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THREE ADAPTIVE STYLES OF NEUROSIS DIFFERENTIALLY ORGANIZED AND DEVELOPMENTALLY ORDERED

by

MARILYN JACOVSKY

A dissertation submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

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Abstract

THREE ADAPTIVE STYLES OF NEUROSIS DIFFERENTIALLY ORGANIZED AND DEVELOPMENTALLY ORDERED

by

Marilyn Jacovsky

Advisor: Professor Samuel Messick

A distinct constellation of cognitive processes were proposed to comprise the hysterical, obsessive-compulsive and paranoid styles and to reflect three different levels of cognitive differentiation or progressive abstraction. The relationship of the cognitive processes of sensory representation, conceptual styles, integrative complexity, and scanning to neurotic styles was explored. It was expected that a developmental like pattern of response consistencies among these different kinds of cognitive process tests would emerge and reflect Shapiro's (1965) clinical observations of these styles of neurotic functioning. The objective of this approach was to offer a functional model of complex cognitive processes which were developmentally ordered in a metaphorical sense, according to the logic of Werner (1957) and Witkin (1965). A correlational analysis using the results of the Hidden Pictures Test (developed by Messick modeled on Smith & Klein, 1953 and Thurstone, L. L., 1944) revealed that the hysterical style correctly identified more hidden pictures than either the obsessive-compulsive or the paranoid styles.

These findings were unexpected. The analysis of the results were extended to explore the prevalence of any sex differences. The findings indicated that women and hysterical style personalities are, in general, better at identifying hidden pictures. Hysterical men, however, were better at scanning the Hidden Pictures Test than hysterical women. In addition, men who were better at correctly identifying hidden pictures retained more incidental information about those pictures. This obsessive-compulsive scanning process was not evident for females. Instead, women who correctly identified more hidden pictures were negatively related to a paranoid style of scanning and generally did not fabulate faces. The pictorial content of the test, however, may have confounded the results. The investigation was extended to include a factor analysis of the cognitive process and neurotic style variables. The hysterical and the paranoid style loaded on a sensory factor as well as a descriptive/scanning factor which was interpreted as contributing to their complex relationship at the correlational level. The findings however were unable to provide support for the constellation of hypothesis generated in this study.

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CHAPTER I

INTRODUCTION

The present research deals with a cognitive process view of three styles of neurosis. The work reported here is partially based on Shapiro's (1965) clinical observations of the following styles: hysterical, obsessive-compulsive, and paranoid. It is posited that the cognitive organization of these three styles of neurosis, i.e. hysterical, obsessive-compulsive, and paranoid, employ analogous mental processes of cognition which suggest for each different levels of development. That is, cognitive differentiation and integration become increasingly complex as neurotic development proceeds from the relative globalism of hysterical cognition to the intermediate state of complexity exhibited by the obsessive-compulsive style to a relatively advanced form of differentiation found in paranoid functioning.

The present study proposes a distinct constellation of cognitive processes to comprise the hysterical, obsessive-compulsive and paranoid styles and reflect three different levels of cognitive differentiation or progressive abstraction. The relationship of the cognitive processes of sensory representation, conceptual styles, integrative complexity, and scanning to these neurotic styles will be explored. It was expected that a developmental like pattern of response consistencies among these different kinds of cognitive

process tests would emerge and reflect Shapiro's (1965) clinical observations of these styles of neurotic functioning. The objective of this model was to offer a functional model of complex cognitive processes which were developmentally ordered in a metaphorical sense, according to the logic of Werner (1957) and Witkin (1965).

Theoretical Background

The orthogenetic principle (Werner, 1948) holds that if "development" proceeds, it extends from an undifferentiated, global state to increasing degrees of differentiation and hierarchies of integration. The term development is used in a metaphorical sense, in the current study, in order to organize current stylistic consistencies of behavior rather than concentrate on past, historical incidents. Its use, however, does not imply that if neurotic styles are organized according to the present hypotheses that they derive from the same source. This cognitive-developmental view of neurotic styles is applied to the hysterical, obsessive-compulsive and paranoid style of behavior in an effort to understand if different adaptive consequences occur with different levels of differentiation. A group of impulsive styles originally included in Shapiro's (1965) text have been deleted from the current investigation because they do not, like the other styles, coincide with any one commonly accepted psychiatric diagnosis. Three different constellations, however, of cognitive-developmental variables are suggested to comprise these three different styles of neurosis. Presumably, the pattern of response consistencies among these cognitive process variables would parallel Shapiro's clinical descriptions. At the same these patterns

were expected to reflect the developmental trend posited for progressive differentiation of these styles as described by Witkin (1965) and Werner (1957).

For Witkin (1965) differentiation refers to the complexity of the structure of a psychological system. Specialization of function and a clear separation of self from non-self are characteristic of increased differentiation. Integration is defined as the form of functional relations among parts of a psychological system and between the system and its surroundings. It is presumed that more advanced levels of cognitive differentiation are accompanied by more complex integrations. At the same time, however, adjustment according to Witkin (1965) is primarily a function of the effectiveness of integration within the cognitive system as well as between the cognitive system and the environment.

Werner's organismic-developmental theory reinforces Witkin's views on the nature of adaptation. Both theories are essential for an understanding of neurotic styles using the developmental approach to the present research. In principle, development is based, according to Werner (1948), on the coordination and integration of two assumptions of behavior: (1) the holistic assumption emphasizing the importance of the context or environment for the overall functioning of the individual; and (2) the directiveness assumption stressing the tendency to develop from global entities to differentiated and integrated adult forms. Within this framework, the thought processes of the three styles of neurosis examined here are seen to lie on a continuum which on the one hand increases in differentiation, integration, and complexity,

and, on the other hand, becomes progressively more abstract and divorced from the contextual reality of the individual.

Somewhat related to Werner's theory of development is Haan's (1977) conception of the coping process as the agreement between intra-subjective and inter-subjective reality. The present study suggests a progressive disparity between the inter-subjective view of the environment and the intra-subjective reality for individuals of each of the three neurotic styles. The disparity is expected to reach its height in the paranoid mode of cognition. It appears to result from processing information in an increasingly selective manner. It is presumed that this inter-subjective disparity is exacerbated by highly abstract perceptions which the paranoid cannot validate through consensual agreement. Nevertheless, the nature of adjustment processes are held to vary for different levels of differentiation but at the same time are considered relatively adequate for each neurotic style.

Adaptation is expected to take different forms in global as opposed to highly differentiated personalities. Field dependence/ independence, for instance, reflects a global versus a more differentiated manner of processing information. Witkin (1965) has suggested that the form or the choice of pathology can be predicted by a knowledge of whether or not an individual is field dependent or field independent. In fact, differences in body concept, the sense of separate identity, and kinds of defenses employed have been associated with either a global or more articulated cognitive style. For example, field dependence has been found to be related to hysteria (Zukerman, 1957).

Shapiro's Neurotic Styles as Three Styles of Adaptation

Shapiro's clinical observations of different neurotic styles originally characterized general modes of defensive functioning which cut across thinking, perceiving, affective experience, subjective experience, and behavior. In order to achieve a conceptual analysis of three styles of neurosis which is empirically verifiable, the present investigation applied measures of cognitive controls to those individuals categorized as hysterical, obsessive-compulsive, or paranoid. The pattern of scores on these various control measures will comprise each individual's cognitive style. Similar to neurotic styles, cognitive styles extend across perception and intellect. However, unlike the emphasis on defense and pathology of neurosis, cognitive styles are regarded as strategies for adaptation which reflect different levels of differentiation and integration. Indeed, prior researchers, e.g. Gardner (1962), have found that a type of synthesis occurs in which certain structures originally formed for defensive and non-defensive purposes during pre-adolescence are integrated into more general adaptive structures which can be applied for either or both functions in adulthood.

Along these same lines Witkin (1965) has emphasized:

> . . . the extent of differentiation is unrelated to effectiveness of integration, numerous studies have shown that more differentiated and less differentiated people are not different in sheer presence or absence of pathology, in other words, in being well adjusted or poorly adjusted. Early studies suggested, however, that the form that psychopathology takes, should it develop, is related to the level of differentiation. (p. 21)

In line with these considerations and theoretical formulations, hysterical, obsessive-compulsive, and paranoid styles will be examined as cognitive networks in which the degree of differentiation and integration reflects a certain level of development which in turn reflects the cognitive form of adaptation preferred by each mode. Preference, in this context, is defined as the chosen mode of functioning, although it is assumed that all healthy adults have in their repertoire every one of the generic capabilities for processing information under different conditions.

First of all, the hysteric has been characterized as "impressionistic." Shapiro's description of hysterical functioning can be viewed as representing a primitive global form of cognition which, without the centralized integration of different thought processes, demonstrates a passive receptivity towards the perception of real world events.

The obsessive-compulsive is described, symptomatically, as "logically absurd." His conception of reality does not seem to reflect a preference for going beyond the more concrete aspects of reality to abstract, inferential thinking. In short, it appears that the obsessive-compulsive's cognitive processes are not as abstract (i.e., differentiated and centralized) as the paranoid's style of thinking. The result is a rigid coherence to concrete dimensions of reality.

The paranoid style, in contrast, is diagnosed as "autistic." It is presumed that the relatively advanced differentiation and integration of the paranoid's thought processes enable the paranoid to transcend the representational thought of the obsessive-compulsive. The advanced abstractions of the paranoid's cognitive processes

promote active and flexible inferential thinking. Simultaneously, however, the paranoid's capacity to symbolize reality can result in the kind of inferential deductive reasoning which would be more vulnerable to autistic biases.

Along these same lines, the sensory modality for representational thought is posited to be most primitively constituted by the hysterical style of cognition. The thought processes of the hysteric are believed to be fused with a closeness to somatic-motor activity which finds it ultimate expression in the traditional conversion symptoms. This relationship between thinking and bodily action was originally referred to as the "syncretic character of primitive organization" (Werner, 1948). In theory, it seems that this concrete representation of hysterical thought would make autistic interpretations of reality unlikely. Antithetically, the auditory modality (which is fundamental to the lexical or symbolic form of representation) would, hypothetically, reflect an advanced form of cognitive representation which is commensurate with the abstract nature of the paranoid style. At the same time, however, the detachment from concrete events that follows symbolization would be expected to make the paranoid most vulnerable to pathological influences and idiosyncretic interpretations.

In the past, a developmental conception of the defenses of neurosis was generally held rather than Shapiro's broader, cognitive style view of neurosis. Anna Freud (1937) characterized psychosis by the primitive defenses of denial, distortion and projection. Psychological well-being, in contrast, was identified by what Sigmund Freud considered to be the mature defenses of sublimation,

altruism, humor, and suppression. Anna Freud (1937) elaborated this epigenetic conception of defenses in her work, the Ego and Mechanisms of Defense. Later research (Vaillant, 1977), has supported Anna Freud's theory of a positive relationship between the evolution of mature defense processes and successful adjustment in adult life.

Sigmund Freud was the first to apply a systematic conceptualization of defenses to neurotic symptoms. Although his emphasis was on the descriptive patterning of defenses he was also concerned with the essential processes involved in defensive behavior. The present study follows Shapiro's model in exploring the cognitive processes related to three major neurotic styles.

The Present Investigation

Shapiro (1965) has addressed the issue of how defenses work and expanded Freudian speculations by proposing that the defensive process be understood in terms of general modes of functioning, which encompass defensive patterns and neurotic symptomotology. Within this context, the defensive process is understood in terms of broader thought and attentional processes or cognitive controls. It is the total constellation of these controls and their unique arrangement within the individual that constitute the particular cognitive style of neurosis to which Shapiro refers. However, Shapiro's shift in emphasis to neurotic styles as the precursors of defensive behavior has not been accompanied by a systematic appraisal within a cognitive developmental framework. Instead, the developmental nature of defense mechanisms has only been the object

of theoretical speculation. Accordingly, the present study will address the application of cognitive control principles (rather than defenses) to specific styles of neurosis within a developmental context.

Neurotic Styles and the Developmental Sequence of Sensory Modalities

Prior investigations (Bruner, 1966; Piaget, 1954; 1958) have observed developmental changes in the use of different sensory modalities. A sensory modality is defined as a system which interacts with the environment through one of the basic senses (Bissell, White, & Zivin, 1968). The developmental transition for the use of sensory modalities has involved a progression from reliance on the kinesthetic modality to the modality of sight and then to the auditory modality. At the same time, this developmental tendency is accompanied by an increase in inter-sensory integration as observed by Birch and Lefford (1963).

This developmental trend in the use of three different sensory modalities is commensurate with Bruner's (1964) proposal for three systems of processing information and constructing inner models of external reality. Similarly, Bruner's model is based on a continuum ranging from concrete to abstract cognitive representation. The enactive (kinesthetic) mode refers to the sensations of movement, pressure, and muscular tensions, i.e., skeletal and visceral. The iconic or image modality (referred to here as the visual modality) represents the perceptual processes in processing information visually. There is some confusion, however, in the literature

regarding the mode of thinking originally termed symbolic by Bruner. Horowitz (1978) refers to essentially this same modality as lexical, and still others have categorized this modality as auditory. Therefore, since audition is the sensory modality for thinking in words which is the predominant manifestation of symbolic thinking, the current study will employ hearing as the primary sensory mode of symbolic thinking.

With these distinctions in mind these three modes, respectively, are held to characterize Shapiro's three styles of neurosis and to reflect a developmental progression from concrete to abstract conceptualization as follows: (1) hysteria-enactive mode, (2) obsessive-compulsive-visual mode, and (3) paranoid-auditory (lexical/symbolic) mode. Consistent with Bruner, Horowitz (1978) states that representation is not limited to the unconscious organization of information. Rather, the organizational form of information can be part of conscious as well as unconscious experience. Therefore the current method of investigation will employ a sensory modality test (i.e., Betts' Questionnaire Upon Mental Imagery) to assess how each individual subjectively experiences his or her own ability to invoke different sensory modalities.

Paramount to the current study is the understanding that the adult, unlike the child, has at his or her disposal all three types of sensory modes which overlap and interrelate rather flexibly. Normally, as Horowitz (1978) states, what is represented in one system can be translated into other modes:

Enaction blurs into image representations in the form of kines-

> thetic, somesthetic, and vestibular or visceral images. Image representation blends with lexical representation in the form of faint auditory, kinesthetic or visual images of words. Words and enactive modes merge through subvocal speech . . . But when there is a loss of functional capacity, or when defensive operations block one or another form of representation, then there is evidence in subjective experience of cleavage between systems. (pp. 92-93)

In extreme states of pathology, transformations from one mode to another may not be subjectively possible. In contrast, it is expected that normal individuals whose cognitive styles are categorized as hysterical, obsessive-compulsive, or paranoid will generally have the capacity to utilize all three sensory modes. However, it is posited that the relative state of cognitive complexity will be related to the particular sensory mode which is invoked most effectively as opposed to the others.

In support of this hypothesis, Lord (1980) has found that within the same individual lexical or symbolic modes are preferred as memory aids for information about the self. Images, in contrast, are generally preferred as memory aids for information about other people. These divergent results are interpreted by Lord (1980) as reflecting a preference for semantic representation regarding more complex and differentiated situations, i.e., self-schemas are more complexly organized than other-schemas. These results suggest that each individual does have in his repertoire different representational modes. Perhaps these findings can be extended to the current hypotheses. That is, the more complex cognitive structure hypothesized for the paranoid style is associated with the auditory mode of representation and that the less differentiated thought processes of the obsessive-compulsive style is related to visual

thinking more so than to any other modality. These combinations are based on the lexical-symbolic nature typical of the paranoid's delusional system and the facility for detail described as typical of the obsessive-compulsive style. However, an alternate explanation could argue that self-schemas may not be more complex than self-other but entail more propositional content because of the belief structure which is involved. Similarly, the delusions typically associated with the paranoid style are also consistent with a propositional system. Self-other schemas, in contrast, may stress configurational information which reflects more of an interpersonal balance structure unrelated to progressive degrees of sensory differentiation or the obsessive-compulsive style.

Nevertheless, intersensory integration seems to be crucial for successful adaptation to the environment. In fact, improved perceptual differentiation, intersensory processing, and improved motor control were found to be facilitated by the intersensory integration achieved with increasing age (Birch & Lefford, 1963; 1967). These findings highlight the possibility that the primary modes of representation posited for the hysterical, obsessive-compulsive, and paranoid styles may, in general, reflect different levels of intersensory integration.

These different levels of intersensory integration may be a result of biologically based traits that appear in infancy. Escalona (1959), for instance, has suggested that infants differ in their sensitivity to different sensory modalities. Theoretically, these differences may determine fundamental preferences or abilities for the enactive, visual, or auditory modes. If so, such predetermined

traits may be intimately related to the adult level of cognitive differentiation and to neurotic styles in general.

A Developmental Like Conception of the Cognitive Controls and the Defenses of Neurotic Styles

It was predicted for the present research that the specific representational level of differentiation associated with each of the three styles of neurosis would also be related to a pattern of cognitive controls reflecting a similar sequence of development. This same constellation of cognitive processes was held to be intrinsic to aspects of defensive functioning. In fact, the pattern of cognitive processes that achieve the exclusion of contents from consciousness among each of three neurotic styles seem to be differentially organized and developmentally ordered.

