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# Trends in Rorschach Content Production Over Time

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# TRENDS IN RORSCHACH CONTENT PRODUCTION OVER TIME

by

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# VITA

The author, Mary Esther Locke, was born on July 21, 1949 in Hartford, Connecticut. She is the daughter of Esther Brainard Locke and Philip Locke and the sister of Frank Brainard Locke.

She completed her secondary education at Chaffee School in Windsor, Connecticut where she Graduated Cum Laude in June, 1967. She entered Wellesley College in September, 1967 where she majored in French Literature. In January, 1971 she completed the requirements for a Bachelor of Arts Degree.

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# CHAPTER I

## INTRODUCTION

Over the past 30 years, a substantial amount of research has been conducted about a widely used personality technique, the Rorschach Technique. A significant number of relevant studies have investigated the occurrence and significance of responses elicited by the test stimuli. This research has addressed a wide range of response characteristics, including perceptual factors, the use of color, form, location and shading, and the understanding of content choice in test performance. In addition, a number of studies have focussed on the development or application of scales which use a number of different response attributes as measures of specific personality traits or dynamics.

During early research, emphasis was on formal characteristics of responses. However, during the last 10 years, interest in Rorschach content has increased. Recent research has generally approached investigation

of content from several perspectives: establishment of normative data; development and application of scales designed to measure personality variables; and investigation of the significance of patterns of occurrence of contextual behaviors. This increased emphasis on content may be related, among other things, to the changing view of the Rorschach by researchers and the changes in clinicians' perception of clinically useful research.

This change in the view of the Rorschach and relevant research is exemplified by articles discussing both the nature of the test and also clinicians' uses both of this test and of Rorschach related research. Aronow, Reznikoff and Rauchway (1979) point out that the Rorschach can be perceived in two ways: as a nomothetic and as an idiographic tool. They note that it appears not to be very reliable or valid as a nomothetic device, but is a good idiographic measure, revealing information about the unique individual. Thus they suggest that one relevant goal of future research would be to focus on studies which could improve the quality and reliability of the idiographic interpretations drawn from this test.

This suggestion of emphasis on research relevant to idiographic aspects of the Rorschach seems especially

appropriate when viewed in terms of clinicians' typical use both of the test itself and of Rorschach related research. In general, clinicians appear unlikely to engage in or use research because it is not generally seen as relevant to their practice. Clinicians report that they learned techniques of interpretation through observation of teachers and through accumulation of experience (Barlow, 1981).

This tendency not to use research is likely to have been exacerbated by the fact that the most prevalent previous research on the Rorschach addressed aspects of the test not emphasized in clinical practice. Schwartz and Lazar (1979) suggest that, although the clinician may initially use normative standards in his interpretation, he tends to use art and skill to attempt to understand the individual. Thus, the clinician focuses on clinical judgment and understanding. This focus is at variance with much research which emphasizes causality and statistical prediction and inference. It is not surprising that the clinician would find this research of limited relevance to his needs as a diagnostician and therapist.

A second area where the bulk of research appears at variance with clinicians' needs, is the focus of

research on perceptual factors. As mentioned earlier, research on perceptual factors was predominant initially and although less so now, it still exceeds the quantity of research on content. Clinicians, however, rely primarily on content in interpreting the Rorschach (Aronow & Reznikoff, 1976; Exner & Exner, 1982; Howes, 1981; Potkay, 1971) and as a result would tend to find the majority of research of limited value in efforts to interpret and understand the Rorschach.

The emphasis by clinicians on idiographic application of the Rorschach and on use of content as the major interpretive device, may have influenced the gradual increase in focus on content and context in current literature. However, these factors also suggest directions for future research. To make Rorschach research more relevant to clinicians, investigators could attempt to provide empirical data which could form the basis for more reliable idiographic interpretation of the Rorschach. One important area of this type is the provision of normative data (Aronow & Reznikoff, 1976; Goldfried, Stricker, & Weiner, 1971). Although there have been some fairly extensive efforts to establish normative data for perceptual factors, there is very limited normative information on the response aspects

most emphasized by clinicians, content and context. Also, because the effects of social and cultural variables have not been clearly established, validity and generalizability of normative data which is not recent or which was collected from subjects of specific socio-economic status (SES) or ethnic group are unclear. Recent authors have recognized the need for data of this type and suggest that extensive, detailed norms be established for both content and context because, "without these data, the clinical use of the Rorschach must depend on subjective, biased and variable 'internal norms' for each individual clinician," (Goldfried, Stricker, & Weiner, 1971, p. 17).

The goal of this investigation was to apply an already developed content and context category system to samples of Rorschach protocols collected in the 1950's, 1960's, and 1970's. Data gathered in this way were used to establish norms for this age group and to investigate possible discrepancies related to cultural factors among protocols from the different time periods.

## CHAPTER II

## REVIEW OF RELATED LITERATURE

In order to address the meaning of content in the Rorschach, it seems important to first summarize the origins of this test and its current use. This summary is drawn largely from a recent article by Kobler (1983). After several years of experimentation with the use of a variety of inkblots as diagnostic tools, Hermann Rorschach, in 1921, ultimately settled on a group of 10 inkblots which are now known as the Rorschach Test. Five of these blots are achromatic (containing only shades of grey, white and black) and five are chromatic using varied additional colors. Since Rorschach's development of this test, several thousand studies have been published on the Rorschach.

The test is administered by asking subjects to describe all percepts suggested by each card and to elaborate on aspects of each card that suggest each percept. Because of the unstructured nature both of the stimuli and also of the task, the subject will theoretically personalize his responses, thus reflecting unique

aspects of his personality and typical coping mechanisms.

Thus, the Rorschach is typically used as a tool for the assessment and understanding of personality. It is usually interpreted wholistically and dynamically. The interpretation of specific facets of a response gain significance only in the context of the total configuration of responses.

Researchers on the Rorschach have tended to approach understanding of content in a number of ways. A few investigators, often in the context of other research, have focussed on establishing norms for content. Some have investigated the occurrence of specific types of content. Others have developed and applied content scales designed to measure personality traits such as anxiety, independence, or hostility. Finally, a few of these investigators have attempted to define and study different types of contextual factors appearing in protocols.

Three major attempts to gather normative data were completed by Ames and her colleagues (Ames, Learned, Metraux & Walker, 1954; Ames, Metraux, Rodell & Walker, 1974; Ames, Metraux, & Walker, 1971). In the initial research, Ames, Learned, Metraux and Walker administered

the Rorschach to individuals between the ages of 70 and 90. They tested 200 subjects, one third of whom were living at home or with relatives, while two thirds were in institutions for the aged. In 1971, Ames, Metraux and Walker investigated Rorschach responses for 650 children between the ages of two and a half and ten. Finally, in 1974, Ames, Metraux, Rodell and Walker completed a similar project for Rorschach performance for 547 adolescents from ages 10 to 16. Within the context of these general investigations, Ames and her colleagues gathered normative data for the appearance of major content categories at each level. The content categories used were similar to those used in the major content systems such as those of Klopfer (Klopfer, Ainsworth, Klopfer, & Holt, 1954; Klopfer & Davidson, 1962) and Exner (1974). At each age level, Ames and her co-investigators reported norms for major categories such as Animal (A), Human (H), and Object (Obj) and also listed a few categories that appeared fairly frequently at that specific age.

In the study of children, Ames et al. reported some areas of apparent consistency across ages in some content categories in addition to some specific trends in other categories. As was true with adults, Ames et

al. found the Animal response to be the most frequent content at every age. Across age levels, A% tended to remain at approximately 50%. This level of response was at the upper end of the normal range for adults. In contrast with this consistency in A, Human and Plant contents fluctuated over time. Human content tended to increase in frequency while Plant (Pl) tended to decrease between the ages of three and ten. Also, as subjects became older, the second most dominant content category shifted. Initially Plants were the second leading content. From ages three to seven, Object became the second most popular. Finally, from eight to ten, Human content supplanted Objects in popularity.

Thus the most apparent developmental trends during the period between two and a half and ten were fairly consistent production of A, gradual increase in H until it became the second leading category at approximately eight, and decrease in Plant content. In addition, Anatomy content (At) increased at approximately age eight and occurred consistently after that.

In addition to gathering these data for the main sample as reported above, Ames addressed the possible effect of SES on Rorschach performance by completing complementary research with three other samples ranging

from one sample similar to the main samples, with middle class children whose fathers were predominantly professionals possessing superior or better I.Q.s to a sample of black inner city children whose fathers were predominently semiskilled, slightly skilled or day laborers. Although she found overall growth trends among groups to be similar, she found significant differences in specific categories of Rorschach responses, apparently related to SES. These categories include percent of whole responses (W%),animal percent (A%), rejections, and human percent (H%). These results suggest that sociocultural factors may affect Rorschach performance, and, as a result, the generalizability of normative data.

In the study of adolescent Rorschach responses, Ames et al. found some trends similar to those found in the main child sample as well as some new changes in response characteristics. Ames et al. (1974) also addressed the possibility that normative data might become invalid over time because of the effect of cultural factors on Rorschach performance. Authors indicate that they believe general trends in adolescent Rorschach production have remained constant, but that production of specific content and other categories are

likely to change over time. Stability of A (approximately 40%) as reported in research of child responses continued while H stabilized at approximately 19% during this period rather than continuing its previous gradual increase. Several other categories did show a tendency to increase with age. These include Flower, Abstract, Reflection, Geography-Geology, and Nature. On the other hand, Fire and Architecture tended to decrease. Most other Categories did not show a specific trend in occurrence. These include Blood, Explosion, Anatomy, Object, Painting-paint, and Mask.

In contrast to their other research, Ames et al. (1954) discussed trends in content production from two different perspectives in their analysis of Rorschach performance of the aged. These two viewpoints were age level and degree of senility. When responses were analysed by age, the authors found that results were generally meager and not consistent. The only clear trends noted were for an apparent increase in A and H and a decrease in Anatomy with age. On the other hand, when analysing performance according to level of senility, Ames et al. (1954) observed marked trends. Ames et al. divided the subject population into three groups on a continuum from no sign of senility to

senile. These groups were designated as "Normal," "Presenile," and "Senile." A% did not follow a linear trend with these subgroups, but increased between normal and presenile levels and then decreased at senility. This content remained the most frequent response category for normal elderly and presenile subjects, but dropped to second place with the senile population. Human remained the second most frequent category for normal and presenile subjects, but dropped to third place with the senile group; H% tended to decrease linearly across the three conditions. Anatomy content, on the other hand, rose gradually for preseniles (from 2% for normals to 7% for preseniles) and jumped to the most frequently occurring category for the senile group (47%). Within the general animal designation, Sealife content (containing fish as well as crustaceans, ocean dwelling mammals, and other ocean dwelling animals) followed a similar pattern to that of Anatomy content, rising quickly from fifth most frequent Animal subcategory in normals to most frequent subcategory in senile subjects. Thus, the most striking trends with increasing senility appeared to be rapid increase in Anatomy and Sealife contents and a significant decrease in Human content. The increase in Anatomy and decrease in Human

content may be related to increased preoccupation with bodily concerns, withdrawal from social interaction and lessening of interest in the external world typical of senile subjects.

Outside of Ames' work, there have been only a few scattered normative studies of content with few consistent trends in results. Two recent investigations (Krall, Sachs, Lazar, Rayson, Growe, Novar, & O'Connell, 1983; Lockwood, Roll, & Matthews, 1981) support Ames et al.'s (Ames, Metraux, Rodell & Walker, 1974; Ames Metraux, & Walker, 1971) concerns related to the effect of sociocultural variables of Rorschach performance and, as a result, the potentially limited validity of normative data. In each case, investigators gathered normative data which differed significantly from previously reported norms. Krall et al. (1983) gathered data for black children aged 3 to 12 on a number of variables including a few content and context categories (e.g., A%, H%, P%, perseveration, rejection). Their results differed significantly from those of Exner, (1974, 1978) and Ames et al. in form accuracy, Whole percent (W%), and percent of Detail responses (D%). Lockwood et al. (1981) found significant difference from Ames et al. (1974) results in production of

movement responses in 6 year old children. These results suggest that sociocultural factors such as SES, ethnic group, and cultural changes over time may affect frequency of specific responses.

Consistently reported trends are related to popular responses, Animal and Human contents, both within the general population and in specific subgroups (Draguns, Haley, & Phillips, 1967). Investigators agree in reporting A% as the most frequent response category, with a range of 30 to 50 percent (Ames, Learned, Metraux, & Walker, 1954; Beck, Beck, Levitt & Molish, 1961; Draguns, Haley, & Phillips, 1967; Exner, 1978; Setze, Setze, Baldwin, Doyle, & Kobler, 1957) and identify H as the second most frequent content at 10 to 20 percent of total responses (Ames et al., 1954; Exner, 1978). Investigators also report that adults produce a mean of six to eight popular responses per protocol (Beck et al., 1961; Exner, 1978).

In addition to these general findings about major content categories, investigations of content produced by various population subgroups suggest specific differences in content among these groups. Ames (1975) investigated changes in men's gender perception of figures on Card III over time. She found that more men

below age 60 perceived females on Card III than subjects had in previous studies, suggesting changes in content choice over time, which the author indicates may be related to the influence of societal change. Prandoni and Schwartz (1978) and Exner (1978) attempted to develop comparative norms for main content categories across a few broad diagnostic groups: organically impaired, non organically impaired subjects, inpatient depressives, schizophrenics, and normal adults. Results of these studies suggest that patients with organic impairment tend to produce lower H and Human Detail (Hd) percents than non-organic patients (Prandoni & Schwartz, 1978) and that inpatient depressives and schizophrenics tend to produce fewer populars than other adults (Exner, 1978; Kobler & Stiel, 1953). In addition, various occupational groups appear to perform differently on the Rorschach: medical students, physicians, and nurses tend to produce more Anatomy (At) responses than comparable controls, while psychologists tend to give a high proportion of Human (H) responses (Draguns et al., 1967; Thomas, Ross & Reed, 1964).

Normative information about Rorschach response content categories seems inadequate at this time for two reasons. First, the possibility that cultural variables

may influence content production and thus limit validity of norms, has not been systematically explored. Second, norms that do exist seem sparse and incomplete. Even in the carefully planned and executed studies by Ames and her colleagues, gathering of content norms occupied a secondary role. Thus, even in this work, normative data were reported for a limited group of content categories. Development of adult norms in other research has been even more limited, with inclusion of one or more main categories as an apparent afterthought in the context of other investigations. Thus there is a need for detailed, complete normative data for adults and other populations at this time.

Research on contextual factors in Rorschach performance is even more limited than studies to establish content norms. This may be related to the fact that contextual bahaviors of the subject are less well defined than response content and thus more difficult to measure and study empirically. Contextual aspects include extraneous verbalizations and test behaviors (i.e., card turning). Various contextual verbalizations include elaborative comments, references to previous percepts, expressions of like or dislike for a percept, or expressions of uncertainty about a percept. The

interest that does exist in contextual issues has generally resulted from investigators' convictions that the quality of the Rorschach interaction mirrors typical roles (Phillips & Smith, 1953) and relationship patterns the individual adopts in his general life (Singer, 1977; Singer & Wynne, 1975). In addition, interest in contextual factors also arises from the expectation that quantification of contextual factors can have diagnostic significance (Aronow & Reznikoff, 1976; Rapaport, Gill, & Schafer, 1968; Exner, 1978).

In their book, Phillips and Smith (1953) based discussion of the significance of contextual factors on clinical observation. They suggest that analysis of these factors can provide significant information about roles the client adopts both with other people and also when faced with new tasks. Phillips and Smith did not develop a specific scale or method for scoring contextual behaviors, but suggested areas for the examiner to note and analyse when interpreting Rorschach performance. These areas include subject's efforts to increase the structure of the test situation, statements reflecting inability to develop a response, indications of hesitation, judgments about a card, and non-verbal behaviors.

Like Phillips and Smith, Singer (1977) (Singer & Wynne, 1975) feels that communication patterns on the Rorschach can reflect significant aspects of a subject's general interpersonal relationships. She became interested in patterns and deviance in communication, particularly within families of schizophrenics, and developed a Communications Deviance Scale to assess this area. This method covers a wide range of contextual factors, including appearance of speech fragments, unstable percepts, extreme tentativeness, contradictory or inconsistent references, critical remarks, and retraction of responses.

Although this effort to devise a scale of this type is needed for the establishment of a more reliable, consistent measure of contextual verbalization than has previously existed, there are several factors which limit its usefulness at the present time. In order to develop this scale, Singer and her colleagues have used the Rorschach in highly innovative and non traditional ways (Lerner, 1975a) and focussed specifically on deviant contextual behaviors. They did not include categories on their scale which reflect behaviors which would appear on a wide variety of Rorschach protocols both within the normal population and in a crossection

of other diagnostic groupings. Thus the applicability of this scale in clinical settings may be limited. In addition, there has been limited research on reliability or validity of this scale (Aronow & Reznikoff, 1976; Lerner, 1975a). Thus, although this scale may be potentially useful, its applicability to clinical settings, reliability and validity are unclear.

In addition to these efforts to measure general contextual behaviors, several authors have developed scales designed to test specific components of contextual behavior as reflections of specific dynamic processes or diagnostic categories (Aronow & Reznikoff, 1976; Watkins & Stauffacher, 1975; Weiner & Exner, 1978). Investigators including Watkins and Stauffacher (1975) and Weiner and Exner (1978) devised scales to reflect pathological thinking, while Loveland (1967) developed a method for measuring group dynamics with the Consensus Rorschach.

A number of investigators have developed scales to reflect disordered, pathological thinking on the Rorschach (Lerner, 1975b; Watkins & Stauffacher, 1975; Weiner & Exner, 1978). Generally these scales have the diagnostic goal of assisting in differentiation of schizophrenic from nonschizophrenic subjects. In

addition to including some noncontextual categories, these scales have a number of categories reflecting qualities of the subject's verbalizations which are hypothesized to reflect disordered thinking. These include queer verbalizations, confusion, incoherence, mangled or distorted percepts (Rapaport, Gill, & Schafer, 1968; Watkins & Stauffacher, 1975) and autistic logic. Initial investigations with these scales suggest that they are fairly reliable and do differentiate schizophrenics from normals fairly effectively.

In contrast to previously described attempts to use measures to assess a specific diagnostic category, Levine and Spivack (Aronow & Reznikoff, 1976) developed a contextual scale to assess a dynamic process, repression. This system includes seven scales: specificity of the concept, elaboration, impulse responses, primary process thinking, self references, movement, and amount of organization of the response. This scale appears to have good interjudge reliability and satisfactory temporal stability. However, results of validity studies have been weak and inconsistent and thus do not clearly indicate that the Rorschach Index of Repressive Style (RIRS) is a valid measure of repression.

In addition to studies of context with individ-

ually administered Rorschachs, some authors have investigated contextual behaviors in the group administered Consensus Rorschach (Aronow & Reznikoff, 1976). These approaches tend to focus on analysing interaction patterns among subjects taking the Rorschach together (Loveland, 1967; Willi, 1969). In one system, developed by Loveland, the focus is on the quality of communication patterns: clarity of communication; physical posture participants assume in their interactions; and the level of each individual's apparent understanding of other participants' communications. A second system, developed by Willi (1969), attends less to specific components of the interaction, but rather examines the roles participants adopt in the group Rorschach. He uses his scoring system to assess both the comparative strengths of participants and also personality changes that occur as participants try to reach a consensus. To address these questions, he scores four areas: 1. the comparative number of proposals by various participants; 2. techniques individuals use to implement or gain acceptance for their proposals; 3. the emergence of leadership in the interaction; and 4. who keeps the card. Although these approaches appear useful in the Consensus Rorschach setting, because they focus on

interactions among multiple subjects, they do not appear applicable to the individually administered Rorschach.

