head. So talk aloud while you multiply 24 times 34.....Good.

Now I would like you to solve an anagram. I will show you a card with scrambled letters. It

is your task to find an English word that consists of all of the presented letters. For example, if the scrambled letters are KORO, you may see that these letters spell the word ROOK. Any questions? Please "talk aloud" while you solve the following anagram. (NPEPHA = HAPPEN)...Good. Now we will begin the experiment.

All subjects were then given a printed instruction sheet which was read aloud by the experimenter. These instructions, which were accurate during the training phase of the experiment, were as follows:

Please read these instructions with me as I say them out loud. This is an experiment in learning, not a psychological test. We are interested in certain aspects of the learning process which are common to all people. During the session you will be alone in this booth until the end of the session. The session will begin when a five by five grid appears on the monitor. When the session is over, the monitor will say so. There will be two sessions today, with a short break between sessions. When the grid appears there will be a plus (+) sign in the upper left-hand corner. To make points, move the plus sign to the lower right-hand corner; then when the monitor says to, press both buttons to receive your point. When the yellow rectangular square is lit, the best way to push the buttons is slowly with several seconds between each push. When the blue rectangular square is lit, the best way to push the buttons is rapidly.

Subjects in the positive contingencies only group were then given the following directions:

Try to see how many points you can get. Each point is worth a chance at two \$20 prizes to be given at the end of the semester. Moving the plus sign to the lower right-hand corner involves the buttons and the lights. If you have any questions ask them now because during the session the experimenter will not be able to answer any questions.

Subjects in the Positive Plus Response Cost condition were then given these remaining instructions:

Try to see how many points you can get. It is important to follow instructions carefully since failure to earn any points during a one-minute period will result in a loss of 1/2 point from your total. Each point is worth a chance at two \$20 prizes to be given at the end of the semester. Moving the plus sign to the lower right-hand corner involves the buttons and the lights. If you have any questions, ask them now because during the session the experimenter will not be able to answer any questions.

Training Phase. The first session and the first 1/3 of the second session comprised the training phase. At the end of the task instructions, the experimenter reminded subjects in the Talk Aloud condition to "Please talk aloud throughout the entire experiment." The experimenter left the room prior to beginning each session. Experimental sessions were audiotaped for subjects in the Talk Aloud condition. At the beginning of each session, the plus (+) sign appeared in the upper left-hand corner of the matrix on the subject's display monitor. Moving the sign to the lower right hand corner required pushes of the left and right buttons - right button pushes moved the plus sign right one column, left button pushes moved the plus sign down one row. During the training phase, movements were scheduled on a MULT DRL 5 sec/FR 18. During the DRL, the first button press after 5 seconds had elapsed since the previous response would move the plus sign. Responses which occurred before 5 seconds had elapsed would not move the sign. During the FR, presses

on either the left or the right button counted toward a single ratio, with the button push on the 18th trial determining the direction of the movement of the sign. During the FR schedule, rapid button pressing would produce the greatest number of sign movements.

If the plus sign was at the extreme right column, pushes on the right button would result in resetting the plus sign to the upper left-hand position. If the plus sign was in the bottom row, pushes on the left button would result in resetting the plus sign to the upper left-hand position. Thus, for example, in the DRL condition, any combination of four effective presses (i.e., those which met the DRL contingency) on the left button and four effective presses on the right button would put the sign in the lower right hand corner and cause the reinforcer message to appear on the screen. If five effective presses were made on either button, however, the sign would move outside of the grid and would therefore be reset to the starting position and no points would be given.

In the Positive Only condition, points could be earned by pressing both buttons when the plus sign reached the lower right hand corner. Additionally, in the Positive Plus Response Cost group, failure to earn any points during a one minute interval would result in an auditory signal and brief message on the monitor which would indicate the loss of .5 points, along with a display of total points earned, total

points lost, and net points earned. For both the Positive Only and Positive Plus Response Cost conditions, the reinforcer message would indicate the award of one point and the number of points accumulated.

The MULT alternated schedules every two minutes. Each schedule was in force for a total of sixteen two-minute intervals, the first twelve of which occurred during the first session. While the DRL was in force, a 4.5 cm x 1.5 cm yellow box on the display screen below the left half of the matrix was lit. While the FR was in force, a 4.5 cm x 1.5 cm blue box appeared below the right half of the matrix.

If subjects did not make any responses during the first two minutes at the beginning of the first session, the session would be stopped and all the instructions would be repeated. This would be done only once. Talk Aloud subjects were reminded to "Please continue talking aloud" if they did not verbalize during a two-minute interval throughout the experiment. At the end of the first session, subjects were told that there would be a short break. At the beginning of the second session, they were told, "There are no further instructions." Talk Aloud subjects were again reminded to "Please continue talking aloud" at the beginning of the second session.

Extinction Phase. After the first 16 min. of Session 2, the schedule changed to extinction. The subjects were not advised of this change of contingencies. During the

extinction phase, the sign did not move regardless of button pressing patterns, and no points could be earned or lost. The schedule lights continued to alternate as during the training phase. If the subject attempted to communicate with the experimenter or to leave the room, they were instructed to "Please remain seated until the session is over."

After the 48 minutes of Session 2 elapsed, subjects completed a post-experimental questionnaire (Appendices E and F) which included questions concerning what they had to do to earn points in the various conditions and Likert-type ratings concerning desire to please the experimenter, earn as many points as possible, lose as few points as possible, and master the task. Subjects were then given a debriefing statement (Appendix G).

Dependent Variables

The dependent variables in the present study included a measure of schedule sensitivity during training and a measure of sensitivity to extinction.

Apparent schedule sensitivity in the training phase was based upon responding during the Session 2 training session. Apparent schedule sensitivity was computed by dividing the total number of responses in the lowest rate or "non-dominant" component (whether that occurs in the DRL or FR schedule) by the total number of responses in both schedules

(i.e., $ND / ND + D$). Using this measure, schedule sensitivity during training can vary from 0 to .5. Differential responding would yield very low values (e.g., .15) while non-differential responding would yield high values (e.g., .35)

Sensitivity to the extinction schedule was quantified by dividing the total number of responses (i.e., key presses) on the schedule which was dominant during training (i.e., the schedule in which the greatest number of responses were made) during the last half of the extinction phase with the total number of responses on the dominant schedule during the Session 2 training phase. Since only the dominant schedule was used, there were four data points (i.e. the frequency of responses within each 2-min. interval) in each of the two phases were compared. Only the dominant schedule was used since unreliable and excessively large ratios could be obtained when measures of change are based on the very low rates characteristic of the non-dominant schedule. If no change was found during the extinction phase, the extinction measure will yield a value of 1.00, while lower values would indicate increasingly greater extinction effects.

Talk Aloud protocols were analyzed on eight dependent measures. Interrater reliability was determined for total amount of talk by dividing the smaller number of phrases counted by the larger number of phrases counted. The

interrater reliability on this measure for five protocols averaged 97%. Interrater reliability on the remaining dependent measures was determined by dividing the number of agreements by the number of agreements plus disagreements ($A / A + D$). Interrater reliability was determined for each measure on a sample of five verbal protocols.

Total Amount of Talk - Verbal protocols were divided into phrases and the total number of phrases was obtained. Interrater reliability on this dependent measure averaged 97%.

Behavior Descriptions - This category included descriptions of the subject's task-relevant behavior which were not presented in the form of a rule. Examples might include, "Faster, faster", "I'm hitting this as fast as I can", and "I can't think of anything to talk about." Interrater reliability on this dependent measure averaged 85%.

Consequence-Related Statements - This category included references to cursor movement (i.e., "Go down", "It's not moving", "It won't work") and references to points or penalties. Interrater reliability on this dependent measure averaged 91%.

Counting - This category included counting numbers (in any language) or recitation of portions of the alphabet, apparently used to time responses on the DRL. Interrater reliability on this dependent measure averaged 99%.

Antecedent-Related Statements - This category included references to the yellow and blue rectangles which served as discriminative stimuli for the DRL and FR schedules. Examples include "Blue means it's the fast one" and "I hate the yellow one." Interrater reliability on this dependent measure averaged 98%.

Rule Statements - This category included descriptions of the contingencies or strategies which were either stated in the form of a rule ("You have to push it very quickly to move the plus sign") or implied a rule ("I've tried alternating, moving very slowly, moving very quickly, and nothing works"). Also, reading or reciting any portion of the experimenter-provided instructions was included in this category. Interrater reliability on this dependent measure averaged 87%.

Task Aversiveness - This category included statements of dislike of task, fatigue, physical discomfort, or comments about the duration of the task (i.e., "I wonder how long I have to keep doing this"). Interrater reliability on this dependent measure averaged 81%.

Task-Irrelevant - This category included any statements which were not relevant to the experimental task. Interrater reliability on this dependent measure averaged 95%.

CHAPTER III

RESULTS

A 3 (diagnosis) X 2 (rule condition) X 2 (talk condition) between subjects design was used in the present study. Subjects in each of the three diagnostic groups (histrionic, compulsive, and control) were randomly assigned to a rule condition (Positive Only vs. Positive Plus Response Cost) and talk condition (Talk Aloud vs. No Talk). Acquisition, extinction, and verbal protocol data were then analyzed. All probability values less than .15 are indicated in summary tables, with tendencies of interest described in the narrative.

Acquisition Data

Acquisition data were analyzed for the last eight two-minute intervals of the training phase. Four of these intervals were in the DRL5 schedule while the other four were in the FR18 schedule of the MULT. A measure of schedule sensitivity was obtained by dividing the number of responses (i.e., button presses) in the DRL by the total number of responses (DRL + FR). Lower ratios indicated greater schedule sensitivity while ratios approaching .50 would indicate nondifferential responding to the two schedules. Since accurate rules were used in the present

study, no significant main effects or interactions were predicted.

A three-factor analysis of variance (Table 3) indicated no main effects of diagnosis, $F(2,48) = .16$, $p < .85$ or talk condition, $F(1,48) = .00$, $p < .97$ upon schedule sensitivity. Means are presented in Table 4. A significant main effect of rule condition was found, $F(1,48) = 7.04$, $p < .01$, with greater schedule sensitivity during the Positive Plus Response Cost condition ($M = .0556$) than during the Positive Only condition ($M = .0819$). Interestingly, however, when the numbers of subjects who did not learn the task in each rule condition were compared using a nonparametric binomial test, more subjects failed to learn the task in the Positive Plus Response Cost condition (14 subjects) than in the Positive only condition (5 subjects), $p < .032$. Thus it would appear that the addition of the response cost contingency interfered with learning of the task, but resulted in greater schedule sensitivity for those subjects who did learn the task. While not significant, there was a tendency towards an interaction between diagnosis and talk condition on schedule sensitivity during acquisition, $F(2,48) = 2.73$, $p < .08$, with histrionics tending to show greater schedule sensitivity in the Talk Aloud condition ($M = .0539$) than in the No Talk condition ($M = .087$), while comparable changes in schedule sensitivity for the two talk

conditions were not found for compulsive or control subjects.