The research of Gardner et al. (1959) has provided the linkage between defenses and cognitive styles. At the time, these findings, in conjunction with Shapiro's clinical observations implied a clear developmental trend in the choice of defense and the nature of the cognitive structures associated with that defense. Gardner et al. (1959) initiated the first systematic approach which demonstrated that the tendency to use repression was associated with the leveling extreme of the leveler-sharpener cognitive control principle. Along these same lines, Shapiro (1965) and others (e.g., Witkin, 1965) have found that the hysteric's form of cognition favors repression, i.e., the tendency not to bring to one's own attention that which is remotely experienced as emotionally charged. However, the specific

pattern of cognitive controls or process variables that comprise the cognition of individuals diagnosed as hysterical per se remain unidentified. The reliable tendency of repressors to blur similar memories and to lose differences in remembered objects has been termed leveling (Gardner et al., 1959) and is in line with Shapiro's diagnosis of hysterical cognition. In fact, the leveling principle describes succinctly the blurred memory and deficiency in factual knowledge which typically characterizes the hysterical style.

In addition, hysterical style scores have been negatively related to the ability to disembed simple geometric figures that are hidden within a larger, more complex figure (Zuckerman, 1957). Again, these results are concordant with Shapiro's contention that the hysterical style involves a global impressionism. From a developmental perspective, these findings reinforced the present speculation that the cognitive controls associated with the hysterical style are most primitive. In Werner's (1947) sense, this display of orthogenetic development proceeds as follows: "Wherever development occurs, it proceeds from a state of relative globality and lack of differentiation to a state of increasing differentiation, articulation, and hierarchic integration." (p. 126)

The obsessive-compulsive style of cognition has been found to rely heavily on isolation as a major defense (Shapiro, 1965), i.e., "the splitting of affect from idea, and idea from idea" (Gardner & Long, 1962). In some ways, the obsessive-compulsive style is diametrically opposed to hysterical behavior. The broad but focussed scanning which has been associated with isolation (Gardner & Long,

1962; Wachtel, 1967)) seems to extend awareness in contrast to the lack of awareness typical of hysterical repression. Essentially, the propensity towards careful examination before making decisions that is involved in this type of scanning confirms Shapiro's clinical observations of the obsessive-compulsive's quest to compensate for the doubt and uncertainty of his experiences. It appears that whereas the hysteric represses ideas and also experiences emotion, the obsessive-compulsive experiences ideas to the neglect of emotion. This progression from feeling to thoughts appears to parallel the development from enaction to imaging to symbolism and to reflect, in part, different levels of abstract development.

The paranoid style of cognition has been associated with projection as a predominant defense, projection being defined as the "externalization of motives and feelings unconsciously conceptualized as bad" (Shapiro, 1965). Like isolation, projection has also been linked to extensive scanning (Gardner & Long, 1962) although the two defenses are presumed to result from different psychosexual conflicts. Gardner and Long (1962) note that the same scanning principle seems to serve a different purpose for each neurotic style. Whereas scanning for exactness appears to compensate for the obsessive-compulsive's uncertainty, the paranoid's scanning for exactness appears to offset suspicion and distrust. These findings reflect Shapiro's observation regarding the paranoid style of attention as biased and narrowly fixed on one's own ideas, while searching only for confirmation. Implicitly, the defense of projection would seem to require a symbolic orientation for the paranoid's biased interpretations to be successfully, although idiosyncratically

attributed to the "other." This symbolic orientation coupled with the confirmation of such a narrow focus of attention would appear to be a logically irrefutable system. That is, the paranoid style permits the interpretation of all events as "symbolic" of their own autistic suspicions of others. At the same time, these closed systems cannot be empirically invalidated. Again, this hypothetical proposition of the symbolism involved in projection supports a relatively advanced notion of cognitive processing.

The defensive patterns of these three neurotic styles, as mediated by different cognitive controls, seem to reflect a developmental pattern which progresses in the degree of differentiation of repressed content from the self. Initially, emotionally threatening information is repressed by the affective-cognitive process of hysterics and remains repressed and undifferentiated from self. The intellectualization of such information by the obsessive-compulsive brings it into awareness but divests it of all affect. In this respect, the obsessive-compulsive only partially, i.e. intellectually, differentiates the reality of emotionally loaded information from the self. Finally, the paranoid's cognitive style goes beyond the obsessive-compulsive's by projecting such threatening content on to another as entirely separate from oneself.

The above proposed evolution of cognitive differentiation parallels Werner's orthogenetic principle of increasing differentiation from a state of relative globality and a lack of differentiation which also advances from self to non-self as posited by Witkin. It was expected, that the constellation of cognitive controls actually found

to be associated with each of the three neurotic styles (hysterical, obsessive-compulsive, and paranoid) would also illustrate a developmental progression which was similar to the three developmental levels implied by the defenses of the neurotic styles. However, the increasingly selective processing of real world events suggested by these three styles of cognition are held to violate Werner's concern for the processing of the entire context of the individual. As a result, a biased interpretation of reality is presumed to advance with each style of neurosis. A progressive distortion of reality is, in theory, expressed most primitively by the sensation of the hysterical individual, intermediately by the perception of the obsessive-compulsive and most complexly by the conceptual inferences drawn by the paranoid. In short, it is posited that the very contrast of the levels of differentiation represented by these three neurotic styles contribute to the form of adaptation as well as pathology. It is this basic assumption that has led Witkin to note that the selective projection of the paranoid, for instance, presupposes a self that has achieved some degree of differentiation from others in comparison to the more global and undifferentiated repression of the hysteric's style.

The present investigation attempts to explore these defensive patterns by exploring the cognitive processes that comprise each neurotic style based on the measures that follow.

Measures Used to Assess a Cognitive-Developmental View of Three Neurotic Styles

The major aim of this study was to demonstrate that neurotic

styles can be developmentally ordered. The data yielded by the following tests were expected to validate and clarify a cognitive-developmental interpretation of neurotic styles.

1. The Paragraph Completion Test (Schroder, 1969) to provide a measure of the integrative component of conceptual complexity
2. The Hidden Pictures Test (developed by Messick modeled on Smith & Klein, 1953 and Thurstone, L. L., 1944) to assess scanning styles
3. The Extended Inventory of Hysterical, Obsessive-Compulsive and Paranoid Styles (Hahn, unpublished manuscript)
4. The Shortened form of Betts' Questionnaire upon Mental Imagery (Sheehan, 1967) to assess sensory modes for cognitive representation
5. The Object Sorting Test (Clayton & Jackson, 1961) in conjunction with the Conceptual Style Sorting Test (Sigel, 1967) to assess relational, analytic-descriptive, and categorical-inferential conceptual styles
6. The following Differential Personality Inventory (DPI) (Jackson & Messick, 1970) scales to provide convergent validity for the Paranoid Style Scale of the Extended Inventory:
   a. Cynicism
   b. Hostility
   c. Ideas of Persecution

7. Test of Verbal Intelligence from the I.E.R. Intelligence Scale CAVD (Thorndike et al., 1926) for the discriminate validity of Neurotic Styles as independent of intelligence.

The current investigation attempted to frame the hypotheses which follow in terms of the data yielded by these instruments.

Hypotheses

The Enactive Mode of Representation and Characteristics of the Hysterical Style (Hypothesis 1)

Enactive (kinesthetic) representation is held to be the most primitive strategy of information processing. Werner (1947) refers to this rudimentary form of perception as "physiognomic perception." This process is described as syncretic in nature, i.e., emotional experience is intimately related to somatic-motor activity. Objects are understood through their dynamic properties or through the bodily experience they elicit in the person. In this respect, enaction or muscle tensing of some sort directly "presents" a meaning rather than "represents" it (referred to as protosymbols by Werner, 1963).

Hysteria, historically, has been associated with "la belle indifference" and conversion symptoms. Typically, hysterics have been described as exhibiting physical symptoms without psychologically integrating them with affect (Freud, 1959). Similarly, emotional outbursts tend to be regarded with the same indifference that accompanies conversion symptoms (Shapiro, 1965). Consonant with this form of hysterical symptomology is the enactive mode of representation which relies primarily on the motor response system.

The particular process of thinking through enactions would seem incompatible with a developmentally advanced form of hierarchical integration. As a result, diffuse physical and emotional expressions might predominate without the centralized awareness possible with symbolic representation. That is, lexical (symbolic) representation would, in contrast, logically seem to facilitate integration by the very ease of interpreting all incoming stimuli within the context of the same basic system. This theory leads to the formulation of hypothesis 1 for the present research.

Hypothesis 1: Hysterical style scores will be positively related to the enactive mode of representation and significantly more so than to either the visual or auditory modes.

The Image Mode of Representation and Characteristics of the Obsessive-Compulsive Style (Hypothesis 2)

Visual representation allows for continued information processing after perceptual events have occurred. Information can be reviewed for new meanings and comparisons can be made in the absence of the objects of comparison; i.e., "thought by trial perception" (Horowitz, 1978) may occur. The representation of form and spatial relationships of objects can be most accurately conveyed through visual images. In support of this contention, Paivio (1971) found that images aid retention of information by "providing a conceptual peg" for classification both in storage and retrieval processes. That is, the concrete quality of image coding systems can provide the simultaneous comparison of information unavailable in the sequential ordering of information by the lexical system.

The obsessive-compulsive style (as described by Shapiro, 1965) is symptomatically confined to the interpretation of details according to strict rules. The extreme manifestation of this condition leads to an impairment of substantial reality or "logical absurdity." This rigid adherence to a narrow and concrete conception of reality is combined with a quasi-moral pressure of an "I Should" imperative or a quasi-external directive. "Overcontrol," that is, restriction of affect, reflects still another aspect of the obsessive-compulsive's rather explicit definition of "how to be." The current study suggests that each of these symptoms are exacerbated by a strong reliance on image formation. Indeed, Shapiro's characterization of the obsessive-compulsive's style "to act as his own overseer as if in response to the requirements of some objective reality" seems to reflect a bias for representation which lies somewhere in between the more primitive kinesthetic processing of information and the more evolved cognitions of symbolic inference. The achievement of the obsessive-compulsive's technical excellence and vividly detailed memory appears most understandable if imaging is the predominant mode of representation. Reliance on image formation provides, at least theoretically, an explanation for the process variables that account for such technical prowess, which under defensive circumstances, are relied upon to the neglect of all affect.

In contrast to the orthogenetic interpretation (Werner, 1948) of neurotic styles however, Smokler and Shevrin (1979) relate the obsessive-compulsive style of processing information to a relatively

overactive left hemisphere and the hysterical style to an overactive right hemisphere. If Smoker and Shevrin (1979) are correct, then obsessive-compulsive functioning might be linked to sequential (auditory) functioning consistent with the left hemisphere and the hysterical style might be linked to the visuospatial functioning of the right hemisphere. The current theory, however, leads to the formulation of hypothesis 2 for the present research.

Hypothesis 2: Obsessive-compulsive scores will be positively related to the image mode of representation and significantly more so than to either the enactive or auditory modes.

The Auditory Mode of Representation and the Characteristics of the Paranoid Style (Hypothesis 3)

Bruner et al. (1966) found that for most children, the final stage in sensory modality preferences is usually represented in the symbols of language, predominately through hearing. Audition reflects the mode crucial for lexical (symbolic) thought. It is, genetically, the most advanced mode. In the enactive and visual mode of representation, the inner and external forms of the "symbolic vehicle" and "referential object" (as described by Werner & Kaplan, 1963) were more closely fused. At the auditory level of representation, however, the heard word or symbol is very different from the internal (cognitive form). The perspective which relies on image formation is limited to an objective, concrete system of representation. Audition, however, reflects the predominant sensory modality or "symbolic vehicle" by which the symbols of language can promote a logic of propositions which result in higher order

abstractions. In this respect, conceptual modes are permitted to dominate and transcend the sensation of enaction and the perception of image formation.

The delusional constructions of the paranoid style reflect a strong reliance on this symbolic mode of information processing. Paranoid delusions reflect organizational operations that require the sophisticated logic of inferential thinking provided by auditory (lexical) representation. For example, since words are used, the sequential organization of the lexical mode permits the identification of persons more clearly than prior modes (Horowitz, 1978). Paranoid delusions, at the same time, can be seen as defensive maneuvers against a clarity of designation regarding the source of action. Such delusions may tend to be serial and involve shifts in designation, for example, "I hurt her, no? She hurt me." In this way, the clarity of identity designation is defended against by displacing the aim, e.g., hurting (Horowitz, 1978).

The paranoid's subjective reality and delusional system is based on "clues" of hidden meaning and a disdain for apparent reality (Shapiro, 1965). This tendency seems opposed, in fact, to the more visual and concrete thinking represented in the obsessive-compulsive style of functioning. For the paranoid these "clues" or symbols are used to reinforce biased preoccupations by way of abstract inferential processes as in the example described previously. Shapiro maintains that the paranoid style is psychologically more primitive than the obsessive-compulsive style. According to him, it is more extreme, less stable, and tense, antagonistic, and more concerned with instinctual conflict.

The current research hypothesizes that the general form of cognitive functioning required for the paranoid's delusional constructions are cognitively more complex in nature than that required for the hysteric or the obsessive-compulsive. However, the paranoid's advanced strategy of information processing is invoked side by side with highly selective biases of suspicion and distrust. Consequently, a decompensation of reality rather than a heightened awareness of the real world occurs in an extremely complex and convoluted system of delusions. It is a system which is internally logical and cohesive although relatively divorced from the gestalt of experience in reality. Accordingly the third hypothesis for the present study is as follows.

Hypothesis 3: Paranoid scores will be positively related to the auditory mode of representation and significantly more so than to either the enactive or visual modes.

The Developmental Nature of the Cognitive Controls Associated with Three Neurotic Styles

"Cognitive style" has been defined as the total arrangement of highly generalized forms of cognitive controls which appear in one's perceptual behavior as well as in one's recall and recollection (Klein, 1954). The findings of Klein and his collaborators (1954) support Shapiro's major contention that neurotic differentiation effects different cognitive styles of functioning which determine the symptom form, defense mechanisms, and adaptive traits as well. Previous research (Klein, 1954; Gardner & Holzman, 1959) has suggested the conceptual similarity of defenses and cognitive system principles:

> Defenses, like cognitive system principles are mediating structures. Defenses mediate between impulses and needs on the one hand and the pressures of reality constraints and/or internalized attitudes that conflict with impulses and needs on the other. Cognitive system principles mediate between purposes, intentions, need states on the one hand, and adaptive requirements of a stimulus situation on the other. (Holzman & Gardner, 1959).

These conclusions have led some investigators (e.g., Holzman & Gardner, 1959) to speculate that the same segment of behavior can be viewed in terms of its defensive implications or its adaptive aspects. The procedure for the current research categorizes subjects in terms of cognitive styles of neurosis as adaptive strategies among a relatively normal population of individuals. This investigation will be based on an extended version of Hahn's (unpublished manuscript) Inventory of Obsessive-Compulsive and Hysterical Styles to include the paranoid style as well.

Neurotic Styles and Conceptual Styles (Hypotheses 4, 5 & 6)

Three conceptualizing styles have been defined as describing consistencies in the uses of particular kinds of stimuli properties and relationships as the bases for forming concepts (Messick, 1976). The first, thematic categorizing, the tendency to use functional relations among stimuli, has been viewed as the most primitive of the three formal bases for conceptualizing (Bruner, 1966; Kagan, Moss, & Sigel, 1960; 1963). Prior research (Werner, 1948) has demonstrated that the elements constituting the world for the infant and primitive man are identified in terms of their pragmatic or functional utility. In addition, pathological regression has been accompanied with a reversion to this conceptualizing style (Werner,

1948). The hysterical style, it is expected, will depend primarily on thematic conceptualizing. Conversion symptoms, which have been typical of hysterical cognition at its extreme, would seem consonant with this form of conceptualization which stresses functional relations, particularly between psychological conflicts and the physical symptoms which are functionally, or at least thematically, related.

Analytic-descriptive conceptualizing or the analysis of descriptive attributes (described by Messick, 1976) has been viewed as holding a developmentally intermediate position among the three conceptual styles (Bruner et al., 1966). The obsessive-compulsive's heavy reliance on description and detail makes the analytic-descriptive form of conceptualizing the most likely means of achieving the technical excellence typical for this neurotic style.

Categorical-inferential conceptualizing or the inference of class membership (Messick, 1976) has been viewed as the most advanced form and the most commonly used style among adults of the three conceptual styles (Bruner, 1966). The paranoid style, characterized by delusional thinking in an effort to confirm preconceived suspicions, would seem to be based on this form of inferential-deductive reasoning. Hypotheses 4, 5, and 6 for the present study are thus as follows.

Hypothesis 4: Hysterical style scores will be positively related to thematic conceptualizing and significantly more so than to either the analytic descriptive or categorical-inferential styles.

Hypothesis 5: Obsessive-compulsive style scores will be

positively related to analytic-descriptive conceptualizing and significantly more so than to either the thematic or categorical-inferential styles.

Hypothesis 6: Paranoid style scores will be positively related to categorical-inferential conceptualizing and significantly more so than to either the thematic or analytic-descriptive styles.

Neurotic Styles and Integrative Complexity (Hypotheses 7, 8 & 9)

According to Schroder (1967), adaptation requires first the selection of specific kinds of information from the environment (referred to as component or content variables). Second, a program or set of rules is necessary to combine these items of information in different ways. Integrative complexity, the structural or information-processing variable performs this latter function. Greater integrative complexity as maintained by Schroder (1967) involves: (a) more basic parts or dimensions for perceiving and scaling a range of stimuli, and (b) more complex organization of schemata or rules for organizing the parts." The basic aspects of structure are defined by Schroder (1967) as:

> 1. Differentiation: the number of elementary dimensions (stable, unique orderings of stimuli in a complex cognitive structure (such as a multidimensional perception).
> 2. Discrimination: the fineness of organization among the stimuli that are ordered along a given dimension. This variable is believed to be related to the abstractness of the schemata used in organizing the dimension.
> 3. Integration: the complexity of the schemata that determine the organization of several dimensions involved in a complex cognitive structure. (p. 165)

Differences in structure or information processing are said to result in different adaptive consequences regardless of whether or not the

same informational components are involved. In line with Schroder (1967) and Witkin (1965) it is predicted that hysterical, obsessive-compulsive and paranoid styles reflect different conceptual levels of integrative complexity which are developmentally ordered and in turn display different forms of adaptation as well as pathology.