In contrast with other contextual system's focus on very deviant behaviors or their limitation to atypical administration procedures, Zubin developed a scoring system which includes a number of behaviors observed frequently on normal protocols (Aronow & Reznikoff, 1976). He has a number of scoring categories which reflect the subject's verbal elaborations of percepts and other categories reflecting non-verbal behaviors and style of response. In the first group, he includes indications of subject's evaluation of his percept and tendency to describe human percepts in a positive or negative light. In the second group, he includes perseverative tendencies, card turning, and other card handling. This scale appears to be a significant step toward objectification of a wide range of contextual categories. However, because there are no norms and limited reliability and validity data, the scale is of very limited practical use at this time.

In summary, the limited research on contextual qualities of the Rorschach has tended to focus on diagnostic applications of contextual factors or on a very limited range of deviant behaviors. In the few

cases where the investigators have attempted to include a wide range of behaviors in their analysis (Phillips & Smith, 1953; Zubin, Eron, & Schumer, 1965), there are limited reliability and validity data and no normative information. As a result, these systems are of limited use to the clinician at this time.

Outside of establishment of norms and study of contextual behaviors, research on content has taken two major directions: investigation of the significance and occurrence of individual content categories and development and application of scales designed to assess components of personality. The emphasis on one or the other of these two approaches was related to conceptualization of the significance of content. In some cases, researchers have conceptualized each type of content as having a specific symbolic impact (Phillips & Smith, 1953) while other investigators have not emphasized the unchanging significance of an individual content response, but have emphasized recurrent themes, configurations, or sequences of content as reflecting dynamic processes in patients (Dana, 1978; Richardson & Morrow, 1974; Schafer, 1954). Phillips and Smith (1953), who feel that content has a universal significance, suggest that content use is likely to reflect

central personality motives and traits to varying degrees. If a subject develops a frequently seen content, he is likely to be revealing the extent of his conventionality. However, if he develops content that is infrequently seen on a card, he is likely to be revealing core motives and traits. In Phillips and Smith's view, the central traits and motives revealed in this way will not necessarily be expressed in behavior. The extent of behavioral expression of these traits will be decided by factors including level of social adjustment, pathology, and awareness of his own conflicts and attitudes. Thus, Phillips and Smith see content as having invariant meaning, but a range of possible behavioral correlates. Phillips and Smith based their understanding of the symbolic meaning of content largely on theory and on clinical observation. Subsequent research in this area has generally focussed on exploring these theoretical conceptions and has emphasized the study of individual categories.

In contrast to the tradition of Phillips and Smith, a number of authors have seen content configurations as reliably reflecting intrapsychic processes and have relied less on interpretation of the meaning of specific responses (Dana, 1978; Richardson, 1974;

Schafer, 1954). This trend in general has resulted from two possible biases: 1. that a number of different contents can reflect one theme in spite of different manifest content (Schafer, 1954); and 2. that specific contents do not necessarily have universal symbolic impacts (Dana, 1978; Exner, 1974; Richardson & Morrow, 1974). Schafer (1954) saw traditional content categories as having limited value, merely indicating breadth of interest and specific preoccupations. He proposed a thematic analysis system in which contents would be grouped according to common thematic impact, rather than according to actual categories. In his view, this approach provides more fruitful insights into the dynamic themes in the personality than analysis by individual contents.

In 1974, Richardson administered the Rorschach to subjects whom he then divided into subgroups (users and non-users) according to whether each individual had produced each of nine specific Animal responses on the test. He also had all subjects describe a number of animals, including the nine target Animal contents. When he compared users' and non-users' descriptions of these percepts, he found that, although there are some common interpretations of symbols for both groups of

subjects, symbols are also seen differently by these subjects. This implies that contents do not have an universal impact and thus cannot be understood as representing a specific dynamic. Exner (1974) supports the view that content does not have universal meaning:

> The literature concerning content seems to convey the notion that no single content category can be regarded as having an absolute relationship to any personality variable and/or psychopathological state, nor should such relationships be inferred in interpretation. The overall configuration of content, however, will often provide guidelines from which other data in the Structural Summary may be understood with greater specificity. (p. 304).

This second view has provided an impetus for development and application of scales designed to reflect specific personality traits or motives (Aronow & Reznikoff, 1976; Elizur, 1975; Goldfried, 1975b; Holt, 1975). A major goal in content research has generally been to find ways of diagnosing or predicting behavior. To do this, researchers have generally emphasized the second approach to content analysis and developed scales or configurations of signs to indicate specific processes or traits. However, research has also been completed on single content categories. In the case of the major content categories, Animal, Human, Anatomy, and Populars, there appear to be some consistent trends

while results of research on other categories are less clear.

Researchers tend to agree that Animal content generally indicates stereotypy or reduced intellectual functioning (Klopfer et al., 1954; Piotrowski, 1957). In their review of research on content, Draguns, Haley, and Phillips (1967) agree with these formulations about stereotypy and intellectual functioning and conclude that "A% represents an index of some of the more mundane aspects of adaptive control and is akin to a measure of reality testing in its more concrete sense," (p. 23). Studies investigating these hypothesized relationships between A% and intellectual functioning and stereotypy have been somewhat inconsistent, but have tended to support this relationship. Aronow and Reznikoff (1976) conclude that most studies suggest that A% is an indication of stereotypy of thought. However, these studies do not consistently indicate that A% is related to intelligence.

In addition to investigation of the general category of A%, Gill (1967) investigated the impact of 50 specific Animal contents. He had subjects identify the sex and specific characteristics associated with A content appearing in the Rorschach. He found subjects

agreed on the sex of five out of 50 animals. There was also substantial variation in characteristics attributed to the animals, indicating that specific A contents have different symbolic impact for different individuals.

Investigators of the Rorschach have consistently identified Human and Human Movement (M) as reflecting the capacity to empathize with and relate to others and indicating social maturity. Although research on the relationship of H and M to empathy has been inconclusive, current research does appear to support the conceptualization of H as a measure of social maturity.

Research with H suggests that H acts as an index of social maturation and appears to vary directly with cognitive development and capacity for mature social relations (Draguns, Haley, & Phillips, 1967; Exner, 1978). In addition, H appears to reflect level of social interest: this is reflected in findings that professionals in fields that emphasize contact with people (physicians, psychologists, and nurses) tend to produce a high percentage of H on their protocols (Pruitt & Spilka, 1975).

As stated previously, research is inconclusive regarding the hypothesized relationship between H and empathy (Aronow & Reznikoff, 1976; Lerner, 1975c).

There is, however, some evidence that M is related to creativity (Peterson, 1978; Raychaudhuri, 1971). Raychaudhuri (1971) analysed the production of M for creative and non-creative male and female subjects. Results of his study suggested that high M production was correlated with creativity. However, in a critique of this research, Aronow (1972) pointed out that results of Raychaudhuri's investigation were not clearcut because of the possible confounding effect of education and IQ. This research is representative of many studies in the area. Because of the complexity both of the test and the human personality, there are often a number of conflicting explanations for results of a study.

Rather than investigate either H or M individually, Pruitt and Spilka (1975) developed an Empathy Object Relationship Scale based on occurrence of both H and M in protocols. They theorized that, because H and M appear to indicate the capacity for empathy and for harmonious relationships, H and M content would distinguish between emotionally disturbed, vocationally handicapped children in group therapy and a similar group not involved in group therapy. Their hypothesis that the group in therapy would produce more H and M than the nontreatment group was supported, thus sug-

gesting the validity of the Rorschach Empathy Object Relationship Scale. However, although these initial results are encouraging, more research is necessary to clearly establish validity, reliability, and clinical efficacy of the scale.

In a later study, McCraw and Pegg-McNab (1981) assessed the effect of a situational variable, test order, on production of variables including H and M to investigate the possibility that Rorschach performance is particularly susceptible to the influence of immediately preceding stimuli. They found no significant difference in H or M responses or any other variables tested related to whether the Rorschach was administered before or after the Hand Test. This suggests that the Rorschach may not be as susceptible to test order effects as previously hypothesized.

Research on less frequently occurring categories or specific subcategories (i.e., a specific type of animal or human like percept) is more sparse and generally reflects less consistent trends than investigations of H and A. Research on these less frequent responses tends to focus on the occurrence of contents including Anatomy, Sex, Blood, Inanimate Movement, and a few, specific unusual responses such as transparency or cross

section.

Investigations of Anatomy (At) generally indicate that these responses reflect anxiety and concern with one's bodily functioning and integrity and concurrent lessening of interest in the external world (Aronow & Reznikoff, 1976; Draguns, Haley, & Phillips, 1967; Exner, 1978; Weiss & Winnick in Aronow and Reznikoff, 1976). In addition, an extremely high At percentage appears to be correlated with physical rehabilitation failure (Carnes & Bates, 1971; Peterson, 1978).

Blood (Bl) and Sex responses appear to reflect the individual's manner of managing his aggressive and sexual impulses. These types of responses occur more often among individuals who have been apprehended for sexual and aggressive acts (Draguns, Haley, & Phillips, 1967). In addition, research with Catholic seminarians (Bartsch & Dawson, 1979) suggests that this particular subpopulation tends to develop few Sex or At percepts. They tended to develop sexual material in a somewhat indirect, immature way and avoid overt sexual responses.

Milner and Moses (1974) investigated the effects of administrator's gender on sexual content as well as general productivity on the Rorschach. They found that sex of examiner did not seem to affect female subjects'

production of Sex content. In contrast, sex of examiner did seem to affect male subjects' production of Sex responses with male examiner-male subject combinations producing significantly more Sex responses than any other condition. This suggests the significant influence situational, possibly cultural, variables can have on production of specific content on this test.

Research on Inanimate Movement (m) suggests that m reflects tension, conflict and frustration (Exner, 1978) and also suggests that high m production may reflect self analytic tendencies (Brien, Eisenman, & Thomas, 1972).

There has been very limited research on the significance of specific, unusual responses to Rorschach stimuli. Blatt and Ritzler (1974) investigated the hypothesized relationship between suicidal behavior and production of crossections and transparency responses on the Rorschach. The authors studies the Rorschach performance of 12 successful suicides and 12 non suicidal patients matched for age, sex, IQ, and number of responses. They found that, as hypothesized, suicidal subjects produced more crossection and transparency responses than non suicidal patients. This finding was supported in a replication by Rierdan, Lang, and Eddy

(1978). Kestenbaum and Lynch (1978) replicated Blatt and Ritzler's initial study to investigate the ability of a number of signs to predict suicide. These included cross section and transparency as studied by Blatt and Ritzler as well as other hypothesized predictors of suicide: Increased penetration responses, color-shading, and decay responses. In contrast to the previously reported findings, (Blatt & Ritzler, 1974; Rierdan, Lang, & Eddy, 1978) these authors found none of the hypothesized variables to differentiate between groups. They hypothesized that cultural factors, including different SES and IQ might be responsible for the divergent results. This suggests that the influence of cultural factors may affect production of particular types of responses.

A study of the significance of the abstract response (Sanders, 1977) suggests that Abstract responses (Abstr) are correlated with achievement, endurance, and sentience in males and with dominance, nurturance, exhibition, and social recognition in females.

Thus, research appears to support tentative conclusions about the significance of H, A, At, and M and suggests further research in several other areas.

However, there are a number of problems with data on the significance of specific content categories. First, a number of the valid studies were completed many years ago when control for confounds in Rorschach research was not as stringent. Also, the effects of situational and cultural variables on specific content production has been investigated to only a limited extent. Finally, many studies from which support for hypotheses were derived, were tangential to the main hypotheses about the meaning of content categories. These studies often correlated a number of Rorschach scores with a specific criterion and thus lacked the focus to allow for support for a specific hypothesis.

As was stated earlier, many authors have concentrated on development of content scales based on a number of types of content rather than on analysis of the significance of individual content categories. In general these scales are designed to assess a particular personality trait or dynamic. Some of the areas focussed on in these scales include hostility/aggression, anxiety, homosexuality, and primary process. Generally investigators based the development of these scales on theoretical constructs and clinical observation, rather than on empirical data. After scale development,

investigators have tended to conduct research to assess the empirical and clinical value of the scale.

Elizur followed this pattern in the development of his scale to assess anxiety and hostility (Aronow & Reznikoff, 1976; Elizur, 1975; Goldfried, 1975a; Goldfried, Stricker, & Weiner, 1971). Thus, when he designed his scales, he based them on intuitive and theoretical hypotheses about qualities in responses that would indicate anxiety or hostility. In his system, responses are scored as anxiety evincing if they are characterized by features such as anxiety, expressed or implied, anxious expressive behaviors, or responses symbolic of anxiety. Research on this intuitively derived scale indicates good interjudge reliability (Goldfried, 1975a). There is also evidence that the anxiety scale is significantly related to ratings of anxiety by self and others and to specific anxiety related symptomatology (Aronow & Reznikoff, 1976).

Aron (1982) used the Elizur Anxiety Scale to assess the effect of life stress on Rorschach content production. He found the Elizur Anxiety Scale discriminated between groups with extreme high and extreme low scores on a stressful life-event rating scale. The author indicated that these results support the construct

validity of the Elizur scale but felt that the clinical use of these scales was still limited by the lack of norms and lack of information regarding the scale's sensitivity to degrees of stress.

In the Elizur Hostility Scale, responses are scored as hostility evincing if they express or imply hostility, if they contain percepts behaving in a hostile way, if they symbolize hostility, if they are objects of aggression, or if they connote anxiety and hostility. This scale has much in common with other less frequently used hostility scales, including the DeVos hostility Scale. These scales all tend to emphasize projection of violent action, malevolent ideation, or the results of violent action into the Rorschach protocols. Research on hostile content in the Rorschach has indicated good ability to differentiate subjects on the basis of past histories of aggression (Aronow & Reznikoff, 1976). It has also suggested significant relationships between hostile content and ratings by self and others (Aronow & Reznikoff,1976; Lerner, 1975d), and correlation of hostile content with extremes in aggressive behavior (Goldfried, Stricker, & Weiner, 1971; Haley, Draguns, & Phillips, 1967). However, research on the relationship of the Elizur scale to

other projective and objective tests of hostility has been inconsistent and at times in directions opposite to that predicted (Aronow & Reznikoff, 1976; Goldfried, Stricker, & Weiner, 1971; Haley, Draguns, & Phillips, 1967; Megargee & Cook, 1967).

Research on Elizur's anxiety and hostility scales suggests that both show significant relationship to symptomatology and ratings by self and others. However, the absence of norms makes these scales of limited value for the clinician (Aronow & Reznikoff, 1976).

Although the Elizur scales are the most frequently used measures of anxiety and hostility, other authors have also developed scales to measure these traits. DeVos (Aronow & Reznikoff, 1976) developed a scale in 1952 which was designed to measure seven areas: hostility, anxiety, bodily preoccupation, dependency, positive feelings, and miscellaneous and neutral responses. The components of his anxiety and hostility subscales are very similar to those of Elizur. Because there is little research about the validity of DeVos' version, it is not used frequently at this time. Research on all subscales has been limited and in general was completed 20 or more years ago. Thus, this scale appears to be of limited current value.

A few scales have been developed to measure homosexuality. The two most frequently used of these are the Wheeler Signs and Schafer's themes (Aronow & Reznikoff, 1976; Kaczala, 1971). During the past several years, there has been increasing controversy both about the validity of these signs and about their relevance in the current practice of psychology. This controversy is generally focussed on two areas: 1) the lack of clinical applicability of the scales because of unproven ability of these measures to discriminate between latent homosexuals and other groups, and 2) lack of relevance of these scales because homosexuality is no longer seen as a meaningful diagnostic classification (Anderson, 1975; Aronow & Reznikoff, 1976; Rosen, 1975).

Wheeler (1949, 1975) developed his scale of 20 homosexual signs in 1949. Items in this scale are based either on components of previously developed scales or on theorectical rationales. Eight general themes are represented on this scale: 1) confused body or sexual image; 2) preoccupation with pre-genital sexuality; 3) derogatory views of people in general; 4) responses reflecting paranoia; 5) perception of women as threatening or unappealing; 6) symbolic phallic destruction; 7) sex viewed in an aggressive or destructive light;

8) feminine identification (Aronow & Reznikoff, 1976; Wheeler, 1949, 1975).

Generally research with this scale has focussed on its capacity to differentiate between overt homosexuals and non homosexuals. Except for one study by Wheeler when he developed the scale, research has not investigated the capacity of the scale to differentiate between latent or repressed homosexual and non homosexual subjects. Results of this study did suggest that Wheeler's signs differentiated successfully between non homosexuals and repressed or latent homosexuals. In general, results of research on the capacity of the Wheeler signs to discriminate between overt homosexuals and non homosexuals have been positive (Aronow & Reznikoff, 1976; Goldfried, 1975b; Goldfried, Stricker, & Weiner, 1971; Haley, Draguns, & Phillips, 1967; Peterson, 1978). Stone and Schneider (1975) investigated the ability of the scale to differentiate among male psychiatric patients divided into three groups: homosexual, sex role disturbed, and normal control. The groups did not differ significantly in age, education, or intelligence. They found that Wheeler's signs successfully discriminated both the homosexual and the sex role disturbed groups from the normal group.

In 1977, Kwawer suggested that inconsistent results of research with the Wheeler signs might be related to the level of arousal of underlying conflicts in homosexual subjects. He pointed out that, often, non-significant results were obtained in situations where homosexual subjects were under no stress related to their sexuality, displayed no psychopathology, and simply volunteered for a study. He suggested that, because these subjects were not experiencing intensified conflicts, they did not have an elevated number of Wheeler signs. To assess this, he compared protocols of 36 homosexuals and 36 heterosexuals each of whom was administered the Rorschach twice; once under an experimental condition designed to intensify unconscious dynamics hypothesized to be related to homosexuality, and another time under neutral conditions. Results indicated that, under the experimental condition, Wheeler signs discriminated between the two groups, while they did not discriminate under the control condition. These findings support the hypotheses that Wheeler signs are valid when unconscious conflicts are intensified.

In contrast to Wheeler's system, Schafer's scale is based on two specific areas of his thematic content:

Fear and Rejecting Attitude Toward Masculine Identity; and Feminine Identification in Men (Aronow & Reznikoff, 1976; Haley, Draguns, & Phillips, 1967; Schafer, 1954). The advantage of this thematic orientation is that it allows the examiner to score all examples of a specific type of response rather than limiting him to a specific blot area. As is true for Wheeler's signs, research on this system has emphasized differentiation of overt homosexuals from non homosexuals and has generally been positive (Aronow & Reznikoff, 1976).

Andersen and Seitz (1969) used the Schafer signs to complete a similar study to that of Stone and Schneider (1975). They applied the Schafer themes to the protocols of male psychiatric patients divided into three subgroups: homosexual, sex role disturbed, and heterosexual and found that the themes discriminated among all three groups.