Extinction Scores

The extinction phase of this study consisted of a total of 16 two-minute time intervals. During 8 of these time intervals, the yellow rectangle appeared at the bottom of the screen (previously the discriminative stimulus for the DRL condition) while the blue rectangle (previously the discriminative stimulus for the FR condition) appeared during the remaining intervals. As previously discussed, only data for the 8 intervals of the dominant (FR) schedule were analyzed for extinction effects since unreliable and excessively large extinction ratios could be obtained if measures of change were based on the very low rates characteristic of the nondominant (DRL) schedule. To permit analysis of extinction at various points along the extinction gradient, extinction trials were divided into three phases, with the first phase consisting of the first four FR intervals during extinction and the third phase consisting of the last four FR intervals during extinction. The second phase overlapped the other two phases and consisted of the last two FR intervals from the first phase and the first two intervals of the last phase of extinction. The extinction phase was divided in this manner since the length of the extinction phase was determined arbitrarily

and group differences might be more apparent at specific points along the extinction gradient. Ratio extinction scores for each of these phases was computed by dividing the total number of responses (i.e., key presses) during the extinction phase by the total number of responses during the last four intervals of the dominant (FR) schedule during acquisition. Thus, lower values of this ratio extinction score would indicate greater extinction effects, while higher values would indicate less change during extinction.

Results of a four-factor repeated measures analysis of variance on extinction scores, with extinction scores of the first and third phases of the extinction as the within subjects factor, are shown in Table 5. Means are presented in Tables 6a and 6c. The second phase of extinction was not included in the repeated measures analysis since, as previously described, this phase was not independent from the other two phases. Of most importance, extinction scores were significantly lower in the third extinction phase ($\bar{M} = 0.377$), $F(1, 48)$, $p < .0001$, than during the first extinction phase ($\bar{M} = 0.563$), thus indicating overall extinction effects. The following sections present the results of analyses of the effects of diagnosis (histrionic vs. compulsive vs. control groups), rules (Positive Only vs. Positive Plus Response Cost conditions), and talk conditions (Talk Aloud vs. No Talk) upon measures of extinction.

Diagnosis. Tables 6a, 6b, and 6c present the means of extinction scores in each of the three extinction phases for histrionic, compulsive, and control groups. Group means for the latter two extinction phases were in the predicted directions, with highest extinction scores for the compulsive group and lowest extinction scores for the histrionic group, thus indicating greatest extinction for the histrionic group and least extinction for the compulsive group. While these effects were not sufficiently robust to show statistical significance in any of the extinction phases using separate three-factor analyses of variance (Tables 7a, 7b, and 7c), diagnostic differences were demonstrated during the second and third phases of extinction using a nonparametric median test (Siegel, 1956), as elaborated in the next paragraph.

Figures 1, 2, and 3 (Appendix I) present subjects' extinction scores above and below the median for each of the three phases of extinction. During the first extinction phase, a chi-square test of numbers of subjects in each diagnostic group whose extinction scores fell above and below the overall median did not indicate significant differences between diagnostic groups $\chi^2(2, N = 60) = 2.8, p < .30$ (Table 8a). During the second extinction phase, histrionic, compulsive, and control groups differed significantly $\chi^2(2, N = 60) = 6.4, p < .025$ (one-tailed) using the median test, with more histrionics showing high

extinction effects and more compulsives showing low extinction effects (Table 8b). During the last third of the extinction phase, more histrionic subjects again fell below the median extinction score while more compulsive subjects fell above the median extinction score $\chi^2(1, N = 60) = 3.6$, $p < .05$ (one-tailed) (Table 8c), although an analysis which included the control group as well as the histrionic and compulsive groups did not yield significant results $\chi^2(2, N = 60) = 3.74$, $p < .10$ (one-tailed). Thus, it would appear that during the second phase of extinction, the experimental hypotheses that histrionics would show greater extinction than either compulsives or control subjects and that compulsives would show less extinction than either histrionics or controls were supported. During the third phase of extinction, histrionics continued to show greater extinction than compulsives, although significant differences were not found when control subjects were included in the analysis.

Further support for the hypothesis that the degree of extinction is related to diagnosis was provided by correlational data in which MCMI Scale 4 (Histrionic Personality Disorder) and Scale 7 (Compulsive Personality Disorder) scores were correlated with extinction scores for each of the three phases of extinction. Table 2 presents MCMI scores and extinction measures during each phase of extinction for subjects in each of the diagnostic groups.

Histrionic (Scale 4) scores were negatively correlated with extinction scores during each extinction phase. This correlation was strongest during the second extinction phase, $r = -.266$, $p < .04$. Compulsive (Scale 7) scores were positively correlated with extinction scores during each third of the extinction phase. During the second extinction phase, the correlation was strongest, $r = .184$, although this correlation did not reach statistical significance, $p < .16$. However, this correlation was in the predicted direction, with higher compulsivity scores tending to be associated with lower extinction scores.

In summary, results of the median tests for the middle and last thirds of extinction as well as correlational data between the Histrionic Personality Disorder scale of the MCMI and extinction scores support the experimental predictions of greater extinction effects for histrionics and lesser extinction effects for compulsives, although these effects are not sufficiently robust to achieve statistical significance using an analysis of variance.

Rule Conditions. Mean extinction scores for the two rule conditions (Positive Only vs. Positive Plus Response Cost) in each of the extinction phases are presented in Tables 6a, 6b, and 6c. While means were higher in each phase for the Positive Only than for the Positive Plus Response Cost condition, these differences were not statistically significant using three separate two-factor

analyses of variance, one for each extinction phase (Tables 7a, 7b, and 7c). No significant differences were found between the two rule conditions using the median test in any of the extinction phases (Tables 9a, 9b, and 9c). These results were consistent with experimental hypotheses which did not predict a significant main effect for rule conditions.

Talk Conditions. Mean extinction scores for the two talk conditions (Talk Aloud vs. No Talk) in each of the three phases of extinction are presented in Tables 6a, 6b, and 6c. While means for were higher in each phase for the No Talk condition than for the Talk Aloud condition, these differences were not significant using either separate three-factor analyses of variance (Tables 7a, 7b, and 7c) or median tests (Tables 10a, 10b, and 10c) for each phase of extinction. These results were consistent with experimental hypotheses which did not predict a significant main effect for talk conditions. Planned comparisons within rule conditions (Tables 11a through 11f) yielded no main effects for talk conditions, but did indicate an interaction between talk condition and diagnosis within the Positive Only condition which is discussed in the following section.

Interactions. No significant interactions between diagnosis and rule condition, diagnosis and talk condition, or three-way interactions were found in separate three-factor analyses of variance for each of the three phases of

extinction (Tables 7a, 7b, and 7c). Means are presented in Tables 6a, 6b, and 6c. It was predicted that compulsive subjects would show greater resistance to extinction in the Positive Plus Response Cost condition than in the Positive Only condition, while differences in the two rule conditions was not predicted for histrionic or control subjects. Results of the present study, however, failed to support the prediction of an interaction between diagnosis and rule condition.

When planned comparisons were made within rule conditions (Tables 11a through 11f), significant interactions were found between diagnosis and talk condition within the Positive Only rule condition during the second phase, $F(2,24)$, $p < .05$, and third phase, $F(2,24)$, $p < .04$, of extinction. A post hoc analysis using Tukey's HSD for the second extinction phase indicated lower extinction scores for histrionic ($M = .2694$) than control ($M = .683$) groups in the No Talk condition, $HSD(6,24) = .3545$, $p < .05$, but not in the Talk Aloud condition. Extinction scores for the control group were significantly lower in the Talk Aloud condition ($M = .2826$) than in the No Talk condition, $HSD(6,24) = .3545$, $p < .05$. Similar results were obtained in a post hoc analysis of the third phase of extinction. Lower extinction scores were found for histrionic ($M = .1536$) than control ($M = .701$) groups in the No Talk condition, $HSD(6,24) = .5015$, $p < .01$, but not in the Talk

Aloud condition. Extinction scores for the control group were significantly lower in the Talk Aloud condition ($M = .2156$) than in the No Talk condition, $HSD(6,24) = .4081$, $p < .05$. No significant interactions were found in the Positive Plus Response Cost condition.

Summary of Analysis of Extinction Scores. Overall extinction effects were demonstrated using a four-factor analysis of variance with extinction scores for the first and third phases of extinction as the within subjects variable. Overall, a significant decline in extinction scores from the first to third extinction phase indicates that, on the whole, the extinction procedure was effective in producing extinction on the FR schedule.

Separate three-factor analyses of variance which were performed for each of the three phases of extinction did not indicate any significant main effects or interactions for diagnosis, rule condition, or talk condition. However, a nonparametric median test demonstrated significant differences between diagnostic groups during the last two phases of extinction which were in the predicted direction. That is, significantly more histrionics than compulsives showed high extinction effects, while significantly more compulsives than histrionics showed low extinction effects. The number of control subjects was intermediate between the number of histrionic and compulsive subjects both above and below the median for extinction scores. Further support for

a diagnostic effect was provided by correlational data which indicates a significant negative correlation between MCMI Scale 4 (Histrionic) scores and extinction scores and a nonsignificant, but positive correlation between MCMI Scale 7 (Compulsive) scores and extinction scores during the second phase of extinction.

No significant main effects for rule condition (Positive Only vs. Positive Plus Response Cost) or talk condition (Talk Aloud vs. No Talk Aloud) or significant interactions between these variables were demonstrated. However, within the Positive Only condition, a significant interaction was found between diagnosis and talk condition. Since there was not a significant main effect for talk condition and since the significant interaction was limited to one rule condition, further analysis of protocol data from the Talk Aloud condition appeared to be justified.

Talk Aloud Protocol Analysis

The proportion of phrases within each category to total number of phrases was determined in each of seven categories in the protocol analysis, including Rule Statements (i.e., statements of contingencies, strategies, or repetition of task instructions), Antecedent-Related (i.e., references to discriminative stimuli for the DRL and FR schedules), Consequence-Related (i.e., references to cursor movement, points, or penalties), Descriptions of Behavior (i.e.,

descriptions of task-relevant behavior or talking behavior which were not stated in the form of a rule), Counting (a strategy used by many subjects for timing during the DRL), Task Aversiveness (i.e., fatigue, dislike of task, boredom, physical discomforts and references to duration of the task), and Task Irrelevant Talk. It was hypothesized that histrionics would have higher proportions of talk in three categories, including Consequence-Related, Task Aversiveness, and Task Irrelevant Talk, compared to compulsive subjects, while compulsive subjects would have higher proportions of Rule Statements than histrionic or control subjects.

