THE EFFECTS OF COGNITIVE FLEXIBILITY ON RORSCHACH INTERPRETATION

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Presented to the Graduate Council of the North Texas State University in Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

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Denton, Texas
August, 1984
The Effects of Cognitive Flexibility on Rorschach Interpretation. Doctor of Philosophy (Clinical Psychology), August, 1984, 83 pp., 2 tables, 1 figure, references, 46 titles.

Although the Rorschach is one of the most widely used psychological assessment techniques, its empirical support has been equivocal. One possible explanation for this lack of empirical support is the tendency for researchers to study only the assessment tool with little regard for the clinician using it. In order to examine the relationship between accurate Rorschach interpretation and attributes of the clinicians employing the technique, 46 psychology graduate students were tested in terms of cognitive flexibility. Torrance's Thinking Creatively with Pictures and Cattell's 16-Personality Factor Questionnaire were used to derive various measures of cognitive flexibility. A two-stage multiple linear regression analysis was done. The most statistically reliable result was that flexibility of thought was found to be the single best mediator of accuracy of Rorschach interpretation. Other individual findings were noted and interpreted.
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The present study is a report on one aspect of a jointly-conducted investigation. The companion report by Sandra Joanna Davis Freeze, entitled Accurate Empathy and Rorschach Interpretation, is also a North Texas State University dissertation (August, 1984).
THE EFFECTS OF COGNITIVE FLEXIBILITY ON
RORSCHACH INTERPRETATION

Since Hermann Rorschach first published his monograph "The Form of Interpretation Test" in 1921, the Rorschach inkblot test has become one of the most heavily researched and most widely disagreed-upon instruments in psychology (Goldfried, Stricker, & Weiner, 1971; Howes, 1981). In the ensuing 60 years since its publication several dozen textbooks and about 6,000 articles have appeared in the literature regarding the merits and deficits of the Rorschach (Howes, 1981). It has been described as a sample of behavior, a clinical technique, a standardized interview, and a semantic interpretation (McArthur, 1972; Schwartz & Lazar, 1979) and has been criticized on the bases of lack of reliability, validity, and sound theoretical foundation (Anastasi, 1976; Cleveland, 1976; Cohen, 1973; Eysenck, 1959). In addition, the suggestion that the Rorschach can provide a projection of the examiner's own psyche as well as that of the client (Schafer, 1967) has received support (Cohen, 1973; Harrower, 1976; Potkay, 1971). In spite of, and perhaps in light of, variable description, criticism, and support, the Rorschach continues to be the most popular assessment technique (Howes, 1981).
The basic hypothesis underlying the use of the projective techniques is that the way in which the individual perceives and interprets the test material, or structures the situation, will reflect fundamental aspects of his or her psychological functioning. In other words, it is expected that the test materials will serve as a sort of screen on which the respondent "projects" his or her characteristic thought processes, needs, conflicts, and anxieties (Anastasi, 1976; Maloney & Ward, 1976). The term "projective method" was coined by Frank (1939), and Bellack (1975) has formulated the broader concept of "apperceptive distortion" which he believes might serve as a more useful frame of reference for some of the projective methods. Bellack's conceptualization of apperceptive distortion, whereby all contemporary perception is influenced and organized by memory traces of all previous perceptions, is related to Freud's (1938) concept of projection which, along with allowing one to attribute undesirable or threatening subjective impulses to the objective world, also colors one's perceptions even when there is no conflict involved. Bellak (1975) refers to this as apperception—"an organism's (dynamically) meaningful interpretation of a perception" (p. 16). It is upon this basis that the client's thought processes, needs, and conflicts are reflected in his or her performance on such tests as the Rorschach.

In considering the principles which seem to constitute the theoretical foundations of the Rorschach, Piotrowski
(1957) proposes that the broadest principle is that there is no perception without selection, and that selection reflects the total personality. By introducing definite meaning into ambiguous situations, an individual thereby reveals his or her way of approaching the world. Piotrowski further asserts that the very fact that an individual is generally unaware of that which he or she reveals about him- or herself enhances the validity of the Rorschach and that the anxiety produced by the unstructured nature of the situation results in more meaningful responses than would be generated in a more relaxed situation.

Based upon an individual's Rorschach responses then, the examiner attempts to make interpretations regarding the way in which the individual structures the environment, the nature of his or her conflicts and needs, and the type of effectiveness of the defense mechanisms characteristic of that person. In contrast with many of the objective techniques, such as the MMPI, the Rorschach and other projective techniques seem to provide a much richer source of information which yield a more comprehensive understanding of the individual's personality. Although Rorschach developed categories of analysis in his instrument, he did not interpret these categories individually, but stressed the importance of an interpretation based upon the interactions of these components (Howes, 1981). Since its initial publication, several scoring systems have been developed (Beck, 1937; Exner, 1974; Hertz, 1951; Klopfer,
1937; Piotrowski, 1957; Schafer, 1967), but still there are few universally adopted rules about scoring and the major scoring systems often disagree as much as they agree (Howes, 1981).

It seems likely that much of the criticism leveled at the Rorschach regarding a lack of a consistent theoretical foundation stems from the fact that scoring systems differ and the explanations of its clinical use vary. Such criticism does not appear to be appropriate since regardless of the scoring system used or clinical explanation for its use, the basic theoretical underpinnings upon which the Rorschach is based remain essentially unchanged. Criticism regarding the lack of empirical validity and reliability, however, may be well-founded.

Although much research has been conducted, there have been relatively few studies yielding positive results when traditional evaluation methods have been used. Howes (1981) has pointed out that the variety of scoring systems seem to preclude any possibility of discussing the Rorschach. For this reason Exner's (1974) comprehensive system may be the most important development in the evolution of the Rorschach and many hope that full adoption of this new system will for the first time allow truly comparative research studies to be undertaken. Goldfried, et. al. (1971) postulate that the tacit assumption underlying much of the Rorschach validity research seems to hold that in order to be valid it must
measure practically everything about an individual psychologically. If this is the job that the Rorschach is supposed to do, they state, then the chances are that it never will be shown to be valid. It is suggested that this assumption has resulted in a lack of a systematic approach to validating attempts which seek to answer the elusive question, "Is the Rorschach valid?" This is a vague, global question, and too much room has consequently been left for variability as to what is actually being asked. Goldfried, et. al. (1971) suggest that a more appropriate question upon which to base research might be "what is the Rorschach valid for?" Goldfried and his colleagues have taken such an approach in their identification and evaluation of factors such as hostility, suicide potential, and schizophrenia. The interdependence of various Rorschach variables is also suggested in a study by Exner and Wylie (1977) in which a constellation of 11 variables were identified as being predictive of suicide.

In spite of the numerous criticisms and lack of consistent empirical support that have plagued projective techniques in general and the Rorschach in particular, there does not appear to have been a dramatic decrease in their use (Goldfried, et. al., 1971; Howes, 1981; Potkay, 1971). In fact, Wade, Baker, Morton, and Baker (1978) have reported that surveys of clinicians and mental health agencies have shown that not only are projective techniques widely used, but the test which most clinicians (n = 500) advised clinical psychology students
to learn was the Rorschach. Certainly it would appear that many clinicians consider projective tests as more valuable than might be suggested by the equivocal nature of reliability and validity studies. This may be due to the greater weight accorded personal clinical experience by many clinicians. Goldfried, et. al. (1971) suggest that clinicians are either "believers" or "nonbelievers" in the Rorschach in that they are influenced by strong personal convictions rather than logical evaluations in light of research data. Potkay (1971) suggests that one reason validity of the technique has not been experimentally demonstrated may be because Rorschach validation research typically has failed to incorporate the critical influence of the clinician, or even to establish experimentally the ways in which clinicians use Rorschach information in actual practice. Most Rorschach validation studies have been based upon the assumption that the traditional variables (e.g., location, form quality, determinants, popular responses, etc.) are the ones being heavily employed by Rorschach clinicians. However, it is not clear that successful Rorschach interpreters do utilize traditional variables in theoretically directed ways (Armitage & Pearl, 1957; Chambers & Hamlin, 1957; Levine, 1959).

Chambers and Hamlin (1957), who found that psychologist-subjects responded to a forced-choice regarding five Rorschach protocols accurately at a level better than chance, note that
successful judges reached a higher level of abstraction from raw data. They showed flexibility in shifting from one level of interpretation to another, suggesting greater capacity for adaptiveness and selectivity regarding the data. Additionally, successful judges adhered less to textbook statements and traditional signs, and used fewer words to express their ideas. Hence the critical influence in Rorschach interpretation may not be any specific technique per se, but rather some characteristic of the clinician who puts the instrument to use (Davis, 1961; Potkay, 1971). Since clinicians have been found to value Rorschach information differentially, any a priori inclusion or omission of Rorschach data in a study may not encompass the informational needs of all clinicians participating in the study (Potkay, 1971). Therefore, Potkay asserts that one of the most significant needs to be met in validation research would be that of incorporating the Rorschach clinician in an experiment which would permit a flexible approach to interpretation, geared to the experiences and needs of the clinician.

**Issues for the Present Study**

As already suggested, much of the research has found the Rorschach to be of questionable validity precisely because the role and personal characteristics of the clinician have not been adequately taken into account (Hertz, 1959; Levine, 1959; Potkay, 1971). Levine (1959) postulates that this inability to obtain positive findings is possibly due to
investigators "scoring the Rorschach for 'traditional' Rorschach categories while clinicians utilize different variables, perhaps without scoring them, in their day-to-day work" (p. 439). It is consequently the purpose of the present study to more closely examine the Rorschach clinician in an effort to identify variables which may effect the accuracy of Rorschach interpretation. The assumption is that successful Rorschach clinicians, i.e., those who can glean accurate and useful information from a Rorschach protocol, are the ones who continue to employ the Rorschach despite the empirical findings of questionable validity for structured scores. The primary focus of this investigation is upon specific aspects of flexible or creative thinking by clinicians interpreting Rorschach responses, and how these aspects influence accuracy of Rorschach interpretation.