In one study, Raychaudhuri and Mukerji (1971) compared the ability of the Wheeler signs to that of the Schafer themes in differentiating active homosexual, passive homosexual, sex role disturbed, and heterosexual normal convicts. The authors found that the Wheeler signs were only able to make two significant discriminations (between both active and passive homosexuals and

sex role disturbed). The Schafer scheme, on the other hand, resulted in four significant discriminations: between active homosexuals and sex role disturbed; between active homosexuals and heterosexuals; between passive homosexuals and sex role disturbed; and between passive homosexuals and heterosexuals. These results suggest that, although Wheeler signs discriminate to some extent, the Schafer scheme discriminates sexual orientation more effectively.

In addition to undertaking research on the effectiveness of homosexuality scales, some authors have questioned the relevance and clinical need for these scales. These authors (Anderson, 1975; Aronow & Reznikoff, 1976) suggest that the "meaning and value of establishing a 'diagnosis' of homosexuality are becoming increasingly dubious," (Aronow & Reznikoff, 1976, p. 171). This dissatisfaction with the diagnosis of homosexuality is based largely on the fact that the understanding of homosexuality is changing among clinicians and that ego-syntonic homosexuality is no longer classified as a proper clinical diagnosis. Thus some clinicians suggest that it is not clear that there is any value in identifying homosexual trends in a person. However, the issue of hostility, anxiety, and depression

in non-ego-syntonic homosexuality remains a clinical issue. In addition, these authors point out that, in general, research has shown the signs to discriminate between overt homosexuals and heterosexuals, but not between latent homosexuals and other groups (Anderson, 1975; Aronow & Reznikoff, 1976; Rosen, 1975). The second type of discrimination is the one that would have clinical value because, unlike overt homosexuals, latent homosexuals would not tend to be able to verbalize their homosexual tendencies. Thus the value of these scales has been questioned recently in two areas: 1) the lack of clinical value of the scales because their ability to identify latent homosexuality is unproven; and 2) the lack of relevance of these scales because, in DSM III (1980), the current diagnostic classification system for mental health professionals, ego syntonic homosexuality is no longer classified as a mental disorder.

A second area which has provoked considerable research is the assessment of primary process manifestations. In general primary process refers to thinking that is characteristic of childhood or dreams and/or the way in which libidinal/aggressive energy is discharged. Primary process is characterized by drive to immediate gratification of impulses without the use of logic,

judgment, or reality testing. In general, this research has used a scale developed by Holt and Havel and then further refined by Holt (Aronow & Reznikoff, 1976; Haley, Draguns, & Phillips, 1967; Holt, 1975; Holt, 1977; Holt & Havel, 1960; Lerner & Lewandowski, 1975). Although the use of this primary process scale requires no unusual administration techniques, Holt suggests the addition of an affect inquiry in which subjects are asked to describe emotional reactions to the test stimuli (Aronow & Reznikoff, 1976; Lerner & Lewandowski, 1975). Holt (1977) conceptualized his scale as a research, rather than a clinical tool. He felt it was too cumbersome and time consuming to use clinically and was more appropriate for use with groups rather than for individual analysis.

Holt's scoring system is divided into three groups of categories: content scores, which have to do with evidence of wishfulness in the content of the responses; formal scores, which relate to deviance in response structure; and control and defense scores, which reflect the subject's reactions to emergence of material in either of the first two groups. Holt based his content section on the premise that overt content of a libidinal or aggressive type reflects the drive domination charac-

teristic of primary process. He developed 10 categories: seven of libidinal and three of aggressive content. Each category of content is divided into two levels: Level I reflects more primitive, blatantly unsocialized responses while Level II refers to more controlled responses.

Formal categories are also scored on a Level I or Level II system and tend to refer both to perceptual organization of the response and to the thought processes underlying the response. These categories attempt to assess deviations from the logical orderly thinking characteristic of secondary process. The final group of variables, the Control and Defense Scores, are designed to assess the subjects' defensive organization, especially as it relates to control over regressive thinking. Holt identified a number of control and defense mechanisms which he then subdivided according to their effectiveness.

Research with this scale has suggested that specific summary scores are related to a number of cognitive and perceptual characteristics. A measure of adaptive regression derived from the Holt system appears related to ability to tolerate and deal adaptively with situations in which reality contact is temporarily

suspended (Holt, 1977; Lerner & Lewandowski, 1975; Wright & Zubek, 1969). Adaptive regression measures have also been related to therapy prognosis (Fishman, 1973a). However, Fishman (1973b) also criticizes the manner of deriving the adaptive regression score. Because this score is based on the Defense Effectiveness Score (which is a category score of the Holt system), he feels the score may simply be a mathematical artifact, rather than a specific score which reveals unique information about the individual.

In addition to research on specific subscores of the Holt Scale, a number of studies have been conducted to assess differences in expression of primary process thinking in the Rorschach as it is related to other variables of either a diagnostic, behavioral, or cognitive nature. Some research has investigated the relationship of primary process scores to level of cognitive development. Benfari and Calogeras (1968) found that college students tended to show fewer manifestations of primary process thinking as they progressed to higher levels of moral and conscience development. This finding was supported by Schimek (1974) who found that primary process manifestations tended to decrease as adolescents reached early adulthood. He felt this

decrease in primary process manifestations was related to intelligence and increase in cognitive complexity. In a study with second grade children and a one year follow up, Russ (1980, 1981) found that measures of Defense Effectiveness and adaptive regression were both positively related to achievement.

In addition to studies emphasizing the relationship between primary process manifestations and cognitive complexity, a number of studies have assessed the ability of the Holt scale to differentiate among diagnostic groups or subjects with varied reality testing. Thus, Lerner and Lewandowski (1975) conclude that Holt's scale appears to differentiate schizophrenics from nonschizophrenics successfully and, in addition, to differentiate process from reactive schizophrenics. These conclusions were supported in a study by Blumetti and Greenberg (1978) which found that female psychiatric patients who showed evidence of poor reality testing produced a greater number of responses at a low developmental level than a more intact group. The ability of the Holt scale to discriminate among subjects from different diagnostic categories was also supported in a study by Patrick and Wolfe (1983) which indicated that borderline patients produce significantly

elevated levels of libidinal and aggressive content relative to normal subjects.

As a research tool, the Holt scale has shown encouraging results. It appears to differentiate various diagnostic groups, levels of cognition, and ability to tolerate suspension of usual reality contact. However, as Holt emphasized, this is a lengthy, cumbersome system which is more appropriate for use in comparing different groups than in individual analysis.

Although in general researchers have used the single criterion of H or M in assessing interpersonal or object relations, a few authors have developed scales to assess these factors. Research on these scales is very limited and thus their clinical application is unclear. As mentioned previously, Pruitt and Spilka (1975) (Lerner, 1975c) developed a scale based on qualities of H and M content in protocols. They applied this scale to emotionally disturbed, vocationally handicapped subjects and found that it discriminated between those in group therapy and those not in treatment. This supported their general hypothesis that the quality of H and M would reflect empathy and capacity for harmonious relationships in these subjects. These results are encouraging; however, since this research is the only

study of the scale, further research would be necessary to establish clinical efficacy and validity of the scale.

Urist (1977) took a different approach in assessing interpersonal relationships. Rather than investigating the appearance of H and M, he developed a scale which focused on relationships between both animate and inanimate objects on the Rorschach. He compared scores on this scale to observed behavior and subjects' descriptions of relationships on an autobiographical task, and found high correlation among the three measures. He felt that this indicates that there are enduring aspects of the subject's capacity for relationships reflected in the three measures and that the Rorschach can tap this capacity. Tuber (1983) used Urist's measure and another scale by Friedman in a post hoc study assessing the ability of these scales to predict rehospitalization for psychiatric inpatient children. He found that these measures were significantly effective for boys, but not effective for girls in predicting rehospitalization. Although, as was true in Pruitt and Spilka's scale, these results were encouraging, more results would be necessary to assess the significance of the scale and its clinical efficacy.

Fisher and Cleveland developed a scale based on clinical observations as well as general theoretical constructs. This scale, the Barrier and Penetration Scale, was designed to reflect definiteness of body boundaries (Aronow & Reznikoff, 1976). Two types of responses were defined: barrier responses, in which the periphery of percepts was stressed and penetration responses, in which the penetrability of boundaries was emphasized (Goldfried, Stricker, & Weiner, 1971). Research on this scale indicates good interjudge reliability and also indicates that scores on this scale are related to psychosomatic disorder, reaction to stress, and measures of social interaction (Aronow & Reznikoff, 1976). Research also indicates that creativity and adjustment to physical disability are related to barrier penetration scores (Loshak & Reznikoff, 1976; Mitchell, 1970). In a study using this scale, Stevens (1981) found that high and low barrier individuals differ systematically in the value they ascribe to others. Stevens suggested that this supports previously hypothesized differing values of high and low barrier groups. Specifically, he indicated that high barrier subjects display low interest in working with people and more independence and ease in a leadership role than low

barrier individuals. He found that subjects tended to ascribe high value to individuals who reflected their own barrier image. These results support the specific hypotheses about different behaviors and beliefs of different barrier score groups. However, the author also noted the need for more research to assess the effects of social variables and changing values over time on barrier and penetration scores.

Research to date appears to have approached the understanding of content and context from a variety of viewpoints: these include limited efforts to develop norms, research on specific content categories, development of scales to measure personality traits, and definition and measurement of contextual behavior. In general emphasis has been on development of scales and investigation of specific contents theoretically hypothesized to be related to specific personality traits. Basic empirical research on norms and frequency of occurrence of content and contextual behaviors has generally been sparse. In addition, when this research has been conducted, it is often secondary to other more extensive research. In these projects, collection of data has generally been limited to development of norms for broad major categories of content and has ignored

occurrence of more narrowly defined and less frequently occurring categories.

Similarly, when developing scales to measure personality traits, authors have generally developed systems based on theoretical expectations regarding significance of content. Thus, scales to measure primary process and anxiety and other traits have been developed largely as a result of the author's clinical, theoretical rationale. Only after these scales are developed based on theory, do researchers begin to empirically investigate the frequency of occurrence of specific content and context configurations.

This emphasis on theoretically based systems at the expense of expanded basic research on the frequency of occurrence of content and context, suggests areas for further research. First, investigations resulting in increased, more detailed normative data would prove valuable, both for provision of an empirical basis for future research and as an aid to clinicians who use this tool. With increased empirical data on the occurrence of content and context, investigators would be more able to develop scales which realistically reflect Rorschach performance rather than depending mainly on theoretical formulations. This information would appear especially

useful clinically because it appears that clinicians emphasize content interpretation and idiographic interpretation in their use of the Rorschach. Content norms would provide an empirical data base from which practitioners could then move to a more idiographic interpretive approach. In this context, it is likely that development of a clinically applicable content and context scoring system could be useful. This system would need to be quick and easy to score and use and also to provide a reliable record of production of a wide range of content and contextual behaviors. This would allow the clinician to gather empirical, quantitative data about content for each protocol which he could compare with norms before moving on to further more idiographic interpretation.

Previous research also suggests that a number of environmental variables may influence production of specific contents. Although research into the effect of external variables on Rorschach performance has been very limited, research into the broader area of the effect of environmental variables on individual behavior is much more extensive. Authors writing in this area suggest a number of general areas and specific variables that are likely to affect individual and group behavior.

General areas include war and violence, group prejudice and discrimination, economic and employment problems, rapid technological and social change (Coleman, 1980), stressors (Coleman, 1980; Hasdorf & Isen, 1982), and changes in social value systems (Coleman, 1980; Goode, 1964). Specific variables hypothesized to have affected human behavior over the past 30 years include increased availability and use of microcomputers (Lepper, 1983); increased television viewing (Fisher, 1983a, 1983b; Rubenstein, 1983); changes in distribution of males and females in different social roles (Eagly, 1983); inflation; reduced natural resources and increased pollution; presence of nuclear threat in the form of nuclear weapons and potential nuclear accident; and changes of roles of women, blacks, and older people (Coleman, 1980). These all suggest significant effects of external variables both on overall behavior patterns and also on specific individual behaviors. Research on the effect on external variables of this nature on the specific behavior, Rorschach performance, is extremely limited. Factors which have been hypothesized to influence Rorschach performance include gender of the examiner, ethnicity, SES, and societal changes over time. Often these external factors are addressed only

in the context of other more extensive work. In fact, only one author, Ames (1975), directly addresses the effect of societal change on content production over time. However, the effect of external variables is a significant issue: "research emphasis should shift, as it already has in part, toward the search for mediating variables that facilitate or inhibit the nature and the extent of covariation between real-life behavior and Rorschach indices. Situational and contextual characteristics, all too often overlooked even in the better studies reviewed, will no doubt emerge as one of the constraints that affect the links between behavior and content," (Haley, Draguns, & Phillips, 1967, p. 31). If societal change affects Rorschach production, then normative data are likely to become, at least in part, obsolete over time as production of specific contents changes. Thus, it would be useful to assess the impact of societal as well as other external variables on Rorschach performance.

This research was designed as a step towards meeting some of the research needs described above. An extensive content and context scoring system developed for a previous study (Locke, 1983) was modified to increase its clinical applicability. It was then

applied to three sets of protocols: 30 from the 1950's, 30 from the 1960's, and 30 from the 1970's. The goals of the study were threefold: 1) modification of the scoring system to increase ease and efficiency of use; 2) acquisition of additional normative data; and 3) investigation of hypotheses that will be empirically derived regarding content and context factors which are found to discriminate between protocols administered at the three different time periods. Because this study was conducted on different individuals at different time periods, it does not address the interaction between changes in Rorschach performance due to individual development and those due to external variables. However, by using fairly similar sample groups, this study does permit investigation of the effect of external variables on Rorschach performance for samples collected at different time periods.

# CHAPTER III

# METHOD

## Subjects

The 90 subjects of this research were selected from students at a Midwestern, Catholic university. All subjects were 17 years or older and enrolled in the undergraduate program at this university. All subjects voluntarily agreed to take the Rorschach Test, either as an ancillary activity for an undergraduate course, or based on personal interest. There were three subgroups, each of which had 30 members, half male and half female. Members of the first group were undergraduate students during the period between 1953 and 1954 and took the Rorschach Test during this time. Members of the second group took the Rorschach while they were undergraduates, between 1963 and 1964. Members of the final group were administered this test between 1978 and 1979 when they were undergraduates.

Procedure

Data used in this research were archival and consisted of Rorschach protocols administered to 90 subjects divided into three subgroups. Thirty were administered in each of the following periods: the early 1950's, early 1960's, and the 1970's. Data were picked from three distinct decades to facilitate the study of the relationship between environmental changes and Rorschach content production. The specific time periods which were used were selected to maximize the amount of available data. The data were coded by number and the identity of the subjects were not known to the investigator. The archival data base from which subjects were drawn was arranged by academic year with protocols for each year filed unsystematically. Male and female protocols for the time periods in question were separated and every third one was taken for this study until there were 15 for each gender. This initial unbiased order, followed by unbiased selection procedure assured an unbiased final sample.

Rorschach tests were administered to the 90 subjects by trained graduate students in clinical psychology and all were supervised by the same clinical

faculty member. All tests were reviewed and checked for appropriate administration and scoring by this supervisor.

Protocols were scored on content and contextual factors on a rating system developed by the investigator for previous research and modified for this study based on previous results. In this previous study (Locke, 1983), initial normative data were gathered and specific content and context indicators were found to discriminate between well and poorly adjusted subjects. This rating system was composed of 282 separate categories designed to measure content and contextual behaviors shown on the Rorschach. Broad categories of the content section were based on the Klopfer (1954) content category system. This system was selected for two reasons. It is extensive, adequately covering the breadth of content seen on the Rorschach. It comprises a large number of categories among which it is easy to discriminate so that it is not difficult to select the appropriate content category for a specific response. This system seemed to provide a good basis for development of the rating scale because it provided a large number of discrete, clearly defined categories. In addition to the basic categories described by Klopfer,

the scale also includes a list of populars, categories for types of movement, aggressive content, presence of interaction, indications of hanging or precarious balance, and various categories which help describe the quality of the response more clearly (e.g., young vs. old and worn).

The basis for the context portion of the scale was drawn from several sources including Phillips and Smith (1953) and Singer (1977). General behaviors which reflected the subject's response to the testing situation were selected from these sources including areas such as reactions/attitudes toward the examiner, reactions to percepts, self reference, reactions to the lack of structure inherent in the test situation, attempts to add structure to the test situation, and hesitation or difficulty in developing a response.

Thus, once the broad categories were established, the author scored 45 protocols, revising and expanding the system as necessary. The goal of this process was the establishment of increased precision in the system, with narrower, clearly defined subcategories. Thus, specific response types or individual behaviors were added if, in the judgment of the author and a skilled clinician, they met at least one of the following

conditions: 1) they appeared repeatedly in protocols; 2) they appeared clinically significant to the rater and a skilled clinician; 3) they were necessary to apply to previously undefined content areas or test behaviors.

Interjudge reliability was assessed for this system, using the Cohen's Kappa, $\underline{k}$, (Cohen, 1960; 1968). To accomplish this, the author and a second rater, who was a clinical graduate student trained in testing, reviewed the system, clarified ambiguous definitions, and then scored nine protocols which they then compared for interjudge reliability. All but two of the scores were considered adequate, since they were at the .80 level or higher. For two categories, Response Specificity and Response Uncertainty, interjudge reliability was fairly close to the .80 level (.75 and .79 respectively). Although these categories did not reach the .80 level of reliability, they were kept in the scoring system, but because of their lower level of reliability, results with these factors were interpreted with caution.

In its initial application, this system was used to establish initial norms for a specific age group and to investigate possible discrepancies in content production between well adjusted and poorly adjusted subjects.

Data used in this previous research were archival and consisted of Rorschach protocols administered to a group of 90 seminarians in their first or second year of college. Subjects were divided into three groups: well adjusted, poorly adjusted, and intermediate. This assignment was based on MMPI performance and evaluation of subjects by faculty and counselors at their school.

Normative data gathered did conform to previous findings for the few categories consistently studied in the past. This suggested that, in spite of its narrow definition, this sample may perform in a way similar to other groups. Many of the most frequently occurring categories outside of A and H reflected elaboration of the basic percept.

Three of four experimental hypotheses in the earlier research were at least partially supported. As predicted, well adjusted subjects produced more Human and fewer of some Anatomy and Sex responses than the poorly adjusted group. However, the final hypothesis that poorly adjusted individuals would produce more Blood responses than well adjusted subjects was not supported. There was no significant difference in production of Blood responses between the two groups. In addition, hypothesis testing and hypothesis

generating exploration suggested three patterns of response that differentiated these groups. Thus, well adjusted subjects appeared to be more specific, elaborative, and more involved in their percepts than poorly adjusted subjects, while poorly adjusted individuals appeared to maintain distance from the percepts. Well adjusted subjects tended to project life, in the form of movement on the percepts more frequently than their poorly adjusted counterparts. It appeared that a final pattern of response which affected content production was the tendency to attribute positive or negative aspects to the percept with well adjusted subjects more likely to project positive mood, positive interaction and positive behavior, while poorly adjusted subjects tended to attribute negative qualities and victimization to percepts.

This scoring system was modified based on results from its initial application. Initial data (Locke, 1983) suggested that many categories were used infrequently in scoring protocols. Because of their infrequent appearance, these categories were unlikely to discriminate between groups of protocols. Even if statistically different production was found with these infrequently appearing categories, clinical significance

would be questionable due to the low base rate. As a result, categories with a mean occurrence less than .25 per protocol were evaluated for exclusion from the system. They were excluded unless they were judged clinically significant by the author. As a result the number of categories for this study was reduced to 171.