Analogously, this process of integrative complexity distinguishes development per se from other types of change over time as formulated by Werner's (1948) "orthogenetic principle." The coordination and integration of one's context with one's tendency towards cognitive differentiation is a prerequisite for growth.

The hysterical style of cognition is typically deficient in this integrative capacity. Shapiro (1965) has observed: "But this integrative development does not occur in hysterical people, no more in the affective than in the cognitive sphere . . . This 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 . . ." (p. 131). The shallowness and preemptoriness of affect as well as the diffuse and labile emotions of hysterical cognition described by Shapiro (1965) seem to be manifestations of a primitive, global level of integrative development. Schroder (1967) has alluded to such abrupt, compartmentalized behavior as the manifestation of low integrative complexity or absolute rules of integration. For Werner (1948) this very diffuseness is a primary quality of primitive organization. Indeed, the lability in the sensorimotor and perceptual organization of the child seems closely replicated by the labile effect of the hysterical adult.

Additionally, the hysterical style of neurosis is described as an incapacity for persistent intellectual concentration, resulting in a passive impressionability and a non-factual world (Shapiro, 1965). These features seem to constitute a cognitive style that exhibits vague thought content or the inhibition of cognition sometimes described as the naivete of hysteria. Shapiro adds that this immediate, global impressionism contributes to a subjective world which is simply and romantically constituted by only heroes and villains. This romantic outlook appears to be an outgrowth of an obliviousness to any contents or recollections of real life that entail complications and contradictions. It is a cognitive tendency to over-simplify reality. Research findings (e.g., Schroder, 1967) suggest that in structures with a low integration index, behavior is anchored to external conditions. The restriction of internal integrative processes and alternate resolutions or interpretations result in the external control of behavior which can be seen in the hysteric's "passive impressionability." This condition limits a sense of self and internal causation.

The obsessive-compulsive style of cognition and the harshness of the superego seem to reflect only the moderate development of the capacity for conceptual integration. The externalized pressure of the "I should" patterns of behavior as if in response to the requirements of some objective reality outside of oneself are founded on doubt and an over-compensation for that doubt in a system which is only moderately differentiated and integrated. The result appears to be a heavy and relatively inflexible reliance on a formal logic

which coordinates all experiential phenomena according to an "objective system" outside oneself. Such cognitive transformations of subjective life into technical, concrete features is believed to reflect a level of integrative complexity which is significantly more advanced than the apparently simple and passive impressionability of hysteria, but is still more concrete than the inferential thinking of paranoia.

The paranoid style is characterized by suspicious preoccupations. Such suspicious biases are reinforced by the paranoid's neglect of the "umwelt" or context in which s/he is immersed. The paranoid searches only for those clues that support these preconceived notions. The delusional system which provides such proof is comprised of complex relationships utilizing symbols and which are internally well integrated within a highly logical governing system. However, the higher abstraction implicit in this internal system of logical relationships is relatively independent of reality. In this way a potentially infinite number of propositions which are complexly interrelated and integrated can be formulated and confirmed without reference to reality. Such delusions are highly systematized, and although they result in an extremely narrow focus of reality there is no breakdown in the integrative complexity of the cognitive system. In fact, Witkin (1967) has suggested that delusions represent attempts to maintain separate identity and ego integrity. The logical structure of delusions therefore, do not reflect a fusion between self and non-self but require their distinction. In comparison, hallucinations imply a dissolution of ego boundaries where inner states and reality become indistinguishable.

Werner and Kaplan's (1963) holistic assumption emphasizes that an analysis of development should consider the reciprocity between the organism and the environment, as well as the level of differentiation and integration achieved. Guided by this theoretical principle it would appear that the paranoid's delusional thinking reflects an advanced level of integrative complexity. At the same time, however, the paranoid's grasp of reality is significantly limited by a form of inferential thinking which is based on a selective perception of the context of reality. Thus the next three hypotheses for the present study are:

Hypothesis 7: Hysterical style scores will be negatively related to integrative complexity.

Hypothesis 8: Obsessive-compulsive style scores will be moderately and positively related to integrative complexity.

Hypothesis 9: Paranoid style scores will be highly and positively related to integrative complexity.

Neurotic Styles and Scanning (Hypotheses 10, 11 & 12)

Scanning refers to the extensiveness of attention deployment. Different modes of scanning result in a difference in the vividness of experience and the range of awareness. Ordinarily, meticulousness, concern with detail, and sharp, wide ranging focus of attention indicates the propensity for extensive scanning (Messick, 1976).

Hysterical cognition is characterized by Shapiro (1965) as relatively lacking in sharp focus of attention and highly susceptible to what is immediately impressive, striking, or obvious. This lack

of active concentration and sustained intellectual interest combined with a passive impressionability is presumed to be incompatible with the wide span of attention and concern typically associated with scanning. At the same time, the global, undifferentiated awareness typical of the hysterical would seem consonant with a preference not to scan, and a more primitive cognitive form.

Gardner et al. (1959) concluded that broad, rather than narrow attention was characteristic of the obsessive-compulsive personality because obsessives were constantly scanning the field. Wachtel (1967) has made an important distinction, however, using the metaphor of a wide or narrow beam. Specifically, the width of the beam or the fidelity of its focus is a separate consideration from how much the beam moves around the field; e.g., the obsessive-compulsive personality can show a wide breadth of attention regarding scanning but, metaphorically, demonstrate a narrow and sharply focussed beam. In the case of the obsessive-compulsive style Shaprio (1965) maintains that scanning serves to provide as exactness of information to offset a basic sense of doubt and uncertainty. Subsequently, the advanced differentiation which would logically require or be associated with extensive scanning simultaneously results in a rigidly technical perception of reality.

The association of extreme scanning has also been established for projection, a preferred defense of the paranoid style. Scanning, in this case, may occur with a narrow focus. This focus is determined to offset the paranoid's suspicion and doubt with a danger signal detection effort provided with extensive scanning (Messick,

1976). It is important to note, however, that the paranoid's tendency to scan with a fixed and narrow focus is posited to be solely for confirmation of preconceived biases. In this respect, paranoid scanning violates the importance of context in deciphering information objectively. According to Werner's (1963) developmental context:

> The holistic assumption is opposed to any view that would treat an element (for example, a movement, a momentary experience) as if it possessed a fixed structure and meaning, irrespective of the whole or context of which it is a part. It thus makes one doubt the value of relating, solely on the basis of material simplicity, elements torn from quite different functional contexts. (p. 4)

In line with this consideration, Shapiro (1965) stresses the paranoid's violation of the holistic assumption in two aspects with regard to the construction of a subjective world as follows: ". . . On the one hand, a biased seizing of 'significant' clues from their context and, on the other hand, a loss of appreciation of that context, which is just what normally gives the small clue item its actual significance" (p. 66). These characteristics coupled with the paranoid's "hyperalertness" are similar to a "soldier likely to shoot at shadows" (described by Shapiro). Consequently, this style is expected to fabulate faces on the scanning task. Undoubtedly, in its extreme, this tendency can be antagonistic to the overall functioning of the individual in the real world despite the intensely directive nature of the paranoid's extensive scanning ability. Thus, hypotheses 10 through 12 of the present study are as follows:

Hypothesis 10: Hysterical style scores will be negatively related to scanning as the correct identification of the Hidden Pictures Test.

Hypothesis 11: Obsessive-compulsive style scores will be positively related to scanning as the correct identification of the Hidden Pictures Test and to the retention of incidental information in the pictoral scene.

Hypothesis 12: Paranoid style scores will be positively related to scanning as the correct identification of the Hidden Pictures Test and to the fabulation of faces and body parts.

The Possible Relationship of Verbal Intelligence to Neurotic Styles (Hypothesis 13)

Zigler (1963) has suggested that indices of differentiation are actually indices of intelligence. Other investigations (e.g., Minard & Mooney, 1969) have supported Witkin's theoretical premise that indices of differentiation, e.g., the perceptual index, are not related to intelligence. Research (Karp, 1963) has supported Witkin's theory that only the subtests of standard intelligence tests that share the analytic or non-verbal requirement of separating an item from its context are significantly related to the perceptual index or certain cognitive control measures of differentiation. This dispute over whether or not measures of differentiation are actually measures of intelligence has prompted the current investigation to include a measure of verbal comprehension from the I.E.R. intelligence scale CAVD (Thorndike, et al., 1926) into the current battery of tests. Thus hypothesis 13 for the present research is:

Hypothesis 13: Verbal intelligence scores will not be related to any of the neurotic style scores.

Convergent Validity for the Paranoid Style Scale of the Extended Inventory (Hypotheses 14, 15 & 16)

Three scales of the Differential Personality Inventory (DPI) (Jackson & Messick, 1970) were used in an effort to offer additional construct validity for the paranoid style scale. This scale was developed in order to include the paranoid style in the current theoretical model. Additionally, the DPI scales seemed to reflect three salient characteristics of the style as described by Shapiro (1967). The DPI was primarily developed for use with clinical populations. However its reliability and validity has also been demonstrated in a college population (Jackson & Carlson, 1973) (see Method Section). Consequently, its application to a relatively normal population seemed justified. The three scales have been defined as follows (Jackson & Messick, 1970):

1. Cynicism. The skepticism of sincerity and motivation measured by this scale is in line with Shapiro's clinical observations of the paranoid style as having a disdain for the apparent; i.e., the paranoid is suspicious and guarded.

2. Hostility. The high level of animosity and antagonism assessed by this scale is expected to conform to the continuous, tense and antagonistic posture of the paranoid style.

3. Ideas of persecution. The ideas of persecution held to define the paranoid character are in accordance with the external threat of a superior force or authority implicit in the paranoid style of defensiveness.

Thus, hypotheses 14 through 16, relating scores on the DPI to paranoid styles, are formulated below:

Hypothesis 14: Paranoid style scores will be positively correlated to cynicism scores.

Hypothesis 15: Paranoid style scores will be positively correlated to hostility scores.

Hypothesis 16: Paranoid style scores will be positively correlated to ideas of persecution scores.

In review, this research is designed to investigate and test the evidence for a cognitive-developmental view of the major neurotic styles. It is designed to test the utility of such an integrative view of personality dynamics.

The hypotheses of the study are summarized in Table 1.

Table 1

Summary of Hypotheses Regarding the Relationships Between Cognitive Measures and Three Neurotic Styles

	Correlation with Neurotic Styles[1]		
Cognitive Measures	Hysterical	Obsessive-Compulsive	Paranoid
Sensory Modality	enactive	image	auditory
Conceptual Style	thematic	analytic-descriptive	inferential
Integrative Complexity	-	+	++
Scanning (Hidden Pictures Test)		retention of incidental information)	fabulation of faces
Verbal Ability	0	0	0
DPI Scales:			
Cynicism	0	0	+
Hostility	0	0	+
Ideas of Persecution	0	0	+

Note.

[1](-) indicates negative correlation, (+) indicates moderate and positive correlation, (++) indicates strong and positive correlation, and (0) indicates no significant relationship.

CHAPTER II

METHOD

Subjects

The sample consisted of 200 subjects which was comprised of 97 male and 95 female undergraduate college students from the N.Y.C. metropolitan area. The sex of eight of the subjects could not be identified from the data given. Most of the students were college sophomores with a range in age from approximately 20 to 45 years old. Their participation in the research was entirely voluntary. The students were informed in advance, that the study involved styles of thinking and that their responses to the protocols could be returned anonymously if they desired.

Procedure

All of the batteries of tests were administered to the students by the same individual who was the principle investigator of the current study. The batteries were administered on site in the classrooms of several N.Y.C. liberal arts colleges. None of the students were required to print their real names, but were informed that they could use pseudo-names, if they preferred. They were told that their results, based on this pseudo-name would be available to them by phone if they so desired. It was stressed that these results could, in no way, affect their academic standing.

One session of approximately two hours was required to complete a series of tests. Subjects were first addressed in the following manner:

"Hello, my name is Marilyn Jacovsky. I would like you to take the following tests in order to learn more about the way people feel and think. None of the test involves any deception. If you have any questions regarding the test instructions I will be glad to answer them; otherwise, please hold your questions until after you finish all of the test questions."

The tests were presented to the subjects in the following sequence:

1. Paragraph Completion Test (Appendix A)
2. Hidden Pictures Test (Appendix B)
3. The Extended Inventory of Hysterical, Obsessive-Compulsive and Paranoid Styles (Appendix C)
4. Shortened Form of Betts' Questionnaire Upon Mental Imagery (Appendix D)
5. The Object Sorting Test (Appendix E)
6. DPI Scales (Appendix F)
7. Verbal Intelligence Test (Appendix G)

A brief description of each of these measures is presented along with their psychometric properties in the following section.

Paragraph Completion Test

The purpose of the Paragraph Completion Test (Schroder, 1969) is to assess how people process different dimensions of information or use certain conceptual structures. Schroder's manual (1969) provides

the guidelines for inferring the degree of integrative complexity based on the use of these structural properties (i.e., differentiation and integration) according to the verbal responses made by Subjects. These responses are sentences written in response to unfinished phrases or sentence stems. All sentence completion tasks are scored along a seven point scale which ranges from low to high levels of complexity. Each Subject was allowed 130 seconds to write two or three sentences in response to these sentence items.

The current investigation used the seven sentence stems which comprise the Paragraph Completion Test as provided by the Educational Testing Service and included in Schroder's manual (1969). However, only four of the six sentence stems (rules, criticism means, confusion, and when I'm in doubt) are the same phrases described by Schroder in his book Human Information Processing (1967). This distinction should be kept in mind when evaluating Schroder's prior reliability estimates that are cited in the present analysis.

In general, the inter-rater reliability, according to Schroder (1967) varies between .80-.95. The correlations between individual stem scores and total scores (over all 6 stems) tends to range between .57 and .75 (Schroder, 1967). Split halves of the test have demonstrated a .70 correlation. The reliability of this instrument has also been supported by the present research (see Results section).

In addition, Schroder cites other information for construct validity which indicates that the structural levels derived from the sentence completions are more closely related to a proficiency in using complex conceptual orientations rather than verbal or quantitative intelligence scores.

Hidden Pictures Test

The Hidden Pictures Test (developed by Messick modeled on Smith & Klein, 1953 and Thurstone, L. L., 1944) was originally used by Thurstone in a factorial study of perception. The aim of his study was similar to the purpose of using the Hidden Pictures Test in the present research; i.e., did perceptual effects play a dynamic and central part in cognition, rather than an ocular one. The Hidden Pictures Test was used to measure scanning. It is a test that requires a flexibility and speed of closure. It consists of pictures of scenes which camouflage pictures of faces and bodies. The task is to find the hidden forms despite the distraction of the more obvious, larger picture. Essentially, this operation requires that the subject suppress the compelling initial closure of the larger picture in order to find the hidden form. Prior factorial studies (Messick & French, 1975; Thurstone, 1944) support the construct validity of this instrument as a measure of flexibility and/or spot of closure. Additionally, the findings of the present research (see Results section) support the reliability of the test.

The Hidden Pictures Test was scored according to a key for faces. Also, the first picture shown was followed by a request for the subject to describe the scene on the prior page without referring to it. This information was scored for the amount of incidental information in the pictoral scene that the subject was able to retain. Literal references to the pictures that included verbs, adjectives, and nouns were counted once. Descriptions that were not directly related to the pictures such as projections, or repeated information were not

included in the total score. A third measure computed was the frequency of fabulated faces or body parts perceived by each subject.

The Extended Inventory of Obsessive-Compulsive, Hysterical and Paranoid Styles of Thinking and Perceiving

The purpose of the Extended Inventory was in line with the aim of Hahn's (unpublished manuscript) original instrument. Many tests exist which measure defenses and neurosis but none that measure the cognitive and perceptual processes of neurosis. All three scales show a moderate degree of internal consistency and Hahn has found that the hysterical and obsessive-compulsive style scale are not substantially confounded by the response sets of social desirability or acquiescence. In addition, the cognitive and perceptual styles measured by these two scales have been supported. They correlate to actual cognitive and perceptual performance regarding aspiration, aptitude and interest variables which have been associated with each neurotic style (Hahn's unpublished manuscript). A more detailed description of these findings will follow.

The Obsessive-Compulsive and Hysterical Styles of Thinking and Perceiving (Hahn, unpublished manuscript) was originally constructed to assess obsessive-compulsive and hysterical styles of cognition only. The present study has extended the scale to include the paranoid style as well. The instructions to the Extended Inventory ask the subject to rate the extent to which each item describes him or her on a scale from 1 to 7. The total score for each style is derived by summing the individual's ratings of all items for

each of the scales, i.e. obsessive-compulsive and hysteric. (The order of all the items was randomly intermixed.)

The inventory is a self-report measure which has been shown by Hahn (unpublished manuscript) to demonstrate a moderate degree of internal consistency, with a standardized coefficient alpha of .66 for the 17-item hysterical style scale and a .81 for the 17-item obsessive-compulsive scale. The present study supports the reliability of Hahn's measures (see Results section). In addition, the paranoid style scale also demonstrates reliability with a coefficient alpha of .70 and an item-total correlation which was at least at the .01 level for all except two items. Additionally, all items on Hahn's scales were significantly correlated with the correspondent style score for the hysterical (.02) and obsessive-compulsive style items (.001).