Much has been written regarding creativity and the nature of the creative process, but a clear understanding of creativity has proved elusive and no consensus has been reached as yet. Freud, who speaks in terms of the artist, states that the artist appears to be endowed not only with the capacity for sublimation, but also with flexibility in the repressions that determine the conflict (Slochower, 1974). Freud (1911, 1917) holds that the artist understands how to work with his or her fantasies or daydreams so that they do not become so personal as to interfere with reality. Extending this idea, the artist appears to be able to mobilize fantasy
into the practical service of the artistic execution—fantasy guides the painter's brush. In the Jungian system, the source and the propelling force of creativity stem from the unconscious; the creative process is viewed as consisting of "an unconscious animation of the archetype" (Jung, 1928, pp. 118-119). Jung describes an autonomous creative complex that is separate from complexes rooted in psychopathology (Rothenberg & Hausman, 1976). Although he attempts a limited account of the creative process, he also states that "any reaction to stimuli may be causally explained; but the creative act, which is the absolute antithesis of mere reaction, will forever elude the human understanding" (June, 1933, p. 177). Harry Lee was one of the first Freudian psychoanalysts to take sharp issue with the concept of sublimation, the defensive conversion of id impulses, as responsible for creativity (Rothenberg & Hausman, 1976). Lee's (1940) proposal that the act of creation was an act of restitution oriented toward overcoming hostile fantasies and depression was an early attempt at emphasizing the overcoming of disabilities through creation. Ernst Kris (1950) relates his concept of "regression in the service of the ego" to the creative process. Kris' theory of creativity emphasizes the role of fantasy and preconscious functioning, and some of the adaptive aspects of creativity. He distinguishes regression in the creative process from regression connected to psychotic states. These represent but a few of the theorists who have attempted to explain the creative process.
E. Paul Torrance has conducted much research in the area of creativity and education, but in the final analysis has been unable to provide an explanation for creative activity. He has, however, made a deliberate effort to construct test tasks that would be models of the creative process, each involving different kinds of thinking and each contributing something unique to the test batteries (Rothenberg & Hausman, 1976). The two aspects of creativity which seem most pertinent to Rorschach interpretation are those of flexibility and ideational fluency. Torrance's (1966) Thinking Creatively with Pictures is a test designed to measure both flexibility and fluency. Specifically, the Parallel Lines subtest consists of 30 identical pairs of parallel lines to which subjects are instructed to add lines making pictures of as many different objects as possible. Subjects must also identify each picture by a label or title. Flexibility of thinking is measured in terms of the number of different categories used, and ideational fluency is measured in terms of the number of relevant responses produced by the subject (Torrance, 1976). The higher the number of categories utilized by the subject, the less that individual persists along repetitious lines of thinking, and therefore, the higher his or her flexibility score (Gilchrist, 1972). In observational studies, Torrance (1976) found that children scoring high on tests of creative thinking initiated larger number of ideas, produced more original ideas, and gave more explanations of
the workings of unfamiliar science toys. Among graduate students, it was consistently found that those who achieve high scores on tests of creative thinking develop original ideas in the content area of their coursework and make more creative applications of knowledge than do their peers who scored lower on the creativity tests (Torrance, 1976). It is proposed that clinicians who score higher on fluency and flexibility will give more accurate Rorschach interpretations; that is, will be more successful Rorschach clinicians. Understanding the patient through the Rorschach seemingly requires one to flexibly follow the ideational stream produced and to be sufficiently fluid in perceiving the blots to comprehend what the patient saw.

Such processes can also be conceptualized in terms of what may be called cognitive flexibility. Cognitive flexibility is thought to be reflected in one's capacity for perspective-taking and is consequently proposed to be an influential characteristic of the Rorschach clinician. In order to gain an adequate understanding of such a concept, it seems useful at this point to consider more generally the cognitive psychological theories of Jean Piaget, George Kelly, and Hazel Markus.

Jean Paiget has made major contributions in the area of cognitive and intellectual development over the past decades. He primarily emphasizes the process by which cognitive development occurs. The most basic structure of action in Piaget's
theory is the cognitive scheme or schema which is a commonality among actions carried out at different times. Although each person frames his or her scheme individually, the schemes we create share common meanings because many aspects of life are similar for everyone (Rychlak, 1981). According to Piaget, it is these shared schemes which make the learning of language possible.

Piaget conceptualizes the human mind in terms of the interlacing of these schemes. In other words, the schemes interact and are in constantly shifting relations with other schemes to form in turn the schemes of the whole-pattern (Rychlak, 1981). Piaget emphasizes that this is not an additive process, but one of creating a new pattern of relationships. The patterned relationships, which Piaget refers to as structures, must have a reliably distinctive form which is capable of being abstracted and recognized again and again. Patterned relations can be changed within a structure even though the overall systematic form remains identifiable. Rychlak (1981) illustrates this point with the Heraclitian observation that we never step in the same river twice, even though there is a constant river present before us. The river thus transforms itself even as it retains its identifiable pattern.

For Piaget, cognition is a systematic process of constructing experience (making structures) through an interaction with the physical world (Piaget, 1970; Rychlak, 1981).
The interaction between the person and the environmental factors is discussed by Piaget in terms of assimilation and accommodation. Assimilation occurs when a person cognitively modifies the external environment so that it becomes consistent with his or her own internal scheme. On the other hand, accommodation occurs when a person modifies his or her own scheme to fit the environment. Piaget sees life as a continuing interplay of assimilation and accommodation in our cognitive development and understanding. There is a reciprocal interaction involved between assimilation and accommodation, and if it is not balanced reasonably well, a person can become rigidly fixed in schemes that are no longer reality-oriented. Or conversely, a person can be readily swayed by irrelevancies in the environment due to the inappropriate weight given the irrelevancies by the disoriented schemes.

George Kelly's position is in some ways similar in that he views the world in which we live as one of continually changing interpretations or points of view rather than a world of frozen meanings. This is not to say that we make up the world to suit our fancy, but that events must be handled in such a way that our interpretations fit what is actually present (Rychlak, 1981). Kelly uses the term construing to describe the process of interpretation and prediction by which the person notes a series of recurring events which seem repetitive, and then places an interpretation upon this predictable aspect of his or her experience. The result is
the development of personal constructs which are like transparent patterns or templates which human beings create (construe) in order to fit over the recurring realities of life (Kelly, 1955). Further, Kelly maintains that construing is never unidimensional: Thought is only possible because humans dichotomize experience into similarities and contrasts. In other words, Kelly says that when we speak of what something means, we always do so based upon the relationship between how things seem alike and also different from something else.

Kelly and Piaget share the belief that in order for one to be adequately adjusted, he or she must sustain some degree of flexibility within his/her system of interpreting the environment. Whereas Piaget speaks in terms of assimilation and accommodation, Kelly talks about range of convenience and the permeability of constructs. A construct's range of convenience refers to the extent to which that construct is relevant and applicable to life events (Kelly, 1955). The range of convenience can be extended or loosened by broadening the field within which it is applicable; or be narrowed or tightened by constricting and specifying only a few life events to which it applies (Kelly, 1955). Permeability of constructs refers to the capacity for a construct to take on new elements. A permeable construct admits situational differences and is open to new elements including those beyond which it has been explicitly formed. A highly impermeable construct freezes its elements into only its unique range of
convenience resulting in rigid "black-or-white" forms of thinking.

Kelly's permeability of constructs can be viewed in Piagetian terms as variations in the ability of a person to assimilate and accommodate his or her self-constructs. Both theorists emphasize the necessity of cognitive flexibility within the broader structure of the personality. Cognitive flexibility can also be related to the earlier discussion of creative thinking. Permeable constructs can be understood in terms of Torrance's definition of flexibility of thinking which is measured by the number of different categories produced by a subject for a given stimulus. The number of relevant or appropriate responses produced by a subject, one measure of Torrance's ideational fluency, seems to correspond well with Kelly's notion of more elaborate constructs. Elaborate constructs are ones that are sharply differentiated and which are marked by organization and integration. The person with more fluent thought processes and more elaborate, differentiated constructs can function more efficiently under a wider range of circumstances. A more flexible and fluent person is better equipped to explore alternative explanations of and take different perspectives on events. A permeable, elaborate construct system which, it seems, would necessarily involve flexibility and fluency of thought, appears to be an advantageous quality for a clinician, and Kelly has indicated as much.
Similarly, Rorschach clinicians would be well served to possess such qualities in that Rorschach interpretation certainly requires clinicians to take a perspective other than their own. Kelly employs the term subsume to describe the process by which one makes a system meaningful within his or her own construct system. In order to make accurate statements about the client based on his or her Rorschach responses, the clinician needs to be able to examine responses in new ways in an effort to better understand the constructs of the client. Kelly would say that the clinician must be able to subsume the constructs of the client in order to accurately understand and predict his or her behavior.

Also important in processing information about others is the way in which we process information about ourselves. Kelly (1955) says that to construe another person is often to construe oneself. We tend to see ourselves like others, yet different from people at the opposite end of our self-construction. So it is virtually impossible to process information about others without exerting the influence of our self-constructs. Markus (1977) has suggested that we are aware of only those constructs or self-descriptions that derive from a well-articulated generalization about the self. Further, it is only when a self-description is well-articulated that it can be expected to converge and form a consistent pattern with the individual's other judgments, decisions, and actions. Kelly (1955) suggests that not all constructs
are verbalized and that some personal constructs prove fleeting or elusive to the individual. The point is that to the extent that individuals do not possess an articulated self-schema on a particular dimension of personality, they will not exhibit consistency in responses. Nor will they display the discrimination necessary for the efficient processing of information and the prediction of future behavior along this dimension (Markus, 1977).

In her studies, Markus found that the group of individuals who thought of themselves as "independent" endorsed significantly more adjectives associated with the concept of independence than did individuals who did not characterize themselves in this way. Also, these people required shorter processing times for "me" judgments to words concerned with independence than to other types of words, were able to supply relatively more specific examples of independent behavior, and were resistant to the acceptance of information that implied that they were not independent. A corresponding pattern of results was found with dependent stimuli for those individuals who thought of themselves as "dependent" people. So, simply endorsing adjectives on a checklist does not necessarily indicate articulated self-schema unless such endorsements can be supported by behavioral evidence and the person's belief that he or she is likely to engage in such behavior in the future.
Although the point is rather simplified, it does suggest that one way of assessing an individual's self-schemas is to request that individuals not only endorse statements that apply to themselves, but that they also identify those descriptors which they believe to be the most important for other people to recognize in order to know them well. The mere measured level of self-schemas or personality traits may not be as predictive as the measured level of those traits considered to be important self-descriptors. If the dimensions under study are not the ones to which an individual characteristically attends, he or she cannot be expected to make corresponding conceptual and behavioral discriminations along that dimension. By requesting that individuals identify those dimensions that they perceive as important, some information is gained regarding self-constructs salient to that individual.

Regarding accuracy of Rorschach interpretation, similarity between clinician and client on some personality traits very likely facilitates the clinician's understanding of the client. However, the relationship between clinicians and clients may not be similarity reflected by the outright measure of traits, but rather similarity on those traits which clinicians nominated as important.

The various theories previously discussed can all be considered as representative of cognitive flexibility; they are different ways of describing and explaining the same
phenomena. The theorists reviewed—Torrance, Piaget, Kelly, and Markus—are all interested in defining the process by which interpretations of the environment occur as well as the ways these interpretations direct one's behavior. They are not particularly interested in the specific behavioral outcomes.

Viewed from the perspective of Rorschach interpretation, it seems important to evaluate the manner in which clinicians perceive their environment and give meaning to events within it since the clinician's Rorschach interpretations are necessarily influenced by his or her mode of perceiving and attributing meaning. Within this framework, the present study proposes to examine the effects of clinician cognitive flexibility on the accuracy of Rorschach interpretation. Cognitive flexibility shall be considered in the context of fluency and flexibility of thought, similarity of clinician and stimulus person, personal constructs designated as important by clinicians, and degree of clinician self-awareness. Clinicians possessing attributes that Torrance terms flexibility and fluency and that Kelly would presumably characterize as elaborate and permeable constructs, are qualities predicted to contribute to more accurate Rorschach interpretations. To extend the integration of theories, the more elaborate and well-articulated a clinician's constructs, the more awareness the clinician has of the kinds of perceptions and behaviors in which he or she is likely to engage. The degree of clinician self-knowledge can, in turn, be said to influence
the accuracy of Rorschach interpretation. Consequently, increased self-awareness is predicted to contribute to accuracy of Rorschach interpretation.

**Operational Definition of Terms**

The 16-Personality Factor Questionnaire (16-PF) profile, which can be seen as a Likert-type scale reminiscent of Osgood's Semantic Differential (1957), will be used to measure the clinician-subjects' understanding of the stimulus person based upon the client's Rorschach protocol. That is, clinicians estimate the level of each of the 16 traits based upon their interpretation of the stimulus person's Rorschach responses. Clinician-Subjects also rate themselves on each of the 16 traits. In addition to the clinical utility of the traits, the 16-PF also has the advantage of being administered within a reasonable length of time with a minimum of instruction.

