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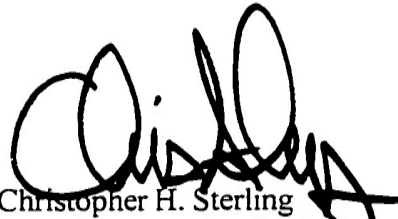
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**The Karp Inkblot Response Questionnaire:
An Evaluation of Social Desirability Responding**

By

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The Faculty of
Columbian School of Arts and Sciences
of the George Washington University
in partial satisfaction of the requirements
for the degree of Doctor of Philosophy**

May 17, 1998

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ABSTRACT

A reputed advantage of projective psychological measures such as the Rorschach Test over self-report psychological tests has been projectives' comparative freedom from social desirability response (SDR) bias. SDR bias is generally defined as the tendency for subjects to respond to personality test items in a manner that consistently presents the self in a favorable light (Wiggins, 1964). Research has shown that self-report instruments such as the Minnesota Multiphasic Personality Inventory (MMPI) are susceptible to such bias (Meehl & Hathaway, 1946). However, to date projectives' comparative freedom from SDR bias has only been a reputed advantage, lacking empirical support. Additionally, critics of projective measures in general and of the Rorschach in particular, have repeatedly pointed out varying scoring and interpretation approaches among clinicians as lacking in uniformity or consistency.

The purpose of the present study was to assess the susceptibility to SDR bias of a new objectively-scored measure intended to be administered in conjunction with the Rorschach. The Karp Inkblot Response Questionnaire (KIRQ) requires a subject to complete a questionnaire about his/her first responses to each of the ten Rorschach plates. The KIRQ was designed to draw upon the strengths of both projective and self-report tasks, hopefully incorporating projectives' reputed freedom from SDR bias with self-report measures' reliable and uniform data collection techniques. 103 subjects (18 males and 85 females, mean age = 21.56 years) participated in the study. Subjects completed the MMPI-2, Marlowe-Crowne Inventory, Rorschach Inkblot Test, and the KIRQ. Three hypotheses were tested: (a) Rorschach and KIRQ scales would show no significant relationship with SDR measures, (b) MMPI-2 scales would show significant relationships with SDR measures, and, (c) support would be found for existing KIRQ validity data. Hypotheses (a) and (b) were tested using stepwise multiple regression, while hypothesis (c) was tested using correlations between individual measures.

Overall Rorschach and KIRQ scales showed little significant relationship to measures of SDR bias, namely the MMPI-2 L scale, MMPI-2 K scale, and Marlowe

Crowne Inventory. Comparatively, MMPI-2 scales showed significant relationships with SDR measures more frequently. Validity findings were more variable, providing data corroborating existing validity figures as well as data contradicting existing findings. Findings were interpreted using Paulhus' (1984) model of SDR which breaks social desirability responding into self-deception and impression management. Limitations of this study and recommendations for future research are discussed.

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INTRODUCTION

Projective tests afford psychologists a unique assessment tool in that they offer a window onto how clients perceive, organize, and interpret perceptual data. Measures like the Rorschach have long been cornerstones of the typical psychological test battery. A reputed advantage of projective measures over self-report tests has been the supposed freedom of projectives from social desirability responding (SDR). The concept of SDR is generally defined as the tendency for subjects to respond to personality test items in a manner that consistently presents the self in a favorable light (Wiggins, 1964). A psychometric disadvantage of projective tests, (e.g. Rorschach), has been the relative lack of systematic and objective administration and scoring (Exner, 1991). The current study focused upon the Karp Inkblot Response Questionnaire (KIRQ), an objective, standardized, self-report measure designed to follow traditional Rorschach administration. Development of the KIRQ has raised the possibility of an instrument that avoids the subjectivity problems of projectives by its objective scoring, simultaneously drawing upon projectives' reputed freedom from social desirability bias. An added advantage of an objectively administered and scored instrument is increased psychometric reliability.

The present study is part of a larger, ongoing project. Over the past ten years, Karp and colleagues at the George Washington University have worked on a series of measures designed to supplement projective techniques with objectively scored questionnaires. Completion of the KIRQ entails the subject filling out a questionnaire about his/her first response to each inkblot, immediately following administration of the Rorschach. In this process, subjects perform both projective and self-report tasks, hopefully drawing upon the strengths of each technique.