Neuroticism and social desirability. Rather small amounts of social undesirability and/or neurotic content was found in the total hysterical style items. The hysterical style scale was negatively correlated to the Edwards Social Desirability Scale scores (r=-.36, p .001) and negatively correlated to the Personality Research Form (PRF) Social Desirability Scale scores (r=-.24, p .05) (Hahn, unpublished manuscript). In contrast Hahn found that the total obsessive-compulsive style items appeared somewhat socially desirable. The scores of the obsessive-compulsive style scale correlated positively with the Edwards Social Desirability Scale scores (r=.11, n.s.) and the PRF Social Desirability Scale scores (r=.31, p .001).

Hahn attributes the significant positive relationships between the total obsessive-compulsive style scores and social desirability to

the inherent social desirability of many of the obsessive-compulsive items in comparison to the social undesirability and/or neuroticism content in many of the hysterical style items. The social desirability of the paranoid style has not been ascertained, however. Consequently, the data yielded by this scale should be evaluated with his note in mind.

Construct validation. Hahn (unpublished manuscript) demonstrated the independence of the obsessive-compulsive and hysterical scales. The construct validation measures offered by him support the validity of the original inventory as a relatively accurate appraisal of the two neurotic styles. Hysterical style scores were significantly and negatively related to the Group Embedded Figures Test, the WAIS Information Scale, high school grades in science, high school grades in mathematics, SAT quantitative minus verbal scores and the Hudson School attitudes scale, recall of SAT scores.

Obsessive-compulsive style scores were significantly and positively related to the Group Embedded Figures Test, high school grades in mathematics, interest in a passage concerning physics, and the Hudson School Attitudes Scale.

The construction of the paranoid style scale. Certain statistical analyses were carried out in order to establish the reliability of the paranoid style scale which was developed for the current investigation.

Internal consistency of the paranoid style scale. An alpha coefficient of .70 established the internal consistency-reliability of the paranoid style scale (see Results section). Most of the Pearson

product-moment correlations between each paranoid style item and the total paranoid style scale were significant (see Table 3). The means and standard deviations for the total hysterical obsessive-compulsive, and paranoid style scales were also computed (see Table 4) as well as their inter-correlations (see Table 5 and Results section for details).

It was expected that the paranoid scale would correlate negatively with the hysterical scale and would be independent from the obsessive-compulsive scale. In fact, the paranoid scale was positively correlated to the hysterical scale (r=.44, p .001) and also to the obsessive-compulsive scale (r=.18, p .01) but less so.

The construct validation currently offered for the paranoid scale was limited to the expected positive correlations with the three scales of the Differential Personality Inventory (Jackson & Messick, 1970); i.e., cynicism, ideas of persecution, and hostility (see DPI section).

Shortened Form of Betts' Questionnaire Upon Mental Imagery (QMI)

The Shortened Form of the QMI (Sheehan, 1967) was originally developed by Betts (1909) to assess the role that imagery plays in the processes of cognition in periods of normalcy, under prolonged sensory deprivation and under drug administration. The test, however, in its original form was prohibitively long. It was, however, the most comprehensive test of imagery available. Sheehan's (1967) version of this test predicts the capacity to image as accurately as the original long version of the test.

The shortened form of the test is a 35-item questionnaire measuring the vividness of imagery in seven different modalities.

Subjects rate the vividness of their images to the items according to a seven-point rating scale.

For the purposes of the current investigation only three of the sensory modality scales were used: (1) enactive, (2) visual, and (3) auditory. Five items for each modality were included for a total of 15 items.

The validity of the instrument has been supported by high correlations to the direct evocation of imagery in a variety of experiments (Sheehan, 1967a).

Cross validation of the QMI (Sheehan, 1967) has demonstrated a correlation of 0.99 between Betts' long form and Sheehan's shortened form. The overall test-retest reliability was +.78. The five items selected for each modality loaded on the main component for that modality averaging .69 and .70 for males and females respectively.

Each separate modality scale demonstrated similar means and standard deviations. In the current study the internal consistency of the enactive (.79), visual (.77) and auditory (.75) scales was moderate as reflected by their alpha coefficients. However, the scales' intercorrelations were high. The enactive modality scale correlated to the visual modality (r=.32) and to the auditory modality (r=.46). In addition, the correlation between the visual and the auditory modality was also substantial (r=.44) according to the present results.

Object Sorting Test

The original Object Sorting Test (Gardner, 1953) was developed to assess equivalence range (i.e., the breadth of categorization or

tolerances for errors of exclusion and inclusion). A written form of this test was designed by Clayton and Jackson (1961) in order to assess the relationship between certain stylistic properties (i.e., acquiescence and overgeneralization) to certain cognitive (i.e., equivalence range) and personality variables (i.e., authoritarianism).

The names of 50 familiar objects were selected according to the following two criteria:

(a) the objects were specific and capable of being moved to a definite location, and

(b) the objects could not easily allow for more than one meaning.

The conceptual style of each subject was scored according to the instructions of the Sigel Conceptual Style Sorting Task (1967). Subjects were requested to place the names of 50 familiar objects into groups which seemed to belong together. Additionally, subjects were requested to indicate their reasons for grouping objects into each category. Thereafter, the conceptual style of each subject was assessed.

The pictured objects originally used in the Sigel Conceptual Sorting Task were replaced by Clayton and Jackson's (1961) list of objects in order to provide a test which was more appropriate for an adult population.

The Sigel Conceptual Sorting Task (1967) was originally designed to indicate an elementary school child's conceptual style. The current investigation, however, expected that this instrument might be useful in demonstrating how adults with different neurotic styles process information and rely on different modes or combinations

of modes of conceptualizing. The characteristics regarding the reliability or validity of Sigel's scoring procedures have been excluded from the present discussion because of their inappropriateness with respect to the adult population. This instrument was chosen, however, because no other instrument was available which was designed for adults and as elaborately developed as Sigel's method.

The conceptual style for each individual had been originally determined by computing the total number of groups categorized by each subject. The most frequent conceptual style assessed among the total number of conceptual styles used for each group represented the predominant conceptual style for each individual. In the present study, the total conceptual style scores were converted to ratio scores. The correlation of the thematic conceptual style to the analytic-descriptive style (.74) and to the categorical-inferential style (.65) was high. In addition, the correlation between the analytic-descriptive and the categorical-inferential styles was also strong (.74). The scores for each of these conceptual styles tended to increase as the total number of categories used by each subject increased. Therefore, three ratio scores were computed in order to control for what appeared like a fluency contaminate. The number of thematic, descriptive and inferential reasons for defining these categories were divided by the total number of categories designated by each subject (called the differential score).

The Differential Personality Inventory (DPI)

The construct validity of the Paranoid Style Scale was investi-

gated by examining its relationship to three scales of the DPI (Jackson & Messick, 1970) which reflected three salient characteristics of the paranoid style of functioning. KR20 internal consistency-reliability measures of the three scales of the DPI (Parlington & Johnson, 1969) were as follows: cynicism (.80), hostility (.75) and ideas of persecution (or psychotic tendencies) (.88). In addition, convergent validities for these scales were all at the .001 level of significance based on the relationship between self and peer ratings of college roommates.

The questions of each scale (see Appendices F & H) were intermixed in a consecutively numbered fashion. Subjects were requested to respond to all statements using a scale from 1 to 7 rather than as "true" or "false" where 1 denoted "true" and 7 stood for "false." This revision was implemented in order to increase the spread of responses to many DPI statements which may otherwise have been too pathological for the typical student population when simply restricted to true-false responses.

Test of Verbal Intelligence

The vocabulary test used in the present study consisted of words chosen by Thorndike et al. (1926) from the I.E.R. Intelligence Scale, CAVD. This particular instrument was chosen because it was a short test (approximately 10 minutes) and could also be used, if desired, to describe other characteristics--e.g., college freshman percentiles. This test was originally designed (in parallel form) to obtain data on the intellectual level of a cross-section of voting

adults. Both forms of this test were standardized by administering them in conjunction with the Otis Self-Administering Intelligence Examination, Intermediate Level, Form A to school and college students. The mental age equivalents for the vocabulary tests agreed well, except at the extremes. It is estimated (Thorndike, 1926) that the correlation of the test (Form A used in current study) to a perfect criterion would be .90.

This 20-word multiple choice test was given as an untimed power examination. The test was scored for the total number of correct vocabulary choices. Instructions originally used by Thorndike were also used in the current study.

Construct Validation for a Cognitive-Developmental Theory of Neurotic Styles

The construct validation for all of the hypotheses which were formulated were tested by examining the matrix of intercorrelations between the hysterical, obsessive-compulsive, and paranoid style scale scores regarding the following measures: (1) sensory modes of representation, (2) conceptual style scores, (3) total integrative complexity scores, and (4) total scanning scores (i.e., the correct identification of the Hidden Pictures Test, retention of information index, and fabulation of faces scores), and (5) verbal intelligence scores.

Additional computations were carried out as follows:

1. Conceptual ratio scores were computed by dividing the total conceptual style score by the total number of categories designated by each subject across the three conceptual styles.

2. Partial correlation coefficients between each sensory style score and the other variables in the study were computed.

3. A factor analysis was computed using the 16 x 16 matrix of intercorrelations among the primary variables. The conceptual style ratio was the only variable omitted from the factor analysis (see Results for explanation).

4. The Pearson product-moment correlations between dichotomous sex variable and the other variables in the study.

5. Two separate 16 x 16 matrices and intercorrelations among the primary variables for each sex.

CHAPTER III

RESULTS

The following sections will begin by providing an account of the reliability of each of the instruments computed in the current research. Each of the sections will address the hypotheses regarding the cognitive process components of the three neurotic styles. In general, the order of presentation of these results will parallel the developmental trend posited for progressive differentiation beginning with the hysterical style, and followed by the obsessive-compulsive style and then the paranoid style.

The Measures' Internal Consistencies and Their Properties

The internal consistency of the neurotic style scales. In order to provide confidence in the internal consistency of the neurotic style scales and all subsequent conclusions based on these scales a standardized item coefficient alpha was computed. The results of such analyses are given in Table 2. In addition, the study was extended to include a separate matrix of intercorrelations of the variables in the study for each sex. In this way, significant relationships between the variables which were derived from the total sample population could be examined in relationship to any pervasive sex differences (see Tables 9 & 10 for females and males respectively).

Table 2

Reliabilities and Correlations Between Neurotic Styles[1]

Neurotic Style	Hysterical	Obsessive-Compulsive	Paranoid	Coefficient Alpha
Hysterical	1.00	-.18**	.44***	.77
Obsessive-Compulsive		1.00	.18**	.83
Paranoid			1.00	.70

[1] *p .05.

**p .01.

***p .001.

Two-Tailed Tests of Significance were used in all cases.

The 17 items of the paranoid scale displayed a moderate degree of internal consistency with an alpha coefficient of .70. The item total correlation for the paranoid style scale demonstrated significant correlations at least at the p .05 level of significance with the exception of one item. In addition, the cynicism (.69), hostility (.67) and persecution (.65) scales of paranoid functioning also displayed substantial reliability. (See Table 3.)

Table 3

Endorsement Means, Standard Deviations and Corrected Item Total Correlations for the Paranoid Scale Items (N=200)

Item #	Mean	Standard Deviation	Corrected Item Total r
1	4.71	1.47	.33***
2	4.72	1.78	.18*
6	4.42	1.62	.34***
11	4.71	1.63	.32***
16	5.68	1.16	.28***
21	4.51	1.60	.21**
22	4.95	1.51	.44***
26	5.58	1.30	.24***
29	5.05	1.38	.42***
31	4.09	1.91	.07
34	4.17	1.88	.19**
35	4.66	1.53	.47***
37	4.41	1.65	.37***
41	4.32	1.57	.22**
45	4.12	1.60	.20**
48	5.03	1.76	.34***
50	4.45	1.49	.33***

*p < .05

**p < .01

***p < .001

The alpha coefficient for the hysterical style scale (.77) and the obsessive-compulsive style scale (.83) also displayed substantial internal consistency.

Endorsement Ratings for the Neurotic Style Scales

Table 4 provides the mean values of the responses to all of the tests used. The mean totals for the hysterical (83.28), the obsessive-compulsive (82.93) and the paranoid scores (79.55) did not differ significantly from each other. The mean endorsement ratings were calculated by dividing the mean totals for each neurotic style score by 17. They indicated that the hysterical (4.90), obsessive-compulsive (4.88) and paranoid (4.68) scale ratings were between slightly related (indicated by a scale rating of 4) or somewhat related (a scale rating of 5) as to how the same population would describe themselves.

Neurotic styles as independent dimensions. The Pearson product-moment correlation between total hysterical style scores and total obsessive-compulsive style scores (r = -.18, p .004) provides some support for the theoretical expectation that the two styles were inversely related. It is important to note, however, that the hysterical style scale was significantly correlated with female subjects (r=.33, p .001) and that the obsessive-compulsive style scale was negatively related to the female subjects (r=-.25, p .001). Correlations to these two neurotic styles should be evaluated with this sex difference in mind.

The small but significant correlation (r = .18, p .01) between the obsessive-compulsive style scale and the paranoid style scale is

Table 4

Means and Standard Deviations of Neurotic Styles and Cognitive Processes[1]

Variable	Mean	n	Standard Deviation
Adaptive Styles	83.28	200	12.88
Hysterical	82.93	200	14.41
Obsessive-Compulsive	79.56	200	11.10
Paranoid	79.56	200	11.10
Sensory Modes			
Enactive Mode	26.98	200	5.33
Visual Mode	26.87	200	4.92
Auditory Mode	27.84	200	4.65
Conceptualizing Styles			
Relational	.30	192	1.40
Analytic Descriptive	1.76	192	3.92
Categorical Inferential	7.34	192	6.00
Integrative Complexity	3.37	200	2.71
Scanning			
Hidden Pictures Test	5.31	200	3.01
Retention of Information	10.90	198	5.38
Fabulation of Faces	5.21	200	3.86
Verbal Intelligence	13.76	200	3.17
DPI Scales			
Cynicism	4.23	190	2.83
Hostility	4.71	190	2.93
Persecution Ideas	2.94	190	2.45

[1]N's less than 200 dues to missing data.

in line with Shapiro's (1965) proposition that the paranoid mode of functioning is an extreme transformation of the obsessive-compulsive style. In contrast, the positive correlation (r=.44, p .001) between the hysterical style and the paranoid style scales was not anticipated. (See Table 2.)

An attempt was made to isolate three relatively pure neurotic styles by separating out those subjects whose style scores were at least one standard deviation above the mean on one scale and not significantly elevated on the other two. Only 9 hysterical style, 9 obsessive-compulsive style, and 12 paranoid style scores were found. The relationship between these pure styles and the cognitive-process variables did not reveal findings significantly different from the broader and more inclusive procedure of the present study.

The internal consistency of the sensory modality scores. The coefficient alpha was computed for each of the sensory modes of representation as measured by the Shortened Forms of Betts' QMI (Sheehan, 1967). The enactive (.79), visual (.77) and auditory (.75) scales all demonstrated substantial internal consistency. However, moderately high intercorrelations among the sensory modality measures required that their mutual relationships be held constant in all subsequent analysis by use of partial correlation coefficients (see Table 6). In addition, a small correlation was found between visualization and female subjects (r=.16, p .05).

Reliability of the conceptual style measures. The reliability of the conceptual style measures, based on Sigel's instructions from the Conceptual Style Sorting Task (1967) was not assessed in the

current research. A limited amount of classroom time did not allow for the administration of parallel forms. Therefore, the results yielded by these measures are to be cautiously interpreted. In addition, the test instructions indicated that the number of categories designated by the subjects was an arbitrary decision which was not limited by a ceiling, or fixed number (see Discussion, however). The total number of categories for thematic, analytic-descriptive and categorical inferential conceptual styles however, were found to increase as the total number of categories used by each subject increased. In order to control for this linear dependence, the thematic, analytic-descriptive and categorical-inferential scores were divided by a conceptual differential score. This measure was derived by summing the total number of conceptual style categories used in the Object Sorting Test (Clayton & Jackson, 1961). Thereafter, each conceptual style was divided by this differentiation measure in order to obtain ratio scores for each subject. This procedure insured that the scores indicated the relative predominance of each conceptual style for a given subject.

Reliability of the measure for integrative complexity. Strong inter-rater reliability was established (r=.92) for the measure of integrative complexity. Thirty protocols were scored by an additional second rater to establish the reliability of the ratings and to monitor any drifts in scoring from the initial protocols to the latest ones. The first ten protocols, the middle ten and the last ten were scored twice, yielding a total of sixty sets of total scores provided by both raters. An analysis of variance revealed no

significant difference between their ratings (F (2, 27) =.27, n.s.) from the beginning to the end of the scoring. In order to determine the internal consistency of the measure a standardized item alpha was computed. The value of .79 obtained corroborated the reliability of the measure.

All protocols were scored for integrative complexity by using the mean of the top two scores as suggested by the authors of the test (Schroder, 1967). This procedure was found by Schroder to be highly correlated to the mean of the total for the six sentence completion tasks. This method was invoked because Schroeder et al. (1967) had found that the integrative complexity scores were skewed toward the concrete end of the continuum when all 6 ratings were used for each subject. The computation of the two highest scores of integrative complexity was used to discourage this tendency of skewedness toward the concrete end of the continuum and improve the distribution somewhat.

Reliability of the Hidden Pictures Test as a scanning measure. A standardized coefficient alpha of .73 revealed that a moderate degree of internal consistency existed for the Hidden Pictures Test although the measure only consisted of three items. In addition, female subjects were significantly correlated to the correct identification of the Hidden Pictures Test (r=.19, p .01). This finding is treated later in the Discussion section. A Pearson product-moment correlation was applied to establish the relationship among the three measures which were used to define the different scanning tendencies among the three styles of neurosis. A relatively small relationship

exists between the correct identification scores of the Hidden Pictures Test and the retention of incidental information (r=.21, p .01). This style of scanning was expected to be associated with the obsessive-compulsive style but it was not. The correct identification scores were found to be negatively correlated (r=-.23, p .01) to the fabulation of faces. The positive correlation between both of these measures was expected to define the paranoid style of scanning and be related to the paranoid style of neurosis but it was not. Parenthetically, scores for the retention of information revealed no significant correlation (r=.07, n.s.) to the fabulation of faces.