Separate two-factor analyses of variance were performed for each of these dependent measures as well as for the total amount of talk (Tables 12a through 12h). Means are presented in Tables 13a through 13h. There were no significant main effects or interactions for any of these dependent variables. However, two interesting patterns were found. First, there was a nonsignificant tendency for a main effect of condition upon Descriptions of Behavior, $F(1,24) = 2.34$, $p < .14$. Specifically, Descriptions of Behavior tended to be higher in the Positive Only condition ($\underline{M} = .126$) than in the Positive Plus Response Cost condition ($\underline{M} = .074$). There was also a tendency for histrionics to have a higher proportion of Task Aversiveness statements ($\underline{M} = .0503$) than compulsive ($\underline{M} = .0205$) or control ($\underline{M} = .0276$)

subjects, $F(2,24) = 2.16, p < .14$. The latter tendency is consistent with the experimental hypothesis that histrionics would show a greater proportion of statements related to task aversiveness than compulsive subjects. Median tests of proportion of total phrases for each of these categories did not indicate significant differences in numbers of subjects within each diagnostic group which fell above and below the median percentage scores.

Questionnaire Data

Following completion of the experiment, subjects were given a brief questionnaire (Appendices E & F) in which items related to the helpfulness of the instructions and various motivations to perform well on the experimental task were rated on Likert-type scales. Separate analyses of variance were performed on ratings on five questions, including ratings of the extent to which the subject found the instructions given at the beginning of the experiment to be helpful, the importance of mastering the task, the importance of making a good impression on the experimenter, the importance of earning as many points as possible, and the importance of losing as few points as possible (in the Positive Plus Response Cost condition only). Summary tables of the analyses of variance are presented in Tables 14a through 14e. Means are presented in Tables 15a through 15e. There were main effects for talk condition on two items,

including self-reported motivation to master the task, $F(1,48) = 8.54, p < .0053$, and importance of earning as many points as possible in the experiment, $F(1,48) = 5.17, p < .0274$, with higher importance ratings in the No Talk than in the Talk Aloud condition for both questions. Significant interactions were found between diagnosis and talk condition on three items, including the importance of making a good impression upon the experimenter, $F(1,48) = 3.66, p < .0332$, the importance of earning as many points as possible in the experiment, $F(1,48) = 7.41, p < .0016$, and the importance of avoiding losing points in the experiment, $F(1,24) = 5.16, p < .0137$. In each case, higher mean self-report ratings of importance were found in the No Talk than the Talk Aloud condition for histrionics and control subjects, while compulsives in the Talk Aloud condition had higher means than the No Talk condition.

CHAPTER IV

DISCUSSION

The present study was designed to assess the role of rule-governed behavior in histrionic and compulsive personality disorders. Specifically, the sensitivity of histrionic, compulsive, and control subjects to extinction in an operant task was assessed in two rule conditions, Positive Only and Positive Plus Response Cost conditions. It was predicted that histrionic subjects would show greater sensitivity to extinction following training on a MULT DRL/FR schedule than compulsive or control subjects, suggesting greater control by direct contingencies of reinforcement than by rules. In contrast, it was predicted that compulsive subjects would show less sensitivity to the extinction schedule than either histrionics or control subjects, suggesting greater control by rules than by direct contingencies. Such overall diagnostic differences would support the view that histrionic and compulsive personality disorders might reflect deficits or excesses in rule-governed behavior, respectively.

Diagnosis and Sensitivity to the Extinction Schedule

Overall, results of the present study suggest that there was, at least, an inconsistently significant effect of

diagnosis upon extinction scores since diagnostic differences were demonstrated using a nonparametric median test but not using an analysis of variance. During the second and third phases of extinction, more histrionic than compulsive or control subjects showed high extinction effects, while more compulsive than histrionic or control subjects showed low extinction effects. Mean extinction scores in all phases of extinction for each of these three groups were also in the predicted direction, with the highest mean extinction ratio for the histrionics, the lowest for the compulsives, and a moderate score for the control group, although these scores did not differ significantly for the three groups.

The Relationship Between Extinction Sensitivity and Histrionic Personality Disorder. The tendency for histrionics to show relatively high extinction effects compared to compulsive or control subjects appears to be consistent with descriptions of the histrionic personality as showing characteristic impulsivity or "hyperflexibility" and quick adaptiveness to changing circumstances (Millon, 1981; Shapiro, 1965). The present results support the earlier conceptualization of the histrionic personality as showing a relatively high level of sensitivity to changing contingencies of behavior and deficits in perseverance. Extreme sensitivity to changing contingencies of behavior could account for many of cognitive, affective, and social

behavioral patterns which characterize the histrionic personality disorder.

As previously discussed, the cognitive style of the histrionic has been described as being undifferentiated, diffuse, and susceptible to immediately impressive external stimuli (Millon, 1981; Millon & Everly, 1985; Shapiro, 1965; Witkin, Dyk, Fattuson, Goodenough, & Karp, 1962). Millon and Everly (1985) further state that "Histrionics clearly demonstrate what can be inferred to be an external cognitive orientation. This external, or exteroceptive, orientation leads to a fleeting, impressionistic, and in severe cases, a scattered and diffuse cognitive pattern. Such a pattern accounts for the histrionic's scattered attention to details, susceptibility to distraction, and apparent superficial cognitive functioning." According to DSM-III, the behavior of the histrionic is characterized in the following manner. "Behavior is overly reactive and intensely expressed. Minor stimuli give rise to emotional excitability, such as irrational angry outbursts or tantrums." Such descriptions of the cognitive functioning of histrionics might be inferred from such observations of apparently inconsistent behavior which would result from extreme sensitivity to changing environmental contingencies.

Interpersonally, histrionics are described as "lively and dramatic and always drawing attention to themselves" (DSM-III, 1980). Millon and Everly (1985) further state

that, "Interpersonally, histrionics appear to be remarkably sensitive to the thoughts or moods of those from whom they seek approval and support." While highly speculative, it would appear that interpersonal characteristics of the histrionic personality, such as demanding behavior or self-dramatization, might result from the histrionic's relatively high sensitivity to extinction. That is, withdrawal of attention might result in rapid extinction of appropriate social behavior or escalation of attention-seeking behavior, perhaps in a response burst during extinction.

The Relationship Between Low Extinction Effects and Compulsive Personality Disorder. In contrast to the histrionics, compulsive subjects tended to show relatively low extinction effects. This result would seem consistent with the earlier hypothesis that compulsives might exhibit an insensitivity to changing environmental contingencies. The results of the present study appear to be consistent with cognitive and behavioral descriptions of the compulsive personality. As discussed in the introduction to this paper, one of the hallmarks of the compulsive personality disorder is the rigidity which is associated with this disorder. Such rigidity might be expressed in several ways, including cognitive rigidity (Shapiro, 1965), rigid adherence to rules and regulations (DSM-III, 1980), and other inflexible patterns of responding. Using a similar paradigm, Wulfert, Shull, Hayes, and Greenway (1986) found

greater perseverance of an operant response during extinction among subjects who scored highly on the Rigidity Inventory (Rehfish, 1958) than subjects with lower rigidity scores. Since similar results were obtained in the present study for compulsive subjects, one might speculate that rigidity among compulsives is associated with relatively high resistance to extinction. Another aspect of compulsive cognitive style which might be related to resistance to extinction is the tendency of compulsives to rehearse ambiguous material, even when this behavior is not indicated or necessary (Reed, 1977b). Thus, compulsives might show perseverance of rehearsal strategies despite lack of reinforcement for this behavior. Other behaviors considered to be characteristic of the compulsive personality also appear to be consistent with the present findings, including perseverance and preoccupation with work to the exclusion of pleasurable activities (DSM-III, 1980). That is, compulsives might tend to persevere despite lack of reinforcement for such activities due to insensitivity to extinction.

Type of Rule

Another question which was addressed by the present study concerned the effects of positive vs. positive plus response cost contingencies upon perseveration of the operant response during extinction. Millon (1969, 1981)

suggested that the compulsive personality pattern is maintained by avoidance of punishment, while intermittent, unpredictable reinforcement maintains histrionic personality patterns. Therefore, it was hypothesized that there would be an interaction between diagnosis and type of rule. More specifically, it was predicted that, for compulsive subjects, greater perseveration of the operant response would be found during extinction when the rule specified punishment contingencies than when only positive contingencies were involved, while histrionic subjects would not respond differentially to the two rule conditions. The present study did not support this hypothesis since neither a statistically significant main effect for type of rule nor a statistically significant interaction between diagnosis and type of rule was found.

A factor which might be hypothesized to account for the lack of significant effects of type of rule in the present study is that the rules and contingencies in the Positive Plus Response Cost group was a combined reinforcement and punishment condition rather than a "pure" response cost condition. In this study, the response cost was contingent upon failure to earn any points rather than directly upon the subjects' behavior, thus presenting combined reinforcement and punishment contingencies. Three possible mechanisms are suggested through which such a combined schedule might weaken the effects of the response cost rule.

First, in the combined schedule, the extinction phase would perhaps not only involve extinction of the operant response through withdrawal of points, but also negative reinforcement of this response through termination of the punishment contingency. A second mechanism through which a combined reinforcement and response cost schedule might weaken the effects of punishment involves the possible discriminant role of the reinforcer. During the acquisition phase, points might have served as discriminative stimuli for successful avoidance of penalties. During extinction, when neither points nor penalties were given, extinction might have occurred due to the absence of points as discriminative stimuli for successful avoidance. Finally, since the task instructions specified that penalties were contingent upon failure to earn points, the absence of penalties during extinction despite failure to earn any points might have provided a signal that the apparatus was no longer functioning or that there was a change in contingencies. Anecdotally, several subjects in the Talk Aloud condition commented to the effect that they would resume button pressing only if they received a penalty which would indicate reinstatement of the former contingencies.

While the possibility of decreased effectiveness of a combined reinforcement and response cost condition compared to a punishment alone condition in producing differential extinction effects among compulsives was anticipated during

the planning of the present study, alternatives to the combined condition were considered to be less satisfactory. For example, a penalty only condition in which points would be deducted from a given score was considered. However, it seemed doubtful that subjects would be able to learn the rather complex schedule during the acquisition phase in a punishment only condition. Another alternative would have been to have removed penalties while continuing to give points during one of two separate extinction phases. Then, during the second extinction phase, points would have been removed while maintaining penalties during the second extinction phase. However, probable carryover effects would have precluded the effectiveness of such a condition.

While no differences were found for type of rule during extinction, acquisition data indicated higher schedule sensitivity to the MULT DRL/FR schedule for the Positive Plus Response Cost group than for the Positive Only group. Interestingly, however, an analysis of data of subjects who were not included in the extinction analysis due to failure to meet criteria for having learned the task indicated that significantly more of these subjects were in the Positive Plus Response Cost group compared to the Positive Only group. Thus, it would appear that while the addition of the response cost interfered with acquisition of the MULT DRL/FR schedule, this condition resulted in greater precision of

schedule training for those subjects who did learn the task than did positive contingencies alone.