The scaled score (Stens) of the 16-PF obtained by taking the test shall be referred to as "Actual Trait Scores" for both the stimulus persons and the clinician-subjects (see Table 1 for a summary of the various measured and derived scores). When the clinicians simply estimate the level of the 16-PF traits, these shall be referred to as "Estimated Trait Scores" for the clinicians themselves and the stimulus persons.

Accuracy of the Estimated Trait Scores is computed as the square of the difference between the Estimated and Actual Trait Scores. This weighs larger errors (greater estimated-actual
Table 1
Study Scores Derivations

<table>
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<tr>
<th>Set</th>
<th>M or Dᵃ</th>
<th>Name</th>
<th>Derivation</th>
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<tr>
<td>1</td>
<td>M</td>
<td>Stimulus Actual Trait Scores</td>
<td>From stimulus person</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>Clinician Actual Trait Scores</td>
<td>From clinician-subjects</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>Stimulus Estimated Trait Scores</td>
<td>Estimated by clinician for stimulus</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>Clinician Estimated Trait Scores</td>
<td>Estimated by clinician for self</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>Nominated Constructs</td>
<td>From clinician-subject</td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>Flexibility and Fluency</td>
<td>From Torrance test</td>
</tr>
<tr>
<td>7</td>
<td>D</td>
<td>Accuracy Scores</td>
<td>Squared differences #1 and #3 above</td>
</tr>
<tr>
<td>8</td>
<td>D</td>
<td>Total Accuracy Scores</td>
<td>Sum of #7 above</td>
</tr>
<tr>
<td>9</td>
<td>D</td>
<td>Similarity Scores</td>
<td>Squared differences #1 and #2 above</td>
</tr>
<tr>
<td>10</td>
<td>D</td>
<td>Nominated Construct Subsets</td>
<td>Subsets of #7, #9, and #13 based on #5</td>
</tr>
<tr>
<td>11</td>
<td>D</td>
<td>Self-Knowledge Scores</td>
<td>Squared differences #2 and #4 above</td>
</tr>
</tbody>
</table>

Note. ᵃ Measured scores arise from either usual scoring procedure; derived scores arise from statistically recoding and combining measured scores.

...more heavy than small ones. The sum of the 16 "Accuracy Scores" shall be referred to as the "Total Accuracy Scores."
The same technique of squaring the differences is used to compute "Similarity Scores" across the Actual Trait Scores between the stimulus persons and the clinician-subjects. Subsets of the Similarity Scores are formed by selecting only those traits corresponding to the clinician-subjects' Nominated Constructs.

Accuracy of the Estimated Trait Scores of the clinician-subjects themselves are likewise computed as the square of the differences between the clinician-subjects' Estimated and Actual Trait Scores on the 16-PF. This score is a measure of the clinician-subject's awareness of his or her own traits and is thus referred to as the "Self-Knowledge Score."

Those 16-PF traits given by the clinician-subjects in response to being asked their important traits shall be referred to as "Nominated Constructs." The Torrance scores shall be referred to as "Flexibility" and "Fluency," and are reflective of major aspects of cognitive flexibility.

Hypotheses

The hypothesized outcomes of this investigation are as follows.

1. Clinicians who are more Fluent and Flexible as measured by Torrance's creativity scale will obtain better overall accuracy of estimation of the stimulus person 16-PF profiles (Total Accuracy Scores) based upon Rorschach interpretation.
2. Clinicians will more accurately estimate the level of a stimulus person 16-PF trait (Accuracy Scores) when the clinician's own 16-PF Trait Score is similar (Similarity Scores) to that of the stimulus person.

3. Clinicians who demonstrate a greater degree of self-awareness (Self-Knowledge Score) will obtain better overall accuracy of estimation of stimulus person 16-PF profiles (Total Accuracy Scores) based upon Rorschach interpretation.

4. Clinicians with a larger number of personal constructs designated as important (nominated Constructs) will obtain better overall accuracy of estimation of stimulus person 16-PF profiles (Total Accuracy Scores) based upon Rorschach interpretation.

5. Clinicians will more accurately estimate the level of a stimulus person 16-PF trait (Accuracy Scores) when that trait is one which the clinician has designated as important (Nominated Constructs).

Method

Subjects

Subjects consisted of 23 males and 23 female graduate students in psychology. All had previously received formal classroom instruction in Rorschach administration and interpretation. The number of Rorschachs interpreted ranged from one to 99. The average age of the subjects was 30.5 years. All subjects agreed to participate voluntarily (see Appendix A, Consent Form).
Materials

Instruments employed in this study included the 16-Personality Factor Questionnaire (16-PF), three Rorschach protocols, and a Torrance creativity scale entitled Thinking Creatively with Pictures.

The 16-PF (Cattell, Eber, & Tatsuoka, 1970) is a personality inventory designed for administration to individuals ages 16 years and over. This objectively scored inventory yields 16 scores for the following traits: (A) reserved versus outgoing, (B) less intelligent versus more intelligent, (C) affected by feelings versus emotionally stable, (E) humble versus assertive, (F) sober versus happy-go-lucky, (G) expedient versus conscientious, (H) shy versus venturesome, (I) tough-minded versus tender-minded, (L) trusting versus suspicious, (M) practical versus imaginative, (N) forthright versus shrewd, (O) self-assured versus apprehensive, (Q1) conservative versus experimenting, (Q2) group dependent versus self-sufficient, (Q3) undisciplined self-conflict versus controlled, and (Q4) relaxed versus tense. Alternate form reliability for the 16-PF is reported to be .70 and criterion validity coefficients are as high as .56 (Buros, 1975). A Sten score is obtained for each trait and scores of 1 to 3 and 8 to 10 are interpretable.

Three Rorschach protocols, with accompanying 16-PF profile, were selected from client files of the Psychology Clinic at North Texas State University. Only client files which contained both a Rorschach protocol and a 16-PF profile for
that client were considered. One Rorschach and corresponding 16-PF was selected as fitting into each of the following categories (1) normal, (2) moderately disturbed, and (3) severely disturbed (See Appendices J, K, and L). Protocols were assigned to the categories based upon diagnostic labeling by the clinicians involved in each client's treatment.

Thinking Creatively with Pictures, Form A (Torrance, 1966) consists of three activities of which only one was employed in this study. Activity Three, titled "Parallel Lines," consists of 30 pairs of parallel lines with which subjects were instructed to produce as many different pictures as possible. Subjects were also instructed to name or title each picture. Ten minutes was the total time allotted for this task. Two scores were obtained for this task—Fluency and Flexibility. The Fluency score is based on the number of relevant or appropriate responses produced and the Flexibility score is based on the number of different categories used by the subject. The technical manuals accompanying the Torrance batteries cite the results of several studies of scorer reliability, with interscorer correlations falling mostly in the .80s and .90s (Anastasi, 1976).

Procedure

The design of the stimulus presentation is that of an overlapping, incomplete lattice (see Table 2 for an example) in which each subject was given a Rorschach protocol from two of the three diagnostic categories. Subjects were
Table 2

Data Design for Error Scores Based Upon Estimated Trait Scores

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Subjects</th>
<th>Stimulus Protocol (Level of Pathology)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Normal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A B C . . Q4</td>
</tr>
<tr>
<td>A1</td>
<td></td>
<td>XX X . . X</td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td>XX X . . X</td>
</tr>
<tr>
<td>A3</td>
<td></td>
<td>XX X . . X</td>
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<tr>
<td></td>
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<td>. . . . . . . .</td>
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<td></td>
<td></td>
<td>. . . . . . . .</td>
</tr>
<tr>
<td>An</td>
<td></td>
<td>XX X . . X</td>
</tr>
<tr>
<td>B1</td>
<td></td>
<td>XX X . . X</td>
</tr>
<tr>
<td>B2</td>
<td></td>
<td>XX X . . X</td>
</tr>
<tr>
<td>B3</td>
<td></td>
<td>XX X . . X</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>. . . . . . . .</td>
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<tr>
<td>Bn</td>
<td></td>
<td>XX X . . X</td>
</tr>
<tr>
<td>C1</td>
<td></td>
<td>XX X . . X</td>
</tr>
<tr>
<td>C2</td>
<td></td>
<td>XX X . . X</td>
</tr>
<tr>
<td>C3</td>
<td></td>
<td>(Not given)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>. . . . . . . .</td>
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<td></td>
<td></td>
<td>. . . . . . . .</td>
</tr>
<tr>
<td>Cn</td>
<td></td>
<td>XX X . . X</td>
</tr>
</tbody>
</table>
instructed to interpret each transcribed Rorschach protocol using their preferred manner of interpretation. For each protocol, subjects were asked to generate a 16-PF profile based upon their interpretation of the stimulus person's Rorschach responses.

Subjects then completed the Parallel Lines subtest of Thinking Creatively with Pictures, Form A. Completion time for this time-limited task was ten minutes. The instructions for this task were printed on the test form.

Upon completion of the Parallel Lines task, each subject was requested to generate an estimate of his or her own 16-PF profile and then to identify his or her Nominated Constructs—those 16-PF traits which he or she considered to be important in describing himself/herself.

Finally, each subject was requested to complete the actual 16-PF Questionnaire thus providing a 16-PF profile for each subject.

Results

A two-stage multiple linear regression analysis was performed on the Accuracy Scores, Similarity Scores, Self-Knowledge Scores, and Trait Scores to examine the relationship between the accuracy of Rorschach interpretation as measured by Total Accuracy Scores for each of the three stimulus persons and the following predictor variables—Fluency, Flexibility, Similarity, Self-Knowledge, and Nominated Construct scores. The three stimulus persons were identified
as "normal," "moderately disturbed," and "severely disturbed."
The first stage was the stepwise regression of the scores
within a set (e.g., Similarity Scores) onto Total Accuracy.
The second stage was the regression of the predicted values
of Total Accuracy from each of the individual sets of scores
(e.g., the predicted values based upon Similarity Scores)
onto Total Accuracy Scores. In these regressions, the Blocks
variable was included to partial out any systematic effect
due to the incomplete lattice design. (See Figure 1 for a
summary of the two-stage regression results.)