The results of the Pearson product-moment correlations which were applied to test the following hypotheses are shown in Table 5.

Tests of Hypotheses Regarding Sensory Modes of Cognitive Representation

Hypothesis 1: The enactive mode and hysterical style scores. Hypothesis 1 postulated that the hysterical style scores would be positively correlated to the enactive mode of representation and significantly more so than either the visual or auditory modes. In order to test this hypothesis Pearson product-moment correlations were computed. This initial procedure established a small but significant correlation (r=.15, p .05) between the hysterical style and the enactive mode. However, the hysterical style was more correlated to the auditory mode (r=.26, p .001) and the visual mode (r=.16, p .05) than to the enactive mode. Hypothesis 1 therefore, was contradicted by the findings.

A more extensive analysis was conducted, however, because of the high correlation between the sensory modality measures

Table 5

Correlations Between the Neurotic Style Scales and Cognitive Process Tests

(N=198)[1]

Cognitive Process Tests	Hysterical	Obsessive-Compulsive	Paranoid
Sensory Scales			
1. Enactive	.15*	-.05	-.03
2. Visual	.16*	.04	.18**
3. Auditory	.26***	-.00	.19**
Conceptual Style Scales			
4. Thematic ratio	.03	.08	.07
5. Descriptive ratio	.10	-.06	.12
6. Inferential ratio	-.10	.02	-.13
Integrative Complexity			
7. Sentence Completion	-.05	-.12	-.11
Scanning			
8. Hidden Pictures	.24***	-.13	.08
9. Retention of Info.	.11	-.13	-.08
10. Fabulation	-.02	.08	.05

[1]Two incomplete batteries of tests were omitted from analysis.

*p .05.

**p .01.

***p .001.

themselves (see Table 6). Partial correlation coefficients were applied to all of the original relationships between the sensory modalities and neurotic style scores. In this way, any tendency for the correlation between hysterical and enactive scores to co-vary, in part, because of their mutual relationship to both visual or auditory scores was controlled for. The results confirmed, (see Table 6), that no significant relationship between the hysterical style scale and enaction was supported by the present data.

Hypothesis 2: The visual mode and obsessive-compulsive style scores. Hypothesis 2 predicted that the obsessive-compulsive style scores would be positively correlated to the visual mode of thinking and significantly more so than to either the enactive or auditory modes. A Pearson product-moment correlation was used to initially test this hypothesis. No significant correlation (r=.04, n.s.) between the two measures was found (see Table 5). Partial correlation coefficients were performed in order to detect any correlation between obsessive-compulsive scores and visual representation that might have been occluded by the mutual relationship of visualizing to auditory and/or enactive thinking. Again, no significant correlation (r=.04, n.s.) between the two variables was found. Therefore, hypothesis 2 was not confirmed by the results of the present study.

Hypothesis 3: The auditory mode and paranoid style scores. Hypothesis 3 posited a positive and more significant correlation between the paranoid style and the auditory mode than to either the

Table 6

Reliabilities of Sensory Modalities and Their Partial Correlations to Neurotic Styles[a]

	Correlations between modalities (N=198)			Partial correlations between sensory modalities and neurotic styles			Coefficient alpha reliability of sensory scales	
	Enactive	Visual	Auditory	Hysterical	Obsessive	Paranoid		
Enactive	1.00	32***	46***	15*	-05	-03	79***	(N=199)
(auditory)				(04)				
(visual)				(11)				
(both)				(04)				
Visual		1.00	44***	16*	04	18**	77***	(N=200)
(enactive)					(06)			
(auditory)					(05)			
(both)					(06)			
Auditory			1.00	26***	-00	19**	75***	(N=200)
(visual)						(13)		
(enactive)						(23***)		
(both)						(17**)		

[a] Correlations partialled out for each sensory moadlity is in parentheses.

*p < .05.

**p < .01.

***p < .001.

enactive or visual mode. A Pearson product-moment correlation yielded a significant correlation between audition and the paranoid style (r=.19, p .01). However, the magnitude of this correlation was not significantly stronger than the correlation between the paranoid style and the visual mode (r=.18, p .01). Therefore, hypothesis 3 was not supported.

This correlation was further analyzed however, in order to determine the extent to which audition actually co-varied with the paranoid style, uncontaminated by the mutual relationships between enaction and visualizing. Partial correlation coefficients (see Table 6) showed that the relationship between the paranoid style and audition decreased when visual scores were partialled out (r=.13, n.s.). However, visualizing and enaction or enaction alone could not be partialled out without artificially elevating the correlation between the paranoid score and audition. These results were unstable, because the enactive mode did not demonstrate a significant correlation to the paranoid style originally (r=-.03, n.s.).

Tests of Hypotheses Regarding Conceptual Style Ratio Scores

Hypothesis 4: Thematic categorizing and hysterical style scores. Hypothesis 4 predicted that hysterical style scores would be positively correlated to thematic categorizing and significantly more so than to either the descriptive or inferential styles. Thematic conceptualizing was defined by those categories in which no item was an independent instance of the concept. Each item in the category got its meaning and definition from its relationship with other items in that category. However, a Pearson product-moment correlation

yielded no significant correlation yielded no significant correlation between the hysterical style and thematizing (r=.03, n.s.). Consequently, hypothesis 4 was not corroborated by the data.

Hypothesis 5: Descriptive categorizing and obsessive-compulsive style scores. Hypothesis 5 expected that obsessive-compulsive style scores would be positively correlated to analytic-descriptive categorizing and significantly more so than to either the thematic or inferential styles. Descriptive categorizing was defined by the inclusion of items within a category that made direct references to physical attributes of any given stimuli. Nevertheless, a Pearson product-moment correlation demonstrated no such relationship (r=.05, n.s.) between the obsessive-compulsive style and descriptive categorizing. Hypothesis 5 was not confirmed by the data.

Hypothesis 6: Categorical-inferential categorizing and paranoid style scores. Hypothesis 6 predicted that the paranoid style scale would be significantly related to categorical-inferential scores and significantly more so than to either thematic or descriptive style scores. A categorical-inferential style of conceptualizing was defined by putting items together in a category which are not interdependent, their characteristics are not necessarily observable, and a class label is used, i.e., the category is based on inferences. However, a Pearson product-moment correlation used to test this hypothesis again found no significant correlation between the inferential style scores and the paranoid style scale (r=-.13, p .10). Hypothesis 6 was also unsupported by the results of the present study.

Tests of Hypotheses Regarding Integrative Complexity Scores

Hypothesis 7: Integrative complexity and hysterical style scores. Hypothesis 7 posited that integrative complexity would be negatively correlated to hysterical style because it was held to be the most global and undifferentiated of the neurotic styles. However, the Pearson product-moment correlation indicated that no significant relationship existed between the hysterical style and integrative complexity (r=.05, n.s.).

Hypothesis 8: Integrative complexity and obsessive-compulsive style scores. Hypothesis 8 predicted that integrative complexity would be positive and moderately related to obsessive-compulsive functioning because this style was expected to reflect an intermediate level of differentiation and abstraction. The Pearson product-moment correlation (r=.12) failed to support this prediction however. Therefore, hypothesis 8 could not be supported by the results either. In fact, the results did approach significance (p .10) but in a negative direction (see Table 5).

Hypothesis 9: Integrative complexity and paranoid style scores. Hypothesis 9 stated that integrative complexity would be positive and highly correlated with paranoid style thinking which was posited as the most complex and abstract of the neurotic styles. However, the Pearson product-moment correlation coefficient (r=-.11, n.s.) again, did not support this hypothesis. In fact, it is interesting to note that all three styles of functioning were in a negative direction with respect to integrative complexity.

Tests of Hypothesis Regarding Styles of Scanning

Hypothesis 10: The correct identification scores of the Hidden Pictures Test and the hysterical style scores. Hypothesis 10 postulated that the correct identification scores would be negatively correlated with the hysterical style. That is, the hysterical style of scanning is generally regarded as global and not selectively attentive (e.g., repression as a defense). Unexpectedly, the Hidden Pictures Test scores were positively correlated (r=.24, p .001) to the hysterical style.

Although hypothesis 10 was not confirmed, these results may not be entirely counter to the global nature of the hysterical style (see Discussion). An extended analysis revealed that the female subjects were also correlated to both the correct identification scores (r=.19, p .01) and to the hysterical style (r=.33, p .001).

Hypothesis 11: The correct identification scores of the Hidden Pictures Test, the retention of information and the obsessive-compulsive style. Hypothesis 11 formulated that both the correct identification score and the retention of incidental information would be positively correlated with the obsessive-compulsive style. This prediction is in line with the defense of isolation and the selective attention typically associated with "obsessives." The relationship between the obsessive-compulsive and correct identification scores approached significance (r=.13, p .10) however, the relationship was in a negative direction. In addition, the correlation between obsessive-compulsive scores and the retention of information approached significance (r=-.13, p .10) but was also in a negative

direction. Consequently, hypothesis 11 was not supported by the data.

Hypothesis 12: The correct identification score of the Hidden Pictures Test, the fabulation of faces and paranoid style scores. Hypothesis 12 maintained that both the correct identification score and the fabulation of faces and body parts would be positively correlated with the paranoid style. This hypothesis seemed appropriately matched to their defense of projection and complex delusional systems. Contrary to hypothesis 12, neither the correct identification scores (r=.08, n.s.) nor the fabulation of faces and body parts (r=.05, n.s.) were significantly correlated to the paranoid style.

Construct Validity for the Paranoid Style Scale

Hypothesis 13: Verbal Intelligence and neurotic style scores. Hypothesis 13 predicted that verbal intelligence would not be correlated to any of the neurotic style scores. Hypothesis 13 was confirmed. Intercorrelations between all of the variables used in the study are given in Table 7. Verbal intelligence was unrelated to hysterical, obsessive-compulsive, and paranoid styles. However, verbal intelligence was significantly correlated to the following cognitive process measures: integrative complexity (r=.19, p .01); the correct identification scores on the Hidden Pictures Test (r=.31, p .001); the retention of incidental information on the Hidden Pictures Test (r=.17, p .05) and the analytic-descriptive ratio (r=.16, p .05) from the Conceptual Style Sorting Task (Sigel, 1967). Results based on these three measures should be viewed with these

relationships in mind.

Hypotheses 14 - 16: DPI scales and paranoid style scores. Hypotheses 14 to 16 were generated in order to determine if the paranoid style scale (developed for the current research) was an accurate measure of its respective mode of general functioning. Hypotheses 14-16 predicted that the cynicism, hostility and persecution scales of the DPI (Differential Personality Inventory) would be positively related to the paranoid scale. All three of these hypotheses were confirmed. Cynicism (r=.31, p .001), hostility (r=.19, p .01) and persecution (r=.29, p .001) were all correlated with the paranoid scale and supported it as a valid measure for the adaptive style of neurosis described by the current study.

In addition, neither the total nor the individual scales of the DPI correlated with the obsessive-compulsive style nor the hysterical style scales of the Extended Inventory of Neurotic Styles (see Table 7). These results provide some convergent validity for the paranoid style scale as a measure which is accurate and relatively independent of hysterical and obsessive-compulsive measures (as used herein).

Table 7

Intercorrelations Between Neurotic Style Scales and Cognitive Measures (N=198)[1]

Tests	Tests															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Hysterical	1	-18*	44***	15*	16*	26***	03	10	-05	24***	11	-02	03	-01	00	-03
2. Obsessive-Compulsive		1	18**	-05	04	-00	-05	-06	-12	-13	-13	08	-09	-01	01	05
3. Paranoid			1	-03	18**	19**	07	12	-11	08	-08	05	-11	19**	29***	31***
4. Enactive				1	32***	46***	-06	-08	06	08	06	09	02	-07	-13	-20**
5. Visual					1	44***	-01	-10	-00	05	14*	17*	07	02	-02	-16*
6. Auditory						1	07	12	03	11	00	08	04	04	-02	-05
7. Thematic ratio							1	-01	-04	-06	-01	12	-11	-04	11	12
8. Descriptive ratio								1	03	12	-01	-14*	16*	-06	-10	-03
9. Integrative Complexity									1	08	05	06	19**	06	-15*	-18**
10. Hidden Pictures										1	21**	-23***	31***	08	-23***	-18**
11. Retention of Information											1	-07	17*	03	-27***	-14*
12. Fabulation of Faces												1	-06	-06	10	-06
13. Verbal Intelligence													1	12	-24***	-26***
14. Hostility (DPI)														1	31***	31***
15. Persecution (DPI)															1	54***
16. Cynicism (DPI)																1

[1]Two incomplete batteries of tests were omitted from analysis.

*p < .05.

**p < .01.

***p < .001.

Factor Analysis

The current investigation of cognitive processes and neurotic styles was extended to include the multivariate technique of factor analysis. This method was employed in order to discover patterns of relationships that might have existed between the primary variables of the study which were not originally hypothesized.

Specifically, the factor analysis was undertaken with the intention of shedding some light on the surprisingly high correlation between the hysterical and paranoid styles. A 16 x 16 matrix of intercorrelations among the primary variables was factored using PA2 (principle factoring with one iteration). This matrix of intercorrelations is given in Table 7.

The only test variable which was dropped from the factor analysis was the categorical-inferential ratio. The conversion of the conceptual style scores to ratio scores imposed a linear dependence on the ratios whereby only two of the three ratio scores could be used. The third ratio score was completely determined by the sum of the other two scores, i.e., the total sum of the ratio scores must equal one. The categorical-inferential score was omitted because most subjects used this conceptual style and it was most highly correlated (.95) to the total number of categories used. Therefore, the two ratio scores which were most independent, i.e., the thematic and analytic-descriptive ratio scores were kept in the factor analysis.

Four factors were retained for rotation. The eigenvalues for the four factor solution were 2.51, 2.12, 1.68, and 1.24. For the first factor not retained the eigenvalue was 1.08. The eigenvalues of

these four factors seemed to define them as the important dimensions. These four factors accounted for 47.1% of the total variance. Although a dramatic drop of the eigenvalues occurred after the third factor, a four factor solution was retained because the results seemed to account for the major percent of the total correlation between the hysterical and paranoid style.

Results of factor analysis. Factor I seemed to represent a vividness of sensory dimension. High loadings on the auditory (.64), visual (.61) and enactive (.56) modes of representation were found. At the same time, Table 5 indicated that the internal consistency of these measures was substantial. Both the hysterical style scores (.28) and the paranoid style scores (.20) although to a lesser degree, loaded on this factor. In addition, the index for the fabulation of faces (.26) loaded on this factor. The substantial level of intercorrelation between these vividness of sensory imagery scales required that their individual correlations with other variables in the study be analyzed by partialling out their mutual relationship (see Results and Discussion sections). In terms of the present analysis this dimension represented the largest factor and accounted for 38.9% of the combined variance.

Factor II deals primarily with a dimension which would be defined as general mental abilities or "intelligence." In fact, verbal intelligence loads most highly (.53) on this factor. In addition, integrative complexity (.29) is related to this dimension. Factor II also consists of high loadings for the scanning measures of the

Table 8

Factor Loadings of Cognitive Process Variables and Neurotic Style Scores (N=198)[1]

Cognitive Variables	Factors:	Sensory I	Mental Abilities "Intelligence" II	Paranoid III	Descriptive Scanning IV
1. Integrative Complexity			.29		
2. Hidden Pictures Test			.46		.34
3. Retention of Information			.34		
4. Fabulation of Faces		.26	-.22		-.20
5. Hysterical Style		.28			.57
6. Obsessive-Compulsive Style			-.28		
7. Paranoid Style		.20	-.28	.36	.50
8. Visual Modality		.64			
9. Auditory Modality		.64			.18
10. Enactive Modality		.56			
11. Thematic Ratio			-.21		
12. Descriptive Ratio					.32
13. Cynicism DPI Scale			-.36	.58	
14. Hostility DPI Scale				.56	
15. Persecution DPI Scale			-.42	.57	
16. Verbal Intelligence			.53		

[1] Two incomplete batteries of tests were omitted from analysis.

correct identification of hidden pictures (.46) and the retention of incidental information (.34). This style of scanning was hypothesized as typical of the obsessive-compulsive personality. However, the obsessive-compulsive style loads negatively (-.28), rather than positively on this dimension.

The paranoid style is also negatively related to this scanning factor (-.28) and, along the same lines, the DPI scales of persecution (-.42) and cynicism (-.36) are also negatively related to this factor. The index for the fabulation of faces which was defined as the paranoid style of scanning (in combination with the Hidden Pictures Test) also demonstrated a negative loading (-.22). This factor, the second largest one, accounted for 31.4% of the total variance.

Factor III seems to reflect a Paranoid dimension. All three of the paranoid DPI scales, cynicism (.58), persecution (.57) and hostility (.56), load substantially on this factor. The only additional item loading on this factor is the paranoid style scale (.36), reinforcing the interpretation of this factor as a paranoid dimension. The three DPI scales as well as the paranoid style scale have all demonstrated substantial internal consistency (see reliability section). Factor III determined 19.4% of the total variance.

Factor IV involves a Descriptive/Scanning dimension which is primarily shared between the hysterical (.57) and paranoid (.50) styles. Both the Hidden Pictures Test (.34) and the descriptive conceptualizing ratio (.32) load moderately on this factor. Of the total variance, 10.2% can be attributed to this factor. The content loading on this factor may suggest that both descriptive conceptual-

izing and scanning may entail a propensity for selective attention. The paranoid and hysterical styles may have this cognitive ability in their repertoire although, depending on the circumstances, the manifestation of this ability may not always be apparent (see Discussion).