Projective testing measures are based on a hypothesis which states: when people attempt to understand an ambiguous or vague stimulus, their interpretation of that stimulus reflects their needs, feelings, experiences, thought processes, etc... (Kaplan & Saccuzzo, 1989). Because such a process is unstructured and less obviously value-laden than traditional self-report measures, projectives would presumably be less susceptible to SDR. Studies have shown that objective and projective measures of the

same construct can yield different data when administered to the same population (Bornstein et al. 1996). This could, in part, be due to SDR bias. While an extensive literature exists on social desirability bias in self-report measures, no counterpart literature exists for projectives. The current study evaluated whether the KIRQ and Rorschach, unlike self-report tests (e.g., MMPI), are relatively free of SDR bias.

The study compared MMPI-2 clinical scales, selected clinically diagnostic Rorschach indices, and KIRQ scales with three measures of SDR: the Marlowe-Crowne Social Desirability scale, MMPI-2 L scale, and MMPI-2 K scale. Analyses included: (a) correlations between KIRQ scales and SDR measures, (b) correlations between MMPI-2 clinical scales and SDR measures, and (c) correlations between Rorschach scores and SDR measures. With these comparisons available it was possible to compare KIRQ, Rorschach, and MMPI-2 data with regard to SDR. It was hypothesized that if the KIRQ generated the reliable, objective, standardized data which projective tests have consistently lacked, and retained the freedom from social desirability bias which projectives typically offer, it would represent a simple, straight-forward test incorporating the strengths of objective and projective data. The following dissertation includes a review of the existing literature for each of the included measures, a review of the social desirability literature, a description of the methods and statistical analyses included in the study, and a summary and discussion of the study's results.

REVIEW OF THE LITERATURE

In order to utilize the most widely recognized and clinically useful personality assessment instruments, this study focused upon the Rorschach, undoubtedly the most widely used and widely researched projective technique (Kobler, 1983) and the MMPI-2, acknowledged to be the most widely used objective personality inventory (Greene, 1991). Because of the frequency with which both measures are used, this study's findings should prove understandable and applicable to clinicians' concerns regarding SDR bias.

A brief history and description of each measure used in the study is included below. Because the KIRQ is a newly developed measure, still in the standardization phase, information about related measures also developed at GWU is included.

Rorschach:

...the history of the Rorschach,
its rise, its fall, and its revival,
may be said to reflect the history
of clinical psychology in general.

Marguerite Hertz (1992)

Considering the Rorschach's status as the most widely used projective assessment tool, a description of its history also informs us about trends in psychological assessment over the past century. Hermann Rorschach (1884-1922) released his inkblot test entitled *Psychodiagnostics* in June of 1921, after four years of research and development. Rorschach viewed subjects' responses as determined by their unique sensory perceptions. Such perceptual tendencies were considered dependent upon the underlying structure of the personality, including its pathological deviations (Pichot, 1984).

In the preface to *Psychodiagnostics*, Rorschach stated that his work was purely empirical, that the findings were from objective observations, and that they were in no way derived from theoretical presuppositions.

Levy organized the first Rorschach seminar in the United States in 1925, only a few years after the test's introduction. From the 1930's through the late 1960's there was great enthusiasm and optimism among clinical psychologists regarding the Rorschach. However, a backlash arose in the 1970's when projective assessment waned in popularity, as compared to more objective techniques (Hertz, 1992). As a psychological test, the Rorschach was assailed by psychometrically minded examiners. They claimed that it failed to meet many standards of test construction, i.e., internal consistency, inter-rater reliability, and validity (Acklin, McDowell, & Orndoff, 1992).

Despite fluctuations in professional regard for the Rorschach, it remains one of the most widely used and frequently taught methods of psychological assessment. Since its initial presentation in 1921, thousands of studies have been published concerning the Rorschach and an examination of the current literature indicates no end to such interest (Kobler, 1983). Frohnauer et al (1988) reported that the majority of APA approved clinical psychology programs teach one course on the Rorschach and a substantial minority teach more than one. This finding contradicts claims of a decade ago that the Rorschach was no longer clinically valid or academically useful. Those who currently believe the Rorschach is an unscientific or unsound test with limited utility have not read the relevant literature of the last 20 years, or having read it, have failed to grasp its meaning (Weiner, 1995).