In summary, the results of the present study support experimental hypotheses regarding the main effect of diagnosis upon extinction scores in that more histrionic subjects than compulsive or control subjects showed high extinction effects, while more compulsive subjects showed low extinction effects. While an unexpected main effect of type of rule was found during acquisition, with greater schedule sensitivity among the Positive Plus Response Cost group than the Positive Only group, neither a significant main effect nor interaction between diagnosis and type of rule was found during extinction. Thus, the present study does not support the experimental hypothesis of greater perseverance of the operant response during extinction in the Positive Plus Response Cost condition than in the Positive Only condition for the compulsive group alone.

Rule-Governed Behavior in Histrionic and Compulsive Personality Disorders

While diagnostic differences in sensitivity to the extinction schedule which were found in the present study are consistent with a hypotheses of excessive rule-governed behavior among compulsives and deficits in the control of behavior by rules among histrionics, other explanations for these differences are plausible. For example, Eysenck

(1970), has suggested that biological differences in cortical stimulation among introverts and extroverts are causally related to greater conditionability among introverts (including compulsives) compared to extraverts (including histrionics). Eysenck and Rachman (1965) suggest that extraverts tend to condition poorly and show rapid extinction, while the reverse is true for introverts. Thus, the present findings of differences in sensitivity to extinction are consistent with Eysenck's theory as well as with a rule-governed analysis of histrionic and compulsive personality disorders.

To provide a more direct examination of the role of rule-governed behavior in these personality disorders, the present study utilized a Talk Aloud procedure developed by Ericsson and Simon (1984) for protocol analysis. Hayes (1986) suggested that the use of protocol analysis would be appropriate for the study of rule governed behavior since, if the addition of the talk aloud procedure does not change task performance, it could logically be assumed that task-relevant verbalizations present a veridical verbal report of private self-stated rules. Otherwise, the addition of new task-relevant verbal stimuli would be expected to, at least subtly, influence task performance.

Effects of Talk Aloud Condition. In the present study, half of the subjects in each diagnostic and type of rule condition were given talk aloud instructions. An overall

analysis of extinction effects did not indicate significant effects of the talk aloud procedure or interactions between talk aloud conditions and type of rule or diagnosis. When planned comparisons were done within type of rule conditions, however, an interaction was found between the talk aloud condition and diagnosis within the positive only condition during the last two phases of extinction. Specifically, histrionic and control subjects differed significantly in the No Talk condition, with less extinction of the operant response for the control condition, while no differences were found between these groups in the Talk Aloud condition. Also, significant differences were found between the control group in the No Talk condition and the control group in the Talk Aloud condition, with greater extinction in the Talk Aloud condition. Thus, it would appear that for the control group within the Positive Only condition, the implementation of the talk aloud procedure did change task performance.

Turning to the effects of talk condition on acquisition, while there were no significant main effects or interactions with talk condition during acquisition, there was a nonsignificant tendency for an interaction between diagnosis and talk aloud condition. While a post hoc analysis did not indicate significant differences between means, there appeared to be a tendency for histrionic subjects to show less sensitivity to the multiple schedule

in acquisition during the No Talk condition compared to the Talk Aloud condition, while no such tendencies were noted for the compulsive or control groups. Thus, while not statistically different, it does appear that the talk aloud procedure might have introduced additional verbal stimuli which controlled behavior for the histrionics during acquisition. Overall, however, it would appear that the effects of the talk aloud procedure upon acquisition and extinction could be considered to be quite weak and highly specific.

The talk condition also appeared to influence self-reported ratings of the degree to which subjects found the experimental instructions to be helpful and the importance of earning points, with higher ratings in the No Talk condition than in the Talk Aloud condition. Also, interactions were found between talk condition and diagnosis on three self-reported ratings of the importance of making a good impression upon the experimenter, the importance of earning points, and the importance of avoiding losing points in the experiment. Histrionic and control subjects in the No Talk condition rated these items as more important than histrionic and control subjects in the Talk Aloud condition while compulsive subjects in the Talk Aloud condition rated these items as more important than compulsives in the No Talk condition. While somewhat speculative, one explanation for the influence of talk condition upon questionnaire data

might be related to the social context of the experiment. That is, subjects in the Talk Aloud condition might have perceived the experimental situation to be more public than subjects in the No Talk condition. Perhaps compulsive subjects were more sensitive to apparent social scrutiny in the Talk Aloud condition than histrionic or control subjects and, therefore, reported higher levels of motivation than in the No Talk condition. However, there is no ready explanation for the higher questionnaire ratings of histrionic and control subjects in the No Talk than the Talk Aloud condition.

In summary, talk condition appeared to influence acquisition and extinction scores in some groups as well as influencing self-reports of helpfulness of the instructions and various motivations to do well on the task. Thus, it would appear that concurrent verbalizations might not have accurately presented covert self-rules in the present study. Instead, concurrent verbalizations might have either presented new verbal stimuli which then functioned as self-rules or represented an independent set of responses.

Protocol Analysis of Talk Aloud Data. While Talk Aloud data cannot necessarily be inferred to present covert self-talk in the present study, verbal protocols were nevertheless considered to be of interest. Verbal protocols of Talk Aloud subjects were rated on seven dependent variables, including Consequence-related Talk (including

references to cursor movement, points, and penalties), Behavior Descriptions (descriptions of behavior relevant to the task or to talking aloud which were not stated in the form of a rule), Antecedent-related Talk (references to discriminative stimuli for the DRL and FR schedules), Counting (a strategy used by many subjects for timing during the DRL), Task Aversiveness (including fatigue, dislike of the task, physical discomfort, and duration of the task), Rule Statements (statements of contingencies or strategies), and Task Irrelevant Talk. No significant main effects were found for diagnosis or rule condition on any of these dependent measures. However, two interesting patterns were noted. A nonsignificant pattern was noted for an effect of type of rule upon Behavior Descriptions. There was a tendency for subjects within the Positive Only condition to show a higher proportion of Behavior Descriptions to total amount of phrases compared to the Positive Plus Response Cost condition. There appears to be no ready explanation for this tendency. A nonsignificant pattern was also noted for an effect of diagnosis upon Task Aversiveness statements. There appeared to be a tendency for histrionics to have the highest proportion of Task Aversiveness statements, with compulsives showing the lowest proportion of Task Aversiveness statements, although differences between means were not significant. These findings would be consistent with descriptions of the histrionic as showing a

tendency to become bored easily (DSM-III, 1980, Millon, 1981, 1985).

Limitations of the Present Study

Two important limitations to the generalizability of results from the present study should be considered. First, the present study used an analogue population consisting of introductory psychology students who were selected on the basis of scores on the Histrionic and Compulsive Personality scales of the Millon Clinical Multiaxial Inventory rather than an actual clinical population. Therefore, subjects can be considered as representing personality types rather than personality disorders. While the use of such an analogue population is justified on the basis of the conceptualization of personality types and disorders as representing different points on a continuum rather than being qualitatively different (DSM-III, 1980; Millon, 1981; Millon & Everly, 1985), generalization of these results to a clinical population has yet to be empirically established. However, it would appear likely that weak effects which are found in a nonclinical population might actually be stronger in a clinical population.

A second limitation to the present study refers to generalizability to other situations. Many of the behaviors of histrionic and compulsive personality disorders which were conceptualized as being caused by insensitivity to

contingencies produced by rule-governed behavior are related to interpersonal situations. Therefore, it was felt that the present laboratory study would provide a conservative test of these hypotheses. However, the generalizability of these data to social situations remains to be empirically established. Further research is needed to determine whether differences in sensitivity to extinction can be demonstrated in histrionic and compulsive clinical populations and to determine the generalizability of these results to other situations, such as social situations.

Theoretical Implications and Conclusions

As previously stated, the results of the present study provide at least inconsistently significant support for the hypothesis that histrionic subjects would show greater sensitivity to extinction than compulsive or control subjects, while compulsives would show greater perseveration during extinction than histrionic or control subject. These findings would appear to be consistent with several theories of the etiology of histrionic and compulsive personality disorders, including Eysenck's theory relating the introversion-extraversion dimension to conditionability, Millon's bio-social learning theory, and the present rule-governed analysis.

The present findings would appear to be consistent with a rule-governed analysis of histrionic and compulsive

personality disorders. The greater sensitivity to extinction exhibited by histrionic subjects would appear to be consistent with the hypothesis that histrionic behavior might reflect deficits in rule-governed behavior. In contrast, since "insensitivity is a defining property of instructional control" (Shimoff, Catania, & Matthews, 1981), the relative insensitivity of compulsive subjects to extinction would support the hypothesis that compulsives exhibit dysfunctional rule-governed behavior in the form of excessive sensitivity to rules and insensitivity to changing environmental contingencies. In the present study, the change to extinction schedule was quite apparent to the subjects. Therefore, it would appear likely that differences in sensitivity to extinction were related to differences in the pliance component of rule-following rather than tracking. That is, differences in sensitivity to extinction were likely to be related to differences in the sensitivity of behavior to social consequences for rule-following rather than differences in sensitivity of behavior to the correspondence between rules and the contingencies they specify. Thus, the present results would suggest that histrionics might demonstrate deficits in pliance while compulsives might show excessive pliance.

While the analysis of verbal protocols did not support the hypothesis that compulsives would have the highest proportion of rule statements while histrionics would show

the lowest proportion of rule statements, these findings would not necessarily preclude a rule-governed hypothesis of rule-governed behavior. The protocol analysis permitted only an analysis of the form of verbal responses. However, since rules are functionally, not topographically, defined (Zettle & Hayes, 1982) the possibility exists that statements which appeared to be tacts (i.e., behavior descriptions) might have functioned as rules for compulsives while statements which were presented in rule form might not have functioned as rules for histrionics. Thus, data from the protocol analysis do not support rule-governed behavior as the underlying mechanism for differences in sensitivity to extinction in histrionics and compulsives, but also do not refute this possibility.

While rule-governed behavior continues to be a plausible explanation for diagnostic differences in sensitivity to the extinction schedule, the present study does not rule out alternative explanations. For example, diagnostic differences in sensitivity to the extinction schedule would appear to be consistent with Eysenck's theory of low conditionability of neurotic extroverts (i.e. histrionics), and high conditionability of neurotic introverts (i.e. compulsives) (Eysenck, 1970; Eysenck & Rachman, 1965). Also, while predictions concerning the effect of type of rule which were based on Millon's theory were not supported by the present study, findings of high

extinction effects among histrionics and low extinction among compulsives would appear to be consistent with Millon's conceptualization of the histrionic as showing "hyperalertness to external stimuli", and of the compulsive as showing "pervasive rigidity."