Similarity

Similarity Scores were computed as the square of the
difference between clinician and stimulus person Actual Trait
Scores on the 16-PF. The stepwise first stage regression of
Similarity Scores onto Accuracy Scores indicated that only
Similarity Scores for 16-PF trait "Affected by Feelings versus
Emotionally Stable" contributed significantly to the regression
equation for the normal stimulus person, F (1, 44) = 4.42,
p < .05 (see Appendix G). Subjects whose Trait Score for the
Affected by Feelings versus Emotionally Stable trait was most
similar to that of the normal stimulus person were significantly
more accurate in estimating that Trait Score for the normal
stimulus person. Additionally, Similarity Scores for the
16-PF trait "Humble versus Assertive" contributed significantly
to the regression equation for the moderately disturbed
stimulus person, F (1, 44) = 4.48, p < .05 (see Appendix G).
<table>
<thead>
<tr>
<th>Similarity</th>
<th>Stage One</th>
<th>Stage Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>A...Q4</td>
<td>AFFECTED BY FEELINGS VERSUS EMOTIONALLY STABLE (BETA = .30, P &lt; .05)</td>
<td>TRUSTING VERSUS SUSPICIOUS (BETA = .30, P &lt; .05)</td>
</tr>
<tr>
<td></td>
<td>HUMBLE VERSUS ASSERTIVE (BETA = .30, P &lt; .05)</td>
<td>LESS INTELLIGENT VERSUS MORE INTELLIGENT (BETA = .38, P &lt; .01)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RELAXED VERSUS TENSE (BETA = .28, P &lt; .05)</td>
</tr>
<tr>
<td>Self-Knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A...Q4</td>
<td>SELF ASSURED VERSUS APPREHENSIVE (BETA = -.43, P &lt; .005)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EXPEDIENT VERSUS CONSCIENTIOUS (BETA = .30, P &lt; .05)</td>
<td></td>
</tr>
<tr>
<td>Nominated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constructs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A...Q4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SIMILARITY:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRACTICAL VERSUS IMAGINATIVE (BETA = .32, P &lt; .05)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SHY VERSUS VENTUREsome (BETA = .50, P &lt; .001)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>self-Knowledge:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AFFECTED BY FEELINGS VERSUS EMOTIONALLY STABLE (BETA = .41, P &lt; .01)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GROUP DEPENDENT VERSUS SELF-SUFFICIENT (BETA = .35, P &lt; .05)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CREATIVITY:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FLEXIBILITY</td>
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<tr>
<td></td>
<td>FLUENCY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>flexibility (BETA = .33, P &lt; .05)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Schematic representation of the two-stage regression results. Both the stage of variable entry into model and if positive results are obtained they are shown in succeeding stage.
Subjects whose Trait Score for this 16-PF trait was most similar to that of the moderately disturbed stimulus person were significantly more accurate in estimating that Trait Score for that stimulus person. Similarity Scores did not significantly contribute to the regression onto Accuracy Scores for the severely disturbed stimulus person.

**Self-Knowledge**

Self-Knowledge Scores were computed as the square of the difference between subject Estimated and Actual Trait Scores on the 16-PF. The regression of Self-Knowledge Scores onto Accuracy Scores for the normal stimulus person indicated that only Self-Knowledge Scores for the 16-PF trait "Trusting versus Suspicious" significantly contributed to the regression, $F(1, 44) = 4.18, p < .05$ (see Appendix G). Subjects whose Self-Knowledge Score indicated a high degree of self-awareness (those who more accurately estimated their own Trait Score) regarding the trusting versus Suspicious Trait were more accurate in estimating the level of that Trait Score for the normal stimulus person.

Regression of Self-Knowledge Scores onto Accuracy Scores for the moderately disturbed stimulus person indicated that the Self-Knowledge Scores for the 16-PF trait "Less Intelligent versus More Intelligent" contributed significantly to the regression equation, $F(1, 44) = 7.31, p < .01$ (see Appendix G). Subjects whose Self-Knowledge Score indicated a high degree of self-awareness regarding the Less Intelligent versus
More Intelligent trait were more accurate in estimating that Trait Score for the moderately disturbed stimulus person. Self-Knowledge Scores for the Less Intelligent versus More Intelligent trait and Self-Knowledge Scores for the 16-PF trait "Relaxed versus Tense" together contribute significantly to the regression, $F(2, 43) = 6.13, p < .01$ (see Appendix G).

Regression of Self-Knowledge Scores onto Accuracy Scores for the severely disturbed stimulus person indicated that Self-Knowledge Scores for the 16-PF trait "Self-Assured versus Apprehensive" contributed significantly to the regression, $F(1, 44) = 10.17, p < .005$ (see Appendix G). In this case, however, subjects whose Self-Knowledge Score reflected a low degree of self-awareness regarding this 16-PF trait were significantly more accurate in estimating that Trait Score for the severely disturbed stimulus person. Self-Knowledge Scores for the Self-Assured versus Apprehensive trait and Self-Knowledge Scores for the 16-PF trait "Expedient versus Conscientious" together contribute significantly to this regression, $F(2, 43) = 8.23, p < .001$ (see Appendix G).

In the case of the Expedient versus Conscientious trait, Self-Knowledge Scores reflecting high self-awareness regarding this trait on the part of the subjects resulted in significantly more accurate estimates of that Trait Score for the severely disturbed stimulus person.
Nominated Constructs

Stepwise first stage regressions of Similarity and Self-Knowledge scores for Nominated Constructs using Total Accuracy were performed. Similarity in Nominated Construct for 16-PF trait "Practical versus Imaginative" significantly contributed to the regression for the normal stimulus person, $F(1, 44) = 5.14, p < .05$ (see Appendix H). Similarity in Nominated Construct refers to similarity of subject and stimulus person on a 16-PF trait identified or nominated as important by the subject. In the case of the finding regarding similarity in Nominated Construct Practical versus Imaginative, subjects who were similar to the normal stimulus person on this trait and who nominated this trait as important about themselves were significantly more accurate in estimating that Trait Score for that stimulus person. Similarity in Nominated Construct on the Practical versus Imaginative trait and similarity in Nominated Construct on the 16-PF trait "Shy versus Venturesome" together contribute significantly to the regression using Total Accuracy for the Severely disturbed stimulus person, $F(2, 43) = 10.81, p < .001$ (see Appendix H). Similarity in Nominated Construct on 16-PF trait Shy versus Venturesome alone also significantly contributed to the regression, $F(1, 44) = 14.42, p < .001$ (see Appendix H). Subjects who were similar to the severely disturbed stimulus person on these 16-PF traits and who nominated these traits as important about themselves were significantly more accurate
in estimating these Trait Scores for the severely disturbed stimulus person.

Regression of Self-Knowledge Scores for Nominated Constructs using Total Accuracy indicated that for the normal stimulus person Self-Knowledge of Nominated Construct "Affected by Feelings versus Emotionally Stable" significantly contributed to the regression, \( F (1, 44) = 9.11, p < .01 \) (see Appendix H). Self-Knowledge of a Nominated Construct refers to the subjects' degree of self-awareness on a 16PF trait identified or nominated as important by the subject. In the case of the finding regarding Self-Knowledge of Nominated Construct Affected by Feelings versus Emotionally Stable, subjects whose Self-Knowledge Score on this trait reflected a high degree of self-awareness and who nominated this trait as important about themselves, were significantly more accurate in estimating that Trait Score for the normal stimulus person.

Regression of Self-Knowledge Scores for Nominated Constructs using Total Accuracy indicated that for the severely disturbed stimulus person Self-Knowledge of Nominated Construct "Group-Dependent versus Self-Sufficient" contributed significantly to the regression, \( F (1, 44) = 6.10, p < .05 \) (see Appendix H). Subjects whose Self-Knowledge Score on this trait reflected a high level of self-awareness and who nominated this trait as important were significantly more accurate in estimating this Trait Score for the severely disturbed stimulus person.
Regressions for Nominated Constructs using Total Accuracy did not yield any significant contributions from Similarity or Self-Knowledge scores for the moderately disturbed stimulus person.

The total number of Nominated Constructs identified by subjects is not correlated with Total Accuracy.

Creativity

Overall, the second-stage regressions did not yield significant results, with one notable exception—Flexibility was found to be the single best predictor of Total Accuracy for the normal stimulus person, $F(1, 44) = 5.31, p < .05$ (see Appendix I). That is, high Flexibility scores predicted lower values of Total Accuracy, denoting greater accuracy, for the normal stimulus person at a rate significantly better than chance.

Analysis of Variance (ANOVA) was conducted for the Accuracy Scores X Fluency and for Accuracy Scores X Flexibility for each of the three stimulus persons (see Appendix F). The ANOVA for Accuracy Scores X Fluency for the moderately disturbed stimulus person indicated that Accuracy Scores for high scorers on Fluency differed significantly from the Accuracy Scores of low Fluency scorers, $F(1, 29) = 4.21, p < .05$. The results of the ANOVA for Accuracy Scores X Flexibility for the moderately disturbed stimulus person indicated that Accuracy Scores differed significantly for high and low Flexibility scores, $F(1, 29) = 8.54, p < .01$. 
ANOVA for the normal and severely disturbed stimulus persons did not yield significant findings.

Pearson Product Moment Correlations indicated that both Fluency and Flexibility are negatively correlated with Total Accuracy Scores for the normal stimulus person and positively correlated with Total Accuracy Scores for the moderately disturbed stimulus person, $p < .05$ (see Appendix C). For the normal stimulus person high scores on both Fluency and Flexibility are correlated with lower Total Accuracy Scores (greater accuracy). Conversely, subjects who scored high on both Fluency and Flexibility produced higher Total Accuracy Scores (i.e., lower accuracy) for the moderately disturbed stimulus person. There is no correlation between Fluency or Flexibility and Total Accuracy for the severely disturbed stimulus person.

Discussion

The purpose of this investigation was to examine the effects of cognitive flexibility on the accuracy of Rorschach interpretation. Cognitive flexibility was measured in the context of four independent variables which were hypothesized to influence the accuracy with which clinicians interpret Rorschachs. The four clinician variables under study were creativity, similarity of clinician and stimulus person, degree of self-knowledge, and personal constructs designated as important by clinicians (Nominated Constructs). Accuracy of Rorschach interpretation was measured via clinician
estimates of stimulus person 16-PF profiles, which were compared to the actual 16-PF profiles of the stimulus persons. Five hypotheses were proposed. Results will first be discussed in relation to specific hypotheses and then consideration will be given to their overall implications. Additionally, consideration should be given to the fact that the clinicians who participated in this study were graduate students in psychology.

Creativity

**Hypothesis.** Clinicians who are more Fluent and Flexible as measured by Torrance's creativity scale will obtain better overall accuracy of estimation of the stimulus person 16-PF profiles (Total Accuracy Scores) based upon Rorschach interpretation.

The results of this study only partially support this hypothesis regarding fluency and flexibility of thought. Clinicians who scored high on Fluency and Flexibility more accurately interpreted the normal Rorschach. Additionally, Flexibility was found to be the one independent variable most predictive of accurate interpretation of the normal Rorschach. Both of these findings are in clear support of the creativity hypothesis. It was also found, however, that clinicians who scored high on Fluency and Flexibility were significantly less accurate at interpreting the moderately disturbed Rorschach. No relationship was found between clinician creativity and interpretation of the severely disturbed Rorschach. To summarize, this hypothesis was
supported in the case of the normal Rorschach, virtually refuted in the case of the moderately disturbed Rorschach, and received no support regarding the severely disturbed Rorschach.

At first glance these results create quite a puzzle. In an effort to reconcile these seemingly disparate findings two issues emerge—the relationship between creativity and Rorschach interpretation and the role that knowledge of psychopathology plays in Rorschach interpretation. It appears that creativity (as measured by fluency and flexibility of thought) does influence accuracy of Rorschach interpretation, but without an extensive knowledge of psychopathology in general and with respect to the Rorschach, creativity alone has diminished effect on accuracy of interpretation. The majority of the clinicians who participated in this study had not gained much experience with severely disturbed individuals. Most of their knowledge of severe psychopathology was gained from case histories, textbooks, and coursework. It is suggested that their limited experience made it difficult for clinician-subjects to accurately interpret the severely disturbed Rorschach and that this may account for the lack of correlation between creativity and accuracy regarding the severely disturbed stimulus person. Creative or not, these subjects did not have the experience base from which to draw a consistent and accurate understanding of such severe psychopathology.
Creativity did exert greater influence on Rorschach interpretation regarding the normal and moderately disturbed stimulus persons. Both of these Rorschachs reflected psychopathology more in line with the applied experience of the clinician-subjects. Still to be addressed, however, is the question of why the creative clinicians who were so accurate in interpreting the normal Rorschach were so inaccurate with the moderately disturbed Rorschach. One explanation is that the more highly creative clinicians found it easier to take the perspective of the normal stimulus person and were, therefore, more able to accurately estimate her 16-PF profile. It is further maintained that increased fluency and flexibility of thought, as exhibited by the creative clinicians, is characterized by increased ability to subsume the constructs of another person thus allowing greater understanding and more accurate prediction of behavior.