Rorschach's test provides a means of understanding the human process of organizing, creating, and perceiving the world, (i.e. creating form and movement out of ambiguous sensory data). Rorschach himself stressed the perceptual factors in the inkblot responses rather than the content of the associations (Kobler, 1983). However, as the Rorschach is generally considered to be a projective technique and is frequently used with respect to the content of subjects' responses, a review of projection as a concept is in order.

In 1939 Frank published "Projective methods for the study of personality", presenting the projective hypothesis that would impact a generation of psychologists. Projective measures are based on a hypothesis which states the following: when people attempt to understand an ambiguous or vague stimulus, their interpretation of that stimulus reflects their needs, feelings, experiences, thought processes, etc... (Kaplan & Saccuzzo, 1989). The Rorschach was not originally designed as a projective technique. However, many clinicians have found its ambiguous stimuli to elicit a range of responses which facilitate an intensive, clinically rich study of the individual.

Later, many of the Rorschach's critics were also critical of psychoanalytic theory and naively linked the two. This was due in part to the individual interpretations of clinicians, the majority of whom were trained in psychoanalysis in the 1940's and 1950's (Exner & Martin, 1983). Exner commented that while the projective process may occur, predominantly within the verbal material, not all Rorschach responses include evidence of projection.

Since its appearance on the psychometric scene in the 1920's the Rorschach has inspired the birth of several similar tests. The Zulliger Test (1948,1954,1968) consists of three inkblot cards and was originally designed for group rather than individual administration (Mahmoud, 1990). However, only a handful of studies using the Zulliger test are available. Another test similar in appearance to the Rorschach is the Holtzman Inkblot Test (Holtzman,1978). In comparison to the Rorschach, neither measure has enjoyed widespread use, research, or psychometric distinction.

Rorschach Scoring:

Rorschach himself did not devise any formal system for scoring responses, and after his untimely death at age 39, numerous psychologists continued using and researching the inkblot test, developing widely varying scoring techniques. The most notable of these were scoring systems devised by Beck, Hertz, Klopfer, Piotrowski, and Rapaport. Beck and Hertz were trained in orthodox experimental psychology departments and both utilized very empirically oriented approaches. Klopfer taught a separate, more

subjective approach (Exner & Martin, 1983). Piotrowski, developer of the perceptanalytic technique, hoped to develop a scoring system that was empirically based and could be validated independently of any theoretical system (DeCato, 1993). This goal was later shared by Exner. Rapaport emphasized the structural vs. the thematic aspects of Rorschach interpretation. Like Rorschach himself, Rapaport viewed the Rorschach primarily as a tool for studying psychological processes, in particular thought organization (Kleiger, 1993).

Prior to Exner, the "Rorschach Problem" could be conceptualized as follows:

(1) confusion and disagreement concerning the theoretical underpinnings of the Rorschach, (2) lack of a single, consistent administration, scoring, and interpretation procedure, (3) the oversimplified classification of the Rorschach as a projective technique, and (4) a lack of documented validity studies (Exner & Martin, 1983).

In response to criticism that psychologists were using different scoring and interpretation methods without any standard guidelines, Exner drew upon the work of the above-mentioned authors and developed the Comprehensive System, today the most widely recognized and taught Rorschach scoring method.

Exner's Comprehensive System may be the most important development in the evolution of the Rorschach because for the first time, truly comparable research could be undertaken using a standard protocol (Howes, 1981; Hertz, 1992). The recent resurgence in interest in the Rorschach may be due primarily to Exner's contributions (Lubin et al, 1984; Meloy, 1991). Handler (1996) stated in his article, "John Exner and the Book That Started it All: A Review of The Rorschach Systems", that Exner's system is taught to a majority of graduate students in comparison to other Rorschach scoring systems. Ritzler and Alter (1986) found that Exner's Comprehensive system was the most frequently cited instructional material in APA-approved doctoral psychology programs.

Exner's Comprehensive System:

According to Exner, administration of the Rorschach involves presentation of the ten inkblot plates and the accompanying question, "What might this be?". All responses

are recorded verbatim for each card. After giving all ten blots, the examiner reads the subject's responses aloud, asks him/her to indicate which part of the blot was used for each response and asks what characteristics of the blot helped to formulate or "suggest" the response. This process is called the Inquiry and clarifies the subject's responses for scoring purposes, indicating how he/she perceived the blot.