While Millon's (1981, 1985) conceptualizations of histrionic and compulsive personality disorders would not be inconsistent with the hypothesis that these personality disorders might be related to deficits or excesses in rule-governed behavior, neither does his theory implicate dysfunctional rule-governed behavior as the mechanism through which social learning histories might exert their influence upon histrionic and compulsive behavior disorders. In conclusion, while diagnostic differences in sensitivity to extinction in the present study support the hypothesis that histrionic and compulsive behavior disorders might be related to deficits or excesses in rule-governed behavior, results from the analysis of verbal protocols do not rule out other theories which would also predict these differences in sensitivity to extinction.

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Appendix A:
Information About Questionnaire
Prior to Consent Form

Information About Questionnaire
Prior to Consent Form

The survey that you have received is an attempt to assess some personality characteristics. Such characteristics are thought to be normally distributed in a given population. In order to participate, you must sign the consent form that you received with your questionnaire. If you choose not to participate, please turn in your questionnaire at this time.

Researchers who will have access to questionnaire data include and are limited to Dr. Nelson, Dr. Lumsden, Nancy Amodei, and Sara Schneidmiller.

Appendix B:
Millon Clinical Multiaxial Inventory

PLEASE NOTE:

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

These consist of pages:

P. 142-144

University
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Appendix C:
Debriefing Statement
For Screening

Debriefing Statement

The purpose of the present study, which was conducted by researchers in the clinical area of psychology, was to further an initial assessment of the distribution of personality styles within a given college population. All individuals are thought to possess personality styles and the questionnaire you just completed attempts to assess your particular style. This type of study helps us to increase our knowledge about the distribution of certain styles in college populations. While many personality styles and traits are thought to be normally distributed in the population, some individuals seek therapy for extreme personality styles. By understanding which factors may be of primary importance in different types of personality styles, clinical psychologists may be able to design studies to assess these more extreme styles and potentially new treatments for such individuals can be developed. There were no independent variables in the present study since administration of this questionnaire is a means of screening potential participants for future studies. The dependent variables in this study are personality style scores.

Individual scores on the questionnaire will not be released since the questionnaire was designed to identify groups of subjects for research rather than for individual personality assessment. However, if you would like other information pertaining to this study, you are encouraged to

contact the experimenters during the following semester. Selection for participation in further studies does not indicate deviant performance on the questionnaire, but instead indicates that the subject has answered test questions in a manner similar to other persons who represent personality styles of interest in these studies. Thank you for your participation.

Appendix D:
Additional Credit

Additional Credit

Would you be willing to participate in related studies for additional credits? Such studies might include visual perception tasks, problem-solving tasks, or visual motor tasks.

YES _____ NO _____

If YES, please read the following paragraph: Only a small subset of all who wish to participate further will be chosen. Selection for participation in further studies does not indicate deviant performance on the questionnaire, but instead indicates that you have answered test items in a similar manner to other persons representing personality styles of interest in these studies. If you are selected, one of the experimenters will contact you as soon as possible, but definitely by April 15, 1986. If, at the time you are contacted, you do not wish to participate in the experiment described to you, there is, of course, no obligation for you to participate.

If you understand and consent to the above paragraph, please provide the following information so that we can contact you:

Name: _____

Social Security #: _____

PSY 221 section #: _____

Home Phone: _____

Work Phone: _____

Local Address: _____

Best times to contact: _____

The experimenters will provide you with further details of the tasks when they contact you. Thank you.

Appendix E:
Subject Questionnaire For
Positive Only Condition

Subject Questionnaire

1. In the first session, what did you have to do to earn points on this task?

2. In the first session, what did you have to do to earn points while the rectangular square was blue?

3. In the first session, what did you have to do to earn points when the rectangular square was yellow?

4. In the last half of the second session, what did you have to do to earn points on this task?

5. In the last half of the second session, what did you have to do to earn points when the rectangular square was blue?

6. In the last half of the second session what did you have to do to earn points when the rectangular square was yellow?

7. To what extent did you find the instructions given at the beginning of the experiment to be helpful?

1	2	3	4	5	6	7
not at all			somewhat			very helpful

8. How important was it to you to master the task?

1	2	3	4	5	6	7
not at all			somewhat			very important

9. How important was it to you to make a good impression upon the experimenter?

1	2	3	4	5	6	7
not at all			somewhat			very important

10. How important was it to you to earn as many points as possible in this experiment?

1	3	3	4	5	6	7
not at all			somewhat			very important

11. The following list contains various reasons why people might be motivated to do well on this task. Please rank order these reasons according to their relative importance to you (1 = most important of these reasons, 2 = second most important of these reasons...4 = least important of these reasons).
 - _____ the challenge of mastering the task
 - _____ pleasing the experimenter
 - _____ earning as many points as possible
 - _____ other: _____ (describe)

Appendix F:
Subject Questionnaire For
Positive Plus Response Cost Condition

Subject Questionnaire

1. In the first session, what did you have to do to earn points on this task?
2. In the first session, what did you have to do to earn points while the rectangular square was blue?
3. In the first session, what did you have to do to earn points when the rectangular square was yellow?
4. In the last half of the second session, what did you have to do to earn points on this task?
5. In the last half of the second session, what did you have to do to earn points when the rectangular square was blue?
6. In the last half of the second session what did you have to do to earn points when the rectangular square was yellow?
7. To what extent did you find the instructions given at the beginning of the experiment to be helpful?

1	2	3	4	5	6	7
not at all			somewhat			very helpful
8. How important was it to you to master the task?

1	2	3	4	5	6	7
not at all			somewhat			very important
9. How important was it to you to make a good impression upon the experimenter?

1	2	3	4	5	6	7
not at all			somewhat			very important
10. How important was it to you to earn as many points as possible in this experiment?

1	2	3	4	5	6	7
not at all			somewhat			very important
11. How important was it to you to avoid losing points in this experiment?

1	2	3	4	5	7	7
not at all			somewhat			very important
12. The following list contains various reasons why people might be motivated to do well on this task. Please rank order these reasons according to their relative importance to you (1 = most important of these reasons, 2 = second most important of these reasons...4 = least important of these reasons).

_____	the challenge of mastering the task
_____	pleasing the experimenter
_____	earning as many points as possible
_____	losing as few points as possible
_____	other: _____ (describe)

Appendix G:
Debriefing Statement

Debriefing Statement

The purpose of the present study is to investigate the relationship between personality type (Respectful vs. Sociable vs. Control) as determined by screening on a personality inventory and behavior in response to rules or instructions. Subjects were assigned to one of two experimental groups: Positive Only and Positive Plus Response Cost. The instructions given to both groups reflected the contingencies for earning points during the first session and the first part of the second session (i.e., when the yellow rectangular square was lit, points were given for slow button pressing with several seconds between each push. When the blue square was lit, points were given for every 18th response. Thus, rapid button pressing would be most effective in earning points). Additionally, in the Positive Plus Response Cost group, subjects lost 1/2 point during each 1 min. interval in which no points were earned. During the last 1/3 of the second session, the sign did not move regardless of button pressing pattern. This extinction session was necessary to determine the extent to which behavior was under the control of the rules rather than point contingencies. It is hypothesized that the behavior of persons who met the criteria for Respectful personality type would be under the control of the rules rather than point contingencies, while that of those meeting the criteria for Sociable personality type

would be more in accordance with point contingencies. The independent variables in this study include personality type (Respectful vs. Sociable vs. Control), positive contingencies only vs. positive and response-cost contingencies, and presence vs. absence of points. The dependent variable is the rate of button pressing.

Appendix H:

Tables

Table 1
 Table of Means and Standard Deviations of Millon
 Clinical Multiaxial Inventory (MCMI) Scale Scores
 of 1063 Introductory Psychology Students

Scale	<u>M</u> BR Score	Standard Deviation
1 (Schizoid)	32.5945	21.5659
2 (Avoidant)	38.9182	24.7246
3 (Dependent)	57.6265	26.3737
4 (Histrionic)	74.8420	22.3486
5 (Narcissistic)	70.8288	20.5675
6 (Antisocial)	60.0263	19.8523
7 (Compulsive)	60.1693	15.7889
8 (Passive-Aggressive)	41.2728	25.1898
S (Schizotypal)	43.0094	16.3081
C (Borderline)	51.2352	17.5518
P (Paranoid)	62.6322	16.0013
A (Anxiety)	62.6952	22.0426
H (Somatoform)	64.8241	17.0981
N (Hypomanic)	54.5127	26.6157
D (Dysthymic)	50.9897	24.6134
B (Alcohol Abuse)	45.1496	16.9280
T (Drug Abuse)	59.1496	19.3080
SS (Psychotic Thinking)	50.9370	10.3497
CC (Psychotic Depression)	46.3321	12.1265
PP (Psychotic Delusion)	53.7159	18.0744

Table 2

Correlations Between Millon Clinical Multiaxial
Inventory Scores and Extinction Scores

Subject #	MCM I BR Scores		Extinction Phase		
	Scale 4	Scale 7	First	Second	Third
1	102	65	.434	.223	.072
2	102	65	.707	.293	.067
3	102	58	.572	.384	.269
4	115	58	.431	.192	.244
5	97	70	.420	.255	.116
H	97	37	.418	.142	.000
I	115	42	.810	.700	.543
S	105	29	.568	.332	.296
T	97	68	.908	.929	.972
R	97	54	.369	.206	.121
I	97	48	.580	.507	.570
O	97	60	.294	.171	.151
N	97	64	.752	.643	.779
I	97	54	.421	.274	.199
C	105	58	.278	.196	.058
16	109	58	.555	.363	.399
17	102	42	.327	.118	.001
18	102	68	.122	.000	.000
19	115	54	.977	.949	.931
20	102	48	.382	.257	.161
21	67	80	.910	.838	.912
22	45	105	.550	.486	.384
23	67	80	.572	.356	.222
24	58	85	.876	.783	1.005
25	45	95	.343	.261	.267
C	58	80	1.293	1.017	1.027
O	78	95	.553	.396	.236
M	58	90	.562	.398	.362
P	65	80	.206	.136	.146
U	82	95	.689	.547	.429
L	00	85	.961	.917	.806
S	75	85	.772	.763	.767
I	78	80	.228	.091	.036
V	58	95	.287	.138	.113
E	11	100	.886	.920	.725
36	45	80	.855	.672	.417
37	61	80	.886	.633	.504
38	78	85	.641	.554	.561
39	78	85	.561	.494	.462
40	78	90	.204	.054	.030

Table 2 Continued

Correlations Between Millon Clinical Multiaxial
Inventory Scores and Extinction Scores