The investigator scored the 90 protocols from the 1950's, 1960's, and 1970's without knowing the date of the protocol. The resulting data were analysed in two ways. Frequencies were tabulated for all categories in each group to establish normative data. Members of each group were randomly assigned to two subgroups: Subgroup A and Subgroup B, each of which had 15 members. Because Rorschach responses are not normally distributed, non-parametric tests were used to analyse data. Members of the three A Subgroups were compared using the Kruskal-Wallis and the Mann-Whitney $U$ tests to generate empirically derived hypotheses, using a .10 level of significance. The .10 level of significance was used since the results were to be crossvalidated. Crossvalidated results achieving a .10 level in both samples are significant at the $p<.05$ level when the results of the two analyses are combined. The Kruskal-Wallis test, which is the distribution free equivalent of an analysis of

variance, was used for three group comparisons, and the The Mann-Whitney U test, the distribution free equivalent of a t test, was used for two group comparisons. The empirically derived hypotheses were then tested with Subgroup B to crossvalidate the earlier findings. This approach therefore addressed the issue of Alpha error in a post hoc analysis, since it is extremely unlikely that two Alpha errors on the same variable and in the same direction would occur by chance.

# CHAPTER IV

# RESULTS

## Normative Data

To establish normative data, frequencies were tabulated for all categories within each of the three sample groups (Group 1 consists of protocols from the 1950's; Group 2 consists of protocols from the 1960's; Group 3 consists of protocols from the 1970's). Appendix 2 summarizes the frequency data for all categories within each group. Table 1 summarizes frequency of variables occurring one or more times per protocol in one or more of the three groups. Out of the 171 categories tabulated, the vast majority tended to occur fewer than one time per protocol. Only 57 categories occurred more than once per protocol in one or more of the sample groups. These frequently occurring categories can be divided onto six broad areas: context (12 frequently occurring categories), populars (total number of populars per protocol), color (two categories), movement (10 frequently occurring categories), traditional content (32 frequently occurring categories), and number

TABLE 1

Frequently Occurring Rorschach Content Variables

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| CONTEXT | | | |
| E0 (1) | 4.07 | 4.43 | 20.00 |
| (2) | 2.47 | 2.89 | 11.00 |
| (3) | 1.80 | 2.39 | 11.00 |
| E28 (1) | 1.77 | 1.81 | 6.00 |
| (2) | 1.93 | 2.08 | 7.00 |
| (3) | 1.10 | 1.00 | 3.00 |
| E7 (1) | 2.60 | 2.39 | 8.00 |
| (2) | 2.47 | 2.53 | 13.00 |
| (3) | 3.00 | 2.65 | 10.00 |
| E8 (1) | 1.00 | 1.14 | 4.00 |
| (2) | 0.87 | 1.38 | 5.00 |
| (3) | 1.17 | 1.29 | 4.00 |
| E2 (1) | 0.53 | 0.86 | 3.00 |
| (2) | 1.10 | 1.56 | 7.00 |

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| (3) | 0.90 | 1.56 | 7.00 |
| E37 (1) | 0.47 | 0.68 | 2.00 |
| (2) | 1.03 | 1.30 | 5.00 |
| (3) | 0.57 | 0.77 | 2.00 |
| E34 (1) | 1.30 | 1.51 | 6.00 |
| (2) | 1.47 | 1.36 | 4.00 |
| (3) | 1.23 | 1.38 | 5.00 |
| G10 (1) | 3.87 | 2.42 | 9.00 |
| (2) | 3.33 | 2.45 | 10.00 |
| (3) | 2.73 | 2.23 | 7.00 |
| E27 (1) | 9.80 | 4.95 | 17.00 |
| (2) | 8.87 | 4.54 | 23.00 |
| (3) | 6.90 | 3.95 | 15.00 |
| E10 (1) | 6.33 | 8.07 | 28.00 |
| (2) | 5.63 | 7.50 | 23.00 |
| (3) | 6.40 | 5.59 | 20.00 |
| ADD (1) | 0.47 | 0.73 | 2.00 |
| (2) | 1.60 | 2.01 | 7.00 |

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| (3) | 0.87 | 1.74 | 7.00 |
| POPULAR | | | |
| POPTOT (1) | 7.43 | 2.54 | 11.00 |
| (2) | 7.03 | 2.20 | 9.00 |
| (3) | 6.07 | 1.89 | 7.00 |
| COLOR | | | |
| C1 (1) | 5.57 | 3.08 | 12.00 |
| (2) | 5.13 | 3.26 | 13.00 |
| (3) | 4.40 | 2.76 | 13.00 |
| C2 (1) | 2.30 | 2.73 | 11.00 |
| (2) | 2.20 | 1.83 | 9.00 |
| (3) | 2.60 | 2.06 | 8.00 |

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| **HUMAN** | | | |
| H1TOT (1) | 5.80 | 4.75 | 17.00 |
| (2) | 4.97 | 3.55 | 16.00 |
| (3) | 5.97 | 4.29 | 19.00 |
| H2 (1) | 1.37 | 1.54 | 6.00 |
| (2) | 1.77 | 1.16 | 5.00 |
| (3) | 1.63 | 1.27 | 4.00 |
| H3 (1) | 1.23 | 1.57 | 5.00 |
| (2) | 0.73 | 1.05 | 4.00 |
| (3) | 1.27 | 1.98 | 10.00 |
| HDTOT (1) | 2.50 | 2.66 | 9.00 |
| (2) | 1.47 | 1.50 | 6.00 |
| (3) | 2.30 | 1.97 | 7.00 |
| HD1 (1) | 1.10 | 1.06 | 3.00 |
| (2) | 0.77 | 1.04 | 4.00 |
| (3) | 0.87 | 1.14 | 4.00 |
| HD2 (1) | 1.23 | 1.59 | 6.00 |
| (2) | 0.67 | 1.06 | 5.00 |
| (3) | 1.37 | 1.47 | 6.00 |

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| HPTOT (1) | 1.17 | 1.64 | 7.00 |
| (2) | 1.03 | 1.40 | 7.00 |
| (3) | 1.33 | 0.99 | 4.00 |
| ANIMAL | | | |
| A1TOT (1) | 13.83 | 5.81 | 25.00 |
| (2) | 11.10 | 4.25 | 18.00 |
| (3) | 10.77 | 4.34 | 16.00 |
| ADTOT (1) | 3.03 | 2.33 | 10.00 |
| (2) | 2.03 | 1.99 | 8.00 |
| (3) | 1.43 | 1.46 | 5.00 |
| AD1 (1) | 1.23 | 1.38 | 5.00 |
| (2) | 0.77 | 1.22 | 6.00 |
| (3) | 0.40 | 0.62 | 2.00 |
| AD3 (1) | 1.83 | 2.28 | 10.00 |
| (2) | 1.27 | 1.44 | 6.00 |
| (3) | 1.03 | 1.38 | 5.00 |
| AA1 (1) | 0.87 | 0.63 | 2.00 |
| (2) | 1.00 | 1.41 | 7.00 |
| (3) | 0.73 | 0.69 | 2.00 |

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| AA3 (1) | 1.43 | 1.63 | 7.00 |
| (2) | 0.60 | 0.81 | 3.00 |
| (3) | 0.80 | 1.16 | 4.00 |
| AA6 (1) | 1.33 | 1.21 | 5.00 |
| (2) | 1.40 | 1.28 | 6.00 |
| (3) | 1.67 | 1.18 | 4.00 |
| AA25 (1) | 0.83 | 0.87 | 3.00 |
| (2) | 0.87 | 1.07 | 4.00 |
| (3) | 1.13 | 1.28 | 4.00 |
| MOVEMENT | | | |
| MTOT (1) | 11.07 | 6.88 | 31.00 |
| (2) | 9.60 | 4.43 | 19.00 |
| (3) | 9.67 | 5.71 | 25.00 |
| M1TOT (1) | 3.40 | 2.62 | 13.00 |
| (2) | 2.63 | 1.96 | 7.00 |
| (3) | 2.67 | 2.34 | 10.00 |
| M2TOT (1) | 7.67 | 4.94 | 20.00 |
| (2) | 6.97 | 3.45 | 14.00 |
| (3) | 7.00 | 4.73 | 19.00 |

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| MHTOT (1) | 3.33 | 2.77 | 10.00 |
| (2) | 3.30 | 2.58 | 11.00 |
| (3) | 3.50 | 2.91 | 14.00 |
| MATOT (1) | 6.03 | 3.70 | 17.00 |
| (2) | 4.77 | 2.34 | 10.00 |
| (3) | 4.13 | 3.08 | 13.00 |
| M1H (1) | 0.80 | 1.13 | 5.00 |
| (2) | 0.73 | 1.11 | 4.00 |
| (3) | 1.03 | 1.03 | 4.00 |
| M1A (1) | 1.87 | 1.61 | 6.00 |
| (2) | 1.30 | 1.12 | 5.00 |
| (3) | 0.97 | 0.96 | 3.00 |
| M2 (1) | 0.93 | 1.36 | 6.00 |
| (2) | 0.93 | 1.14 | 5.00 |
| (3) | 1.37 | 1.38 | 5.00 |
| M2H (1) | 2.53 | 2.27 | 8.00 |
| (2) | 2.57 | 2.11 | 10.00 |
| (3) | 2.47 | 2.32 | 10.00 |
| M2A (1) | 4.20 | 2.78 | 12.00 |
| (2) | 3.47 | 2.03 | 10.00 |
| (3) | 3.17 | 2.88 | 11.00 |

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| ADDITIONAL TRADITIONAL CONTENT | | | |
| AOBJTOT (1) | 1.27 | 0.83 | 3.00 |
| (2) | 1.20 | 1.16 | 4.00 |
| (3) | 0.77 | 0.94 | 3.00 |
| AGTOT (1) | 2.50 | 1.83 | 8.00 |
| (2) | 2.93 | 2.70 | 11.00 |
| (3) | 3.17 | 2.89 | 11.00 |
| AG1 (1) | 0.76 | 0.82 | 3.00 |
| (2) | 0.57 | 1.01 | 4.00 |
| (3) | 1.17 | 1.21 | 4.00 |
| CLO (1) | 2.67 | 2.41 | 8.00 |
| (2) | 2.20 | 1.85 | 7.00 |
| (3) | 2.13 | 1.92 | 9.00 |
| IN1 (1) | 1.23 | 1.30 | 4.00 |
| (2) | 0.47 | 0.63 | 2.00 |
| (3) | 0.57 | 0.94 | 3.00 |
| ARTTOT (1) | 1.60 | 1.59 | 6.00 |
| (2) | 1.53 | 1.63 | 6.00 |
| (3) | 1.43 | 1.41 | 5.00 |

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| ART1 (1) | 1.30 | 1.42 | 5.00 |
| (2) | 1.10 | 1.32 | 5.00 |
| (3) | 0.93 | 1.05 | 4.00 |
| NATTOT (1) | 2.83 | 2.56 | 11.00 |
| (2) | 2.00 | 1.66 | 6.00 |
| (3) | 2.30 | 3.11 | 16.00 |
| N1 (1) | 1.10 | 1.27 | 5.00 |
| (2) | 0.60 | 0.89 | 4.00 |
| (3) | 0.93 | 2.10 | 11.00 |
| PLTOT (1) | 1.97 | 1.69 | 8.00 |
| (2) | 0.87 | 1.36 | 7.00 |
| (3) | 1.30 | 1.44 | 5.00 |
| GEO (1) | 0.50 | 0.82 | 3.00 |
| (2) | 1.03 | 1.79 | 6.00 |
| (3) | 0.33 | 0.66 | 3.00 |
| AT1TOT (1) | 1.27 | 1.44 | 5.00 |
| (2) | 1.63 | 1.94 | 7.00 |
| (3) | 1.03 | 1.16 | 5.00 |

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| AT2 (1) | 0.63 | 1.00 | 4.00 |
| (2) | 1.03 | 1.54 | 5.00 |
| (3) | 0.40 | 0.86 | 4.00 |
| OBJTOT (1) | 3.77 | 3.39 | 16.00 |
| (2) | 2.90 | 2.55 | 10.00 |
| (3) | 3.17 | 2.74 | 13.00 |
| OBJ1 (1) | 3.33 | 3.03 | 15.00 |
| (2) | 2.43 | 1.96 | 7.00 |
| (3) | 2.77 | 2.49 | 12.00 |
| SEXTOT (1) | 0.57 | 1.01 | 4.00 |
| (2) | 1.13 | 1.76 | 8.00 |
| (3) | 1.20 | 1.77 | 8.00 |
| BLSEXTOT (1) | 0.77 | 1.16 | 4.00 |
| (2) | 1.73 | 1.86 | 8.00 |
| (3) | 1.53 | 2.00 | 9.00 |

| VARIABLE | MEAN | SD | RANGE |
|---|---|---|---|
| RESP (1) | 28.90 | 9.26 | 37.00 |
| (2) | 25.03 | 10.95 | 43.00 |
| (3) | 23.60 | 9.00 | 39.00 |

Note. The parenthesized numbers, 1, 2, and 3, stand for the three sample groups. Group 1 is the sample from the 1950's, Group 2 the sample from the 1960's, and Group 3 the sample from the 1970's. For explanation of alpha-numeric symbols, refer to Appendix A.

of responses. The parenthesized alpha-numeric characters used in the following text are content category symbols and refer to Tables 1 and 2. In the following text, mean values for frequencies of categories will be parenthesized in the following order: Group 1 first, followed by Group 2 and Group 3.

In the area of context, Use of Plurals, E27, was most frequent for all groups (mean values of 9.80, 8.87, and 6.90 occurrences). Other frequently occurring categories did not occur in a consistent order across groups. However, 5 categories occurred more than once per protocol in all groups. These were Response Uncertainty, E0 (mean values of 4.07, 2.47, and 1.80 occurrences); Negative Percept Comments, E7 (mean values of 2.60, 2.47, and 3.00 occurrences); Response Specificity, G10 (3.87, 3.33, and 2.73 mean occurrences); Indecisiveness in Response Proper, E28 (1.77, 1.93, and 1.10 occurrences); and Specific Reference to Color, E34 (1.30, 1.47, and 1.23 occurrences). In addition, four categories occurred more than once per protocol in at least one of the three groups. These were Additional Responses, ADD (0.47, 1.60. and 0.87 occurrences); Self Reference, E2 (0.53, 1.10, and 0.90 occurrences);

Positive Percept Comments, E8 (1.00, 0.87, and 1.17 occurrences); and Neutral Card Comments, E37 (0.47, 1.03, and 0.57 occurrences).

In the color area, Chromatic Color, C1 (5.57, 5.13, and 4.40 mean occurrences) occurred more frequently than Achromatic Color, C2 ( 2.30, 2.20, and 2.60 occurrences), in all groups. No individual popular responses occurred more than once per protocol, but Total Number of Populars per protocol, POPTOT, tended to occur approximately seven times per protocol in all three groups (mean values of 7.43, 7.03. and 6.07 occurrences).

Frequencies were derived both for specific movement categories (M1, M1A, M1H, M2, M2A, M2H, and M2A) and also for combinations of these categories (MTOT, M1TOT, M2TOT, MHTOT, and MATOT). All but two of the individual or combined categories occurred more than once per protocol in one or more of the sample groups. Total Movement, MTOT (11.07, 9.60, and 9.67 occurrences) was the most frequently occurring combined category for all three groups, followed by Total Active Movement, M2TOT (7.67, 6.97, and 7.00 occurrences). The three remaining combined categories occurred more than twice per protocol for all groups. The values for these were

Total Animal Movement (MATOT) 6.03, 4.77, and 4.13 mean occurrences; Total Human Movement (MHTOT) 3.33, 3.30, and 3.50 mean occurrences; and Total Passive Movement (M1TOT) 3.40, 2.63, and 2.67 mean occurrences. Two individual movement categories, Active Animal Movement and Active Human Movement, occurred more than twice per protocol for all groups, with Active Animal Movement, M2A (4.20, 3.47, and 3.17 mean occurrences), consistently occurring more frequently than Active Human Movement, M2H (2.53, 2.57, and 2.47 mean occurrences). Finally, three individual movement categories occurred more than once per protocol in only one or two of the three groups. These were Passive Animal Movement, M1A (1.87, 1.30, and 0.97 mean occurrences); Passive Human Movement, M1H (0.80, 0.73, and 1.03 mean occurrences); and Active Inanimate Movement, M2 (0.93, 0.93, and 1.37 mean occurrences).

Fifteen of the frequent traditional content categories were included within the broad areas of Human or Animal Content. General Animal Response, A1TOT, was the most frequently occurring traditional content category with mean values of 13.83, 11.10, and 10.77 occurrences. Within the animal area, Total Animal Detail Responses (ADTOT) was consistently second most

frequent with mean values of 3.03, 2.03, and 1.43 occurrences. In addition, six animal subcategories occurred frequently in one or more of the groups. These were Residual Animal Detail, AD1 (1.23, 0.77, and 0.40 mean occurrences); Animal Heads, AD3 (1.83, 1.27, and 1.03 mean occurrences); Butterfly/Moth, AA6 (1.33, 1.40, and 1.67 mean occurrences); Bat, AA1 (0.87, 1.00, and 0.73 mean occurrences); Bird, AA3 (1.43, 0.60, and 0.80 mean occurrences); and Insect, AA25 (0.83, 0.87, and 1.13 mean occurrences). General Human Response, H1TOT (5.80, 4.97, and 5.97 mean occurrences), was the second most frequent traditional content for all three groups. Total Human Detail, HDTOT, also occurred frequently with mean values of 2.50, 1.47, and 2.30 occurrences. Five additional human subcategories also occurred one or more times per protocol in at least one of the groups. These were Total Humanlike Responses, HPTOT (1.17, 1.03, and 1.33 mean occurrences); Human Head, HD2 (1.23, 0.67, and 1.37 mean occurrences); Residual Human Detail, HD1 (1.10, 0.77, and 0.87 mean occurrences); Female Human, H2 (1.37, 1.77, and 1.27 mean occurrences); and Male Human, H3 ( 1.23, 0.73, and 1.27 mean occurrences).

In addition to various types of Human and Animal content, 17 other areas of traditional content occurred

frequently. These fell into nine general areas. Often, an overall broad category and one subcategory occurred frequently while other subcategories were fairly rare. These broad areas were Aggression and Interaction, Art, Nature and Plant, Anatomy, Object, Blood and Sex, Geography, Animal Object, and Clothing. Overall Agression, AGTOT (2.50, 2.93, and 3.17 mean occurrences), occurred frequently with Object of Aggression, AG1 (0.76, 0.57, and 1.17 mean occurrences), as the only frequently occurring subcategory. In addition, a related category, Neutral Interaction, IN1 (1.23, 0.47, and 0.57 mean occurrences), occurred fairly frequently. Total Object, OBJTOT (3.77, 2.90, and 3.17 mean occurrences), occurred frequently, with only one subcategory, Residual Object, OBJ1 (3.33, 2.43, and 2.77 mean occurrences), also appearing frequently. Similarly, Total Art, ARTTOT (1.60, 1.53, and 1.43 mean occurrences), occurred frequently in all groups, with one subcategory, Residual Art, ART1 (1.30, 1.10, and 0.93 mean occurrences), occurring more than once per protocol in two of the three sample groups. Overall Anatomy, AT1TOT (1.27, 1.63, and 1.03 mean occurrences), occurred frequently in all groups with Visceral Anatomy, AT2 (0.63, 1.03, and 0.40 mean occurrences) as a frequent subcategory in one

group. Combined Blood and Sex Responses, BLSEXTOT (0.77, 1.73, and 1.53 mean occurrences), and its subcategory, Total Sex Content, SEXTOT (0.57, 1.13, and 1.20), were both frequent contents in two groups. In the Nature/Plant area, Overall Nature, NATTOT (2.83, 2.00, and 2.30 mean occurrences), and one subcategory, Residual Nature, N1 (1.10, 0.60, and 0.93), as well as Total Plant, PLTOT (1.97, 0.87, and 1.30 mean occurrences) were all frequent categories.