Exner conceptualizes the Rorschach test as a problem-solving situation that sets in motion several psychological operations. Initially the subject must scan or encode the stimulus inkblot. The first step is discrimination, (i.e. the subject's decision concerning which of several objects a blot or portion of a blot resembles). This seems to take the form of a rank ordering of potential answers. Second, there is a censoring out or discarding process in which unacceptable answers are jettisoned. Then, the subject responds to the blot. Exner and colleagues (1978) found evidence indicating that a social desirability factor is probably influential for some subjects in determining which of several objects perceived in the blots will actually be reported to the examiner. There is evidence that issues of set and social desirability play a role in Rorschach responding (Exner & Martin, 1983). However, the role of social desirability responding (SDR) in the collection of Rorschach data has traditionally been thought to be smaller than the role of SDR interference in traditional self-report measures. This assertion was tested in the current study.

The Comprehensive System breaks Rorschach responses down into seven major categories: (a) location, (b) determinants, (c) form quality, (d) content, (e) popularity, (f) organizational activity, and (g) special scores. Location scoring includes one symbol for the part of the blot used, such as W for whole, D for a common area, Dd for an uncommon area, S for white space, as well as a symbol denoting developmental quality of the response. Determinant scores reveal what features of the blot contributed to the formation of an answer, (e.g. form, color, achromatic color, shading, movement). Organizational activity is designated by a Z score which is assigned if responses have been organized in a perceptible fashion. Common responses are designated as Populars. Contents are designated by abbreviations for content areas (e.g., H=human,

A=animal, Bt=botany, etc...). Special Scores denote unusual verbal material such as responses considered morbid, illogical, overly fantastic, or perseverative in nature.

The interpretation of a Rorschach protocol involves three basic steps, (a) hypotheses generated from the structural or scoring data, (b) hypotheses generated from examination of the sequence of scores, and (c) hypotheses derived from a review of the verbal material in the record. The systematization offered by the Exner system operationalizes this step by step approach. Another important development in Exner's Comprehensive system is the development of norms. As of 1991, the non-patient adult normalization sample had 700 adults, equally divided between male and female, (mean age = 32.35 years, s.d.=11.93, range 19 - 70), whose average education level was 13.25 years (Exner, 1991).

When comparing the Rorschach to the MMPI, considered to be, "the standard of psychological assessment" (Kendall & Norton-Ford, 1982), Parker et al. (1988) found the two tests to have acceptable and roughly equivalent psychometric properties when used in appropriate circumstances. Acklin et al. (1992) concluded that, historically, small sample sizes in most Rorschach studies have jeopardized statistical power and have produced weak effect sizes. The problem of small sample size was addressed in the current study, as was the issue of social desirability bias.

Objective / Projective Questionnaires:

The primary focus of the current study was the newly developed Karp Inkblot Response Questionnaire (KIRQ), the most recent in a series of measures intended to improve upon traditional projective techniques. Developed in the last decade at The George Washington University, its predecessors include the Apperceptive Personality Test (APT) and the Draw-a-Person Questionnaire (DAPQ). A review of research utilizing these measures provides a good foundation for understanding the kind of data obtainable from the comparably designed KIRQ. A major goal when designing such objective, standardized, self-report instruments is to reduce pervasive amounts of variance such as the variance attributable to SDR (Holden & Fekken, 1989).

Apperceptive Personality Test (APT):

The APT was developed to obtain data previously gleaned from another popular projective test, the Thematic Apperception Test (TAT), developed by Morgan and Murray (Murray, 1935). The TAT is composed of a series of pictures about which subjects are asked to tell a story. In an effort to modernize and improve upon the TAT's foundation, the APT was designed to depict contemporary settings and to include characters representing minority groups. One of the major benefits of this projective measure over other projective tests is that it can be objectively scored.

The first section of the APT is administered similarly to the TAT, (i.e. subjects are asked to tell stories about each of the eight stimulus pictures). The second part of the APT represents an addition to traditional test administration. For each story, subjects complete a self-administered, multiple-choice questionnaire. Subjects respond to questions about the characters in their stories regarding: (a) their feelings, (b) their actions, and (c) their relationships. Additionally, subjects choose a central character, rate the outcome of the story, and respond to a semantic differential scale (Holmstrom et al., 1990). Questionnaire responses are computer-scored, producing a printout of raw scores as well as standardized t-scores for the personality variables, (e.g. hostility, denial, extreme thinking, etc...). In addition to the eight card APT a brief (APT/BA) four card, hand-scored version (Karp, Silber and Holmstrom, 1993) has also been developed.