Sex Differences

The prior results suggested that the process of correctly identifying hidden pictures differed between the sexes. In order to explore these and other sex differences for the entire group a dichotomous sex variable was initially correlated with the total matrix of the other variables in the study. A significant mean difference was found between the sexes. More females tended to be hysterical (r=.33, p .001) and do better on the Hidden Pictures Test (r=19, p .01). In addition, females tended to be negatively correlated to the obsesive-compulsive style (r=-.25, p .01). Separate matrices were computed for the sexes in order to discover the variables that were intercorrelated for each sex (see Tables 9 & 10). The results indicated that male subjects who were associated with the hysterical style tended to do even better on the Hidden Pictures Test (r=.30, p .01) than females who were characterized as hysterical (r=.03, n.s.). In addition, females who correctly identified more hidden pictures did not tend to fabulate faces (r=-.47, p .001). In contrast, males who did well on the Hidden Pictures Test tended to retain a significant amount of incidental information (r=.30, p .05).

Table 9

Intercorrelations Between Neurotic Styles and Cognitive Measures for Female Subjects (N=95)[1]

Tests	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Hysterical	1	-04	44***	11	07	13	13	14	10	04	01	-16	-08	-01	08	03
2. Obsessive		1	09	01	-13	-11	08	-02	-17	02	-16	22	-08	-10	08	-03
3. Paranoid			1	-07	05	04	12	05	-05	-04	-11	07	-22*	30**	36***	39
4. Enactive				1	-07	29***	-12	-22	-06	-10	-08	09	-09	-21	-08	-21
5. Visual					1	47***	-08	-11	06	-05	14	12	01	-05	-05	-18
6. Auditory						1	10	00	15	-02	04	02	05	-03	12	06
7. Thematic Ratio							1	06	02	11	-17	-05	-08	02	06	11
8. Descriptive Ratio								1	-08	-12	04	-00	08	-08	-06	06
9. Integrative Complexity									1	23*	20*	-06	24*	03	-22*	-09
10. Hidden Pictures										1	05	-47***	21*	01	-10	-06
11. Retention of Information											1	-15	13	07	-18	-15
12. Fabulation of Faces												1	-10	-01	11	11
13. Verbal Intelligence													1	19	-15	-16
14. Hostility (DPI)														1	51***	36***
15. Persecution (DPI)															1	59***
16. Cynicism (DPI)																1

[1] Some batteries omitted because sex of subject could not be determined.

*$p < .05$.

**$p < .01$.

***$p < .001$

Table 10

Intercorrelations Between Neurotic Styles and Cognitive Measures for Male Subjects (N=97)[1]

Tests	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Hysterical	1	-24**	45***	14	09	38***	-01	11	-08	30	15	-02	08	-00	-08	05
2. Obsessive		1	28**	-09	19	04	06	-10	-16	-19	-10	01	-08	-03	15	05
3. Paranoid			1	05	23*	36***	04	18	-14	15	-02	-01	-02	06	16	26**
4. Enactive				1	32***	58***	-03	02	11	23*	12	09	18	13	-11	-18
5. Visual					1	42***	04	-08	-01	04	16	15	10	04	00	-12
6. Auditory						1	03	20	01	21	-05	10	06	11	-06	-07
7. Thematic Ratio							1	-04	-07	-16	08	24**	-13	-08	17	13
8. Descriptive Ratio								1	06	31**	-05	-23*	24*	-04	-14	-11
9. Integrative Complexity									1	07	02	11	22*	08	16	-24*
10. Hidden Pictures										1	30**	-15	37**	15	-35***	-20
11. Retention of Information											1	-02	23*	05	-28**	-08
12. Fabulation of Faces												1	-10	-13	10	-12
13. Verbal Intelligence													1	05	-37***	-30**
14. Hostility (DPI)														1	12	30**
15. Persecution (DPI)															1	51***
16. Cynicism (DPI)																1

[1]Some batteries omitted because sex of subject could not be determined.

Summary of Results

The present study investigated the relationship of three neurotic styles to three patterns of cognitive processes that were expected to reflect three different levels of cognitive differentiation. This cognitive-developmental model of neurotic styles was investigated by using Pearson product-moment correlations to detect any systematic relationships of covariance between the neurotic styles and the cognitive process measures (see Table 7). After a high intercorrelation between the vividness of sensory modality measures was discovered, partial correlation coefficients were examined to assess their relationship to the neurotic styles. This procedure was used to factor out the mutual relationships between the vividness of imagery scales themselves and discover any "pure" relationships that existed between the neurotic styles and sensory modality measures. Despite this procedure no stable relationships were found between the styles of neurosis and the reported vividness of imagery for the sensory modalities.

In addition, no significant relationships were found between the neurotic style measures and the conceptual styles. The number of thematic, descriptive, and inferential reasons for categorizing items had all increased as the total number of categories used in the Conceptual Sorting Task increased. Therefore, ratio scores were used which divided each of the three conceptual style scores by the total number of categories used across all three categories. These ratio scores, however, yielded no significant findings.

The hypothesized relationship between integrative complexity and neurotic styles was not established either. In fact, integrative

complexity seemed to suggest a negative trend for obsessive-compulsive and paranoid styles of neurosis. Contrary to expectations, the correct identification scores of the Hidden Pictures Test was significantly and positively correlated to the hysterical style and also to female subjects who mostly comprised this style. However, despite these findings, the data indicated that hysterical men did best of all on the correct identification of hidden pictures. These surprising results are reviewed in the Discussion section. No support, however, was found for the obsessive-compulsive style of scanning, i.e., obsessives did not identify more hidden pictures and remember more incidental information about those pictures. The paranoid style of scanning was not confirmed either. Paranoid style individuals did not identify more hidden pictures and fabulate more figures than either of the other two neurotic styles.

The findings did indicate, however, that the tendency not to fabulate faces for females and the retention of information for males were scanning differences which were associated with identifying more hidden pictures correctly. Additionally, the tests used to define these three styles of neurosis were measuring three personality styles which were independent of verbal intelligence according to the results.

Some of the cognitive process measures, however, were correlated to verbal intelligence. Integrative complexity, the Hidden Pictures Test, the retention of information and analytic-descriptive conceptualizing seem to be related to a verbal intelligence dimension.

The results of this analysis were based on instruments that proved to be internally consistent with the exception of the concep-

tual style test whose consistency was not assessed directly.

The correlational analysis was extended to include a factor analysis of the cognitive process and neurotic style variables. Four factors were retained after rotation because they seemed to account for the major amount of the total variance of the correlational matrix. These four factors were interpreted as follows: Factor 1 reflected a general vividness of sensory imagery dimension with high loadings of the hysterical and the paranoid style scales; Factor II a type of verbal facility or general intelligence dimension; Factor III a Paranoid dimension; and Factor IV a Descriptive/Scanning dimension. These factors may have implications for understanding some of the relationships between the measures which were found at the correlational level. The surprisingly strong correlation between the hysterical and paranoid style will be discussed in the next chapter in view of their loadings on Factor I and Factor IV.

CHAPTER IV

DISCUSSION

A cognitive-developmental model of neurotic styles was investigated by the present study. The theoretical model was based on Shapiro's (1965) clinical observations of the hysterical, obsessive-compulsive and paranoid styles of behavior. The stylistic consistencies of these styles of neurosis have been found to cut across a wide domain of behaviors, attitudes and ways of thinking. It was hoped that these stylistic consistencies which cut across so many domains could be explained in terms of a hierarchical theory of progressive differentiation and abstraction. The distinct patterns of cognitive processes which were hypothesized to comprise each neurotic style were also expected to reflect progressive degrees of complexity which could be subsumed under the broader principle of differentiation. The current research was an attempt to test this model by postulating a cognitively global nature for the hysterical style, an intermediate level of complexity for the obsessive-compulsive style and an advanced form of abstraction for the paranoid style. The differential organization of these levels were hypothesized to be developmentally ordered in a metaphorical sense and not necessarily derived from the same source.

The developmental interpretation of these styles was influenced by the logic of Werner (1957) and Witkin (1965). The cognitive

processes were seen as continuing forms of adaptation that paralleled biological development; i.e., a progression toward increased differentiation and specialization of system functioning which extended on a continuum from concreteness to abstraction.

Without implying any value judgments, the current study attempted to offer a functional model of complex mental processes. Personality traits were conceived of as related to cognitive styles and strategies and their development (Messick, 1972), but were not integrated into the research aims of the present study.

It is expected that individuals either respond to or restructure their environment in ways that are congenial to their typical modes of cognitive functioning. However, it is also assumed that as adults, individuals have a full repertoire of cognitive skills; they are not limited to any one level of development but enjoy a fundamentally integrated system of cognitive strategies. Each adaptive style of neurosis however, was expected to be more correlated to one cognitive process test than to other tests reflecting different degrees of differentiation for the same cognitive style dimension. Most importantly, the different patterns of correlations were expected to reflect a similar level of differentiation for each neurotic style.

No prior research, however, was available to support the notion that the different cognitive processes which were supposed to reflect the same level of differentiation in fact did. Instead, the hypotheses that were generated in this study regarding the same levels of differentiation for different kinds of cognitive processes

could only be based on face validity. This qualification might be a major explanation for the lack of findings of this investigation.

The knowledge of the level of differentiation for each style of neurosis was expected to provide a process view of the structural typologies of neurosis. It was hoped that the individual differences based on these patterns of cognitive controls could promote an understanding of how certain individuals construct their world experience. The findings of the present research, however, did not support the major aim of the study. Perhaps, the use of normal subjects rather than a true clinical population attenuated the potentially significant results that might have been yielded by this study otherwise.

An additional drawback in the current study was the unavailability of an instrument to assess neurotic styles which was well validated. Hahn's (unpublished manuscript) original construction of the Inventory for Obsessive-Compulsive and Hysterical Styles was extended in the present research to include a scale for the paranoid style scale. This Extended Inventory may have had deficiencies, however, which contributed to the lack of findings of this study. The hysterical and obsessive-compulsive style scales, for instance, might have included a substantial subset of questions which were actually measuring the sex role attributes of feminine expressiveness and masculine instrumentality, respectively (this notion is described by Spence & Helmreich, 1980). If so, the females' positive correlation to the hysterical style and their negative relationship to the obsessive-compulsive style would have to be dis-

entangled from these respective sex role stereotype traits. Analogously, the distinction between the significant ability of hysterical style men rather than expressive men to identify more hidden pictures would have to be demonstrated.

Nevertheless, some discriminant validity provided by Hahn's (unpublished manuscript) original results did indicate that the obsessive-compulsive and hysterical styles were independent dimensions (r=.02, n.s.). The current research indicated only a slight negative relationship (r=-.18, p .01) between the two styles. In contrast, a slightly positive relationship was found between the obsessive-compulsive and the paranoid style (r=.18, p .01) according to the present findings.

These results do not contradict the similarities that Shapiro (1965) stressed between the obsessive-compulsive and the paranoid style in comparison to the hysterical mode of functioning.

> . . . but even the briefest examination of formal qualities confirms it, in my opinion, unmistakeably. Such an examination shows not merely that the two styles are alike, for their differences are obviously at least as critical as their resemblances, but also that there is a close and definite relationship between them, virtually every formal aspect of the one style bearing a relationship to a corresponding aspect of the other. . . . Between these two styles, the paranoid, is in every instance, the more extreme. (p. 107)

It is also important to note that although the paranoid style scale demonstrated a moderate degree of internal consistency, no test-retest reliabilities were established for any of the neurotic style scales. The construct validity of the paranoid scale suggests that the scale was measuring what it was supposed to be measuring rather than some other attribute, e.g., intelligence. The validity measures used however, were limited and not as extensive as the

validity measures Hahn (unpublished manuscript) used. Nevertheless, the paranoid scale is significantly related to three characteristics that Shapiro described as typical of the paranoid style--cynicism, hostility, and ideas of persecution. In addition, the three DPI scales that measured these attributes were not related to either the hysterical or obsessive-compulsive style scales.

Sensory Modes (Hypotheses 1-3)

The present analysis attempted to uncover a trend of progressive differentiation or abstraction in the kinds of sensory modalities favored by the three neurotic styles. Although the hysterical style was slightly related to the enactive mode (r=.15, p .05), its correlation to the visual (r=.16, p .05) and auditory mode (r=.26, p .001) were higher. Consequently, Hypothesis 1 was not supported by the data. At the same time, high intercorrelations between the sensory modalities were found. The analysis was extended, therefore, in order to explore the extent to which the hysterical style actually correlated to enaction without being influenced by the mutual relationships that enaction shared with audition and visualization. Partial correlations were used for the purpose of examining the "pure" relationship between hysteria and enaction. After these results were computed, no significant relationship between the hysterical style and enaction was obtained. The findings did not show a significant relationship between the obsessive-compulsive style and the visual mode of representation either.

The reliance on the symbolic systems (auditory) mode of representation, it was expected, provided the kind of flexibility necessary for the paranoid style individual to confirm his delusions without violating the perception of real world phenomena. This symbolic system was posited as an advanced form of differentiation compared to enaction or visualization.

Although the paranoid style scale was significantly correlated with audition (r=.19, p .01), it was not significantly more correlated to this sensory modality than to visualization (r=.18, p .01). In addition, audition's mutual relationship to the other sensory modalities could not be factored out of its relationship to the paranoid style without leaving the relationship highly unstable. Consequently, this hypothesis was not confirmed.

Some deficiencies in the construction of the test itself, however might account for the lack of findings. The items that the subjects were asked to image were not the same across each of the sensory modality scales (see Appendix D). Perhaps the instrument would have been more discriminating if it had asked the respondent to imagine e.g., the feelings of being on a rollercoaster, seeing a rollercoaster, and hearing the sounds of a rollercoaster. However, this method would still have relied on the respondents' reported vividness of imagery rather than tapping the relative strength or predominance of the sensory modalities. Instead, actual behavioral measures of these senses and their thresholds for activation might have provided more support for the hypothesis described earlier. In fact, requesting the subjects to consciously report their vividness of imagery would seem to contradict e.g., the global repressed style of

the hysteric across all three modalities. This is especially relevant to their unconsciousness of conversion symptoms as it relates to enaction. If this is true, the discriminating power of the test would have been substantially diminished.

Conceptual Styles (Hypotheses 4-6)

None of the hypotheses regarding conceptual styles were supported by the present data. The tendency to categorize stimuli according to a specific theme (thematic), or their physical attributes (descriptive) or abstract inferences about the stimuli (inferential) yielded no support for a cognitive-developmental model of neurotic styles. No relationship was found between the hysterical style and thematic categorizing, the obsessive-compulsive style and analytic descriptive categorizing, or the paranoid style and categorical-inferential categorizing. Although the reliability for the current measure was not established, another methodological drawback may have interfered with identifying any significant relationships between these two dimensions. The Object Sorting Test (Clayton & Jackson, 1961) was assessed according to the instructions of the Sigel Conceptual Style Sorting Task (Sigel, 1967). This procedure did not seem to offer a range of variability that could effectively discriminate different conceptual styles among adults. Most likely, the conceptual style measure which was originally intended for children, was inappropriate for the adult population. Even after ratio scores were used instead of total scores the measure failed to discriminate the use of different conceptual styles for different styles of neurosis. Additionally, the construction of the

test may have had some methodological deficiencies. Specifically, the instructions require the subjects to place each item in no more than one category. This condition imposes an artificially negative relationship on the number of categories (differentiation) and the number of items in each category (discrimination) which can be generated. In other words, the more items that were placed in each category, the fewer the categories that could be used. This end result might have reduced the variance or power of the test to actually discriminate individual differences regarding the conceptual styles for different styles of neurosis. Perhaps, a measure that did not impose this restriction on the subjects would have yielded data which could support the current hypothesis. Just the ability for subjects to use the same item more than once in different categories might have improved the results. In addition, it is possible that the use of a clinical population rather than normal subjects would have made a significant difference. That is, normal adult subjects were expected, for the most part, to display categorical-inferential styles of categorizing. Neurotic subjects, however, may not have achieved the conceptual integration or flexibility necessary to invoke any style other than thematic or descriptive conceptualizing.

Integrative Complexity (Hypotheses 7-9)

The global impressionism of the hysterical style, the logical and "objective system" for the obsessive-compulsive style and the internally complex and well integrated system of delusions which is

divorced from reality for the paranoid style were expected to reflect progressive degrees of integrative complexity.

The relationship between integrative complexity and the neurotic styles however, did not meet the hypothetical expectations of the current study. Integrative complexity was not correlated to hysterical, obsessive-compulsive, or paranoid style scores. In fact, a slight negative relationship was found between integrative complexity and the cynicism (r=-.18, p .01) and persecution (r=-.15, p .05) scales of the DPI. Perhaps the variability yielded by scoring the protocols using the prescribed procedure was not sufficiently adequate to discriminate different levels of complexity. Conversely, it is also possible that paranoid thinkers tend to over-generalize or be least complex cognitively. The present analysis also indicated that verbal intelligence correlated with integrative complexity scores (see Table 7). This contaminating variable may have been sufficient to override individual differences of integrative complexity. Indeed, the sentence completion tasks required to measure integrative complexity did seem to require a verbal aptitude which was partially a measure of verbal intelligence. In addition, the problem also emerged of disentangling those sentences which may have appeared much simpler to the rater, which in fact were far more cognitively complex forms of information processing than were initially appreciated by the raters.