The remaining three frequently occurring traditional content categories were Total Animal Object, AOBJTOT (1.27, 1.20, and 0.77 mean occurrences), Clothing, CLO (2.67, 2.20, and 2.13 mean occurrences), and Geography, GEO (0.50, 1.03, and 0.33 mean occurrences). Finally, Total Main and Additional Responses (RESP) had the following mean values: 28.90, 25.03, and 23.60 occurrences.

If all content and context categories are looked at together, only 20 occurred more than twice per protocol across all groups. Animal Content, A1TOT (13.83, 11.10, and 10.77 mean occurrences), occurred most frequently. In addition, five other categories occurred six or more times per protocol in each of the groups. These were Total Movement, MTOT (11.07, 9.60,

and 9.67 mean occurrences), Total Active Movement, M2TOT (7.67, 6.97, and 7.00 mean occurrences), Use of Plurals, E27 (9.80, 8.87, and 6.90 mean occurrences), Card Turning, E10 (6.33, 5.63, and 6.40 mean occurrences), and Total Populars, POPTOT (7.43, 7.03, and 6.07 mean occurrences). Five categories occurred three or more times per protocol in all groups. These were Total Human, H1TOT (5.80, 4.97, and 5.97 mean occurrences), Chromatic Color, C1 (5.56, 5.13, and 4.40 mean occurrences), Total Animal Movement, MATOT (6.03, 4.77, and 4.13 mean occurrences), Total Human Movement, MHTOT (3.33, 3.30, and 3.50 mean occurrences), and Active Animal Movement, M2A (4.20, 3.47, and 3.17 mean occurrences). The remaining nine of these categories occurred two or more times per protocol for all three groups. They were Total Passive Movement, M1TOT (3.40, 2.63, and 2.67 mean occurrences), Active Human Movement, M2H (2.53, 2.57, 2.47), Response Specificity, G10 (3.87, 3.33, and 2.73 mean occurrences), Negative Percept Comments, E7 (2.60, 2.47, and 3.00 mean occurrences), Achromatic Color, C2 (2.30, 2.20, and 2.60 mean occurrences), Total Object, OBJTOT (3.77, 2.90, and 3.17 mean occurrences), Residual Object, OBJ1 (3.33, 2.43,and 2.77 mean occurrences), Total Aggression, AGTOT (2.50, 2.93,

and 3.17 mean occurrences), and Total Nature, NATTOT (2.83, 2.00, and 2.30 mean occurrences).

Group Comparisons

In addition to establishment of normative data, exploratory data analysis, followed by crossvalidation of significant findings was conducted to explore differences in content production at different time periods. To accomplish this, the sample was randomly divided into two subgroups, Subgroup A and Subgroup B, each of which contained 15 members from each of the three sample groups; protocols from the 1950's (Group 1), protocols from the 1960's (Group 2), and protocols from the 1970's (Group 3). Initially Subgroup A was tested across time periods for 45 individual content or context categories and 18 factors created by combining categories. All categories with significant values, $p < .10$, for Subgroup A were then tested across groups for Subgroup B for crossvalidation of initial findings. Differences among subgroups were judged as significant if the combined probability of results for both Subgroup A and Subgroup B for a specific category reached the $p < .01$ level. For these analyses, the Mann-Whitney $U$ Test

TABLE 2

Categories that Differentiate Among Groups

| Variable | Test | Rank Sums | | | p< |
|---|---|---|---|---|---|
| | | Group 1 | Group 2 | Group 3 | |
| CONTEXT | | | | | |
| ADD(A) | K-W | 254.5 | 423.0 | 357.5 | .05 |
| ADD(B) | K-W | 358.5 | 408.0 | 268.5 | .10 |
| POPULAR | | | | | |
| P10(A) | K-W | 427.5 | 270.0 | 337.5 | .05 |
| P10(B) | K-W | 442.5 | 307.5 | 285.0 | .01 |
| P31(A) | K-W | 405.0 | 360.0 | 270.0 | .05 |
| P31(B) | K-W | 405.0 | 360.0 | 270.0 | .05 |
| HUMAN | | | | | |
| HA(A) | M-W | 210.0 | 255.0 | | .10 |
| HA(B) | M-W | 202.0 | 263.0 | | .10 |

| Variable | Test | Rank Sums Group 1 | Group 2 | Group 3 | p< |
|---|---|---|---|---|---|
| ANIMAL | | | | | |
| AD1(A) | M-W | 279.0 | | 186.0 | .05 |
| AD1(B) | M-W | 269.0 | | 196.0 | .10 |
| PLANT | | | | | |
| PLTOT(A) | K-W | 422.0 | 233.0 | 380.0 | .05 |
| PLTOT(B) | K-W | 444.5 | 298.5 | 292.0 | .05 |
| PL1(A) | K-W | 415.5 | 260.0 | 359.5 | .05 |
| PL1(B) | K-W | 445.0 | 275.0 | 315.0 | .01 |
| ANIMAL OBJECT | | | | | |
| AOBJTOT(A) | K-W | 437.5 | 291.5 | 306.0 | .10 |
| AOBJTOT(B) | K-W | 344.5 | 421.5 | 269.0 | .10 |

| Variable | Test | Rank Sums Group 1 | Group 2 | Group 3 | p< |
|---|---|---|---|---|---|
| BLOOD AND SEX | | | | | |
| BLSEXTOT(A) | M-W | 192.0 | 273.0 | | .10 |
| BLSEXTOT(B) | M-W | 191.5 | 273.5 | | .10 |

Note. M-W is the Mann-Whitney U Test. K-W is the Kruskal-Wallis Test. Parenthesized letters, A or B, refer to the appropriate subgroup; either Subgroup A, the sample analysed initially, or Subgroup B the sample analysed for crossvalidation purposes. Group 1 is the sample from the 1950's, Group 2 the sample from the 1960's, Group 3 the sample from the 1970's. The probability for the individual subgroup is p. The combined probability for Subgroups A and B is p<.01 for all cases. For explanation of alpha-numeric symbols, refer to Appendix A.

was used to compare two groups, the Kruskal Wallis test was used to compare the three groups. Analysis of nine factors led to significant results.

In the use of contextual behaviors, subjects were found to differ significantly in one category, Number of Additional Responses (ADD). Significant differences in Additional Response production were found among all three groups (Subgroup A, $p<.05$ and $p<.10$ for Subgroup B) with subjects from the 1960's tending to produce more additional responses than the other subjects.

Groups differed significantly in production of two specific Popular responses, P10 (butterfly or bowtie for red on Card III) and P31 (worms for green detail on Card X). For both P10 (Subgroup A, $p<.05$, and Subgroup B, $p<.10$) and P31 (Subgroups A and B both $p<.05$) the three groups differed significantly with subjects from the 1950's tending to produce more of these responses than other groups.

Only one type of Human response differentiated among groups. Subjects in Group 2 produced significantly more Indian Responses, HA (Subgroups A and B both $p<.10$), than those in Group 1.

Production of Animal responses also differentiated among groups in one area, Residual Animal Detail (AD1).

Groups 1 and 3 differed significantly in production of AD1 (Subgroup A, $p<.05$ and Subgroup B, $p<.10$) with subjects from the 1950's producing more of this category than subjects from the 1970's.

Groups differed significantly in four other content areas. In two areas, PLTOT (Plant Total) and PL1 (Residual Plant), members of Group 1 tended to produce more of the content in question than either of the other two Groups. Both PLTOT (Subgroups A and B both $p<.05$) and PL1 (Subgroup A, $p<.05$ and Subgroup B, $p<.01$) production differed significantly among all three groups. Significant differences were also found among all groups in production of AOBJTOT, Total Animal Object Responses (Subgroups A and B both $p<.10$). In Subgroup A, Group 1 produced the most and Group 2 produced the least of these responses, while in Subgroup B, Group 2 produced the most and Group 3 produced the least of this category. Finally, production of BLSEXTOT, Total Blood and Sex Responses, differentiated significantly between Group 1 and Group 2 (Subgroups A and B both $p<.10$) with members of Group 1 tending to produce more of these responses than their counterparts in Group 2.

# CHAPTER V

## DISCUSSION

Normative data gathered in this study use a modified version of a scoring system applied only once before. As a result, they must be viewed as initial findings which will require further crossvalidation to fully establish their significance. This is particularly true because the sample used is small and represents a restricted subgroup of the general population, Midwestern college students. However, in spite of these factors, the data appear useful in a number of ways: provision of normative data; increased information about frequency of specific subcategories; some evidence that these data may conform to previous normative research; and the opportunity to compare the current findings with data gathered in the previous application of this system.

In some ways, provision of additional norms is the most important aspect of this study. Although clinicians apparently depend to a large extent on content in their interpretation of the Rorschach, research about

norms for content and context has been limited in the past. Establishment of extensive, detailed norms could provide good foundation from which clinicians could move to interpretation of results. While these norms provide a good preliminary step, there is need for crossvalidation and use with varied populations to develop valid normative data.

In addition to providing normative data, the scoring scale also provided new information about specific subcategories which tend to occur frequently. Although, on the whole, subdivision of broad categories did not result in increased information, in a few cases, subdivision into narrowly defined subcategories suggested that a specific subcategory appears to occur more frequently than others. Thus, Human Male, Human Female, Human Head, Animal Head, Bat, Bird, Butterfly/Moth, Insect, nine types of Movement, Object of Aggression, and Visceral Anatomy all occurred one or more times per protocol and more frequently than other subcategories in their relevant content areas in one or more of the sample groups. This suggests that further investigation of subcategories (e.g., Active Animal Movement, Visceral Anatomy) might result in clearer expectations for frequency of occurrence of specific response types. This

potentially could provide valuable information for clinical use. This clinical use will be enhanced particularly when a subcategory predominates in a general category investigated in previous research (e.g., Active Movement predominates within the broad category of Movement). These are the kinds of distinctions that clinicians often need to make.

In addition, although this investigation provided only preliminary data, results suggest that these data conform to previous findings. There is little or no consistent research on the vast majority of the 171 categories studied. However, data from this investigation does conform to previous findings for the few categories studied in the past. Thus A was the most frequent traditional content category, followed by H. Total Populars also fell within the six to eight response range predicted by previous research. This suggests that, in spite of the narrow definition of this sample, the three groups studied may be fairly representative in Rorschach performance and thus, results with this sample may be generalizable to a broader population.

Many of the most frequent categories outside of A and H reflected some form of elaboration of the basic

percept. The types of elaborative comments occurring frequently included Movement, Use of Plurals, Specificity of Response, use of Color (both chromatic and achromatic), aggressive imagery, and comments showing negative feelings about the percept. An additional behavior which occurred frequently was card turning. The frequency of occurrence of these elaborative behaviors suggests that further research into richness of response and elaboration might lead to norms in this area which would be relevant to clinical work.

In additon to apparent conformation of these data with previous general normative findings, these results also appear to conform with results from the previous application of the original version of this system. In both investigations, Total Animal, Total Movement, Use of Plurals, Total Populars, Total Active Movement, Card Turning, Total Human, and use of Chromatic Color were the seven most frequently occurring categories. In addition, the 13 remaining categories which occurred two or more times per protocol in all groups in this study all occurred at similar levels in the previous research. Thus, the four additional Movement categories which occurred more than twice per protocol in this study occurred at similar levels in the previous investigation

with the original version of this scale. These categories were Total Animal Movement, Total Human Movement, Active Animal Movement, and Total Inanimate Movement. In addition, the three contextual and four traditional categories occurring at least twice per protocol also occurred at similar levels in the previous use of this scale. These categories are Response Specificity, Negative Percept Comments, Achromatic Color, Total Object, Residual Object, Total Aggression, and Total Nature. These results are encouraging for two reasons. First, they provide further support for the reliability of this system. In addition, because of the agreement between the two studies these results suggest that these samples, though divergent from each other, both may be fairly representative in Rorschach content and context use and thus, results with this sample may be generalizable to a broader population.

In addition to gathering normative data, data analysis was completed on 63 variables. The purpose of this was to gather initial data about differences in content production in different time periods which might suggest areas for further exploration. Although research on the effects of external variables on content production is extremely limited, it does suggest types

of changes in content production which might be expected over time. Previous investigators (Ames, 1975; Ames, Metraux, & Walker, 1971; Krall, Sachs, Lazar, Rayson, Growe, Novar, & O'Connell, 1983; Lockwood, Roll, & Matthews, 1981) all suggest that while overall trends are not likely to change significantly, production of specific categories may change over time due to the impact of external factors including SES, education, and socio-cultural factors, among others. Results from this exploratory data analysis tend to support these hypotheses. For the vast majority of categories, production remained consistent over time. This suggests that, not only do overall trends remain stable over time, but also, in most cases, production of specific contents remains consistent. All significant findings were for specific, narrowly defined response types. In fact in five of the nine cases, significant findings were for a specific subcategory of a more broadly defined response area. In this exploratory data analysis, significant results appeared to fall in two areas: differences in production of specific populars and use of specific traditional content.

Differences in production of popular responses suggests that individuals tend to produce significantly

differing levels of specific popular responses over time. This is indicated by the fact that subjects in the 1960's and 1970's were less likely to produce two popular responses, the butterfly response on Card III and the worm on Card X, than their counterparts in the 1950's. These differences are so marked in the case of the worm response, that, for the 1970's sample, it does not meet the criteria (Rappaport, Gill, & Schafer, 1968) for a popular response (at least one occurrence per five protocols). If, as suggested by these results, specific popular responses change over time, due to the impact of environmental stimuli, then it would be important to empirically establish new lists of Populars periodically to insure that clinicians have accurate data to use as a basis for interpretation.

The possibility that production of specific narrowly defined responses changes due to external factors, while general trends may remain the same was also supported by differences found among sample groups in production of additional responses as well as production of specific traditional categories. Subjects in the 1960's tended to produce more additonal responses than individuals from either of the other two time periods. In addition, significant differences were

found in production of two specific Animal and Human subcategories. Subjects in the 1950's produced more Residual Animal Detail responses than individuals in the 1960's or 1970's, and individuals in the 1960's produced the most of a specific Human subcategory, Indians.

Differences in production of three other traditional content categories also reflected the previously discussed hypothesis that production of specific categories changes over time. Individuals produced significantly differing amounts of overall plant and one of its subcategories, Residual Plants, as well as Total Blood and Sex responses. Subjects in the 1950's produced more Total Plant and Residual Plant than their counterparts in the 1960's and 1970's. According to Phillips and Smith (1953), these responses suggest passivity, femininity, and dependency. It is possible that external factors in later years were reflected in a less passive, dependent orientation in individuals in the 1960's and 1970's. These factors may include equal rights movements by various social and ethnic groups and associated changes in social roles (e.g., civil rights movement and the women's liberation movement); increased mobility of the population; and increased exposure to aggression and violence through the news media,

entertainment media, and as a result of the Viet Nam War and the related anti-war movement.

Subjects in the 1960's tended to produce more Total Blood and Sex responses than those in the 1950's. These responses (Phillips & Smith, 1953) are seen as reflecting conflict over sexual and aggressive impulses. Two specific external factors which may have affected production of these responses in the 1960's were the increased exposure to aggression and violence and changing sexual mores at this time. Major factors which may be hypothesized to have had an impact on production of content reflecting conflict over aggressive impulses include: 1) The Viet Nam War, both because of its extensive coverage in the media and also because of controversy and demonstrations aroused by it; 2) The assassination of President Kennedy followed by other political assassinations; and 3) The increasingly graphic exposure to violence through the media, both as news and in entertainment. Similarly, the much publicized sexual revolution, with associated pressures and changes in roles and behavioral expectations may have influenced production of content reflecting sexual conflict. These relationships must remain speculative. Further research is needed.

There were significant differences in production of Total Animal Object, but results in this study are contradictory. In the initial sample, Subgroup A, subjects from the 1950's produced the most of this response, while in the crossvalidation group, Subgroup B, subjects from the 1960's produced more Animal Object responses than either other group. Due to the contradictory nature of these results, it is not possible to hypothesize about the meaning of these data. Further research of this area is needed.

Thus, current results support the suggestion of previous research that external factors appear likely to produce changes in production of specific content while general content trends remain stable. Although the restricted type of the sample and exploratory nature of this investigation indicate that current results must be interpreted with care, there is evidence that norms established for this sample conform both to findings of previous normative research and also to results from the previous application of this scale. Thus, results for this sample may have some generalizability to other groups. The main impact of this investigation, however, lies in questions it raises related to the impact of external stimuli on Rorschach performance and implica-

tions for future research. First, this research suggests that production of the vast majority of general content categories does remain stable over time. This suggests that, although specific subcategories may vary, general normative data will remain clinically relevant for an extended period of time. However, this research also suggests that external stimuli may affect content and context production on the Rorschach. Even with a restricted, homogeneous sample, specific responses differed significantly over time. External factors which may be hypothesized to have affected content production in these samples include: 1) The end of the Korean War (1950's); 2. The Viet Nam War (1960's); 3) Introduction of television and accompanying increased exposure to varied cultures; 4) Equal rights movements of groups including Blacks and women and associated changes in social roles (1960's and 1970's); 5) The assassination of President Kennedy (1963) and other political leaders (1960's and 1970's); 6) Economic boom in the 1960's followed by recession in the 1970's; 7) Changes in sexual mores and roles in the 1960's; and 8) Technological change reflected in the space program, increasingly available travel opportunities, computer development, and the widespread use of television.

However the exact nature of stimuli that do impact on Rorschach performance and the mechanisms of interaction are at this time unclear. It may be that specific types of environmental events have specific, more profound impact than others. Further research would be necessary to assess the differential effect of various external factors on Rorschach performance. In addition, it is not clear to what extent changes in content production, due to external phenomena, reflect actual personality changes in a changing culture rather than fairly stable personality functioning expressing itself differently in reaction to changing external phenomena. It is possible that changes in Rorschach content production over time reflect actual changes in personality functioning in response to environmental impact. If this is the case, the significance of Rorschach content is likely to remain the same and changes in content production over time are likely to reflect changes in personality functioning over time. However, if changes in content due to external stimuli do not typically reflect personality change, then the significance of specific content may vary according to the effect of external phenomena. In this case, the meaning of content would vary over time periods and in terms of the

context of different external environments. This changing significance of content would affect the reliability and validity of clinical interpretation of Rorschach results. This issue could best be decided through longitudinal research, for instance, following the same subjects and retesting them with the Rorschach at five year intervals.

These issues suggest a number of areas for further research: 1) continued use of this system to establish clinically relevant, detailed norms; 2) more complete research into areas for which there were previously no reliable measures, such as context and richness of response; 3) use of this system with varied populations and in different time periods to assess patterns of response which differentiate among different groups; 4) investigation into specific external factors and their impact on Rorschach content production; and 5) investigation of the interaction between environmental change and personality change. Extensive research in these areas will be necessary to establish valid, clinically useful norms and knowledge about the impact of external factors on Rorschach performance. However, if this research is completed, it will provide clinicians with specific information about the use of content and

context in the Rorschach and will encourage and permit improved interpretation of Rorschach results in the clinical setting.