In a validity study Karp et al (1992) correlated APT measures with scores on MMPI clinical scales. They found that weighted combinations of APT measures significantly predicted MMPI raw scores in 15 of 16 analyses. Of 84 predicted correlations between APT and MMPI measures, 60% were confirmed, 74% for females and 45% for males. In general, the study demonstrated that college students, particularly women, with higher MMPI clinical scores tend to rate APT characters more negatively and to rate story outcomes as less successful than subjects with lower MMPI scores. Individuals higher on Hypochondriasis (Hs), Depression (D), or Hysteria (Hy) scales, particularly men, tended to attribute hostile feelings and Initiation of Feelings to their characters. Individuals higher on Psychopathic Deviate (Pd), Psychasthenia (Pt), Schizophrenia (Sc), and Hypomania

(Ma), particularly women, tended to rate their characters and story outcomes more frequently with extreme negative ratings. MMPI clinical scales and their associated meanings will be discussed further on in this paper.

Additionally, in a paper presented at the Society for Personality Assessment Midwinter Meeting (1988), Karp shared findings that the APT showed much lower levels of correlation with an SDR measure, namely the Edwards SD scale (1957) than did MMPI scales. For the APT and Edwards' SD scale, Karp reported a median correlation of .205, while the median correlation for MMPI scales and Edwards' SD scale was .605. Such a finding lends support to the idea that data based on projective data is less susceptible to SDR bias than data obtained through purely self-report measures such as the MMPI, or its revision, the MMPI-2.

Draw A Person Questionnaire (DAPQ):

The DAPQ (Karp, 1990) is another projective personality instrument developed in response to the need for a standardized, objectively scorable projective test. The DAPQ is a modified version of the traditional Draw-A-Person test (Machover, 1949). The DAPQ is a two page questionnaire which subjects complete after executing male and female human figure drawings. Subjects answer questions about each drawing which describe the figures' demographic characteristics, (i.e. age, marital status, years of education, race), and personality traits, (i.e., sympathetic, helpless, strong, unhappy, etc...). Subsequent questionnaire items are constructed in a 5-point Likert scale format ranging from "very much" to "very little". As with the APT, responses to the DAPQ can be computer scored. Printed outputs yield raw scores of relevant variables such as leadership, negativism, hostility, denial, and acceptance.

When subjects responded about one set of drawings on two separate occasions, test-retest reliabilities ranged from .90 for Feels Accepted and Mastery scales to a low of .50 for Extreme Thinking. When subjects produced two sets of drawings on two separate occasions, reliability coefficients ranged from a high of .78 for Feels Accepted to a low of .51 for Antisocial Behavior (Karp, 1990).

Using the DAPQ, Waldman et al (1994) found differences between adult survivors of incest and controls on a number of measures. Survivors rated both male and female drawings higher on DAPQ "Likes to Hurt". They projected more feelings about lacking leadership and autonomy than controls, projected more negative traits overall, and projected less acceptance in comparison to control subjects.

Pattee (1994) found that psychiatric inpatients generated significantly more extreme scores with the DAPQ than matched controls. Furthermore, inpatients' extreme scores tended to have more negative connotations than controls' scores, indicating a tendency to give more socially undesirable answers. Overall it was found that the DAPQ could successfully distinguish inpatients from normal controls.

Karp Inkblot Response Questionnaire (KIRQ):

The KIRQ (Karp, 1995) was developed along similar lines to the APT and DAPQ. It provides an objectively administered and scored supplement to the Rorschach Inkblot Test. Once generated, KIRQ results may be compared with standardized norms.

The KIRQ consists of a six-page booklet administered immediately following traditional Rorschach administration, preferably using Exner's Comprehensive System. Subjects are asked to rate the first percept they saw in each Rorschach card along seven-point semantic differential scales describing a range of attributes. The questions involve rating one's percept in terms of the following attributes: (1) commonplace-unusual, (2) harmful-harmless, (3) you can trust-you can't trust, (4) vicious-gentle, (5) active-passive, (6) stupid-smart, (7) adventurous-timid, (8) a follower-a leader. If the percept is human, animal, or both, subjects respond to all eight semantic differential questions. If the percept is neither, (e.g. an inanimate object), subjects respond to only the first three questions, (i.e., commonplace-unusual, harmful-harmless, you can trust-you can't trust).