Also as a consequence of their ability to flexibly subsume a wide variety of constructs, however, the creative clinicians appear to have been more lenient in their interpretation of the moderately disturbed Rorschach. Their tendency to err in the conservative direction on their 16-PF trait estimations suggests that they were more willing to accept deviant responses as within the realm of normalcy. It is proposed that the less creative clinicians, being less likely to flexibly take the perspective of another person, resorted to strict adherence to pathognomic indicators and ultimately
were more accurate in their Rorschach interpretation of the moderately disturbed stimulus person.

One conclusion that could be drawn from these results is that creativity is not really so important since less creative clinicians were actually more accurate at interpreting the moderately disturbed Rorschach. Such a conclusion, it is believed, would be premature. Whereas attention to psychopathological signs served less creative clinicians in good stead on the moderately disturbed Rorschach, that strategy proved counterproductive with the normal Rorschach. If the creative clinicians can be faulted with overlooking deviant responses in the moderately disturbed Rorschach, so the less creative clinicians are guilty of overestimating psychopathology in the normal stimulus person. In the long run it is suspected that the more creative clinicians will be better able to extrapolate beyond the Rorschach than their more concrete counterparts. So rather than disregard creativity as a valid component of Rorschach interpretation, it seems more useful to suggest that creative clinicians need to temper their tendency to overlook or justify deviant responses while maintaining their ability to take another person's perspective. They must rely on their knowledge of psychopathology as well as their personal ability to take the perspective of another. Considered from the standpoint of the less creative clinicians, it may be important for them to temper their reliance on pathognomic signs with increased perspective-taking. Whether
fluency and flexibility can be developed through training is beyond the scope of this paper, but there does seem to be utility in maintaining an equilibrium between personal perspective-taking and the application of psychopathological indicators when interpreting Rorschachs.

Similarity Hypothesis. Clinicians will more accurately estimate the level of a stimulus person 16-PF trait (Accuracy Scores) when the clinician's own 16-PF Trait Score is similar (Similarity Scores) to that of the stimulus person.

The results of this study provide limited support for this hypothesis. Similarity between clinician and stimulus person on a given 16-PF trait was found to significantly contribute to accuracy of Rorschach interpretation in only two instances. Specifically, clinicians who obtained Trait Scores similar to that of the normal stimulus person on the 16-PF dimension Affected by Feelings versus Emotionally Stable more accurately estimated that particular trait from the normal Rorschach. Likewise, clinicians who scored similarly to the severely disturbed stimulus person on the 16-PF dimension Humble versus Assertive were more accurate at predicting that Trait Score from the severely disturbed Rorschach.

One of the general implications of the current findings is that similarity between clinician and stimulus person can be a salient factor in accurate Rorschach interpretation.
This is not a surprising suggestion if one stops to consider that it is often much easier to identify with individuals to whom we are similar. Such a supposition implies that since clinicians were most similar to the normal stimulus person (see Appendix B for mean Similarity (Error) Scores across stimulus persons), they would be most accurate at interpreting the normal Rorschach and least accurate with the Rorschach of the severely disturbed stimulus person. However, as the results indicate, this is not entirely the case.

In considering these results it is important to recognize the distinction between interpreting individual 16-PF traits and interpretation of the overall profile configuration. Generally, it is the configuration of the profile which provides the best description of an individual's psychological adjustment, however extreme Trait Scores can be interpreted individually. Since the 16-PF is not intended to identify specific psychopathology (as is the MMPI, for example), the individual dimensions vary widely as to their psychopathological implications. Extreme scores on some 16-PF dimensions do not necessarily carry the same weight regarding psychopathology as do extreme scores on some other dimensions. Consequently, the overall similarity between clinicians and the normal stimulus person does not preclude individual similarities between clinicians and the disturbed stimulus persons.

The severely disturbed stimulus person obtained an extreme Trait Score in the "Humble" direction on the Humble
versus Assertive dimension. Clinicians who also scored at the "Humble" end of the dimension were more accurate at identifying that trait in the severely disturbed stimulus person. An extreme score on the Humble versus Assertive dimension alone does not signify the presence (or absence) of mental disturbance. An extreme Trait Score on the dimension Affected by Feelings versus Emotionally Stable, on the other hand, might be considered to carry greater psychopathological significance. The normal stimulus person scored in the normative (mid) range on this dimension whereas both of the disturbed stimulus persons obtained very extreme Trait Scores in the direction of "Affected by Feelings." Clinicians who were similar to the normal stimulus person on this dimension were more accurate in their estimation of the normal stimulus person on this trait. On this particular dimension it seems reasonable to expect that these prospective psychologists would score in the mid-range since they are likely to be more cognizant of both poles by merit of their chosen discipline. That is to say that although they are not overwhelmed or governed by feelings (as an extreme score in the direction of "Affected by Feeling" might suggest), they are perhaps more influenced by and aware of feelings than some people in other professions.

Self-Knowledge

Hypothesis. Clinicians who demonstrate a greater degree of self-awareness (Self-Knowledge Score) will obtain better
overall accuracy of estimation of the stimulus person 16-PF profile (Total Accuracy Scores) based upon Rorschach interpretation.

The clinician Self-Knowledge Score was not found to significantly contribute to the accurate prediction of Total Accuracy Scores based on Rorschach interpretation. So in the strictest sense this hypothesis received no support. The results of this study suggest that on some individual traits, degree of clinician self-knowledge did influence Trait Score estimates for the stimulus persons. In most cases it was the clinicians who were self-knowledgable on a given trait that more accurately estimated that trait in the stimulus person. In one case, however, it seems that clinicians who were poor at identifying a particular trait in themselves were actually more accurate at identifying that trait in the stimulus person.

Specifically, clinicians who demonstrated low self-knowledge on the 16-PF dimensions Self-Assured versus Apprehensive were more accurate at estimating that Trait Score for the severely disturbed stimulus person. The severely disturbed stimulus person actually scored quite extreme in the "Apprehensive" direction. It is proposed that clinicians estimating their own level on this dimension defensively placed themselves in the more positive light of being "Self-Assured." Psychologists frequently work to help their clients become more self-assured and less apprehensive. Apprehensiveness is thus perceived as a liability to overcome
and consequently it might produce a good deal of cognitive
dissonance for clinicians to identify themselves as apprehen-
sive. The clinicians employed in this study may have
actually been more apprehensive than they were willing and/or
able to recognize. Their apprehensiveness could be explained
by the fact that these clinicians were also graduate students
and it is not uncommon for graduate students to feel appre-
hensive.

Other findings regarding Self-Knowledge might also be
explained in terms of the clinicians' roles as graduate
students. Accurate Self-Knowledge on the three 16-PF dimensions
Trusting versus Suspicious, Relaxed versus Tense, and Expedient
versus Conscientious was found to result in significantly more
accurate estimates on the trait for the normal, moderately
disturbed, and severely disturbed stimulus persons respectively.
All three of these dimensions represent salient issues for
many graduate students perhaps making them more aware of their
own position on each dimension and allowing them, in conjunction
with their clinical skills, to be more sensitive to such a
trait in others. Both the moderately and severely disturbed
stimulus persons obtained extreme Trait Scores, the moderately
disturbed person being very tense and the severely disturbed
person being extremely expedient. Such extreme scores, in
combination with the clinicians' high degree of self-knowledge
on these traits, may have rendered these characteristics more
easily recognized in the respective stimulus persons.
Additionally, clinicians who were more self-knowledgable on the dimension Less Intelligent versus More Intelligent were more accurate in their estimation of that trait for the moderately disturbed stimulus person. The Trait Score on this dimension is problematic since it seems to be more reflective of an individual's ability to use the intelligence he or she possesses rather than of absolute intelligence. So, aside from remarking on clinician-subjects more aware of their own intellectual functioning being more accurate in predicting that of the moderately disturbed stimulus person, it is difficult to attach specific meaning to their particular finding. It is, however, an instance where self-knowledge again appears to influence one individual's understanding of another.

In conclusion, although the Self-Knowledge variable did not significantly contribute to overall accuracy of interpretation, clinician self-knowledge on individual traits does appear to influence accuracy of estimation on that trait.

Nominated Constructs

Hypothesis No. 1. Clinicians with a larger number of personal constructs designated as important (Nominated Constructs) will obtain better overall accuracy of estimation of the stimulus person 16-PF profiles (Total Accuracy Scores) based upon Rorschach interpretation.

This hypothesis received no support; no relationship was found between the number of personal constructs designated
as important and Total Accuracy Scores based upon Rorschach interpretation.

One reason for these results could be that it is not the number of personal constructs which influences a clinician’s ability to understand another individual. It may be the structure rather than sheer numbers of personal constructs that is crucial. To employ Kellian terminology, perhaps it is the permeability of constructs which allows one person to gain a more meaningful understanding of another person. This line of reasoning suggests that clinicians whose constructs allow them to be more open to situational and individual differences and willing to take a different perspective are better able to subsume another's constructs. It is also possible that the 16-PF traits did not provide some clinicians with adequate descriptions of their important personal constructs thus reducing the number of constructs nominated. Clinicians could have functioned under the influence of important personal constructs which they could not identify on the 16-PF dimensions, but which nonetheless facilitated their interpretation of the stimulus Rorschachs.

_Hypothesis No. 2._ Clinicians will more accurately estimate the level of a stimulus person 16-PF trait (Accuracy Scores) when that trait is one which the clinician has designated as important (Nominated Constructs).

The results of this study lend partial support to this hypothesis although Accuracy Scores were not consistently
influenced by Nominated Constructs across stimulus persons. Nominated Constructs were evaluated in terms of Similarity and Self-Knowledge scores. It was found that clinicians who were more self-knowledgable or similar to a stimulus person on certain 16-PF traits which they had nominated as important self-constructs, produced more accurate 16-PF profiles for the normal and severely disturbed stimulus persons.

Specifically, similarity between clinician and severely disturbed stimulus person on the Nominated Constructs Shy versus Venturesome and Practical versus Imaginative resulted in greater overall accuracy of estimation of the severely disturbed stimulus person's 16-PF profile. Similarity to the normal stimulus person on Nominated Construct Practical versus Imaginative also resulted in more accurate estimates of the normal 16-PF profile. For the severely disturbed stimulus person it was the combination of Shy versus Venturesome and Practical versus Imaginative which contributed most to overall accuracy.

Moving to the consideration of Nominated Constructs about which clinicians demonstrated a high degree of self-knowledge, the 16-PF dimension Affected by Feelings versus Emotionally Stable had the greatest influence on overall accuracy regarding the normal stimulus person. For the severely disturbed stimulus person, greater clinician self-knowledge about Nominated Construct Group Dependent versus Self-Sufficient resulted in more accurate estimates of her 16-PF profile.
Although these results are somewhat inconsistent and therefore must be interpreted with caution, they do seem to suggest that clinicians' Nominated Constructs can influence Rorschach interpretation. It appears that when a trait is also a Nominated Construct the influence of Self-Knowledge and Similarity are somehow enhanced resulting in more accurate appraisal of the stimulus person. Being similar to the stimulus person and/or self-knowledgable regarding a specific trait can certainly increase one's understanding of that trait in another person, but when that trait is considered to be an important self-construct perhaps an even deeper understanding can be achieved by subsuming the other person's constructs.