# CHAPTER VI

## SUMMARY

Over the past 30 years, a substantial amount of research has been conducted on the Rorschach Technique, a widely used personality assessment technique. A significant portion of the research has focussed on the significance and patterns of occurrence of various types of content in subjects' responses to the Rorschach stimuli. This research has generally approached the investigation of content from several perspectives: establishment of normative data; development and application of scales designed to measure personality variables; investigation of occurrence and significance of specific content categories; and investigation of the occurrence and significance of contextual behaviors. However, in general, research has led to only limited normative information and conflicting data about significance of specific content categories. The goal of this investigation was to modify a previously developed content and context scoring system and to apply it to a sample of subjects. Data gathered in this way were used to estab-

lish norms for a specific age group and also to investigate possible discrepancies in content and context production between subjects from different time periods.

Data used in this research were archival and consisted of Rorschach protocols administered to 90 college students between 1953 and 1979. Data were coded by number, and both the identity of subjects and the date of administration were not known to the investigator. Subjects were divided into three groups according to date of administration of the Rorschach: 30 were given the test in the 1950's, 30 in the 1960's, and 30 in the 1970's.

Protocols were scored on content and contextual factors on a modified version of a previously developed rating system. The initial system was modified for this study to increase clinical applicability by reducing the number of possible scoring categories from 282 in the original version to 171 in the modified system. This system was modified based on results from its initial application (Locke, 1983). All categories with a mean occurrence less than .25 per protocol in the initial study were evaluated for exclusion from the modified system. They were excluded unless they were judged clinically significant by the author. This resulted in

the above mentioned reduction of categories to 171.

Once the modification of the system was complete, the 90 protocols were scored. Data gathered was used to establish initial norms for this age group and for hypothesis generating exploration and crossvalidation of findings.

All results must be interpreted with care. First, the restricted nature of this sample (Midwestern college students) suggest that the norms and findings for this research may not be generalizable to other populations. In addition crossvalidation and use with varied populations will be necessary to assess validity of these data.

Normative data gathered did conform to findings for the few categories consistently studied in the past. In addition, data conformed closely to results from the previous application of this scale. This suggested that, in spite of its narrow definition, this sample may perform in a way similar to other groups. Many of the most frequently occurring categories outside of A and H reflected elaboration of the basic percept.

In addition to establishment of normative data, analysis was conducted on 63 variables to gather initial data about differences in content production in differ-

ent time periods which might suggest further areas of exploration. Results from this exploratory analysis tend to support previous investigations which suggest that, although overall trends in content production are likely to remain stable, production of specific content categories is likely to change over time. Categories which differed significantly among groups include specific populars, subcategories of Animal and Human content, Total Plant, Residual Plant, Total Blood and Sex, and Additional Responses.

Thus, these data suggest both that specific changes in content production occur over time and that norms gathered may be fairly representative of Rorschach production in a broader population. However, extensive research will be necessary to establish clinically valid, detailed norms, and to clarify the specific types of external variables that affect content production and the nature of interaction between external variables and personality functioning.

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# APPENDIX A

# MODIFIED RORSCHACH CONTENT SCORING SYSTEM

This appendix describes the content scoring system developed for this research. The major portion of this section lists and defines the 171 categories used. In many cases there is no other definition than the category name (i.e., the category AA1 is simply defined as "BAT"). In these cases, the examiner should simply use this category any time the subject labels a percept as the content in question.

Each response should be scored for all relevant content components. Thus, if a response is fairly complex, there may be a number of content scores (VIII: Two red bears, or rats, or mountain lions scaling a mountain: A1,AA2,-M2A, E28, E27, N5, C1, P23; or VIII: Two rats hanging onto a multicolored tree; holding on with their claws with rocks below them: A1, AA35, M1A, BAL, E27, P12, C1, N8).

Within each response, one part will be underlined and thus identified as the primary response segment. The primary segment will consist of the most emphasized noun content; relevant subcategories of that area; and movement, aggression, balance and interaction scores associated with the primary content. If no noun content

is clearly emphasized, the first mentioned content will be defined as primary content (VIII: Two rats hanging to a multicolored tree, holding on with their claws with rocks below them; A1, AA35, M1A, Bal, N8, P12, E27, C1: VII: Two indian girls staring at each other, feathers in hair; H1, H2, HA, M1H, IN1, P19, E27, AOBJ2).

## CONTEXTUAL FACTORS AND ELABORATIVE COMMENTS

E0 RESPONSE UNCERTAINTY, OR EVASIVENESS IN RESPONSE PROPER. Examples: "almost looks like," "Could be a ," "looks lika a x, I think," "might be an x," "perhaps a x," "I don't know, but it looks like a x." E0 may also be scored if the subject uses an evasive, delaying statement before producing a response. An example of this would be "looks like something, I'm not sure what," or similar statements delaying the response.

E28 INDECISIVENESS IN RESPONSE PROPER. Score when subject offers two precision alternatives in response proper; "a dog or a squirrel." Also score if subject offers one response in the response proper, but offers a precision alternative in the inquiry. To score this the alternative must be part of one scored response. For content scoring, use the most emphasized alternative or if that is unclear, use first offered choice. Use this only for the main content. Do not use for context, color, movement, or other elaborations of the basic percept. If a response is scored for E28, do not score it as E0.

E29 CARD REJECTION-RESPONSE PROPER. In response proper, subject cannot generate a response.

E30 REJECTION OF A SPECIFIC SECTION OF THE CARD. On a specific response, subject indicates he is unable to generate a response for a specific section of the card; "I can't make anything out of that," "this part isn't anything." Subject may use that part of the blot in a percept in another response.

E13 TENDENCY TO REJECTION. 1. On inquiry, subject has trouble recalling response or says it is difficult to remember the response or appears surprised that he made that response; 2. Initial rejection of blot followed by a response; "I don't see anything on this one, ..... Well, maybe it is a x." 3. After one or more responses, subject indicates that there is some other percept, but he can't see it; "There's something else there, but I can't think what." This will be scored as E13 whether or not subject eventually offers an additional percept.

E1 NEGATIVE SELF STATEMENTS. "I have no imagination." "I haven't got my thinking cap on." "I hate to

say it, but it's a x again."

E2 SELF REFERENCE. Subject refers percept to own experiences or beliefs. "I don't like them." "....like when I was a kid."

G13 SYMBOLISM. All symbolism other than that covered by GC.

GC COLOR SYMBOLISM.

E7 NEGATIVE PERCEPT COMMENTS: 1. Comments that are demeaning or derisory, or indicate that subject is making fun of or minimizing percept: e.g., describing percept as "icky," "ludicrous," or "silly." or 2. Negative comment or elaboration of percept, especially in ways indicating percept has poor fit with reality: e.g., describing percept as ugly, malformed, distorted, or out of proportion.

E9 PHOBIC RESPONSE. Response suggesting fear or painful emotional involvement: e.g., describing percept as eerie, wierd, spooky, horrible, scarey, or nasty.

E8 POSITIVE COMMENT ABOUT PERCEPT OR CARD. Subject describes percept or card, either according to positive attributes ("pretty flowers," "looks happy," "seems gay," "I like this one.") or indicates that he finds the percept to be a good fit to the blot ("This is a perfect butterfly shape.").

E37 NEUTRAL CARD COMMENTS. Subject refers to previous cards or responses, noting similarities, etc.

E34 SPECIFIC REFERENCES TO COLOR, INDICATING REACTION TO COLOR. Generally this may appear separately from the description of the percept: e.g., "This is colorful." "Look at the different shades of blue." However, if the response clearly indicates reaction to color, it may be scored E34 in addition to C1 or C2. This would be in situations in which the subject specifically indicates the importance of color within the context of a response using color: e.g., "Wow, a technicolor scene." "The colors are important here."

E23 SPECIFIC REFERENCE TO COLOR: DENYING ITS IMPORTANCE OR INDICATING DISCOMFORT WITH IT: "I didn't do anything with the color." "These don't seem to fit in."

"I had trouble making that fit in." If subject is also rejecting a specific section of the card, score E30. Can also score C1 or C2 if the subject uses color in addition to showing discomfort with it.

C1 SPECIFIC USE OF COLOR IN PERCEPT: (i.e., content scored FC, CF, or C).

C2 SPECIFIC USE OF ACHROMATIC COLOR IN PERCEPT: (i.e., content scored C', FC', or C'F).

E17 SEES EXAMINER AS AUTHORITY FIGURE. subject calls examiner "Sir," or behaves in ways which indicate that he sees examiner as authority figure.

E3 UNIQUE SELF REFERENCE: Subject describes percept as if it is actually present and interacting in some way with the subject. If the percept is seen as looking, staring, or pointing at subject, however, score as E4 instead of E3. "Someone coming at me." "An ape walking toward me."

E4 SURVEILLANCE: finger pointing; eyes seen alone in the percept, person staring (possibly at subject);

something peeking through a curtain or other concealment.

G20 REFLECTION. Percept is described as reflected in water, a mirror, or on another surface: e.g., "a bird reflected in water."

G6 DENIAL, UNDOING: denial of movement, life, potency to a percept: e.g., "dead bisected dog, a cartoon;" "alligator, but it's not hungry, it won't bite."

G10 SPECIFICITY. Subject describes percept as a specific instance of the content category: "head of Kennedy," "mask of Orpheus;" a specific type of animal or other content. Thus, if a subject sees a dog, it would not be scored for G10, but if he identifies it as a Scotch Terrier, the response would be scored for G10. The same would be true if the subject identified a tree as an oak or a pine tree, or a map specifically as a map of Africa.

E27 PLURAL. If a subject sees more than one of any content in a response, the response is scored for E27.

A response can only be scored for E27 once.

G7 WORN, RAGGED, OLD. If a subject describes percept in way that indicates that it is worn down, old or damaged, score for G7.

G8 FOSSILS, ANCIENT CONTENT. H,A, and other content associated with ancient or prehistoric times: e.g., Greek temple, dinosaur.

G17 YOUNG A OR H: e.g., children, puppies, baby rabbits.

E10 CARD TURNING. Any instance of turning, either by change in arrow (<,>, etc.) or by spiral on protocol indicating card turning. Also, if the first response to a card indicates that the card is not upright, score E10. If a response based on a rotated card is followed by a response with no orientation indicated (suggesting card is upright again), score E10. If after the response, but before the following response is listed on the protocol, turning is indicated, record E10 for the earlier response. If a series of orientations are shown with arrows or a combination of three or less arrows and

a spiral culminating with a final orientation leading to a response or ending use of the card, count the series as one E10. For two spirals or one spiral and four or more arrows, score as two E10s.

E35 PART NOT WHOLE. Score only when incompleteness has not been indicated by other scoring such as Ad or Hd: "Tree limb," "petal of a flower."

E14 REFERENCE TO SOMETHING MISSING. Subject refers to the fact that some part is missing in the percept; it must be clear that the part has been lost. Human and Animal percepts will also always be scored for Hd and Ad: e.g., "it looks like it lost its head;" "a rug with something missing;" "a x with bits chipped off it."

E15 PERSEVERATIVE TENDENCY. Subject produces two or more in a row of a specific category, or is unable to think of a new response because his previous response stays on the subject's mind. Score E15 for each instance of repetition of a category: if the subject produces three bats in a row, score E15 on each of the second and third bats. However, do not score for E15 in additional responses.

G14 SYMMETRY. The subject verbally notes symmetry: e.g., "It's the same on both sides;" "the crease in the middle divides it;" "the mirror effect (if referring to symmetry rather than reflection. If subject is referring to a reflection, score as G20)."

E33 SUBJECT LAUGHS. Score once for each time that this is noted. Thus, E33 can be scored more than once per response.

G19 EXTRATERRESTRIAL. Subject identifies any content as from another planet, another world, outer space or similar concepts.

ADD ADDITIONAL RESPONSE. Response given during inquiry and scored by examiner as an additional response. Except for scoring these responses with ADD, score in the same way as main responses are scored.

G1 HANDS, PINCERS, CLAWS, HOOKS, FINGERS: Score G1 if subject sees these or similar contents and they are not connected to the body.

G21 NOT STIMULUS BOUND. Subject begins with a

response then free associates; develops concept or concepts tangentially related, or sees color on an achromatic card, or develops a complex story or scenario connected with the percept.

POPULARS

POPTOT The sum of all popular responses, as defined by the following popular categories.

P1 Butterfly, bat, bird, or beetle on Card I.

P2 Human figure (middle detail) on Card I.

P4 Two animals (black or black and red) on Card II.

P5 Two people on Card II (black or black and red).

P7 Two people on Card III (with card upright, black area).

P10 Butterfly or bow tie for red on Card III.

P11 Man or giant for whole on Card IV.

P12 Monster, man-like creature, or gorilla for whole on Card IV.

P15 Fur skin for whole or cut off whole on Card IV.

P16 Bat, butterfly, or bird for whole or cut off whole on Card V.

P17 Animal skin for whole or cut off whole on Card VI.

P18 Totem pole for Card VI.

P19 Two people on Card VII with card upright.

P23 Two animals for red details on Card VIII (Can also be one animal reflected).

P24 Anatomy on Card VIII.

P29 Two crabs, spiders, scorpions, lobsters, or similar percepts for blue detail on Card X. Subject may still be scored for P29 if he or she only identifies one of the blue details as a popular percept.

P30 Rabbit head for green detail on Card X.

P31 Worms for green detail on Card X.

HUMAN RESPONSES

H1 ALL HUMAN RESPONSES: including all H, Hd, (H), and (Hd). Use this score for any kind of human content.

H2 FEMALE HUMAN RESPONSES: use only when percept is explicitly identified as female.

H3 MALE HUMAN RESPONSES: use only when percept is explicitly identified as male.

H4 HUMANS ENGAGED IN POSITIVE, HAPPY BEHAVIORS: human percepts engaged in positive behaviors (e.g., dancing, singing, playing music) or who represent these things (e.g., dancer, singer, musician). If there are negative overtones to the percept, don't score for H4.

SPECIFIC HUMAN RESPONSES

HA INDIANS.

HC BLACK, NATIVES, OR AFRICANS.

HUMAN DETAIL RESPONSES

HdTOT Sum of all human detail responses as defined by the following categories.

Hd1 RESIDUAL Hd: all human detail responses not covered by the following specific subcategories of human detail response.

Hd2 FACES, HEADS: can include body down to neck, but no further.

Hd4 HANDS, FINGERS.

HUMANLIKE RESPONSES

HPTOT Sum of all humanlike responses (H) as defined by the following categories.

(H)1 RESIDUAL HUMANLIKE RESPONSES: all (H) responses not covered by the following specific (H) subcategories.

(H)2 POTENTIALLY THREATENING OR SCAREY (H): e.g.,

monster, abominable snowman.

(H)3 PLEASANT OR BENIGN (H): e.g., fairies, elves, or clowns.

(H)3 STATUES, DOLLS.

(H)4 HYBRID (H): (H) percept which is a mixture of human with some other category of content, e.g., man with wings, or a being which is half man and half animal.

ANIMAL RESPONSES

A1=ATOT ALL ANIMAL RESPONSES: score for any animal percept. This should be used in addition to any scores for A, Ad, (A), and AA.

ANIMAL DETAIL RESPONSES

AdTOT Sum of all animal detail responses, as defined by the following categories.

Ad1 RESIDUAL ANIMAL DETAIL RESPONSES: score for all animal detail percepts not covered by the following specific subcategories.

Ad3 HEAD: to be scored for Ad3, percept may include head and neck, but no more.

ANIMAL LIKE RESPONSES

APTOT Sum of all animal like responses as defined by

the following categories.

(A)1 RESIDUAL ANIMAL LIKE RESPONSES: all (A) percepts not covered by the following specific subcategories. This includes mythical figures.

(A)2 UNPLEASANT, FRIGHTENING PERCEPTS: e.g., King Kong, gargoyle.

SPECIFIC ANIMAL CATEGORIES

AA1 BAT

AA2 BEAR

AA3 BIRD

AA6 BUTTERFLY, MOTH

AA7 CAT

AA11 CRAB, CRAYFISH, LOBSTER, CRUSTACEANS.

AA15 DOG

AA17 ELEPHANT

AA18 FISH, SHRIMP.

AA24 HORSE

AA25 INSECT, BUG, FLY

AA27 LION, MOUNTAIN LION, PANTHER, TIGER

AA34 RABBIT

AA35 RAT

AA39 SEA HORSE

AA43 SPIDER, TARANTULA, SCORPION

AA48 WOLF, COYOTE

ANIMAL OBJECT RESPONSES

AOBJTOT Sum of all animal object responses as defined by the following categories.

AOBJ1 FUR SKIN: score for animal skin percept, or skinned animal if subject is referring only to the skin. Also score for specificity (G10) if subject identifies skin as from a specific kind of animal, e.g., a bear skin, skin of a cat. Also score as object of aggression (Ag1) only if percept is explicitly described as having been aggressed on, e.g., skin of a bear that was killed by a hunter; skin of a cat that was hit by a car.

AOBJ2 ALL OTHER ANIMAL OBJECTS: e.g., feathers in hair, wishbone.

MOVEMENT, BALANCE, AND AGGRESSION

MTOT Sum of all movement responses as defined by the sum of the categories M1, M1A, M1H, M2, M2A, and M2H.

M1TOT Sum of all passive movement responses as defined by the sum of the categories M1, M1A, and M1H.

M2TOT Sum of all active movement responses as defined by the sum of the categories M2, M2A, and M2H.

MHTOT Sum of all human movement responses as defined by the sum of the categories M1H and M2H.

MATOT Sum of all animal movement responses as defined by the sum of the categories M1A and M2A.

PASSIVE MOVEMENT OR POTENTIAL MOVEMENT

In general, an unelaborated posture or stance that implies life, but has no explicit active movement component; it is often indicated by a sense of tension without actual movement, e.g., sitting, standing, lying; also includes movement that is simply a response to

gravity or other forces and involves no clear action on the part of the percept, e.g., water dripping, leaf falling; also includes potential movement - percept is about to, has just completed, or has the capacity for active movement (a dog about to leap, a panther poised to spring, a man who has just sat down, a bird that flies). For fire content, score for passive movement if there is no elaboration of the concept and no reference to movement, burning, etc.; score for active movement if subject refers to flames, burning, etc. To score for passive movement follow this basic definition, but specify type of content by using M1, M1A, or M1H.

M1 PASSIVE INANIMATE MOVEMENT: movement conforming to the passive movement definition for inanimate objects.

M1A PASSIVE ANIMAL MOVEMENT: movement conforming to the passive movement definition for animal content.

M1H PASSIVE HUMAN MOVEMENT: movement conforming to the passive movement definition for human content.

ACTIVE MOVEMENT

Active movement reflecting effort or energy of the percept: running, jumping, frowning, sneering, erupting, spouting.

M2 ACTIVE INANIMATE MOVEMENT: movement conforming to the definition of active movement for inanimate objects.

M2A ACTIVE ANIMAL MOVEMENT: movement conforming to the definition of active movement for animal content.