Subject #	MCM I BR Scores		Extinction Phase		
	Scale 4	Scale 7	First	Second	Third
41	58	58	1.003	.996	.946
42	82	58	.679	.491	.565
43	75	67	.617	.381	.280
44	78	65	.648	.674	.712
45	82	60	.911	.903	1.002
46	18	68	.418	.249	.228
C 47	67	58	.608	.395	.256
O 48	82	68	.651	.561	.415
N 49	75	68	.282	.120	.158
T 50	67	65	.340	.088	.021
R 51	78	58	.309	.388	.434
O 52	78	68	.573	.345	.112
L 53	77	66	.492	.385	.471
54	82	58	.271	.139	.025
55	52	68	.339	.178	.141
56	82	68	.485	.374	.434
57	85	66	.226	.032	.011
58	81	67	.804	.711	.670
59	85	65	.529	.258	.113
60	58	67	.435	.231	.259
Overall Correlation With Scale 4			-.22539*	-.26557**	-.22558*
Overall Correlation With Scale 7			.12887	.18402	.16053

* p < .10

** p < .05

Table 3
Summary Table of the Analysis of Variance Performed
on Schedule Sensitivity Scores During Acquisition

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.00047563	.16	
B (Rule Condition)	1	.01034907	7.04	.0108
C (Talk Condition)	1	.00000240	.00	
AB	2	.00084463	.29	
AC	2	.00804370	2.73	.0751
BC	1	.00004860	.03	
ABC	2	.00527470	1.79	
Error	48	.07060600		

Table 4
Table of Means of Schedule Sensitivity
Scores During Acquisition

Diagnosis	Rule Condition	Talk Condition	Schedule Sensitivity
Histrionic	_Positive Only_____	_No Talk	.1146
		_Talk Aloud	.0570
	_Positive Plus _Response Cost_____	_No Talk	.0594
		_Talk Aloud	.0508
Compulsive	_Positive Only_____	_No Talk	.0612
		_Talk Aloud	.0966
	_Positive Plus _Response Cost_____	_No Talk	.0634
		_Talk Aloud	.0630
Control	_Positive Only_____	_No Talk	.0678
		_Talk Aloud	.0942
	_Positive Plus _Response Cost_____	_No Talk	.0474
		_Talk Aloud	.0498

Table 5
 Summary Table of the Repeated Measures Analysis of
 Variance of Ratio Extinction Scores in the
 First and Third Phases of Extinction

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.18901083	1.53	
B (Rule Condition)	1	.14220402	2.30	.1355
C (Talk Condition)	1	.00348082	0.06	
AB	2	.05017203	0.41	
AC	2	.06826443	0.55	
BC	1	.03999002	0.65	
ABC	2	.18210563	1.48	
S(ABC)	48	6.70506220		
D (Extinction Phase)	1	1.04011320	93.69	.0001
AD	2	.01598945	0.72	
BD	1	.00813453	0.73	
CD	1	.02790750	2.51	.1194
ABD	2	.05128162	2.31	.1102
ACD	2	.03475535	1.57	
BCD	1	.00014083	0.01	
ABCD	2	.03483152	1.57	
DxS(ABC)	48	.53287700		

Table 6a
 Table of Means of Ratio Extinction Scores
 During the First Extinction Phase

Diagnosis	Rule Condition	Talk Condition	Extinction Score
Histrionic	Positive Only	No Talk	.5128
		Talk Aloud	.6146
	Positive Plus Response Cost	No Talk	.4650
		Talk Aloud	.4726
Compulsive	Positive Only	No Talk	.6512
		Talk Aloud	.6606
	Positive Plus Response Cost	No Talk	.6268
		Talk Aloud	.6294
Control	Positive Only	No Talk	.7716
		Talk Aloud	.4598
	Positive Plus Response Cost	No Talk	.3968
		Talk Aloud	.4958

Table 6b

Table of Means of Ratio Extinction Scores
During the Second Extinction Phase

Diagnosis	Rule Condition	Talk Condition	Extinction Score
Histrionic	Positive Only	No Talk	.2694
		Talk Aloud	.4618
	Positive Plus Response Cost	No Talk	.3582
		Talk Aloud	.3374
Compulsive	Positive Only	No Talk	.5448
		Talk Aloud	.4988
	Positive Plus Response Cost	No Talk	.5658
		Talk Aloud	.4814
Control	Positive Only	No Talk	.6830
		Talk Aloud	.2826
	Positive Plus Response Cost	No Talk	.2870
		Talk Aloud	.3212

Table 6c
 Table of Means of Ratio Extinction Scores
 During the Third Extinction Phase

Diagnosis	Rule Condition	Talk Condition	Extinction Score
Histrionic	Positive Only	No Talk	.1536
		Talk Aloud	.3864
	Positive Plus Response Cost	No Talk	.3514
		Talk Aloud	.2984
Compulsive	Positive Only	No Talk	.5580
		Talk Aloud	.4400
	Positive Plus Response Cost	No Talk	.4894
		Talk Aloud	.3948
Control	Positive Only	No Talk	.7010
		Talk Aloud	.2156
	Positive Plus Response Cost	No Talk	.2366
		Talk Aloud	.2974

Table 7a
 Summary Table of the Analysis of Variance
 Performed on Ratio Extinction Scores During
 the First Extinction Phase

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.18901083	1.53	
B (Rule Condition)	1	.14220402	2.30	.1355
C (Talk Condition)	1	.00348082	0.06	
AB	2	.05017203	0.41	
AC	2	.06826443	0.55	
BC	1	.03999002	0.65	
ABC	2	.18210563	1.48	
Error	48	2.96169280		

Table 7b
 Summary Table of the Analysis of Variance
 Performed on Ratio Extinction Scores During
 the Second Extinction Phase

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.30408083	2.06	.1388
B (Rule Condition)	1	.06318015	0.86	
C (Talk Condition)	1	.04401042	0.60	
AB	2	.09808870	0.66	
AC	2	.18168103	1.23	
BC	1	.01395375	0.19	
ABC	2	.28080370	1.90	
Error	48	3.54522560		

Table 7c
 Summary Table of the Analysis of Variance
 Performed on Ratio Extinction Scores During
 the Third Extinction Phase

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.30571373	1.72	
B (Rule Condition)	1	.06227482	0.70	
C (Talk Condition)	1	.08717282	0.98	
AB	2	.15196173	0.85	
AC	2	.23509213	1.32	
BC	1	.03355935	0.38	
ABC	2	.44214520	2.48	.0943
Error	48	4.27624640		

Table 8a

χ^2 Summary Table for the
First Extinction Phase

Diagnosis	Extinction Scores	
	(Numbers of Subjects)	
	Below Median	Above Median
Histrionic	12	8
Compulsive	7	13
Control	11	9

Table 8b

χ^2 Summary Table for the
Second Extinction Phase

Diagnosis	Extinction Scores	
	(Numbers of Subjects)	
	Below Median	Above Median
Histrionic	14	6
Compulsive	6	14
Control	10	10

Table 8c
 χ^2 Summary Table for the
Third Extinction Phase

Diagnosis	Extinction Scores (Numbers of Subjects)	
	Below Median	Above Median
Histrionic	13	7
Compulsive	7	13
Control	11	9

Table 9a

χ^2 Summary Table for Rule Conditions
During the First Extinction Phase

Rule Condition	Extinction Scores	
	(Numbers of Subjects)	
	Below Median	Above Median
Positive Only	12	18
Positive Plus Response Cost	18	12

Table 9b

χ^2 Summary Table for Rule Conditions
During the Second Extinction Phase

Rule Condition	Extinction Scores	
	(Numbers of Subjects)	
	Below Median	Above Median
Positive Only	13	17
Positive Plus Response Cost	17	13

Table 9c
X² Summary Table for Rule Conditions
During the Third Extinction Phase

Rule Condition	Extinction Scores (Numbers of Subjects)	
	Below Median	Above Median
Positive Only	15	15
Positive Plus Response Cost	15	15

Table 10a

χ^2 Summary Table for Talk Conditions During
the First Extinction Phase

Talk Condition	Extinction Scores	
	(Numbers of Subjects)	
	Below Median	Above Median
No Talk	14	16
Talk Aloud	16	14

Table 10b

χ^2 Summary Table for Talk Conditions During
the Second Extinction Phase

Talk Condition	Extinction Scores	
	(Numbers of Subjects)	
	Below Median	Above Median
No Talk	14	16
Talk Aloud	16	14

Table 10c

χ^2 Summary Table for Talk Conditions During
the Third Extinction Phase

Talk Condition	Extinction Scores (Numbers of Subjects)	
	Below Median	Above Median
No Talk	16	14
Talk Aloud	15	15

Table 11a

Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores in the Positive Only Condition During the First Extinction Phase

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.04273627	0.37	
B (Talk Condition)	1	.03353363	0.59	
AB	2	.23564347	2.06	.1488
Error	24	1.36975600		

Table 11b

Summary Table of the Analysis of Variance Performed on Ratio Extinction Scores in the Positive Only Condition During the Second Extinction Phase

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.13218427	1.00	
B (Talk Condition)	1	.05376333	0.82	
AB	2	.44487147	3.38	.0509
Error	24	1.57938280		

Table 11c

Summary Table of the Analysis of Variance Performed on Ratio
Extinction Scores in the Positive Only Condition During the
Third Extinction Phase

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.29851460	1.71	
B (Talk Condition)	1	.11445363	1.31	
AB	2	.64487887	3.70	.0399
Error	24	2.09344760		

Table 11d

Summary Table of the Analysis of Variance Performed on Ratio
Extinction Scores in the Positive Plus Response Cost
Condition During the First Extinction Phase

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.19644660	1.48	
B (Talk Condition)	1	.00993720	0.15	
AB	2	.01472660	0.11	
Error	24	1.59193680		

Table 11e

Summary Table of the Analysis of Variance Performed on Ratio
Extinction Scores in the Positive Plus Response Cost
Condition During the Second Extinction Phase

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.26998527	1.65	
B (Talk Condition)	1	.00420083	0.05	
AB	2	.01761327	0.11	
Error	24	1.96584280		

Table 11f

Summary Table of the Analysis of Variance Performed on Ratio
Extinction Scores in the Positive Plus Response Cost
Condition During the Third Extinction Phase

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.15916087		
B (Talk Condition)	1	.00627853		
AB	2	.03235847		
Error	24	2.18279880		

Table 12a

Summary Table of the Analysis of Variance Performed
on Talk Aloud Description of Behavior Scores

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.00486140	0.28	
B (Rule Condition)	1	.02038413	2.34	.1388
AB	2	.00882607	.51	
Error	24	.20865360		

Table 12b

Summary Table of the Analysis of Variance Performed
on Talk Aloud Consequence-Related Scores

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.03366500	1.13	
B (Rule Condition)	1	.00109203	.07	
AB	2	.03635407	1.22	
Error	24	.35900920		

Table 12c

Summary Table of the Analysis of Variance Performed
on Talk Aloud Antecedent-Related Scores