The specific Nominated Constructs which increased overall accuracy of interpretation are proposed to have done so by enabling clinicians to subsume the constructs of the normal and severely disturbed stimulus persons. In the case of the moderately disturbed stimulus person, however, it appears that clinician Nominated Constructs did not facilitate understanding of that person and therefore did not influence overall accuracy of interpretation. In other words, none of the constructs nominated as important by clinicians were crucial to the understanding of the moderately disturbed stimulus person. For the normal stimulus person, Affected by Feelings versus Emotionally Stable seems to have been one of the more important traits to subsume leading to greater overall
understanding of that person. For both the normal and severely disturbed stimulus persons, Practical versus Imaginative proved to be an important construct to understand. It is interesting that all three stimulus persons obtained identical scores on this particular dimension, but as a Nominated Construct it did not influence accuracy on the moderately disturbed Rorschach. This is considered further evidence in support of the proposition that clinicians were unable to subsume her constructs resulting in decreased overall accuracy on that Rorschach (see Appendix B).

The other two Nominated Constructs which proved salient for understanding the severely disturbed stimulus person were Shy versus Venturesome and Group Dependent versus Self-Sufficient. This stimulus person obtained extreme Trait Scores on both of these dimensions—she scored in the direction of "Shy" on the former and in the direction of "Self-Sufficient" on the latter. Remembering that clinicians were also similar to this stimulus person on the Shy versus Venturesome dimension and self-knowledgable on the Group Dependent versus Self-Sufficient dimension, it seems that these important clinician self-constructs were also critical to gaining greater understanding of the severely disturbed stimulus person.

These results can be viewed from the position of Hazel Markus (1977) who posutulated that only self-descriptions which derive from well-articulated generalizations about
oneself can be expected to form a consistent pattern with the individual's other judgments, decisions, and actions. Markus refers to these cognitive generalizations about the self as self-schemata. In the present study the idea of such self-schemata is represented by Nominated Constructs (i.e., those 16-PF traits designated by clinicians as important about themselves) and Self-Knowledge Scores which reflect the degree to which clinicians were aware of their own traits. Markus' (1977) results indicate that well-articulated self-schemata facilitate the processing of information about the self and provide a basis for the confident self-prediction of behavior on schema-related dimensions. To expand on these results, the present study suggests that well-articulated self-schemata (Nominated Constructs and Self-Knowledge) also facilitate the processing of information about others on schema-related dimensions, such as 16-PF traits, and provide a basis for prediction about related behavior.

Such a process bears a striking resemblance to Kelly's notion of subsuming constructs. Kelly, whose terminology has already been employed extensively here, believed that in order for psychotherapy to progress, the clinician must subsume the constructs of his or her client. The same can be purported for Rorschach interpretation. It seems logical to presume that the clinician who can subsume the constructs of his or her client based on Rorschach responses (or other test data) will possess more depth of understanding of his or her
client enabling him or her to make more accurate predictions about the client's behavior.

Markus (1977) states that to the extent that individuals do not possess an articulated self-schema on a particular dimension of behavior, they will neither exhibit consistency in response nor display the discrimination necessary for the efficient processing of information and prediction of future behavior along that dimension. She was referring to the individuals' responses and discriminations about themselves, but the same can be applied to individuals' perceptions of others. This line of thought provides one rationale for the variability of accurate Rorschach interpretation across stimulus persons. Not all 16-PF traits represent well-defined self-schemata or constructs into which clinicians can categorize their own behavior. Additionally, as previously noted, critical traits vary among stimulus persons. Consequently, only some Nominated Constructs contributed to the overall understanding of some stimulus persons.

Implications

The present study constitutes one of the first investigations of the effects of clinician attributes on Rorschach interpretation. While it is true that, with the exception of Flexibility, none of the variables under consideration were strong enough to stand out as contributing significantly to overall accuracy of interpretation, individual results do tend to suggest that existence of some sort of systematic
relationship between clinicians attributes and Rorschach interpretation. It is thought that the seemingly sporadic or inconsistent nature of these findings may merely reflect the complexity of that relationship and that further exploration of clinician attributes is warranted. The fact that Flexibility was found to make a significant contribution to overall accuracy of Rorschach interpretation only serves to underscore this call for continued research in the area.

In evaluating the individual results of this study, those regarding Nominated Constructs and Self-Knowledge are among the more provocative. As discussed, these findings may constitute a logical extension to Hazel Markus' investigations of self-schemata. The more awareness clinicians have of themselves and their manner of perceiving the environment, the greater their ability to accurately understand the feelings and behaviors of others. Creativity also taps into this idea in that increased flexibility of thought facilitates taking the perspective of another person. Ultimately these various descriptors can be construed as representative of what has been termed cognitive flexibility. Cognitively flexible individuals are ones who can loosen or tighten their constructs as the situation dictates thus allowing acquisition of an in-depth understanding of another person. They possess the flexibility of thought to be able to take someone else's perspective, which may merely be another way of referring to the subsumation of constructs. The pitfall comes when a
clinician is so flexible that he or she fails to recognize truly deviant responses or behavior. Subsuming a construct, however, does not mean overlooking or justifying deviant or maladaptive processes. The extent to which subjects in the current study overlooked psychopathology may merely reflect their relative inexperience as clinicians. The ability to understand and empathize with another person while simultaneously maintaining the objectivity to distinguish between adaptive and maladaptive operations is crucial to the effectiveness of a psychologist.

The most statistically reliable finding of this study, however, is the contribution of Flexibility to overall accuracy of Rorschach interpretation. A clinician's cognitive capacity for flexibility of thought appears to be a better overall predictor of interpretational accuracy than traditional personality dimensions. That is, traditional personality variables may not be as important as cognitive attributes. In the current study it made little difference whether traditional personality attributes, as represented by 16-PF traits, were measured across the board or only in terms of Nominated Constructs. In either case personality variables do not stand out. However, there does appear to be some systematic relationship between those variables and Rorschach accuracy. Markus' technique of identifying important, well-articulated constructs does not appear to directly address the relationship suggesting that the problem requires examination from
additional perspectives. Cognitive capacity, on the other hand, appears to play a major role in accuracy of Rorschach interpretation. If this line of investigation is supported by future research, that would tend to indicate that traditional personality attributes of clinicians are less important than cognitive skills.

When combined with the observed poor accuracy of interpretation for the severely disturbed stimulus person, this may suggest that not only cognitive skills, but also knowledge of pertinent information (e.g., psychopathology) are essential to accurate Rorschach interpretation.

In conjunction with further investigation along the lines of exploration of clinician attributes such as cognitive flexibility and Rorschach interpretation, future research is needed employing subjects with a broader range of experience. Any generalizations drawn from the current results must be done with caution since the subject population was comprised of relatively inexperienced psychology graduate students. This fact alone could have influenced Rorschach interpretation. Future research might focus upon more experienced clinicians who have gathered greater knowledge of psychopathology, the Rorschach, and themselves as clinicians. Although cognitive flexibility appears to be a worthwhile component of Rorschach interpretation, knowledge of psychopathology in general and as it applies to the Rorschach remains critical as always. The organization of future Rorschach research needs to
concentrate upon group differences and the continuation of
development of habitual description (e.g., pathognomic
indicators of varying types and degrees of emotional
disturbance).

Overall, the results of this study suggest that cognitive
flexibility, especially with relation to cognitive capacity,
does influence accuracy of Rorschach interpretation. The
extent to which cognitive flexibility is a salient character-
istic of the successful Rorschach clinician cannot be determined
on the basis of this single investigation. In light of the
results and implications discussed and the fact that this
study produced results almost as good as those accumulated
from 60 years of traditional Rorschach research, it is hoped
that this investigation does provide the impetus for continued
research regarding attributes of the Rorschach clinician.
APPENDIX A

CONSENT FORM

CORRELATES OF RORSCHACH INTERPRETATION

The exercises which follow are part of a research study. The goal of this research is to better understand the processes involved in interpreting projective personality tests. If you wish to know the results of the study, write your mailing address on the following page.

Participation in this study is completely voluntary. If you choose not to participate you may discontinue at any time by not returning this material. If you choose to volunteer for this study, the filling out of the following material will show your consent to serve as a subject.

Thank you for your participation in our study. You've made two graduate students very happy.

Terry Walters
Joanna Freeze

If you have any questions, please contact: Leon Peek, Ph.D.
Ron Maresh
Dept. of Psychology
N.T.S.U.
### Appendix B

Basic Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>23-52 yrs.</td>
<td>30.46</td>
<td>6.46</td>
</tr>
<tr>
<td>2. Number of Rorschachs previously interpreted</td>
<td>1-99</td>
<td>22.96</td>
<td>25.61</td>
</tr>
<tr>
<td>3. Accuracy Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Normal</td>
<td>20-205</td>
<td>67.90</td>
<td>40.02</td>
</tr>
<tr>
<td>b. Moderately Disturbed</td>
<td>47-304</td>
<td>142.47</td>
<td>53.74</td>
</tr>
<tr>
<td>c. Severely Disturbed</td>
<td>59-225</td>
<td>122.66</td>
<td>45.67</td>
</tr>
<tr>
<td>4. Similarity Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Normal</td>
<td>41-199</td>
<td>97.07</td>
<td>37.36</td>
</tr>
<tr>
<td>b. Moderately Disturbed</td>
<td>55-262</td>
<td>141.20</td>
<td>51.31</td>
</tr>
<tr>
<td>c. Severely Disturbed</td>
<td>70-404</td>
<td>218.15</td>
<td>82.02</td>
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<tr>
<td>5. Self-Knowledge Score</td>
<td>39-173</td>
<td>88.96</td>
<td>35.55</td>
</tr>
<tr>
<td>6. Fluency Score</td>
<td>25-79</td>
<td>41.96</td>
<td>13.39</td>
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<tr>
<td>7. Flexibility Score</td>
<td>23-75</td>
<td>40.91</td>
<td>12.17</td>
</tr>
<tr>
<td>8. Number of Nominated Constructs</td>
<td>0-9</td>
<td>4.98</td>
<td>2.29</td>
</tr>
</tbody>
</table>
### Appendix C

**Pearson Product Moment Correlation**

<table>
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<tr>
<th>Accuracy Scores</th>
<th>Normal</th>
<th>Moderately Disturbed</th>
<th>Severely Disturbed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominated Constructs</td>
<td>-0.04</td>
<td>-0.16</td>
<td>0.09</td>
</tr>
<tr>
<td>Self-Knowledge</td>
<td>0.13</td>
<td>0.08</td>
<td>-0.0008</td>
</tr>
<tr>
<td>Fluency</td>
<td>-0.33*</td>
<td>0.31*</td>
<td>-0.20</td>
</tr>
<tr>
<td>Flexibility</td>
<td>-0.36*</td>
<td>0.31*</td>
<td>-0.12</td>
</tr>
</tbody>
</table>

**Note.** *p < .05.
## Appendix D

### ANOVAS: ACCURACY SCORES BY SELF-KNOWLEDGE

1. **Normal stimulus person**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>2179.13</td>
<td>1</td>
<td>2179.13</td>
<td>1.379</td>
<td>0.25</td>
</tr>
<tr>
<td>Within</td>
<td>44259.58</td>
<td>28</td>
<td>1580.70</td>
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</tbody>
</table>