M2H ACTIVE HUMAN MOVEMENT: movement conforming to the definition of active movement for human content. If Hd inanimate movement (for example, hair blowing) is used to elaborate a human movement percept (this will usually be active human movement), do not score additionally for the inanimate movement (two girls dancing, their hair whipping around them, would be scored M2H for active movement, but would not be scored for the movement of their hair -- H1, H2,-M2H ). If there is human movement (in this case, it will usually be passive human movement) and inanimate Hd movement which is not simply an elaboration of the human movement, then score for human movement, but also add a score for the inanimate

movement immediately following the human movement score (girls sitting with their hair blowing in the wind would be scored for passive human movement and for passive inanimate movement -- H1, H2,-M1H, M1.

Ma DANCING: score this in addition to an active movement score.

BAL PERCEPT DESCRIBED AS HANGING, CLINGING, OR PRECARIOUSLY BALANCED. Score for passive movement or active movement when scoring for BAL.

AGGRESSION

AGTOT Sum of all aggression responses as defined by the sum of AG1, AG2, AG3, and AG4.

AG1 OBJECT OF AGGRESSION: e.g., wounded or squashed; bleeding if unelaborated or clearly the result of being the object of aggression (mountain lion turned into a rug).

AG2 AGGRESSOR: percept attacking, stalking prey, colliding, kicking. If the percept is also wounded,

score for object of aggression in addition to the aggressor score.

AG3 DEAD: score if percept is explicitly identified as dead, or if from the description, the percept clearly must be dead.

AG4 SYMBOL OF AGGRESSION: e.g., knife, submarine, hideous monster floating, aggressive look, holding out hand in imitation of a gun, growling, teeth clenched, aggressive behavior with no focus or actual aggressive consequence.

OTHER CONTENT CATEGORIES

CLO ALL CLOTHING

INTERACTION

IN1 NEUTRAL INTERACTION: content in which percepts are described as interacting, but with no implication of positive or negative involvement, e.g., looking at each other (but not simply facing each other or other concepts which indicate physical orientation, but not necessarily any interaction between percepts).

IN2 POSITIVE INTERACTION: percepts are described as interacting with each other with a definite positive affect, or in a way that clearly reflects positive relationship; e.g., smiling at each other, playing with each other.

EMB EMBLEM: insignia, coat of arms, and other objects which serve as symbols for something (crown,

shield, boy scout badge). In addition to the EMB score, score for content within the emblem if it is described.

MASK MASK: any kind of mask.

TE TEETH: score whenever it appears in response, even if it is part of a larger percept.

FI FIRE, FLAMES: if the percept is described as fire with no elaboration, score for passive movement (M1); if percept is described in terms of flames, burning, etc., score for active movement (M2).

SM SMOKE: if smoke is described as rising, drifting, etc., use passive movement score (M1).

CL CLOUD: if cloud formation, do not score for plural (E27); however, if it is a cloud formation, and subject refers to clouds, score for E27.

EXPL EXPLOSION: this is any kind of explosion or eruption, including a jet stream, volcanic eruption, or exhaust of a rocket taking off (if exhaust of a rocket taking off is only described in terms of fire, score for

fire (FI), not explosion). If the explosion is in process, score for active movement (M2). Use symbol of aggression score (AG4) for explosion of a bomb or weapon.

BL BLOOD: if flowing or dripping, use passive movement score (M1); if spurting or bleeding, use active movement score (M2).

BU BURN.

ST STAIN.

PA PAINT: not as part of art, abstract art or a painting, but simply the substance, paint; e.g., paint spattered on the wall; somebody dropped a can of paint. If paint is dripping or was just spilled, use passive movement score (M1).

XRAY XRAY. Score for type of anatomy in addition to the xray score.

X CROSSECTION: when subject describes percept as a crossection of a specific type of content.

FO FOOD.

ARCH ARCHITECTURE. All architecture.

ARTTOT Sum of all art responses as defined by the sum of ART1, ART2, ART3, ART5, and ART6.

ART1 PERCEPT SEEN AS AN EXAMPLE OF A TYPE OF ART FORM: but not as a specific work of art; e.g., a painting, a model of something, a statue, like in a movie, or like in a play. If subject identifies the percept as a painting or model of a specific person, but the percept is still not a specific work of art, score for ART1, and also score for G10 for specificity; e.g., a bust of presidient Kennedy would be scored for G10 and ART1.

ART2 CHARICATURE OR CARTOON: e.g., a cartoon of Beetle Bailey (this would also be scored G10 for specificity), a cartoon head.

ART3 ABSTRACT: a painting with no form, modern art, abstract painting. Do not score "an abstract picture of two men sitting," as ART3. Because this has form, it would be scored as ART1.

ART5 SPECIFIC WORK OF ART: this can be a painting, statue or other work of art, identified as a specific item, in general, it must be identified by name (i.e., the Mona Lisa, Rodin's Thinker). In addition to ART5 also score for specificity (G10).

ART6 MYTH, FABLE, FAIRY TALE, ETC.: percept is identified as a character from a myth, fairy tale, book, fable, play, folk tale, etc., e.g., the witch from Hansel and Gretel, Oedipus.

PAT GEOMETRICAL OR OTHER PATTERN.

GEO MAP.

NATTOT All nature responses as defined by the sum of N1, N2, N5, and N8.

N1 RESIDUAL NATURE: all nature not covered by the following categories.

N2 WATER.

N5 HILL, MOUNTAIN, VOLCANO.

N8 ROCK.

LS LANDSCAPE: percept is described as a view, scene, panorama, etc. If subject clearly indicates that he views the percept as a scene, score for LS, if scoring is unclear, score for LS if there are four or more kinds of content within the percept.

PLTOT All plant responses as defined by the sum of PL1, PL2, and PL3.

PL1 RESIDUAL PLANTS: all plants not covered by the following specific subcategories.

PL2 TREE, BUSH.

PL3 FLOWER.

RELTOT All religion responses as defined by the sum of REL1, REL2, REL3, REL4, and REL5.

REL1 RESIDUAL RELIGION: all religion content not covered by the following specific subcategories.

REL2 EXOTIC, EASTERN RELIGIOUS FIGURES.

REL3 EXOTIC EASTERN RELIGIOUS OBJECTS, ARCHITECTURE, STATUES, ICONS, ETC.

REL4 JUDEO-CHRISTIAN RELIGIOUS FIGURES.

REL5 JUDEO-CHRISTIAN RELIGIOUS OBJECTS, ARCHITECTURE, STATUES, ICONS, ETC.

AT1 GENERAL ANATOMY: score for each anatomy response.

AT2 VISCERAL ANATOMY: score in addition to AT1 for visceral anatomy.

AT3 BONY ANATOMY: score in addition to AT1 for bony anatomy.

SEXTOT All sex responses as defined by the sum of SEX1, SEX2, and SEX3.

SEX1 RESIDUAL SEX: all sex content other than that included by the other specific subcategories. Examples

of this include pelvis, if gender is not specified, and describing a percept as naked.

SEX2 FEMALE SEXUAL CONTENT: e.g., female genitalia, breast, rump, private parts, vagina, buttocks, hips, feminine shape, female curves.

SEX3 MALE SEXUAL CONTENT: e.g., male genitalia, penis, balls, testicles, rump (when male gender is specified).

OBJTOT All object responses; sum of OBJ1 and OBJ2.

OBJ1 RESIDUAL OBJECT: all objects not covered by specific object subcategories.

OBJ2 DOMESTIC, DECORATIVE OBJECTS: e.g., furniture, vase, teapot, plate, cooking pot, chair.

BLSEXTOT BLOOD, SEX TOTAL: total of all blood and sex responses as defined by the sum of BL and SEXTOT.

RESP TOTAL RESPONSES: the number of main and additional responses in a protocol.