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.00055140	.34	
B (Rule Condition)	1	.00133333	1.65	
AB	2	.00121487	.75	
Error	24	.01942240		

Table 12d

Summary Table of the Analysis of Variance Performed
on Talk Aloud Counting Scores

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.03503847	.29	
B (Rule Condition)	1	.00008670	.00	
AB	2	.05365500	.44	
Error	24	1.46467680		

Table 12e
 Summary Table of the Analysis of Variance Performed
 on Talk Aloud Rule Statement Scores

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.00525020	1.38	
B (Rule Condition)	1	.00052083	.27	
AB	2	.00012487	.03	
Error	24	.04555640		

Table 12f
 Summary Table of the Analysis of Variance Performed
 on Talk Aloud Task-Aversiveness Scores

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.00484580	2.16	.1375
B (Rule Condition)	1	.00007053	.06	
AB	2	.00198087	.88	
Error	24	.02695160		

Table 12g

Summary Table of the Analysis of Variance Performed
on Talk Aloud Task-Irrelevant Scores

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	.00324740	.38	
B (Rule Condition)	1	.00216750	.51	
AB	2	.00614940	.73	
Error	24	.10144000		

Table 12h

Summary Table of the Analysis of Variance Performed
on Total Amount of Talk During Talk Aloud

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	200563.4	.48	
B (Rule Condition)	1	197803.2	.94	
AB	2	181911.8	.43	
Error	24	5028314.8		

Table 13a

Table of Means of Talk Aloud
Description of Behavior Scores

Diagnosis	Rule Condition	<u>M</u> Proportion of Talk
Histrionic	Positive Only	.1302
	Positive Plus Response Cost	.0408
Compulsive	Positive Only	.1468
	Positive Plus Response Cost	.0864
Control	Positive Only	.1024
	Positive Plus Response Cost	.0958

Table 13b
 Table of Means of Talk Aloud
 Consequence-Related Scores

Diagnosis	Rule Condition	<u>M</u> Proportion of Talk
Histrionic	_Positive Only	.2048
	_Positive Plus Response Cost	.1526
Compulsive	_Positive Only	.2058
	_Positive Plus Response Cost	.3146
Control	_Positive Only	.2214
	_Positive Plus Response Cost	.2010

Table 13c
 Table of Means of Talk Aloud
 Antecedent-Related Scores

Diagnosis	Rule Condition	<u>M</u> Proportion of Talk
Histrionic	Positive Only	.0378
	Positive Plus Response Cost	.0200
Compulsive	Positive Only	.0218
	Positive Plus Response Cost	.0258
Control	Positive Only	.0474
	Positive Plus Response Cost	.0212

Table 13d
Table of Means of Talk Aloud
Counting Scores

Diagnosis	Rule Condition	<u>M</u> Proportion of Talk
Histrionic	Positive Only	.2170
	Positive Plus Response Cost	.3394
Compulsive	Positive Only	.3338
	Positive Plus Response Cost	.2882
Control	Positive Only	.2612
	Positive Plus Response Cost	.1946

Table 13e
 Table of Means of Talk Aloud
 Rule Statement Scores

Diagnosis	Rule Condition	<u>M</u> Proportion of Talk
Histrionic	Positive Only	.0318
	Positive Plus Response Cost	.0180
Compulsive	Positive Only	.0424
	Positive Plus Response Cost	.0352
Control	Positive Only	.0592
	Positive Plus Response Cost	.0552

Table 13f
 Table of Means of Talk Aloud
 Task-Aversiveness Scores

Diagnosis	Rule Condition	<u>M</u> Proportion of Talk
Histrionic	Positive Only	.0630
	Positive Plus Response Cost	.0376
Compulsive	Positive Only	.0188
	Positive Plus Response Cost	.0222
Control	Positive Only	.0212
	Positive Plus Response Cost	.0340

Table 13g
 Table of Means of Talk Aloud
 Task-Irrelevant Scores

Diagnosis	Rule Condition	<u>M</u> Proportion of Talk
Histrionic_____	_Positve Only	.0812
	_Positve Plus Response Cost	.0238
Compulsive_____	_Positve Only	.0306
	_Positve Plus Response Cost	.0314
Control_____	_Positve Only	.0508
	_Positve Plus Response Cost	.0564

Table 13h
 Table of Means of Talk Aloud
 Total Amount of Talk

Diagnosis	Rule Condition	<u>M</u> Number of Phrases
Histrionic	_Positive Only	1038.00
	_Positive Plus Response Cost	789.60
Compulsive	_Positive Only	1040.60
	_Positive Plus Response Cost	1096.80
Control	_Positive Only	1028.80
	_Positive Plus Response Cost	733.80

Table 14a
 Summary Table of the Analysis of Variance Performed
 on Post-Experimental Questionnaire Item 7

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	0.43333333	0.11	
B (Rule Condition)	1	0.60000000	0.31	
C (Talk Condition)	1	3.26666667	1.68	
AB	2	3.90000000	1.00	
AC	2	5.43333333	1.40	
BC	1	4.26666667	2.20	.1448
ABC	2	8.63333333	2.22	.1193
Error	48	93.20000000		

Table 14b
 Summary Table of the Analysis of Variance Performed
 on Post-Experimental Questionnaire Item 8

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	3.23333333	0.98	
B (Rule Condition)	1	0.01666667	0.01	
C (Talk Condition)	1	14.01666667	8.54	.0053
AB	2	2.43333333	0.74	
AC	2	2.63333333	0.80	
BC	1	2.81666667	1.72	
ABC	2	3.03333333	0.92	
Error	48	106.98333333		

Table 14c

Summary Table of the Analysis of Variance Performed
on Post-Experimental Questionnaire Item 9

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	7.23333333	1.35	
B (Rule Condition)	1	0.26666667	0.10	
C (Talk Condition)	1	6.66666667	2.48	.1215
AB	2	2.03333333	0.38	
AC	2	19.63333333	3.66	.0332
BC	1	2.40000000	0.89	
ABC	2	0.70000000	0.13	
Error	48	128.80000000		

Table 14d

Summary Table of the Analysis of Variance Performed
on Post-Experimental Questionnaire Item 10

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	1.30000000	0.26	
B (Rule Condition)	1	5.40000000	2.14	
C (Talk Condition)	1	13.06666667	5.17	.0274
AB	2	2.10000000	0.42	
AC	2	37.43333333	7.41	.0016
BC	1	4.26666667	1.69	
ABC	2	0.63433333	0.13	
Error	48	185.40000000		

Table 14e

Summary Table of the Analysis of Variance Performed
on Post-Experimental Questionnaire Item 11
(Positive Plus Response Cost Only)

Source	df	Sum of Squares	F	Pr>F
A (Diagnosis)	2	0.46666667	0.09	
B (Talk Condition)	1	2.70000000	1.08	
AB	2	25.80000000	5.16	.0137
Error	24	88.96666667		

Table 15a
Table of Means of Post-Experimental
Questionnaire Item 7

Diagnosis	Rule Condition	Talk Condition	Rating
Histrionic	_Positive Only_____	_No Talk	4.8
		_Talk Aloud	5.2
	_Positive Plus _Response Cost_____	_No Talk	5.6
		_Talk Aloud	5.0
Compulsive	_Positive Only_____	_No Talk	5.4
		_Talk Aloud	5.4
	_Positive Plus _Response Cost_____	_No Talk	3.2
		_Talk Aloud	5.8
Control	_Positive Only_____	_No Talk	5.4
		_Talk Aloud	4.8
	_Positive Plus _Response Cost_____	_No Talk	4.6
		_Talk Aloud	5.6

Table 15b
Table of Means of Post-Experimental
Questionnaire Item 8

Diagnosis	Rule Condition	Talk Condition	Rating
Histrionic	Positive Only	No Talk	5.4
		Talk Aloud	4.2
	Positive Plus Response Cost	No Talk	6.2
		Talk Aloud	4.6
Compulsive	Positive Only	No Talk	6.2
		Talk Aloud	5.0
	Positive Plus Response Cost	No Talk	5.2
		Talk Aloud	5.6
Control	Positive Only	No Talk	6.0
		Talk Aloud	4.2
	Positive Plus Response Cost	No Talk	5.0
		Talk Aloud	4.6

Table 15c
Table of Means of Post-Experimental
Questionnaire Item 9

Diagnosis	Rule Condition	Talk Condition	Rating
Histrionic	Positive Only	No Talk	5.0
		Talk Aloud	3.8
	Positive Plus Response Cost	No Talk	5.2
		Talk Aloud	4.2
Compulsive	Positive Only	No Talk	3.6
		Talk Aloud	4.0
	Positive Plus Response Cost	No Talk	3.0
		Talk Aloud	4.4
Control	Positive Only	No Talk	5.4
		Talk Aloud	3.0
	Positive Plus Response Cost	No Talk	4.2
		Talk Aloud	3.0

Table 15d
 Table of Means of Post-Experimental
 Questionnaire Item 10

Diagnosis	Rule Condition	Talk Condition	Rating
Histrionic	Positive Only	No Talk	6.0
		Talk Aloud	3.2
	Positive Plus Response Cost	No Talk	6.2
		Talk Aloud	5.0
Compulsive	Positive Only	No Talk	4.0
		Talk Aloud	5.0
	Positive Plus Response Cost	No Talk	4.4
		Talk Aloud	6.0
Control	Positive Only	No Talk	6.0
		Talk Aloud	3.4
	Positive Plus Response Cost	No Talk	5.6
		Talk Aloud	4.0

Table 15e
 Table of Means of Post-Experimental
 Questionnaire Item 11 (Positive
 Plus Response Cost Only)

Diagnosis	Talk Condition	Rating
Histrionic	No Talk	6.2
	Talk Aloud	4.0
Compulsive	No Talk	4.0
	Talk Aloud	6.0
Control	No Talk	5.6
	Talk Aloud	4.0