$\eta = 0.22$

$\eta^2 = 0.05$

2. **Moderately disturbed stimulus person**

<table>
<thead>
<tr>
<th>Source</th>
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<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>308.50</td>
<td>1</td>
<td>308.50</td>
<td>0.11</td>
<td>0.74</td>
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<td>Within</td>
<td>81835.44</td>
<td>29</td>
<td>2821.91</td>
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</table>

$\eta = 0.06$

$\eta^2 = 0.004$

3. **Severely disturbed stimulus person**

<table>
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<th>p</th>
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<td>Between</td>
<td>1638.58</td>
<td>1</td>
<td>1638.58</td>
<td>0.75</td>
<td>0.39</td>
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<td>Within</td>
<td>56466.67</td>
<td>26</td>
<td>2171.80</td>
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</table>

$\eta = 0.17$

$\eta^2 = 0.03$
**Appendix E**

**ANOVA: ACCURACY SCORES BY CREATIVITY—FLUENCY SCORE**

1. Normal stimulus person

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
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<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>119.13</td>
<td>1</td>
<td>119.13</td>
<td>0.12</td>
<td>0.70</td>
</tr>
<tr>
<td>Within</td>
<td>46239.58</td>
<td>28</td>
<td>1651.41</td>
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$\eta = 0.07$

$\eta^2 = 0.004$

2. Moderately disturbed stimulus person

<table>
<thead>
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<th>MS</th>
<th>F</th>
<th>p</th>
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</thead>
<tbody>
<tr>
<td>Between</td>
<td>11223.53</td>
<td>1</td>
<td>11223.53</td>
<td>4.21</td>
<td>0.05</td>
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<td>Within</td>
<td>77270.15</td>
<td>29</td>
<td>2664.49</td>
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</table>

$\eta = 0.36$

$\eta^2 = 0.13$

3. Severely disturbed stimulus person

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>2840.14</td>
<td>1</td>
<td>2840.14</td>
<td>1.46</td>
<td>0.24</td>
</tr>
<tr>
<td>Within</td>
<td>50427.29</td>
<td>26</td>
<td>1939.51</td>
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$\eta = 0.23$

$\eta^2 = 0.05$
## Appendix F

ANOVAS: ACCURACY SCORES BY CREATIVITY—FLEXIBILITY SCORE

1. Normal stimulus person

<table>
<thead>
<tr>
<th>Source</th>
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<th>MS</th>
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<th>p</th>
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<td>1217.39</td>
<td>0.75</td>
<td>0.39</td>
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<td>Within</td>
<td>45221.31</td>
<td>28</td>
<td>1615.05</td>
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\[ \eta = 0.16 \]

\[ \eta^2 = 0.03 \]

2. Moderately disturbed stimulus person

<table>
<thead>
<tr>
<th>Source</th>
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<th>MS</th>
<th>F</th>
<th>p</th>
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<tbody>
<tr>
<td>Between</td>
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<td>20130.19</td>
<td>8.54</td>
<td>0.007</td>
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<td>Within</td>
<td>69363.48</td>
<td>29</td>
<td>2357.36</td>
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\[ \eta = 0.48 \]

\[ \eta^2 = 0.23 \]

3. Severely disturbed stimulus person

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
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<tr>
<td>Between</td>
<td>3.57</td>
<td>1</td>
<td>3.57</td>
<td>0.002</td>
<td>0.97</td>
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<td>Within</td>
<td>53263.86</td>
<td>26</td>
<td>2048.61</td>
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\[ \eta = 0.008 \]

\[ \eta^2 = 0.0001 \]
Appendix G

REGRESSIONS FOR ACCURACY SCORES

1. Normal stimulus person

<table>
<thead>
<tr>
<th>Multiple R = .30</th>
<th>F = 4.42</th>
<th>p = .04</th>
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</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Beta</td>
<td>T</td>
</tr>
<tr>
<td>Similarity Score: Affected by Feelings versus Emotionally Stable</td>
<td>.30</td>
<td>2.10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiple R = .29</th>
<th>F = 4.08</th>
<th>p = .049</th>
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<tbody>
<tr>
<td>Variable</td>
<td>Beta</td>
<td>T</td>
</tr>
<tr>
<td>Self-Knowledge Score: Trusting versus Suspicious</td>
<td>.30</td>
<td>2.02</td>
</tr>
</tbody>
</table>

2. Moderately disturbed stimulus person

<table>
<thead>
<tr>
<th>Multiple R = .38</th>
<th>F = 7.31</th>
<th>p = .0097</th>
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</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Beta</td>
<td>T</td>
</tr>
<tr>
<td>Self-Knowledge Score: Less Intelligent versus More Intelligent</td>
<td>.38</td>
<td>2.71</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiple R = .47</th>
<th>F = 7.31</th>
<th>p = .0045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Beta</td>
<td>T</td>
</tr>
<tr>
<td>Self-Knowledge Score: Less Intelligent versus More Intelligent</td>
<td>.39</td>
<td>2.91</td>
</tr>
<tr>
<td>Self-Knowledge Score: Relaxed versus Tense</td>
<td>.28</td>
<td>2.10</td>
</tr>
</tbody>
</table>
Appendix G—Continued

3. Severely disturbed stimulus person

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similarity Score: Humble</td>
<td>0.30</td>
<td>2.12</td>
<td>0.04</td>
</tr>
<tr>
<td>versus Assertive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multiple R = .30  
F = 4.48  
p = .04

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Knowledge Score:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Assured versus</td>
<td>-.43</td>
<td>-3.10</td>
<td>0.0026</td>
</tr>
<tr>
<td>Apprehensive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multiple R = .43  
F = 10.17  
p = .0026

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Knowledge Score:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Self-Assured versus</td>
<td>-.43</td>
<td>-3.48</td>
<td>0.0012</td>
</tr>
<tr>
<td>Apprehensive</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Self-Knowledge Score: Expedient versus Conscientious  
0.30 2.30 0.03

Multiple R = .53  
F = 8.23  
p = .0009
**Appendix H**

**REGRESSIONS FOR NOMINATED CONSTRUCTS USING TOTAL ACCURACY**

1. Normal stimulus person

<table>
<thead>
<tr>
<th>Multiple R = .32</th>
<th>F = 5.14</th>
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<tbody>
<tr>
<td>Variable</td>
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<td>T</td>
</tr>
<tr>
<td>Similarity in Nominated Construct: Practical versus Imaginative</td>
<td>.32</td>
<td>2.27</td>
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2. Severely disturbed stimulus person

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Appendix I

REGRESSIONS FOR CREATIVITY USING TOTAL ACCURACY

1. Normal stimulus person

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Appendix J

"Normal"-30' Year Old Female--Bachelor's Level Education

FREE ASSOCIATION

Card I - 10"
This middle looks like two people standing together with one of arms around each other and other arm up like this.

These two parts look like angels or something with wings and they're riding on something in middle. Kind of holding on here.

Another thing, if take whole thing, is a fox's head.

Card II - 6"
Looks like two animals with hands pressed together, looks like they're playing patty cake. Also looks like pretty involved in it because red part looks like in cartoons where they're working real hard and sort of sweating. Looks like that because little spots out here, looks like working industriously and sweating too.

White part looks like rocket ship with fire coming out, exhaust.

Card III - 5"
Looks like two native women standing around cauldron of some sort and they're cooking.

Red part in middle looks like butterfly.

These little deals remind me of puppets. Sorta like little duck or chicken in Groucho Marx that used to come down.

INQUIRY

This part here. Looks like friend sometimes put arm around other. Like waving at someone. (E: Waving?)
Yes.

These are the wings and the rest of the angel.

Here's snout, cheeks, eyes, and ears. A little off on ears.

They're also talking to each other because mouths are open. Hands, head, body, feet.

Nose headed upward and red part looks like fire from exhaust. Sorta like when one lifts off.

Native women because of fuller lips. Reminds me of women because of chest. (E: Cauldron?) A big pot. This part.

Looks like a big butterfly.

Looks like on Happy Days where show scenes from old Marx show that used to come on every week, and they'd have at intermission or what they'd drop down duck or chicken or some kind of puppet suspended from a string.
FREE ASSOCIATION
Card IV - 4"
This looks like motorcycle rider. Angle of it looks like taken from downward position so that his feet look bigger. Stereotyped macho man.

Card V - 1"
Looks like a butterfly. Also looks like two women lying down, leaning on a chair or something - this middle part is what they're lying on. Just lying there and thinking with arms folded like this. (Indicates arms crossed in front.)

Card VI - 5"
Part at top reminds me of totem pole, has sorta an Indian Flavor to it. Also something about it that reminds me of a cat. These looks like features.

Also looks like animal rug of some sort. Like a bear skin or something. Whole thing stretched out on floor, or laid out on floor. Submarine, like yellow submarine like in Beatles movie. Not a real submarine because fat and chunky. A caricature, a cartoon of one. Periscope. This part could be the water swishing behind it.

Card VII - 4"
These two things look like clown faces. (Subject points) Pointed hat, nose, eyes, mouth. Doesn't really look like one but, these deals remind me of cat whisker. Chins, hands, neck. They're female.

If take this part up, looks like two Siamese dancers with hands extended kind of bent backwards, their necks like jutting their chins out.

INQUIRY
Handle bars, wheels, feet. Sort of like crouched down like ready to take off or riding, I don't know. (E: Stereotyped?) Stereotyped because of the black leather. (E: Leather?) Color, I guess. And association with motorcycle.

FREE ASSOCIATION

These look like two Russian dancers,
with big furry hats, the tall ones.
Dressed in traditional Russian
clothes and doing Russian dance where
they kick their feet out with arms folded
in front of them.

Card VIII - 5"
This looks like two mountain lions
climbing up side of a mountain.

Something about this part (top)
reminds me of wolf baying at the moon.
This part (in middle) reminds me of
some part of anatomy like a rib cage
or something.

Card IX - 3'
Ok, this looks like two wizards dualing
with violins - playing violins, you
know.
That's about it.

Card X - 7"
These two blue things look like crabs.

Down here have seahorses.

Whole thing looks like ocean life
pictures. Has aquatic quality to it.

This deal up here looks like some kind
of sea creature but I don't know what
kind. Kind of ugly with a long face.

This reminds me of a person swinging
but rope made out of very light
material, like a boa.

INQUIRY

Hats, legs, hands.
Up on their toes, but very
graceful.

Here are lions, and rocks.

Snout part. Wolf stretching up
looking at moon. And howling.

Ribs, this part to side looks
like lungs.

Violins hold up under their chins
and playing them.

Pastel colors, blue reminds me of
water, and green reminds of sea
weed.

(E: Ugly?)
Sort of harsh looking and stupid
looking.

(E: Boa?)
Light and fluffy looking. Very
tranquil sort of idea.
Appendix K

"Moderately Disturbed"—38-Year Old
Female—High School Education

FREE ASSOCIATION

Card I - 7"
(Laughs) Looks like a monster, like some kind of demon. The more I look at it, it doesn't look like anything but a demon (laughs).

(INQUIRY)

Those they've got two sets of eyes and these look like two horns here. Just looks like a demon's face.
(E: How much of blot?) Whole thing.
(E: Where are eyes?) Eyes - see four of them - that's how I know it's a demon because if it was something else it would have only two (laugh).