# APPENDIX B

FREQUENCY OF RORSCHACH CONTENT VARIABLES

| Variable | Mean | SD | Range |
|---|---|---|---|
| E0* (1) | 4.07 | 4.43 | 20.00 |
| (2) | 2.47 | 2.89 | 11.00 |
| (3) | 1.80 | 2.39 | 11.00 |
| E28* (1) | 1.77 | 1.81 | 6.00 |
| (2) | 1.93 | 2.08 | 7.00 |
| (3) | 1.10 | 1.00 | 3.00 |
| E29 (1) | 0.03 | 0.18 | 1.00 |
| (2) | 0.27 | 0.94 | 5.00 |
| (3) | 0.17 | 0.46 | 2.00 |
| E30 (1) | 0.40 | 1.04 | 4.00 |
| (2) | 0.27 | 0.94 | 5.00 |
| (3) | 0.27 | 0.58 | 2.00 |
| E13 (1) | 0.40 | 0.62 | 2.00 |
| (2) | 0.63 | 0.76 | 2.00 |
| (3) | 0.77 | 1.48 | 7.00 |
| E1 (1) | 0.07 | 0.25 | 1.00 |
| (2) | 0.07 | 0.36 | 2.00 |
| (3) | 0.50 | 1.11 | 5.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| E2 (1) | 0.53 | 0.86 | 3.00 |
| (2) | 1.10 | 1.56 | 7.00 |
| (3) | 0.90 | 1.56 | 7.00 |
| G13 (1) | 0.20 | 0.61 | 3.00 |
| (2) | 0.17 | 0.38 | 1.00 |
| (3) | 0.30 | 1.12 | 6.00 |
| GC (1) | 0.50 | 0.97 | 4.00 |
| (2) | 0.83 | 1.39 | 7.00 |
| (3) | 0.40 | 0.72 | 3.00 |
| E7* (1) | 2.60 | 2.39 | 8.00 |
| (2) | 2.47 | 2.53 | 13.00 |
| (3) | 3.00 | 2.65 | 10.00 |
| E9 (1) | 0.93 | 1.46 | 6.00 |
| (2) | 0.63 | 1.00 | 4.00 |
| (3) | 0.73 | 0.87 | 3.00 |
| E8 (1) | 1.00 | 1.14 | 4.00 |
| (2) | 0.87 | 1.38 | 5.00 |
| (3) | 1.17 | 1.29 | 4.00 |
| E37 (1) | 0.47 | 0.68 | 2.00 |
| (2) | 1.03 | 1.30 | 5.00 |
| (3) | 0.57 | 0.77 | 2.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| E34* (1) | 1.30 | 1.51 | 6.00 |
| (2) | 1.47 | 1.36 | 4.00 |
| (3) | 1.23 | 1.38 | 5.00 |
| E23 (1) | 0.57 | 1.01 | 4.00 |
| (2) | 0.40 | 0.77 | 3.00 |
| (3) | 0.20 | 0.48 | 2.00 |
| C1* (1) | 5.57 | 3.08 | 12.00 |
| (2) | 5.13 | 3.26 | 13.00 |
| (3) | 4.40 | 2.76 | 13.00 |
| C2* (1) | 2.30 | 2.73 | 11.00 |
| (2) | 2.20 | 1.83 | 9.00 |
| (3) | 2.60 | 2.06 | 8.00 |
| E17 (1) | 0.33 | 0.76 | 3.00 |
| (2) | 0.07 | 0.25 | 1.00 |
| (3) | 0.73 | 1.39 | 6.00 |
| E3 (1) | 0.10 | 0.30 | 1.00 |
| (2) | 0.03 | 0.18 | 1.00 |
| (3) | 0.17 | 0.46 | 2.00 |
| E4 (1) | 0.20 | 0.41 | 1.00 |
| (2) | 0.03 | 0.18 | 1.00 |
| (3) | 0.27 | 0.52 | 2.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| G20 (1) | 0.17 | 0.46 | 2.00 |
| (2) | 0.03 | 0.18 | 1.00 |
| (3) | 0.63 | 0.93 | 3.00 |
| G6 (1) | 0.50 | 0.82 | 3.00 |
| (2) | 0.40 | 0.68 | 2.00 |
| (3) | 0.40 | 0.62 | 2.00 |
| G10* (1) | 3.87 | 2.42 | 9.00 |
| (2) | 3.33 | 2.45 | 10.00 |
| (3) | 2.73 | 2.23 | 7.00 |
| E27* (1) | 9.80 | 4.95 | 17.00 |
| (2) | 8.87 | 4.54 | 23.00 |
| (3) | 6.90 | 3.95 | 15.00 |
| G7 (1) | 0.57 | 0.90 | 3.00 |
| (2) | 0.73 | 1.11 | 4.00 |
| (3) | 0.67 | 1.06 | 4.00 |
| G8 (1) | 0.17 | 0.46 | 2.00 |
| (2) | 0.23 | 0.68 | 3.00 |
| (3) | 0.30 | 0.54 | 2.00 |
| G17 (1) | 0.70 | 0.84 | 3.00 |
| (2) | 0.53 | 0.68 | 2.00 |
| (3) | 0.57 | 0.77 | 2.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| E10* (1) | 6.33 | 8.07 | 28.00 |
| (2) | 5.63 | 7.50 | 23.00 |
| (3) | 6.40 | 5.59 | 20.00 |
| E35 (1) | 0.87 | 1.11 | 4.00 |
| (2) | 0.67 | 1.21 | 5.00 |
| (3) | 0.40 | 0.56 | 2.00 |
| E14 (1) | 0.13 | 0.43 | 2.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.00 | 0.00 | 0.00 |
| E15 (1) | 0.67 | 0.76 | 2.00 |
| (2) | 0.57 | 0.86 | 3.00 |
| (3) | 0.60 | 1.19 | 6.00 |
| G14 (1) | 0.47 | 0.86 | 3.00 |
| (2) | 0.47 | 1.01 | 4.00 |
| (3) | 0.70 | 0.92 | 3.00 |
| E33 (1) | 0.50 | 1.01 | 3.00 |
| (2) | 0.67 | 1.18 | 4.00 |
| (3) | 0.77 | 1.61 | 7.00 |
| G19 (1) | 0.03 | 0.18 | 1.00 |
| (2) | 0.07 | 0.25 | 1.00 |
| (3) | 0.10 | 0.30 | 1.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| ADD (1) | 0.47 | 0.73 | 2.00 |
| (2) | 1.60 | 2.01 | 7.00 |
| (3) | 0.87 | 1.74 | 7.00 |
| G1 (1) | 0.03 | 0.18 | 1.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.10 | 0.30 | 1.00 |
| G21 (1) | 0.10 | 0.30 | 1.00 |
| (2) | 0.60 | 0.97 | 4.00 |
| (3) | 0.40 | 0.77 | 2.00 |
| POPTOT* (1) | 7.43 | 2.54 | 11.00 |
| (2) | 7.03 | 2.20 | 9.00 |
| (3) | 6.07 | 1.89 | 7.00 |
| P1 (1) | 0.67 | 0.48 | 1.00 |
| (2) | 0.73 | 0.45 | 1.00 |
| (3) | 0.63 | 0.49 | 1.00 |
| P2 (1) | 0.23 | 0.43 | 1.00 |
| (2) | 0.13 | 0.35 | 1.00 |
| (3) | 0.16 | 0.38 | 1.00 |
| P4 (1) | 0.40 | 0.50 | 1.00 |
| (2) | 0.47 | 0.51 | 1.00 |
| (3) | 0.33 | 0.48 | 1.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| P5 (1) | 0.27 | 0.45 | 1.00 |
| (2) | 0.23 | 0.43 | 1.00 |
| (3) | 0.20 | 0.41 | 1.00 |
| P7 (1) | 0.68 | 0.48 | 1.00 |
| (2) | 0.83 | 0.38 | 1.00 |
| (3) | 0.67 | 0.48 | 1.00 |
| P10 (1) | 0.60 | 0.50 | 1.00 |
| (2) | 0.17 | 0.38 | 1.00 |
| (3) | 0.23 | 0.43 | 1.00 |
| P11 (1) | 0.10 | 0.30 | 1.00 |
| (2) | 0.03 | 0.18 | 1.00 |
| (3) | 0.17 | 0.38 | 1.00 |
| P12 (1) | 0.07 | 0.25 | 1.00 |
| (2) | 0.17 | 0.38 | 1.00 |
| (3) | 0.27 | 0.45 | 1.00 |
| P15 (1) | 0.23 | 0.43 | 1.00 |
| (2) | 0.20 | 0.41 | 1.00 |
| (3) | 0.10 | 0.30 | 1.00 |
| P16 (1) | 0.70 | 0.47 | 1.00 |
| (2) | 0.77 | 0.43 | 1.00 |
| (3) | 0.93 | 0.25 | 1.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| P17 (1) | 0.53 | 0.51 | 1.00 |
| (2) | 0.50 | 0.51 | 1.00 |
| (3) | 0.27 | 0.45 | 1.00 |
| P18 (1) | 0.33 | 0.48 | 1.00 |
| (2) | 0.20 | 0.41 | 1.00 |
| (3) | 0.07 | 0.25 | 1.00 |
| P19 (1) | 0.33 | 0.48 | 1.00 |
| (2) | 0.63 | 0.49 | 1.00 |
| (3) | 0.37 | 0.49 | 1.00 |
| P23 (1) | 0.93 | 0.25 | 1.00 |
| (2) | 0.87 | 0.35 | 1.00 |
| (3) | 0.83 | 0.38 | 1.00 |
| P24 (1) | 0.00 | 0.00 | 0.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.00 | 0.00 | 0.00 |
| P29 (1) | 0.60 | 0.50 | 1.00 |
| (2) | 0.63 | 0.49 | 1.00 |
| (3) | 0.57 | 0.50 | 1.00 |
| P30 (1) | 0.33 | 0.48 | 1.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.10 | 0.30 | 1.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| P31 (1) | 0.43 | 0.50 | 1.00 |
| (2) | 0.30 | 0.47 | 1.00 |
| (3) | 0.03 | 0.18 | 1.00 |
| H1TOT* (1) | 5.80 | 4.75 | 17.00 |
| (2) | 4.97 | 3.55 | 16.00 |
| (3) | 5.97 | 4.29 | 19.00 |
| H2* (1) | 1.37 | 1.54 | 6.00 |
| (2) | 1.77 | 1.16 | 5.00 |
| (3) | 1.63 | 1.27 | 4.00 |
| H3 (1) | 1.23 | 1.57 | 5.00 |
| (2) | 0.73 | 1.05 | 4.00 |
| (3) | 1.27 | 1.98 | 10.00 |
| H4 (1) | 0.77 | 1.04 | 4.00 |
| (2) | 0.83 | 0.99 | 3.00 |
| (3) | 0.60 | 0.97 | 4.00 |
| HA (1) | 0.03 | 0.18 | 1.00 |
| (2) | 0.37 | 0.72 | 3.00 |
| (3) | 0.03 | 0.18 | 1.00 |
| HC (1) | 0.30 | 0.54 | 2.00 |
| (2) | 0.17 | 0.38 | 1.00 |
| (3) | 0.13 | 0.43 | 2.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| HDTOT* (1) | 2.50 | 2.66 | 9.00 |
| (2) | 1.47 | 1.50 | 6.00 |
| (3) | 2.30 | 1.97 | 7.00 |
| HD1 (1) | 1.10 | 1.06 | 3.00 |
| (2) | 0.77 | 1.04 | 4.00 |
| (3) | 0.87 | 1.14 | 4.00 |
| HD2 (1) | 1.23 | 1.59 | 6.00 |
| (2) | 0.67 | 1.06 | 5.00 |
| (3) | 1.37 | 1.47 | 6.00 |
| HD4 (1) | 0.17 | 0.38 | 1.00 |
| (2) | 0.03 | 0.18 | 1.00 |
| (3) | 0.07 | 0.25 | 1.00 |
| HPTOT* (1) | 1.17 | 1.64 | 7.00 |
| (2) | 1.03 | 1.40 | 7.00 |
| (3) | 1.33 | 0.99 | 4.00 |
| HP1 (1) | 0.30 | 0.60 | 2.00 |
| (2) | 0.23 | 0.50 | 2.00 |
| (3) | 0.50 | 0.63 | 2.00 |
| HP2 (1) | 0.37 | 0.62 | 2.00 |
| (2) | 0.30 | 0.70 | 3.00 |
| (3) | 0.50 | 0.78 | 2.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| HP3 (1) | 0.23 | 0.43 | 1.00 |
| (2) | 0.27 | 1.12 | 6.00 |
| (3) | 0.17 | 0.38 | 1.00 |
| HP4 (1) | 0.23 | 0.57 | 2.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.03 | 0.18 | 1.00 |
| HP5 (1) | 0.07 | 0.36 | 2.00 |
| (2) | 0.13 | 0.35 | 1.00 |
| (3) | 0.13 | 0.35 | 1.00 |
| A1TOT* (1) | 13.83 | 5.81 | 25.00 |
| (2) | 11.10 | 4.25 | 18.00 |
| (3) | 10.77 | 4.34 | 16.00 |
| ADTOT* (1) | 3.03 | 2.33 | 10.00 |
| (2) | 2.03 | 1.99 | 8.00 |
| (3) | 1.43 | 1.46 | 5.00 |
| AD1 (1) | 1.23 | 1.38 | 5.00 |
| (2) | 0.77 | 1.22 | 6.00 |
| (3) | 0.40 | 0.62 | 2.00 |
| AD3 (1) | 1.83 | 2.28 | 10.00 |
| (2) | 1.27 | 1.44 | 6.00 |
| (3) | 1.03 | 1.38 | 5.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| APTOT* (1) | 0.83 | 0.99 | 3.00 |
| (2) | 0.87 | 1.14 | 5.00 |
| (3) | 0.80 | 0.96 | 3.00 |
| AP1 (1) | 0.57 | 0.73 | 2.00 |
| (2) | 0.53 | 0.86 | 4.00 |
| (3) | 0.40 | 0.72 | 3.00 |
| AP2 (1) | 0.27 | 0.52 | 2.00 |
| (2) | 0.33 | 0.55 | 2.00 |
| (3) | 0.40 | 0.72 | 3.00 |
| AA1 (1) | 0.87 | 0.63 | 2.00 |
| (2) | 1.00 | 1.41 | 7.00 |
| (3) | 0.73 | 0.69 | 2.00 |
| AA2 (1) | 0.30 | 0.60 | 2.00 |
| (2) | 0.57 | 0.57 | 2.00 |
| (3) | 0.67 | 0.80 | 3.00 |
| AA3 (1) | 1.43 | 1.63 | 7.00 |
| (2) | 0.60 | 0.81 | 3.00 |
| (3) | 0.80 | 1.16 | 4.00 |
| AA6* (1) | 1.33 | 1.21 | 5.00 |
| (2) | 1.40 | 1.28 | 6.00 |
| (3) | 1.67 | 1.18 | 4.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| AA7 (1) | 0.17 | 0.38 | 1.00 |
| (2) | 0.33 | 0.61 | 2.00 |
| (3) | 0.33 | 0.61 | 2.00 |
| AA11 (1) | 0.53 | 0.78 | 3.00 |
| (2) | 0.53 | 0.57 | 2.00 |
| (3) | 0.73 | 0.87 | 4.00 |
| AA15 (1) | 0.90 | 1.27 | 6.00 |
| (2) | 0.57 | 0.90 | 4.00 |
| (3) | 0.23 | 0.43 | 1.00 |
| AA17 (1) | 0.03 | 0.18 | 1.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.20 | 0.41 | 1.00 |
| AA18 (1) | 0.57 | 0.73 | 3.00 |
| (2) | 0.23 | 0.43 | 1.00 |
| (3) | 0.43 | 0.63 | 2.00 |
| AA24 (1) | 0.13 | 0.43 | 2.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.13 | 0.35 | 1.00 |
| AA25 (1) | 0.83 | 0.87 | 3.00 |
| (2) | 0.87 | 1.07 | 4.00 |
| (3) | 1.13 | 1.28 | 4.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| AA27 (1) | 0.33 | 0.55 | 2.00 |
| (2) | 0.27 | 0.52 | 2.00 |
| (3) | 0.20 | 0.41 | 1.00 |
| AA34 (1) | 0.63 | 0.72 | 2.00 |
| (2) | 0.20 | 0.48 | 2.00 |
| (3) | 0.47 | 0.73 | 3.00 |
| AA35 (1) | 0.07 | 0.25 | 1.00 |
| (2) | 0.20 | 0.48 | 2.00 |
| (3) | 0.07 | 0.36 | 2.00 |
| AA39 (1) | 0.37 | 0.67 | 2.00 |
| (2) | 0.27 | 0.58 | 2.00 |
| (3) | 0.23 | 0.43 | 1.00 |
| AA43 (1) | 0.40 | 0.56 | 2.00 |
| (2) | 0.50 | 0.63 | 2.00 |
| (3) | 0.27 | 0.52 | 2.00 |
| AA48 (1) | 0.07 | 0.25 | 1.00 |
| (2) | 0.13 | 0.43 | 2.00 |
| (3) | 0.03 | 0.18 | 1.00 |
| AOBJTOT (1) | 1.27 | 0.83 | 3.00 |
| (2) | 1.20 | 1.16 | 4.00 |
| (3) | 0.77 | 0.94 | 3.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| AOBJ1 (1) | 0.93 | 0.78 | 3.00 |
| (2) | 0.67 | 0.71 | 3.00 |
| (3) | 0.37 | 0.56 | 2.00 |
| AOBJ2 (1) | 0.33 | 0.48 | 1.00 |
| (2) | 0.53 | 0.73 | 2.00 |
| (3) | 0.40 | 0.62 | 2.00 |
| MTOT* (1) | 11.07 | 6.88 | 31.00 |
| (2) | 9.60 | 4.43 | 19.00 |
| (3) | 9.67 | 5.71 | 25.00 |
| M1TOT* (1) | 3.40 | 2.62 | 13.00 |
| (2) | 2.63 | 1.96 | 7.00 |
| (3) | 2.67 | 2.34 | 10.00 |
| M2TOT* (1) | 7.67 | 4.94 | 20.00 |
| (2) | 6.97 | 3.45 | 14.00 |
| (3) | 7.00 | 4.73 | 19.00 |
| MHTOT* (1) | 3.33 | 2.77 | 10.00 |
| (2) | 3.30 | 2.58 | 11.00 |
| (3) | 3.50 | 2.91 | 14.00 |
| MATOT* (1) | 6.03 | 3.70 | 17.00 |
| (2) | 4.77 | 2.34 | 10.00 |
| (3) | 4.13 | 3.08 | 13.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| M1 (1) | 0.73 | 1.64 | 8.00 |
| (2) | 0.60 | 0.97 | 3.00 |
| (3) | 0.67 | 1.21 | 6.00 |
| M1A (1) | 1.87 | 1.61 | 6.00 |
| (2) | 1.30 | 1.12 | 5.00 |
| (3) | 0.97 | 0.96 | 3.00 |
| M1H (1) | 0.80 | 1.13 | 5.00 |
| (2) | 0.73 | 1.11 | 4.00 |
| (3) | 1.03 | 1.03 | 4.00 |
| M2 (1) | 0.93 | 1.36 | 6.00 |
| (2) | 0.93 | 1.14 | 5.00 |
| (3) | 1.37 | 1.38 | 5.00 |
| M2A* (1) | 4.20 | 2.78 | 12.00 |
| (2) | 3.47 | 2.03 | 10.00 |
| (3) | 3.17 | 2.88 | 11.00 |
| M2H* (1) | 2.53 | 2.27 | 8.00 |
| (2) | 2.57 | 2.11 | 10.00 |
| (3) | 2.47 | 2.32 | 10.00 |
| MA (1) | 0.53 | 0.90 | 3.00 |
| (2) | 0.37 | 0.56 | 2.00 |
| (3) | 0.53 | 1.04 | 5.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| BAL (1) | 0.17 | 0.38 | 1.00 |
| (2) | 0.23 | 0.43 | 1.00 |
| (3) | 0.13 | 0.43 | 2.00 |
| AGTOT* (1) | 2.50 | 1.83 | 8.00 |
| (2) | 2.93 | 2.70 | 11.00 |
| (3) | 3.17 | 2.89 | 11.00 |
| AG1 (1) | 0.76 | 0.82 | 3.00 |
| (2) | 0.57 | 1.01 | 4.00 |
| (3) | 1.17 | 1.21 | 4.00 |
| AG2 (1) | 0.67 | 0.76 | 2.00 |
| (2) | 0.97 | 1.01 | 4.00 |
| (3) | 0.83 | 1.23 | 4.00 |
| AG3 (1) | 0.27 | 0.45 | 1.00 |
| (2) | 0.43 | 0.68 | 3.00 |
| (3) | 0.43 | 0.50 | 1.00 |
| AG4 (1) | 0.80 | 1.00 | 4.00 |
| (2) | 0.97 | 1.61 | 8.00 |
| (3) | 0.73 | 1.02 | 4.00 |
| CLO* (1) | 2.67 | 2.41 | 8.00 |
| (2) | 2.20 | 1.85 | 7.00 |
| (3) | 2.13 | 1.92 | 9.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| IN1 (1) | 1.23 | 1.30 | 4.00 |
| (2) | 0.47 | 0.63 | 2.00 |
| (3) | 0.57 | 0.94 | 3.00 |
| IN2 (1) | 0.73 | 1.20 | 5.00 |
| (2) | 0.43 | 0.90 | 4.00 |
| (3) | 0.10 | 0.30 | 1.00 |
| EMB (1) | 0.47 | 0.82 | 4.00 |
| (2) | 0.13 | 0.35 | 1.00 |
| (3) | 0.17 | 0.46 | 2.00 |
| MASK (1) | 0.10 | 0.30 | 1.00 |
| (2) | 0.17 | 0.53 | 2.00 |
| (3) | 0.23 | 0.57 | 2.00 |
| TE (1) | 0.23 | 0.50 | 2.00 |
| (2) | 0.03 | 0.18 | 1.00 |
| (3) | 0.20 | 0.48 | 2.00 |
| FI (1) | 0.23 | 0.50 | 2.00 |
| (2) | 0.27 | 0.52 | 2.00 |
| (3) | 0.43 | 0.57 | 2.00 |
| SM (1) | 0.23 | 0.63 | 2.00 |
| (2) | 0.30 | 0.70 | 3.00 |
| (3) | 0.13 | 0.35 | 1.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| CL (1) | 0.17 | 0.46 | 2.00 |
| (2) | 0.40 | 0.68 | 2.00 |
| (3) | 0.33 | 0.48 | 1.00 |
| EXPL (1) | 0.27 | 0.78 | 4.00 |
| (2) | 0.33 | 0.71 | 3.00 |
| (3) | 0.27 | 0.52 | 2.00 |
| BL (1) | 0.20 | 0.55 | 2.00 |
| (2) | 0.60 | 0.97 | 4.00 |
| (3) | 0.33 | 0.55 | 2.00 |
| BU (1) | 0.00 | 0.00 | 0.00 |
| (2) | 0.03 | 0.18 | 1.00 |
| (3) | 0.00 | 0.00 | 0.00 |
| ST (1) | 0.00 | 0.00 | 0.00 |
| (2) | 0.00 | 0.00 | 0.00 |
| (3) | 0.00 | 0.00 | 0.00 |
| PA (1) | 0.03 | 0.18 | 1.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.07 | 0.25 | 1.00 |
| XRAY (1) | 0.20 | 0.55 | 2.00 |
| (2) | 0.13 | 0.35 | 1.00 |
| (3) | 0.17 | 0.46 | 2.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| X (1) | 0.07 | 0.25 | 1.00 |
| (2) | 0.07 | 0.25 | 1.00 |
| (3) | 0.03 | 0.18 | 1.00 |
| FO (1) | 0.60 | 0.97 | 4.00 |
| (2) | 0.60 | 0.81 | 4.00 |
| (3) | 0.20 | 0.41 | 1.00 |
| ARCH (1) | 0.50 | 0.90 | 3.00 |
| (2) | 0.40 | 0.56 | 2.00 |
| (3) | 0.30 | 0.65 | 3.00 |
| ARTTOT* (1) | 1.60 | 1.59 | 6.00 |
| (2) | 1.53 | 1.63 | 6.00 |
| (3) | 1.43 | 1.41 | 5.00 |
| ART1 (1) | 1.30 | 1.42 | 5.00 |
| (2) | 1.10 | 1.32 | 5.00 |
| (3) | 0.93 | 1.05 | 4.00 |
| ART2 (1) | 0.23 | 0.50 | 2.00 |
| (2) | 0.23 | 0.50 | 2.00 |
| (3) | 0.27 | 0.52 | 2.00 |
| ART3 (1) | 0.07 | 0.25 | 1.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.07 | 0.25 | 1.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| ART5 (1) | 0.00 | 0.00 | 0.00 |
| (2) | 0.00 | 0.00 | 0.00 |
| (3) | 0.03 | 0.18 | 1.00 |
| ART6 (1) | 0.00 | 0.00 | 0.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.13 | 0.35 | 1.00 |
| PAT (1) | 0.00 | 0.00 | 0.00 |
| (2) | 0.03 | 0.18 | 1.00 |
| (3) | 0.00 | 0.00 | 0.00 |
| GEO (1) | 0.50 | 0.82 | 3.00 |
| (2) | 1.03 | 1.79 | 6.00 |
| (3) | 0.33 | 0.66 | 3.00 |
| NATTOT* (1) | 2.83 | 2.56 | 11.00 |
| (2) | 2.00 | 1.66 | 6.00 |
| (3) | 2.30 | 3.11 | 16.00 |
| N1 (1) | 1.10 | 1.27 | 5.00 |
| (2) | 0.60 | 0.89 | 4.00 |
| (3) | 0.93 | 2.10 | 11.00 |
| N2 (1) | 0.57 | 1.11 | 5.00 |
| (2) | 0.63 | 0.89 | 3.00 |
| (3) | 0.50 | 0.82 | 3.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| N5 (1) | 0.33 | 0.71 | 3.00 |
| (2) | 0.47 | 0.86 | 4.00 |
| (3) | 0.43 | 0.73 | 2.00 |
| N8 (1) | 0.83 | 1.08 | 5.00 |
| (2) | 0.30 | 0.54 | 2.00 |
| (3) | 0.43 | 0.86 | 3.00 |
| LS (1) | 0.83 | 2.05 | 10.00 |
| (2) | 0.67 | 1.18 | 4.00 |
| (3) | 0.43 | 0.73 | 3.00 |
| PLTOT (1) | 1.97 | 1.69 | 8.00 |
| (2) | 0.87 | 1.36 | 7.00 |
| (3) | 1.30 | 1.44 | 5.00 |
| PL1 (1) | 0.87 | 1.11 | 5.00 |
| (2) | 0.07 | 0.25 | 1.00 |
| (3) | 0.37 | 0.67 | 2.00 |
| PL2 (1) | 0.83 | 1.21 | 5.00 |
| (2) | 0.53 | 0.78 | 3.00 |
| (3) | 0.57 | 0.86 | 3.00 |
| PL3 (1) | 0.26 | 0.52 | 2.00 |
| (2) | 0.27 | 0.78 | 4.00 |
| (3) | 0.37 | 0.81 | 3.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| RELTOT (1) | 0.40 | 0.62 | 2.00 |
| (2) | 0.70 | 1.56 | 8.00 |
| (3) | 0.37 | 0.67 | 3.00 |
| REL1 (1) | 0.03 | 0.18 | 1.00 |
| (2) | 0.10 | 0.30 | 1.00 |
| (3) | 0.03 | 0.18 | 1.00 |
| REL2 (1) | 0.03 | 0.18 | 1.00 |
| (2) | 0.03 | 0.18 | 1.00 |
| (3) | 0.03 | 0.18 | 1.00 |
| REL3 (1) | 0.03 | 0.18 | 1.00 |
| (2) | 0.13 | 0.43 | 2.00 |
| (3) | 0.07 | 0.25 | 1.00 |
| REL4 (1) | 0.20 | 0.41 | 1.00 |
| (2) | 0.27 | 0.94 | 5.00 |
| (3) | 0.17 | 0.38 | 1.00 |
| REL5 (1) | 0.10 | 0.30 | 1.00 |
| (2) | 0.17 | 0.53 | 2.00 |
| (3) | 0.07 | 0.36 | 2.00 |
| AT1TOT* (1) | 1.27 | 1.44 | 5.00 |
| (2) | 1.63 | 1.94 | 7.00 |
| (3) | 1.03 | 1.16 | 5.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| AT2 (1) | 0.63 | 1.00 | 4.00 |
| (2) | 1.03 | 1.54 | 5.00 |
| (3) | 0.40 | 0.86 | 4.00 |
| AT3 (1) | 0.67 | 0.92 | 4.00 |
| (2) | 0.90 | 1.30 | 4.00 |
| (3) | 0.70 | 0.88 | 4.00 |
| SEXTOT (1) | 0.57 | 1.01 | 4.00 |
| (2) | 1.13 | 1.76 | 8.00 |
| (3) | 1.20 | 1.77 | 8.00 |
| SEX1 (1) | 0.20 | 0.48 | 2.00 |
| (2) | 0.27 | 0.83 | 4.00 |
| (3) | 0.37 | 0.62 | 2.00 |
| SEX2 (1) | 0.30 | 0.88 | 4.00 |
| (2) | 0.70 | 0.88 | 3.00 |
| (3) | 0.77 | 1.19 | 5.00 |
| SEX3 (1) | 0.07 | 0.25 | 1.00 |
| (2) | 0.17 | 0.65 | 3.00 |
| (3) | 0.07 | 0.25 | 1.00 |
| OBJTOT* (1) | 3.77 | 3.39 | 16.00 |
| (2) | 2.90 | 2.55 | 10.00 |
| (3) | 3.17 | 2.74 | 13.00 |

| Variable | Mean | SD | Range |
|---|---|---|---|
| OBJ1* (1) | 3.33 | 3.03 | 15.00 |
| (2) | 2.43 | 1.96 | 7.00 |
| (3) | 2.77 | 2.49 | 12.00 |
| OBJ2 (1) | 0.43 | 0.73 | 3.00 |
| (2) | 0.47 | 1.01 | 4.00 |
| (3) | 0.40 | 0.62 | 2.00 |
| BLSEXTOT (1) | 0.77 | 1.16 | 4.00 |
| (2) | 1.73 | 1.86 | 8.00 |
| (3) | 1.53 | 2.00 | 9.00 |
| RESP* (1) | 28.90 | 9.26 | 37.00 |
| (2) | 25.03 | 10.95 | 43.00 |
| (3) | 23.60 | 9.00 | 39.00 |

Note. * indicates variables with a mean of one or more occurrences per protocol in all groups. The parenthesized numbers, 1, 2, and 3, stand for the three sample groups. Group 1 is the sample from the 1950's, Group 2 the sample from the 1960's and Group 3 is the sample from the 1970's. For explanation of alpha-numeric symbols, refer to Appendix A.

## APPROVAL SHEET

The dissertation submitted by Mary Esther Locke has been read and approved by the following committee:

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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

June 28, 1985
Date

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