Still another problem may exist with the application of this integrative complexity principle using normal subjects. The notion of integrative complexity was expected to increase within the

cognitive system of each neurotic style ranging from the hysterical to the obsessive, to the paranoid structures for processing information. At the same time the integration of these cognitive systems with the whole of reality was expected to decrease. The paranoid style, for instance was hypothesized to reflect the greatest disparity between the abstractly organized internal system of delusions and the consensual validation of these delusions by outsiders. With this distinction in mind, the use of normal rather than neurotic subjects may have attenuated otherwise significant results. The results pertaining to the current hypothesis might have also been improved if an instrument were available which could have measured and discriminated the integration of structures within a cognitive system from the integration of this system to outside events or phenomena.

Scanning (Hypotheses 10-12)

The task of scanning which required subjects to correctly identify hidden pictures entailed a flexibility and speed of closure as well as the skill of disembedding. These component cognitive skills were expected to reflect an advanced form of differentiation and development. Upon first examination of the data (see Table 5), it appeared that none of the hypotheses originally formulated were substantiated by the current results. In direct opposition to research expectations, the hysterical style scores were positively and significantly related to the correct identification of the Hidden Pictures Test. Their successful performance on this type of scanning reflected a flexibility and speed of closure as well as

disembedding skills which countered the global, diffuse descriptions of the hysterical personality (e.g., Shapiro, 1965). At the same time, Shapiro (1965) describes the hysterical individual as more sensitized to people and interpersonal interactions. The Hidden Pictures Test is a scanning measure that is comprised of faces and bodies of people which subjects are asked to find. It is possible that the hysterical's sensitized response to the pictorial content of the test facilitated the cognitive skills necessary for this type of scanning. An equally plausible argument, however, would suggest that the paranoid style is particularly sensitized to hidden faces. Yet, no relationship was established between the paranoid style and the correct identification of hidden pictures, or the fabulation of faces. In fact, negative and significant correlations were found between the persecution (r=-.23, p .01) and cynicism (r=-.17, p .05) scales of the DPI and the correct identification score. Additional findings indicated that perhaps females in general, rather than hysterical subjects *per se*, are more successful at correctly identifying hidden pictures. In fact, female subjects were significantly related to the ability to report visual images vividly.

Sex Differences

Although more females were associated with hysterical functioning and in general, tended to correctly identify more hidden pictures, "hysterical" male subjects were significantly better on the Hidden Pictures Test than "hysterical" females. Perhaps scanning for the correct identification of hidden faces was facilitated by the combined effect of the interpersonal sensitivity associated with

hysterical functioning and the field independence generally found among males.

The results also indicated that females who typically did well on the Hidden Pictures Test did not tend to fabulate faces or demonstrate a paranoid scanning style. The scanning process for males seemed to differ. Those male subjects who did tend to correctly identify the hidden pictures retained more incidental information but showed no relationship to the fabulation of faces for those pictures. These findings suggested an obsessive scanning style for male subjects in comparison to females.

Verbal Intelligence

Verbal intelligence correlated with the correct identification score of the Hidden Pictures Test and the retention of incidental information measure. As a result, the scanning tendencies among the subjects were somewhat confounded with an intelligence factor.

Parenthetically, the Hidden Pictures Test was not correlated to integrative complexity. In fact, most factor analytic studies have demonstrated that although sentences can be ambiguous and subject to two or more semantic interpretations, sentence dis-ambiguating as a restructuring task is not related to visual restructuring (Messick & French, 1975). Instead, it has been suggested that the ability to manipulate verbal material may be more influenced by traditional education than by spatial reordering (Witkin, 1981).

Interpretation of Factor Analysis

The factor analyses of the present study was performed in order to discover any relationships between the variables which were

not originally hypothesized. In addition, it was hoped that this systematic explanation might uncover the nature of the unexpectedly strong relationship between the hysterical and paranoid styles and reveal any mutual relationships to other patterns of variables that confounded their relationship to each other.

The complexity of both the hysterical and the paranoid style was evident from their overlap (see Table 8); jointly they loaded on two cognitive dimensions within the factor analysis. The two neurotic styles shared common loadings on Factor I, the sensory dimension and on Factor IV, the Descriptive/Scanning dimension.

Factor Loadings Shared by the Hysterical and Paranoid Style

The paranoid and the hysterical style measures showed an unexpectedly high correlation to each other in this study. At the correlational level, the findings revealed small correlations between the paranoid style and the visual (r=.18, p .01) and auditory (r=.19, p .01) modalities. The hysterical style was also correlated to the enactive (r=.15, p .05), the visual (r=.16, p .05) and the auditory (r=.26, p .001) modalities. These results were contaminated by the intercorrelations among the sensory modalities and could not be used as such in the present study. However, the relationships between the hysterical and paranoid style at the correlational level may explain, in part, their mutual loadings on the Sensory dimension (Factor I) (hysterical loading=.28; paranoid loading=.20).

In addition, the simultaneously high loadings of the hysterical and the paranoid style on the Descriptive/Scanning dimension

suggested that Factor IV was also a critical variable in the curiously high correlation between both styles. In fact, when this fourth factor was retained for rotation the sum of the cross products between the hysterical style and the paranoid style yielded a .35 correlation for the four factor solution. This correlation accounts for 80% of the total correlation (r=.44) found between both styles.

Perhaps one of the cognitive skills involved in descriptive categorizing was the subject's ability to scan the sensory characteristics of the objects and group them according to color, texture, sound, etc. This exercise may entail an ability to scan for one sensory aspect of the total object and, in effect, isolate it from its context for categorization. In this respect, it is possible that the loading of the hysterical style on the Descriptive/Scanning dimension (.57) may be, in part, related to a scanning process similar to the correct identification of the Hidden Pictures Test which also loaded on this factor (.34). The loading of the paranoid style (.50) on this dimension may be due to the originally strong correlation between the paranoid and hysterical style. Possibly, a subset of questions on the two neurotic style scales were mutually applicable to both styles and inflated the degree to which they were positively correlated. Perhaps, both styles are equally attentive to verbal and descriptive interpersonal content but for different reasons. The paranoid style may need to attend to this sort of information in order to reinforce their delusions. In contrast, the hysterical style has generally been found to be more sensitive to people and impressions in general.

The constellation of loadings regarding the second dimension, i.e., "intelligence" or general mental abilities suggested that verbal intelligence (.53); integrative complexity (.29); the correct identification of the Hidden Pictures Test (.46) and the retention of incidental information (.34) shared a mental abilities factor. At the same time, both the obsessive-compulsive (-.28) and the paranoid style (-.28) were negatively related to this dimension. These findings might imply that neurotic thinking, especially regarding the obsessive-compulsive and paranoid style is counter to the kind of "intelligence" displayed by this factor. The negative loading of the cynicism (-.36) and persecution (-.42) scales of the DPI on this dimension support the negative loading of the paranoid style on this factor. An alternative explanation, however might also account for these findings. The questions of the DPI were originally intended for a clinical population. As a result, they are comprised of sweeping overgeneralizations which seem uncritical and undiscriminating. The current study attempted to compensate for the extreme character of these questions especially when asked to normal individuals. Therefore, subjects were asked to answer the questions on a scale of 1 to 7, rather than respond to them as simply "true" or "false" (as indicated by the original DPI instructions). This procedure, however, might not have been successful in attempting to make the DPI scales more appropriate for the normal population. As a result, the relationships between the DPI scales and this factor might reflect an acquiescent response set and/or certain aspects of socialization (e.g., dogmatism, prejudice, etc.) rather than the paranoid style per se. The authoritarian personality, for instance,

has been associated with an acquiescent response set (Jackson & Messick, 1958). In addition, several other investigations have found that acquiescence is negatively correlated to verbal intelligence and measures of intellectual ability (Messick, 1976). Jackson & Messick (1970), however did incorporate several procedures in the construction of the DPI to control for acquiesent response sets e.g., reversal of phrasing items, paired comparison methods, reduction of item ambiguity, etc. Nevertheless, an independent index of acquiescence would help to unconfound the possibility of acquiescence as a trait or personal style from the item content of the paranoid style scale as well as the DPI scales.

Conclusion

"The validity and hence the usefulness of any scientific theory derives first from its correspondence with data (clinical observations, in the case of psychoanalysis) and, second, from its own internal consistency" (Horner, 1979). The formulation of the cognitive development model of neurotic styles evolved predominately from Shapiro's (1965) clinical observations, correlational studies, and controlled research. It was hoped that the reconceptualization of these findings in process terms which were differentially organized and developmentally ordered could provide a parsimonious explanation for addressing the following two issues: (1) the "choice of neurosis," i.e., how different levels of differentiation dispose a given person to develop symptoms of a particular form, and (2) the component cognitive processes that we can expect to be associated with particular neurotic forms of functioning. Theoretically, the

patterns of these component cognitive processes were subsumed under the broader hierarchical model of progressive differentiation.

The progressive differentiation of the neurotic styles was not demonstrated however. Although the cognitive process measures did demonstrate adequate reliability, the use of behavioral measures rather than paper and pencil tests might have provided data which was more closely aligned to the clinical observations of Shapiro (1965). It is also possible that the cognitive process tests might have yielded more promising results if each test had been constructed and validated for the specific purpose of identifying three levels of differentiation.

A more precise investigation of this issue in the future might take into account the total interaction of different neurotic styles within the same individual (which would include their component cognitive processes). Additionally, if the neurotic styles are to be understood in terms of progressive levels of differentiation, perhaps cognitive functioning should be investigated in the light of other multiple and interacting sources. Several models, (e.g., Witkin, 1981) for instance, have suggested that hormonal levels of androgen-estrogen ratios during a critical period in the early years may influence the development of hemispheric specialization of functions which in turn affects the development of cognitive restructuring skills.

Perhaps future research can establish that differentiation is a higher order structure which can account for the cognitive styles among different styles of neurosis. These findings would have heuristic potential in many fields. In the clinical domain the choice

of pathology among patients could be anticipated and understood more fully. Modes of therapy could be designed to increase the structural options for each patient based on their general level of cognitive differentiation. Therapeutic objectives might be furthered by integrating different styles or levels of differentiation with others; e.g., providing concrete exercises to the abstract (paranoid) thinker or providing analytic exercises to the concrete (hysterical) thinker. Instruction might also be tailored to the nature and level of cognitive differentiation of the student to maximize learning strategies. Additionally, creativity might be enhanced by broadening the cognitive repertoire of differentiation within the individual, e.g., the flexibility to combine thematic and inferential concepts simultaneously.

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APPENDIX A

THE COVER SHEET AND THE PARAGRAPH COMPLETION TEST

COGNITIVE PROCESS TEST BATTERY

Name:

Address:

Phone:

College major and/or Profession:

Please answer the questions in the following tests. Your answers will remain entirely confidential. No deception is involved in any of the tests.

PARAGRAPH COMPLETION

In this first set of materials you will be providing us with information about your reactions to events which commonly occur in interpersonal, professional business situations.

On the following pages we will ask you to complete certain sentences and write a short paragraph.

On each page you will find the beginning of a sentence, and your task is to complete it.

For example I like...

You would finish this sentence, and then write at least three additional sentences.

When you are given the signal, turn to Page 1. Complete sentence given, and write at least three additional sentences. You will be given 130 seconds. After 110 seconds you will be asked to finish your sentences, to turn the page. Make sure you complete your last sentence on each page.

Write down your reactions as they come to you. Do not try to reason out an answer. There are no right or wrong answers.

Do not turn the page until you are given the signal.

When someone disagrees with me . . .

Try to write at least 3 sentences.

Do not turn this page until you are given the signal.

In planning my career . . .

Try to write at least three sentences.

Do not turn this page until you are given the signal.

When I am in doubt . . .

Try to write at least 3 sentences.

Do not turn the page until you are given the signal.

Rules...

Try to write at least 3 sentences.

Do not turn the page until you are given the signal.

When others criticize me it usually means . . .

Try to write at least 3 sentences.

Do not turn this page until you are given the signal.

Confusion . . .

Try to write at least 3 sentences.

Do not turn the page until you are given the signal.

Going to College . . .

Try to write at least 3 sentences.

Do not turn the page until you are given the signal.

APPENDIX B

THE HIDDEN PICTURES TEST

HIDDEN PICTURES

The picture at the right shows an old man in a buggy. If you examine the picture closely, however, you will find the heads of three other people hidden in the picture. One of these "hidden people" has been encircled. Find the other two hidden people and encircle them in the same way.

In each of the three pictures which follow, you are to find the hidden people and encircle them. There may be other objects in the picture (in the picture at the right, for example, there are a horse, a pitcher, and a bell), but you are not to mark these. You are to concern yourself only with people.

You will be told under each picture how many people to look for. Sometimes there will be only a face, sometimes a whole head, sometimes an entire person. Turn your book around in various positions in order to find the hidden people. When you find a person's head, face, or a whole figure, draw a circle around it.

When the supervisor tells you to begin, turn the page and start looking for the hidden people in the first picture. Do not spend too much time on any one picture. Find the more obvious hidden people in all three pictures first; then go back and look for the more difficult ones.

You will have 15 minutes to work on the test.

DO NOT TURN THIS PAGE
UNTIL YOU ARE TOLD TO DO SO.

3 people to find

HIDDEN PICTURES

Time—15 minutes

4 people to find

GO ON TO THE NEXT PAGE.

Hidden Pictures Scene.

Describe the pictoral scene of the picture that you have just examined without going back to look at the picture again.

5 people to find

GO ON TO THE NEXT PAGE.

5 people to find

STOP. IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST. DO NOT GO BACK TO THE PREVIOUS TEST. DO NOT GO ON TO THE NEXT TEST UNTIL YOU ARE TOLD TO DO SO.

APPENDIX C:

THE EXTENDED INVENTORY OF HYSTERICAL, OBSESSIVE-COMPULSIVE AND PARANOID STYLES OF NEUROSIS

The following introduction to the test was read to the subjects: "The following statements represent possible descriptions of yourself, your feelings, your behavior, and your ideas. If you were asked to describe yourself, some of these statements may be closely related to the kinds of statements you might make about yourself."

THE EXTENDED INVENTORY

Please use the scale below to rate each item in terms of the extent to which it describes you.

The relationship of the statement to my self-description is:

1- completely unrelated
2- considerably unrelated
3- somewhat unrelated
4- slightly related
5- somewhat related
6- closely related
7- very closely related

1---------2---------3---------4---------5---------6---------7

completely unrelated — slightly related — very closely related

Please try to use the entire range from 1 to 7 unless a number cannot be appropriately related to any of the statements.

_____1. I can often tell when someone is being deceptive, even when others cannot.

_____2. I pay attention to what storekeepers charge because I don't want them to take advantage of me.

_____3. I sometimes think about what it would be like to be an actor or an actress and to play a lot of different roles or parts.

_____4. I often think about what I plan to be doing 5 or 10 years from now, and organize many of my present activities according to these plans.

_____5. Before making a decision, I usually try to take into consideration all of the details involved.

_____6. People are more controlling of others than they appear to be.

1---------2---------3---------4---------5---------6---------7
ompletely slightly very closely
nrelated related related

____7. I can sometimes lose myself in the lives and experiences of characters portrayed in a novel, play, or movie.

____8. I frequently work hard in developing carefully organized plans for action.

____9. Certain people who have a charisma about them capture my attention.

____10. Thinking about the excitement of a romantic fling often stimulates me.

____11. I think a great threat is losing one's power and control to a superior force or authority.

____12. I like to engage in technical and scientific pursuits.

____13. I usually attempt to organize things according to a schedule, and try to carry them out at a steady pace.

____14. I have very specific, well-defined future plans, and work hard in attempting to attain my goal.

____15. The theater enraptures and excites me.

____16. I can easily identify anger and irritability in others.

____17. In reviewing work that I have done, I always try to concentrate very hard in order to detect and correct possible mistakes.

____18. Buying new clothes or trying on the latest fashions often excites me.

____19. I like to attempt problems involving technical details.

1---------2---------3---------4---------5---------6---------7

completely unrelated — slightly related — very closely related

____20. Large Insects often frighten me.

____21. Often, people are unaware of how aggressive they are being.

____22. I can always tell when someone does not like me regardless of what they say.

____23. I like to assemble and fix gadgets.

____24. A sad movie often makes me feel like crying.

____25. When I am happy, I tend to be bubbly, spontaneous, and flowing with energy.

____26. I believe my independence is my main concern.

____27. I often try to study all the facts before choosing a course of action.

____28. I prefer work which involves intense concentration.

____29. My instincts about people are usually more accurate than other kinds of information they offer me.

____30. Romantic day dreams or fantasies excite me.

____31. I wonder what people say about me when I'm not there.

____32. I consider myself an emotionally expressive person.

____33. I sometimes get so carried away by romantic feelings that I completely forget about everyday activities.

____34. I don't like people that don't like me.

____35. I am aware of the symbolic significance of other peoples' gestures.

1---------2---------3---------4---------5-------6-------7

completely unrelated — slightly related — very closely related

____36. I concentrate best when I find something exciting and become emotionally involved with it.

____37. Sometimes, I think I know people better than they know themselves.

____38. I usually plan my activities in accordance with a steady, systematic schedule.

____39. I have very clear professional goals, and carefully plan appropriate action which will lead to the attainment of my goals.