(E: Some see more.)

Well, maybe a person there in the middle with their hands up like maybe reaching for something.

√ Do you have to look at them right side up?

∧ Yeah, probably a female person because it looks like she has on a dress and looks like she is reaching for something.

Card II - 7"
This looks like two people playing a game, like patty cake.

(INQUIRY)

Hands here, there's the outline, feet are here and dress. It would have been easy to say monster to a lot of the black ones, but that's too easy. Better to look and see if there's really an answer there. Wonder what it would have meant if I'd said monster to everyone of them. Means I was in big trouble living in never never land.
(E: What reminded you of that?) Kind of an hour glass so it wouldn't really be a man.

∧ No, that's all I see.

(E: Including lower red?) No, I thought it might be a cushion. Guess it's just as important when you leave out as when you put in (laughs).
(E: What reminds you of people?) Hands, hands touching.
(E: Male or female?) Probably male and I don't know why, just their shape.
FREE ASSOCIATION

Card III
\[
\checkmark \text{That way it looks kind of like a beetle.}
\]
\[
\checkmark \text{Looks like two women and there's a wash tub or something in the middle and a butterfly.}
\]

Do they really fold paper together or are they supposed to look like something?

Card IV - 27"
Kind of like a hill with trees. Kind of a countryside hill with trees silhouetted.

\[
\checkmark \text{That way kind of looks like a bat.}
\]

INQUIRY

That way (\(\checkmark\)) those look like their front pincher arms. I don't know what they're called. Those black areas look like eyes and these look like, it is mandibles I think they call it. (E: Include red?)

Yeah, that was probably part of the design on its back, but I didn't think about the outside red spots.

These women, tell their women because there's their breasts and they're bent over like they're washing clothes down in this tub.

Native women and the butterfly is just in the picture maybe he just flew through there while they're washing clothes. (E: Native?)

Because of the shape of heads look more like African women. (E: Color?)

Probably because they're black and have elongated heads.

Little trees here, these are big trees like weeping willow. Kind of V-shaped like a hill and lot of bumpy places that are probably trees and rocks and grass.

This is another that would have probably been easy to say it's a monster.

Just the silhouette, just looked at the outside.

When their wings aren't all the way out when they're at rest. This is probably claw feet (laughs) don't even know if they have feet.
FREE ASSOCIATION

Card IV - 27" (CONTINUED)

INQUIRY

and this is wings and this is it's head up here. Little eyes there and little feelers here - I've never seen a bat up but that's what I think it would look like. The wings is what is most suggestive of a bat to me.

(E: What reminds of bat?)
The wings raised up by their head.

CARD V - 1"

Looks like a bat.

Looks like a bat in flight, his wings back.

(E: How much is bat?)
Whole thing.

(E: What reminds you of bat?)
Shape of the wings, his head and feeler things and his wings and feet straight back. He's flying. It will probably show I have a bat fixation (laughs).

√ The other way it looks like a butterfly.

A swallow tail butterfly. There's his tail and wings. He's in flight too.

(E: What reminds of swallow tail butterfly?)
Why wings are up and forward and the way the tail is.

Card VI

Gee, I thought why don't you have anything pretty, and then I thought, well, it's just what you see, dear.

An Indian totem.

\√\√\√

A pheonix bird, is that what they call them, with their wings spread out. Yeah, an Indian totem of a pheonix, how they depict them in flight.

Just the part at the top here.

This kind of looks like feathers and it's very straight and it just reminds me of pictures of totem poles they make in Canada, Alaska, around there.

(E: What reminded you of totem poles?)
Shape.
FREE ASSOCIATION

Card VII - 25"
/
\ Think it's two dancing girls.
/ 
> 
/ 
\ I must not have a very good imagination (laughs).

Card VIII - 15"
(Sigh)
/
< It's a wild, it's a wolf, and a tree and some rocks and at least it has color.

Card IX - 23"
/
\ Kind of looks like an angel and a cloud.

INQUIRY

\ Sorta either direction. This way it's like they've got a head-dress on. There's their heads and face. It's a female shape, an arm, a bustle and it comes down to their legs and feet.

< Yeah, right here, the pink part is the wolf, and there's rocks and some trees and that's probably water and this is the reflection. This looks like a wolf running. Could have been several different answers, but something about the legs and feet were more like a wolf.

(E: How much of blot?)

< Yeah, right here, the pink part is the wolf, and there's rocks and some trees and that's probably water and this is the reflection. This looks like a wolf running. Could have been several different answers, but something about the legs and feet were more like a wolf.

(E: Shape?)
Yes.

(E: How much referring to?)
Whole thing.
Right there in the middle that would be part of the glow. The top part is yellow, kind of like a halo effect above its head.

(E: What reminds you of halo?)
The yellow halo, kind of like.

(E: Color?)
Yes. These would be like sunset clouds surrounding the angel, different color sunset.

(E: Clouds?)
Because that would be what is just naturally around an angel.

(E: Color?)
FREE ASSOCIATION

Card IX – 23” (CONTINUED)

\( \sqrt{\) Well, it looks like flowers and insects. 
\( \vee \)
\( \sqrt{\) angry insects. 
\( \checkmark \)

INQUIRY

Like stormy sunset clouds because some of them would be dark and some of them will be light when the light hits them.

(E: Where are clouds?)
Everything but the angel.
(E: How much of blot?) Whole thing.

(E: Where?)

This way looks like a grasshopper's face because they have a long pointed face and they have these green things on top their head. Here's their yellow eyes and their little orange mouth. And this is flowers surrounding. He's in the middle of them probably eating them up.

(E: Flowers?)
The yellow ones kind of look like a folded up rose, a yellow rose. And blue ones kind of look like asters, I think they're called.

(E: Why flowers?)
Color.
Appendix L

"Severely Disturbed"-30-Year Old Female--Bachelor's Level Education

FREE ASSOCIATION

Card I - 35"
Only thing I can think of is a sort of female pelvic girdle.

Also looks like a bunch of bats flying this direction towards me.

Looks like a big bug.

Card II - 50"
Looks like someone is having their period.

Could be a giant butterfly, too.
Actually, looks like a giant butterfly. And then a small butterfly.

Can't see anything else in it.

Card III - 50"
(Refused to pick card up.)
Small butterfly inside.

Also looks like a woman with a uterus, ovaries, vagina, hips and cervix.

Red thing looks like patches of blood.

Two long, skinny things at the bottom look like two different fish swimming in two different directions. I can't see anything else, wait a minute.

These two red things at the top look like seahorses hanging upside down or possums hanging from a tree. Maybe they could be a couple of fetuses, I don't know.

INQUIRY

Backbone, hips. Coming up to the hip.
(E: Q)
Don't know. In studying anatomy. Just looks like belongs to female because they're wide. Don't know.

Bat here (points).

Looks like a bug with eyes, antenna, wings (points).

(Vpoints) Vagina, menstrual flow.

Big butterfly giving birth to small butterfly.

(E: What looks like a butterfly?)
Wings here, body in the middle.

(Points to card.)

(Points to card.)

These are the fish, head, fins.

Shaped like seahorses; fins here, tail. Possum hanging from a tree upside down; head, body, tail.
Appendix L—Continued

FREE ASSOCIATION

Card IV - 15"
Looks like a giant bat.

Looks like someone's backbone. Maybe the muscles around it.

Looks like sex. Somebody's penis is sticking into somebody's vagina.

Also looks like some kind of leaf on a tree.

Kind of like something after it has been burned. Maybe like a piece of paper sitting on by some pencil sharp pointing object.

Card V - 5"
Looks like a giant bat.

Very large fly.

Maybe like two half-leaves stuck together

Card VI - 15"
Looks like a cat that's been run over by a steamroller.

Card VII - 75"
I think it to me looks like a woman's pelvis. Maybe her genital area.

Looks like a pair of little big clouds. Weird looking clouds, the kind you see on a sunny day or maybe on a cloudy day, but something going in it. A

INQUIRY

Head, eyes. (Points.)
(E: Q)

Head, body, wings make it look like it's flying.

Backbone is straight and narrow.

See cartilage on the backbone.

(Points to card.)

Shape is real skinny and goes down like a V.

Piece of paper after someone struck a match to it. It's colored black and been charred. The whole thing except for the middle.

Body, wings, eyes (points).

Same things.

Here. (Points to card.)

The cat is basically squashed.

Head, eyes, whiskers, backbone, and what's left of the feet.

Higher than hip, maybe up to the waist.

(E: Q)

Because kind of looks like a woman's shape there - gets narrow at hips to waist, genital area where she goes to the bathroom - where she pees.
FREE ASSOCIATION

Card VII - 75" (CONTINUED)
plane or something because I see the wings or part of the wings. Looks like clouds when it's about to rain because it has a lot of black around the edges.

Card VIII - 75"
Also looks like a woman's pelvic area. The two pink things look like ovaries and the green is like the woman's uterus, womb. Green up here sort of like her backbone, you can see her spine coming through.

The two pink things look like animals like holding on to a bush or tree. See legs, tail, and eyes.

Colors, don't know, look like something heaven would be. Golds, greens and pink and grayish area like clouds.

Card IX - 120"
Maybe a butterfly coming out of its cocoon.

Could be a man and woman having sex. This being the man, penis coming this way through the vagina.

Looks like what would happen if we had an atomic explosion, everything burst out. What would happen if middle was coming out.

Looks like this part, the green part, the gold is some kind of big moth eating something. Probably a bat instead of a moth, licking something like blood - what bats drink.

INQUIRY

(E: What makes it look that way?)
The shape, the anatomy. Don't know.

(Points to card.)

Colors remind me of what would be in heaven. Pinks, golds, gray clouds.

Think of freaking out. Cocoon in the middle breaking out of cocoon which is now body between the wings.

Pink area is the man.

(E: What makes it look like that?)
Looks like sort of shape of a woman's body, hip right here too. Looks like man and body and testicles. Maybe I just have sex on my mind.

Here. Here's the explosion and here's where the middle is coming out. (Points.)

(E: What makes it look that way?)
<table>
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<th>FREE ASSOCIATION</th>
<th>INQUIRY</th>
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<tr>
<td>Card X - 125&quot;</td>
<td></td>
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<tr>
<td>Giant female pelvic area with the green area being blue fallopian tubes.</td>
<td>Shape again. Shape, area, vagina, uterus. Fallopian tubes come up to backbone again.</td>
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<tr>
<td>Green yellow brown things look like leaves.</td>
<td>Here (points.)</td>
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<tr>
<td>Blue, big blue spiders on the sides.</td>
<td>Here are the spiders. There are two of them.</td>
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<tr>
<td>Reminds me of different seasons if you took different parts out. If you take the blue, green, and pink out—fall season. Pink, brown, and black out—springtime. Green grass, yellow flowers, blue sky.</td>
<td>Colors make it look like different seasons. Yellow is leaves and green is grass.</td>
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<tr>
<td>Things in the middle looks like a blue bat.</td>
<td>(Points.)</td>
</tr>
<tr>
<td>Gray thing reminds me something of a mosquito—very funny looking mosquito.</td>
<td>Shape of a mosquito. Eyes and little legs.</td>
</tr>
<tr>
<td>Pink kind of like blood too. Kind of like blood when you're having your period or something. When you're really flooding and can't stop.</td>
<td>(E: Why remind you of blood?) Because pink, like the first day of my period. Because I'm having my period now.</td>
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<tr>
<td>Green things like blades of grass.</td>
<td>(Points.)</td>
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References