Appendix I:
Figures

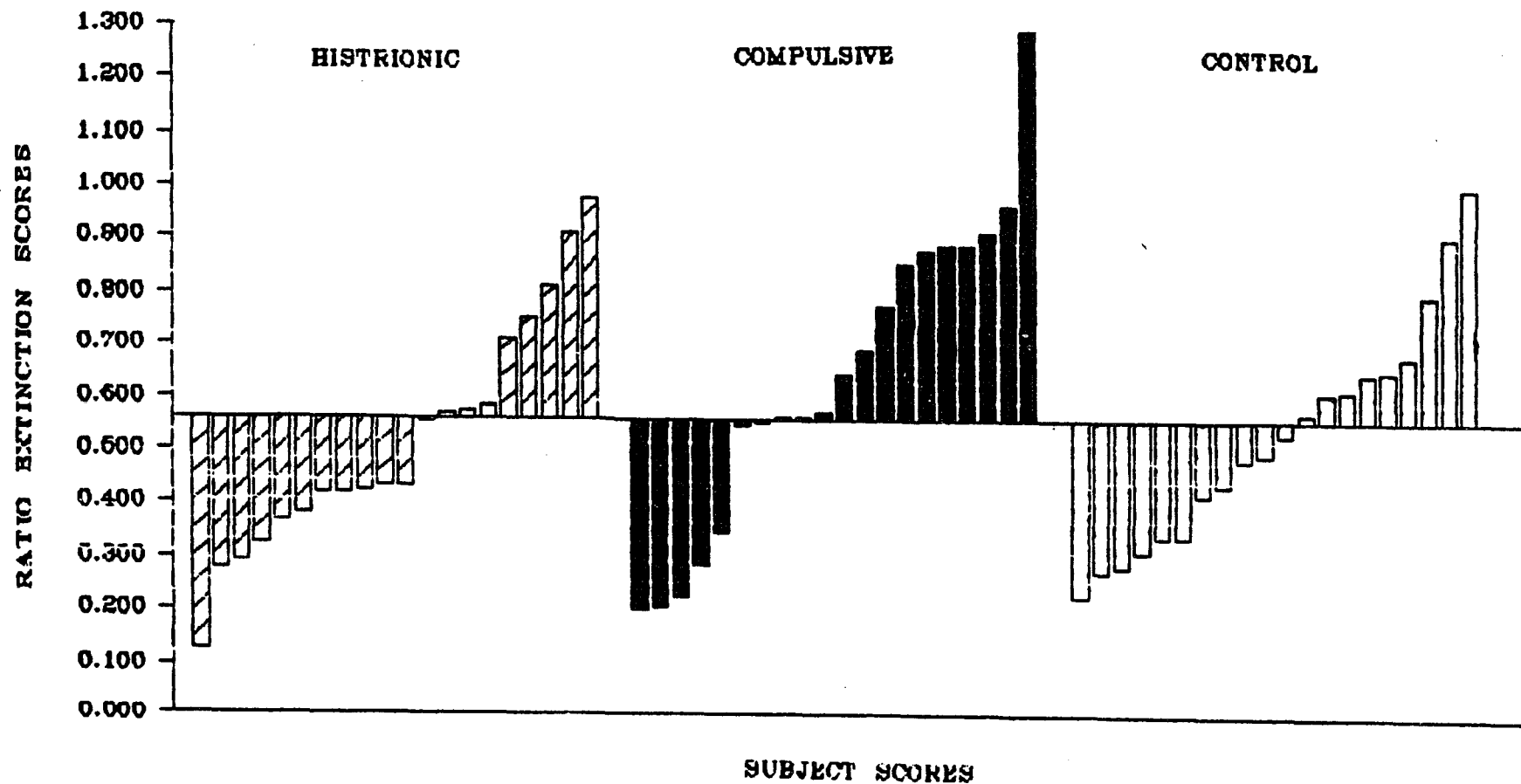


Fig. 1. Subject scores in histrionic, compulsive, and control groups above and below the overall median score in the first phase of extinction.

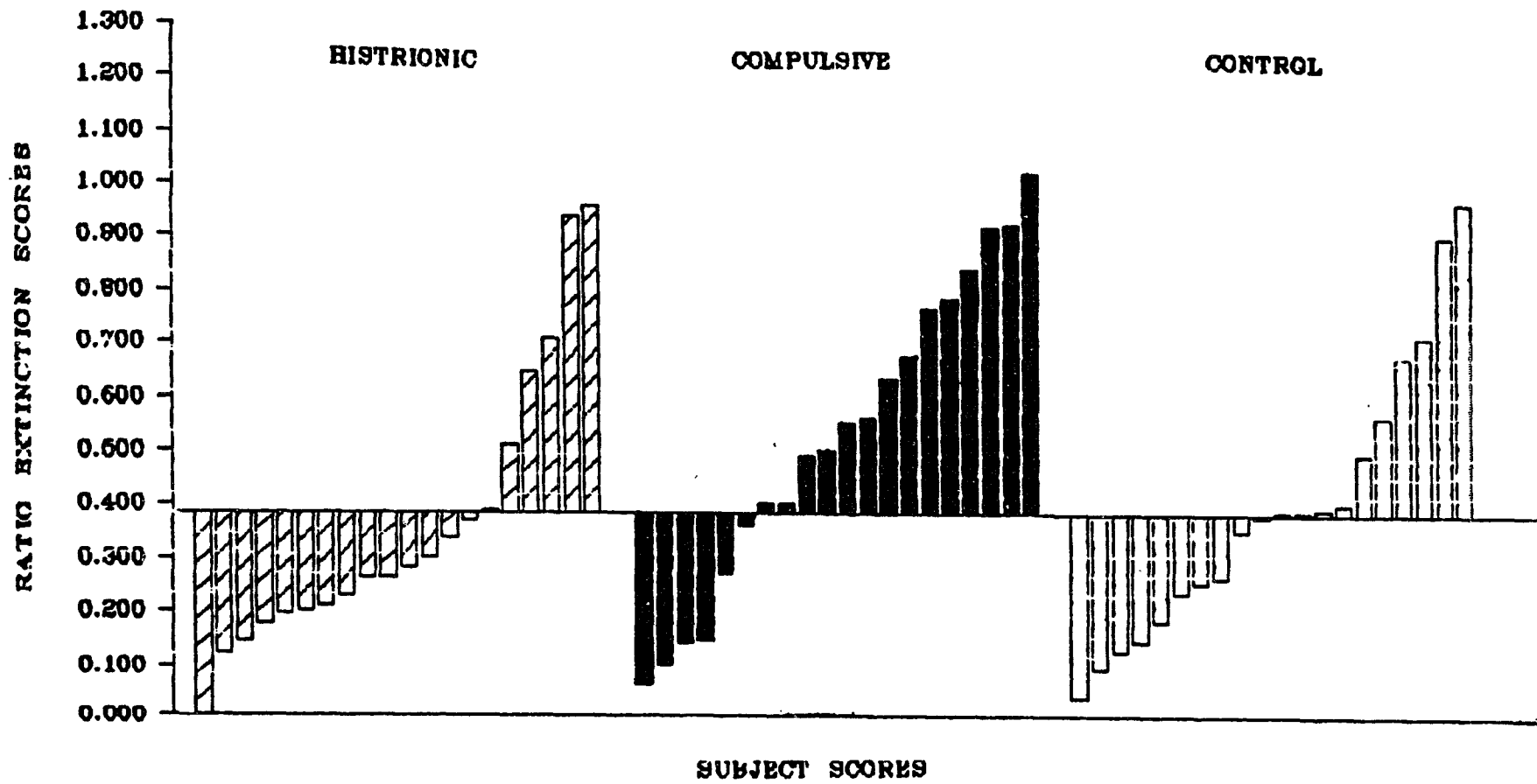


Fig. 2. Subject scores in histrionic, compulsive, and control groups above and below the overall median score in the second phase of extinction.

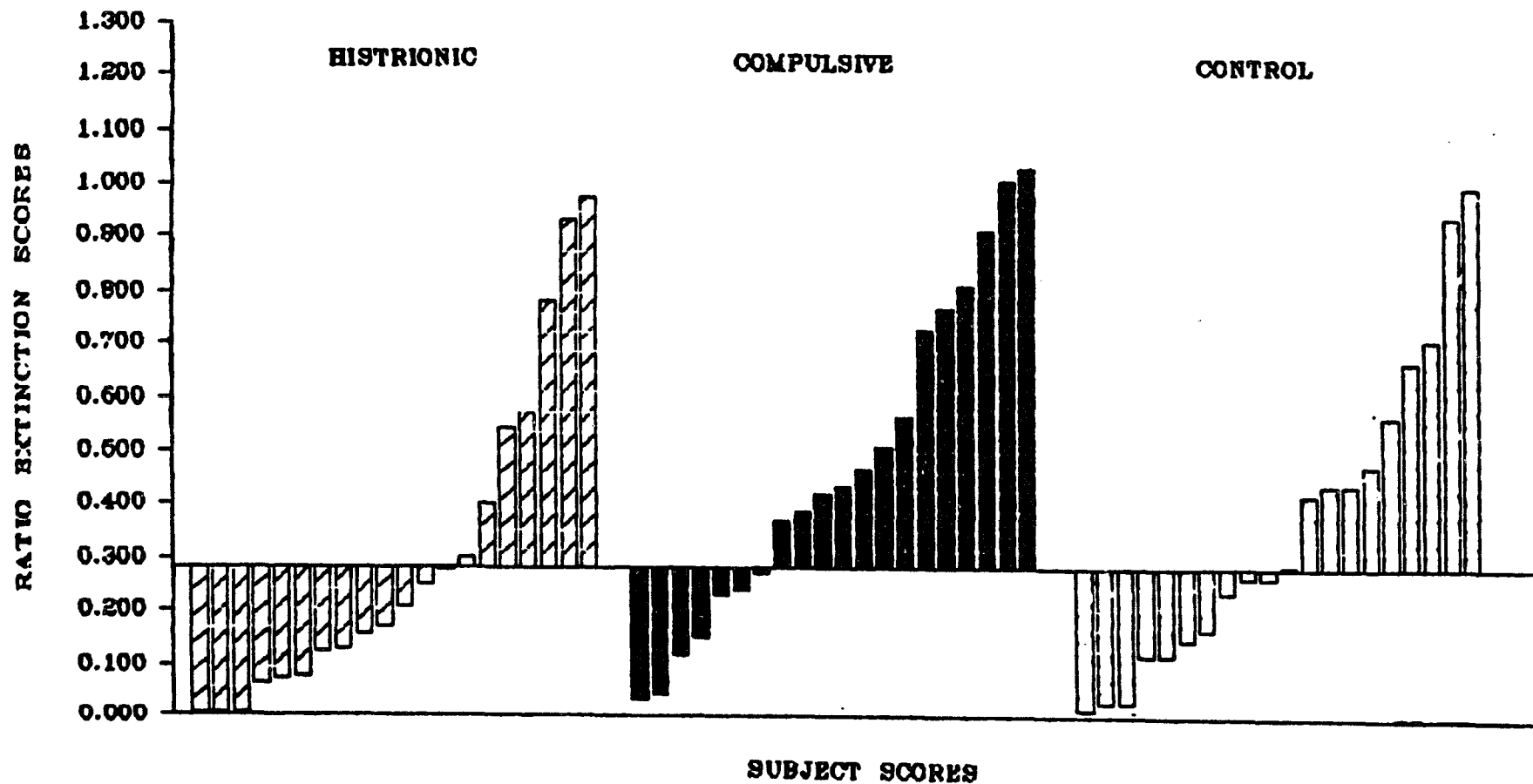


Fig. 3. Subject scores in histrionic, compulsive, and control groups above and below the overall median score in the third phase of extinction.