____40. I enjoy reading or reciting poetry.

____41. Freedom from authority is more important than the security authorities can offer.

____42. Mathematics has always been one of my favorite subjects in school.

____43. I like problems in which one is required to pay close attention to details.

____44. I love theater and art.

____45. I think it can be dangerous to believe in the friendliness of strangers.

____46. When I feel good, I am lively and emotionally expressive.

____47. I perform best when I have a strong emotional involvement in what I am doing.

____48. I would like to be able to interpret dreams.

1---------2---------3---------4---------5---------6---------7

completely unrelated	slightly related	very closely related

____49. I would enjoy working with computers.

____50 I believe that what people say often contradicts what they really mean.

____51. I enjoy the planning of things I am going to do.

APPENDIX D:

THE SHORTENED FORM OF BETTS' QUESTIONNAIRE UPON MENTAL IMAGERY

NAME:_____ DATE:_____

ADDRESS:_____ TELEPHONE:_____

Instructions for Doing Test

The aim of this test is to determine the vividness of your imagery. The items of the test will bring certain images to your mind. You are to rate the vividness of each image by reference to the accompanying rating scale, which is shown at the bottom of the page. For example, if your image is "vague and dim" you give it a rating of 3. Record your answer in the brackets provided after each item. Just write the appropriate number after each item. Before you turn to the items on the next page, familiarize yourself with the different categories on the rating scale. Throughout the test, refer to the rating scale when judging the vividness of each image. A copy of the rating scale will be printed on each page. Please do not turn to the next page until you have completed the items on the page you are doing, and do not turn back to check on other items you have done. Complete each page before moving on to the next page. Try to do each item separately independent of how you may have done other items.

The image aroused by an item of this test may be-

No image present at all, you only "knowing" that you are thinking of the object	.....Rating 1
So vague and dim as to be hardly discernible	....Rating 2
Vague and dim	....Rating 3
Not clear or vivid, but recognizable	....Rating 4
Moderately clear and vivid	....Rating 5
Very clear and comparable in vividness to the actual experience	....Rating 6
Perfectly clear and as vivid as the actual experience	....Rating 7

An example of an item on the test would be one which asked you to consider an image which comes to your mind's eye of a red apple. If your visual image was moderately clear and vivid you would check the rating scale and mark "5" in the brackets as follows:

Item	Rating
5.	(5)

Now turn to the next page when you have understood these instructions and begin the test.

VIVIDNESS OF VISUAL IMAGERY IN YOUR MEMORIES AND IMAGINATION

We want to know how clear, distinct, and life like your visual images are. For example:

Think of some relative whom you frequently see, considering carefully the picture that rises before your mind's eye. Classify the images suggested by each of the following questions as indicated by the degrees of clearness and vividness specified on the Rating Scale.

Item	Rating
1. The exact contour of face, head, shoulders and body	....( )
2. Characteristic poses of head, attitudes of body, etc.	....( )
3. The precise carriage, length of step, etc. in walking	....( )
4. The different colours worn in some familiar costume	....( )

Think of seeing each of the following, considering carefully the picture which comes before you mind's eye; and classify the image suggested by each of the following questions as indicated by the degrees of clearness and vividness specified on the Rating Scale.

5. The sun as it is sinking below the horizon ..... ( )

Rating Scale

The image aroused by an item of this test may be-

No image present at all, you only "knowing" that you are thinking of the object	....Rating 1
So vague and dim as to be hardly discernible	....Rating 2
Vague and dim	....Rating 3
Not clear or vivid, but recognizable	....Rating 4
Moderately clear and vivid	....Rating 5
Very clear and comparable in vividness to the actual experience	....Rating 6
Perfectly clear and as vivid as the actual experience	....Rating 7

VIVIDNESS OF AUDITORY IMAGERY AND HEARING ON YOU MEMORIES AND IMAGINATION

We want to know how clear, distinct, and life like your auditory images are. For example:

Think of the following sounds, considering carefully the image which comes to your mind's ear, and classify the images suggested by each of the following questions as indicated by the degrees of clearness and vividness specified on the Rating Scale.

Item		Rating
6.	The whistle of a locomotive	( )
7.	The honk of a automobile	( )
8.	The mewing of a cat	( )
9.	The sound of escaping steam	( )
10.	The clapping of hands in applause	( )

Rating Scale

The image aroused by an item of this test may be-

No image present at all, you only "knowing" that you are thinking of the object ....Rating 1

So vague and dim as to be hardly discernible ....Rating 2

Vague and dim ....Rating 3

Not clear or vivid, but recognizable ....Rating 4

Moderately clear and vivid ....Rating 5

Very clear and comparable in vividness to the actual experience ....Rating 6

Perfectly clear and as vivid as the actual experience....Rating 7

VIVIDNESS OF BODY AND MOTOR IMAGES IN YOUR MEMORIES AND IMAGINATION

We want to know how clear, distinct, and life like your body images and feelings are. For example:

Think of performing each of the following acts, considering carefully the imagery of your body and motor sensations which come to your mind's arms, legs, lips, etc., and classify the images suggested as indicated by the degree of clearness and vividness specified on the Rating Scale.

Item		Rating
11.	Running upstairs	( )
12.	Springing across a gutter	( )
13.	Drawing a circle on paper	( )
14.	Reaching up to a high shelf	( )
15.	Kicking something out of your way	( )

Rating Scale

The image aroused by an item of this test may be-

No image present at all, you only "knowing" that you are thinking of the object	....Rating 1
So vague and dim as to be hardly discernible	....Rating 2
Vague and dim	....Rating 3
Not clear or vivid, but recognizable	....Rating 4
Moderately clear and vivid	....Rating 5
Very clear and comparable in vividness to the actual experience	....Rating 6
Perfectly clear and as vivid as the actual experience	....Rating 7

APPENDIX E:

THE OBJECT SORTING TEST

First of all, it is important to note that there is no one right answer to this test. Everyone does it in his own way. You should do it in the way that seems most natural, most logical, and most comfortable to you. The instructions are simply to put together into groups the names of the objects listed below which seem to you to belong together. Write these groups down on the paper provided, labeling the categories, A, B, etc. For example, in category A, you would place those objects which seem to belong in one group, in category B those objects which seem to belong in a second group, and so on for as many or as few objects in a group as you like, so long as the objects in each group belong together for one particular reason. However, no object may be placed in more than one group. If, after you have thought about all the objects, a few do not seem to belong with any of the others, you may put each of those objects into groups by themselves. So that you will be sure to sort all of the objects it is suggested that you place a check mark next to each object when you place it in a category. Use a pencil with an eraser.

*Underneath each category indicate the reason for putting those particular objects in the same group.

Object Sorting Test II

cap	baseball bat	nail file
paper weight	Venetian blind	a hoe
tulip	mittens	a spear
fork	measuring spoon	pliers
penny	rifle	phonograph
a cork	a saw	stool
hair brush	cigar	wash cloth
clock	a football	photograph
cushion	sled	purse
lighter	shirt	fountain pen
vitamin pill	bush	string
tax stamp	yard stick	slipper
movie projector	adhesive tape	carpet
pebble	row boat	inner tube
telegram	telephone pole	a screw
telephone directory	a kleenex	a pan
jacket	a candle	

APPENDIX F:

THE DIFFERENTIAL PERSONALITY INVENTORY

DPI Directions

This booklet contains a number of statements. Read each statement and decide how you feel about it. Based on the scale from 1 to 7 rate each statement in terms of how closely it describes you.

1- completely unrelated
2- considerably unrelated
3- somewhat unrelated
4- slightly related
5- somewhat related
6-closely related
7-very closely related

1---------2---------3---------4---------5---------6---------7

completely unrelated	slightly related	very closely related

Please give the most accurate description of yourself that you can by considering the entire range of the scale before you choose your answer.

_____1. People are basically "good."

_____2. I let people know when I'm angry.

_____3. I often feel that someone is trying to make my life difficult and unpleasant.

_____4. Someone is always getting away with something.

_____5. I don't very often feel like "telling someone off."

_____6. I never have the feeling that someone wants to kill me.

_____7. Most people are descent and trust worthy.

_____8. Heaven help the person who tries to cheat me.

_____9. I can tell that someone is listening to my telephone calls.

____10. In today's world , people don't treat others the way they should.

____11. I avoid becoming angry.

____12. I am sure that no one tells my friends mean things about me.

____13. People are not always out to trick you.

____14. I enjoy hearing about the hard luck of those I don't like.

____15. I often feel that I am in great danger from people who wish to harm me.

____16. There is good reason to believe that "there's a sucker born every minute."

1---------2---------3---------4---------5---------6---------7

completely unrelated — slightly related — very closely related

____17. If someone tried to cheat me, I would probably forgive and forget.

____18. I never feel like a robot that someone else is directing.

____19. I am willing to trust most people.

____20. If I were angry enough, I might even strike a friend.

____21. I would be much more successful if certain people were not against me.

____22. Politics are and always will be rotten.

____23. I would never enjoy making anyone feel bad.

____24. I am sure that no one has it in for me.

____25. I believe most people in the world are honest.

____26. I believe that physical violence is often the only way to teach a person something.

____27. I can taste bad things in my food that no one else notices.

____28. Most welfare agencies are out to cheat the public.

____29. Even though it might be called for, I don't get angry.

____30. No one spreads rumors to turn my friends against me.

____31. I believe that most people do not lie on purpose.

____32. I often tell others that I don't like a person.

1---------2---------3---------4---------5---------6---------7

completely unrelated	slightly related	very closely related

____33. Someone has robbed me of my free will.

____34. In this world if you don't step on the other fellow, he'll step on you.

____35. "Turning the other cheek" is better than fighting.

____36. People don't usually blame me for things I haven't done.

____37. Most students do not cheat on tests.

____38. I usually attack rather than walk away from a person who angers me.

____39. Every day someone makes me do something against my will.

____40. There are so many theives today that you need eyes in the back of your head.

____41. I would never threaten anyone with physical attack.

____42. No one is making things go wrong for me.

____43. There are many people who are willing to help me.

____44. I can tell that my belongings have often been searched by someone.

____45. I'll never go out of my way to avoid a good fight.

____46. People often try to fool you in one way or another.

____47. I never hit people when I'm angry.

____48. No one stops me from thinking my own thoughts.

1---------2---------3---------4---------5---------6---------7

completely unrelated	slightly related	very closely related

APPENDIX G:

VERBAL INTELLIGENCE TEST

Q.2 On each line is one word in capital letters and, on the same line, five words in small letters. For each word in capitals, circle the one word in small letters that has the same meaning as the word in capital letters. In this example...

BEAST afraid word large animal bird

... you would circle the word "animal" because it is closer to "BEAST" than any of the other words. Do the same thing for the following 20 lines of words.

SPACE	school	noon	captain	room	board
LIFT	sort out	raise	value	trying	fancy
CONCERN	see	engage	furnish	disturb	have to do with
BROADEN	efface	make level	elapse	embroider	widen
BLUNT	dull	drowsy	deaf	doubtful	ugly
ACCUSTOM	way	customary	encounter	get used to	business
CHARITABLE	relentless	evil	sympathetic	poetic	keen
EDIBLE	jaw	eligible	fit to eat	tough	building
PACT	ready	demonstration	agreement	definite	trial
SOLICITOR	lawyer	chieftan	watchman	maggot	constable
ALLUSION	aria	illusion	eulogy	cream	reference
CAPRICE	value	star	grimace	whim	inducement
ANIMOSITY	hatrid	animation	crudeness	illness	spirit
EMANATE	populate	free	prominent	rival	come from
RUDIMENT	cargo	beginning	insult	remorse	stomach
CLOISTERED	minature	bunched	arched	malady	secluded
RUBRIC	kopeck	oaf	lace	heading	debris
PRISTINE	flashing	earlier	primeval	bound	green
TACTILITY	tangibility	grace	subtlety	rudeness	nerve
SEDULOUS	muddled	sluggish	stupid	assiduous	currupt

APPENDIX H:

INDIVIDUAL SCALES OF THE EXTENDED INVENTORY OF THE HYSTERICAL, OBSESSIVE-COMPULSIVE AND PARANOID STYLES OF NEUROSIS

The following scales have been extracted from their original context in order to demonstrate the specific kinds of questions that comprised the psychological dimensions that they were designed to reflect:

The Extended Inventory which consists of the (2) Hysterical style, (2) the Obsessive-compulsive style, and (3) the Paranoid style scales.

HYSTERICAL STYLE SCALE

I sometimes think about what it would be like to be an actor or an actress and to play a lot of different roles or parts.

I can sometimes lose myself in the lives and experiences of characters portrayed in a novel, play, or movie.

Certain people who have a charisma about them capture my attention.

Thinking about the excitement of a romantic fling often stimulates me.

The theater enraptures and excites me.

Buying new clothes or trying on the latest fashions often excites me.

Large insects often frighten me.

A sad movie often makes me feel like crying.

When I am happy, I tend to be bubbly, spontaneous, and flowing with energy.

Romantic daydreams or fantasies excite me.

I consider myself an emotionally expressive person.

I sometimes get so carried away by romantic feelings that I completely forget about everyday activities.

I concentrate best when I find something exciting and become emotionally involved with it.

I enjoy reading or reciting poetry.

I love theater and art.

When I feel good, I am lively and emotionally expressive.

I perform best when I have a strong emotional involvement in what I am doing.

OBSESSIVE-COMPULSIVE STYLE SCALE

I often think about what I plan to be doing 5 or 10 years from now, and organize many of my present activities according to these plans.

Before making a decision, I usually try to take into consideration all of the details involved.

I frequently work hard in developing carefully organized plans for action.

I like to engage in technical and scientific pursuits.

I usually attempt to organize things according to a schedule, and try to carry them out at a steady pace.

I have very specific, well-defined future plans, and work hard in attempting to attain my goal.

In reviewing work that I have done, I always try to concentrate very hard in order to detect and correct possible mistakes.

I like to attempt problems involving technical details.

I like to assemble and fix gadgets.

I often try to study all the facts before choosing a course of action.

I prefer work which involves intense concentration.

I usually try to carefully plan my activities in accordance with a steady, systematic schedule.

I have very clear professional goals, and carefully plan appropriate action which will lead to the attainment of my goals.

Mathematics has always been one of my favorite subjects in school.

I like problems in which one is required to pay close attention to details.

I would enjoy working with computers.

I enjoy the planning of things I am going to do.

PARANOID STYLE SCALE

I can often tell when someone is being deceptive, even when others cannot.

I pay attention to what storekeepers charge because I don't want them to take advantage of me.

People are more controlling of others than they appear to be.

I think a great threat is losing one's power and control to a superior force or authority.

I can easily identify anger and irritability in others.

Often, people are unaware of how aggressive they are being.

I can always tell when someone does not like me regardless of what they say.

I believe my independence is my main concern.

My instincts about people are usually more accurate than other kinds of information they offer me.

I wonder what people say about me when I'm not there.

I don't like people that don't like me.

I am aware of the symbolic significance of other peoples' gestures.

Sometimes, I think I know people better than they know themselves.

Freedom from authority is more important than the security authorities can offer.

I think it can be dangerous to believe in the friendliness of strangers.

I would like to be able to interpret dreams.

I believe that what people say often contradicts what they really mean.

APPENDIX I:

INDIVIDUAL SCALES OF THE DIFFERENTIAL PERSONALITY INVENTORY

The following scales have been extracted their original context in order to demonstrate the specific kinds of questions that comprised the psychological dimensions that were designed to reflect:

The DPI Scales consist of (1) Differential, (2) Cynicism, and (3) Hostility.

DIFFERENTIAL PERSONALITY INVENTORY SCALE

The appropriate scales from this inventory were adapted using the original instructions of the DPI test which can be found in the Cognitive Process Battery. The questions of each scale were intermixed in a consecutively numbered fashion (which is also of a randomized order) to simplify scoring procedures.

The following items were scored "1" if they were marked "T" for "TRUE" or "F" for "FALSE" as indicative of one of the following traits of paranoia.

Ideas of Persecution

3	T	I often feel that someone is trying to make my life difficult and unpleasant.
6	F	I never have the feeling that someone wants to kill me.
9	T	I can tell that someone is listening to my telephone calls.
12	F	I am sure that no one tells my friends mean things about me.
15	T	I often feel that I am in great danger from people who wish to harm me.
18	F	I never feel like a robot that someone else is directing.
21	T	I would be much more successful if certain people were not against me.
24	F	I am sure that no one has it in for me.
27	T	I can taste bad things in my food that no one else notices.
30	F	No one spreads rumors to turn my friends against me.
33	T	Someone has robbed me of my free will.
36	F	People don't usually blame me for things I haven't done.
39	T	Every day someone makes me do something against my will.

42 F No one is making things go wrong for me.

44 T I can tell that my belongings have often been searched by someone.

48 F No one stops me from thinking my own thoughts.

Cynicism

1	F	People are basically "good."
4	T	Someone is always getting away with something.
7	F	Most people are decent and trustworthy.
10	T	In today's world, people don't treat others the way they should.
13	F	People are not always out to trick you.
16	T	There is good reason to believe that "there's a sucker born every minute."
19	F	I am willing to trust most people.
22	T	Politics are and always will be rotten.
25	F	I believe most people in the world are honest.
28	T	Most welfare agencies are out to cheat the public.
31	F	I believe most people do not lie on purpose.
34	T	In this world if you don't step on the other fellow, he'll step on you.
37	F	Most students do not cheat on tests.
40	T	There are so many thieves today that you need eyes in the back of your head.
43	F	There are many people who are willing to help me.
46	T	People often try to fool you in one way or another.

Hostility

2	T	I let people know when I'm angry.
5	F	I don't very often feel like "telling someone off."
8	T	Heaven help the person who tries to cheat me.
11	F	I avoid becoming angry.
14	T	I enjoy hearing about the hard luck of those I do not like.
17	F	If someone tried to cheat me, I would probably forgive and forget.
20	T	If I were angry enough, I might even strike a friend.
23	F	I would never enjoy making anyone feel bad.
26	T	I believe that physical violence is often the only way to teach a person something.
29	T	Even though it might be called for, I don't usually get angry.
32	T	I often tell others that I do not like a person.
35	F	"Turning the other cheek" is better than fighting.
38	T	I usually attack rather than walk away from a person who angers me.
41	F	I would never threaten anyone with physical attack.
45	T	I'll never go out of my way to avoid a good fight.
47	F	I never hit people when I'm angry.