Administration:

Following Rorschach administration, the KIRQ is introduced to subjects as follows: "Now I would like you to answer some more questions about what you have seen. This

time we will concentrate on your first response to each inkblot." Then with respect to the subject's responses to the first card, "Circle the ratings describing what you saw on the first inkblot. First, check whether you saw a human, an animal, both, or neither. If you saw neither, fill out only the first three ratings for inkblot one. For human, animal, or both, fill out all eight ratings." With regard to questions about whether a response is human, animal, both, or neither, the examiner can say, "If what you saw is human, part of a human, or something that is not human but like a human, you can check the human category. If what you saw is an animal including fish, birds, insects and the like, or part of an animal, or something that is not an animal but like an animal, you can check the animal category. If what you saw includes both human or humans and animal or animals, you can choose which you want to answer questions about."

Scoring:

Scoring of the KIRQ involves obtaining averages across all blots for each of eight ratings listed above. In order that all ratings be aligned so that a rating of 7 is positive and a rating of 1 is negative, the average ratings of harmful-harmless, vicious-gentle, stupid-smart, and follower-leader have to be reversed. This is achieved by subtracting the average rating obtained from 8.

Average ratings from the eight semantic differential questions, (commonplace-unusual, harmful-harmless, you can trust-you can't trust, vicious-gentle, active-passive, stupid-smart, adventurous-timid, a follower-a leader), are then used to obtain scores on twelve KIRQ scales. Each KIRQ scale is generated by a combination of the original eight ratings. The twelve scales are as follows: (1) Unusual, (2) Harmless, (3) Trustworthy, (4) Gentle, (5) Active, (6) Smart, (7) Adventurous, (8) A Leader, (9) Denial, (10) Demeaning, (11) Human Content, and (12) Animal Content. The following gives an example of how a KIRQ scale is derived.

The Denial scale is obtained by counting all ratings of 7 for all blots for commonplace-unusual, you can trust-you can't trust, active-passive, and adventurous-

timid, plus all ratings of 1 for harmless-harmful, vicious-gentle, stupid-smart, and follower-leader. This total is averaged by dividing it over the total number of ratings.

Based upon the research of Gemert (1995), tentative interpretations of the 12 KIRQ scales are summarized as follows:

(1) Unusual: found to correlate with MMPI-2 Paranoia scores for both males and females; high Paranoia scorers tended to rate percepts as more usual than unusual.

(2) Harmless: found to correlate negatively with being anxious on the Anxiety Sensitivity Index (ASI) for both genders and negatively with depression on the Beck Depression Inventory (BDI) for females. Significant relationships have also emerged between Denial on the APT, DAPQ, and KIRQ, and KIRQ Harmless, (i.e. those using more denial rate their percepts as more harmless). Harmless appears to reflect a tendency toward denial.

(3) Trustworthy: found to correlate negatively with the ASI for both males and females, and with the BDI for women. This scale related positively to Kind on the APT/BA for females, and Trustworthy and Basic Trust on the DAPQ for both genders. KIRQ Trustworthy is also highly related to Harmless, Gentle, and Denial on the KIRQ itself. It appears similar to APT and DAPQ measures of trust and other KIRQ measures of denial.

(4) Gentle: correlates most highly with KIRQ Harmless, Trustworthy, and Denial. KIRQ Gentle was also found to relate negatively to the ASI for males and negatively to the BDI for females.

(5) Active: at present the meaning of this scale is unclear. It was originally hypothesized to correlate with MMPI-2 Hypomania, but support was not found for this hypothesis.

(6) Smart: relates positively to APT/BA Smart scale. Smart related positively to ratings of various positive characteristics and negatively to ratings of various negative characteristics on the APT/BA and DAPQ. As with APT and DAPQ scales, Smart seems associated with projections of smartness.

(7) Adventurous: adventurous relates negatively with hostility in males, and shows a positive relationship with Extreme Positive Outlook and with MMPI-2 Hypochondriasis. Further research is needed to clarify the meaning of this scale.

(8) A Leader: found to be higher for high school leaders than for non-leaders. It appears to reflect projections of leadership characteristics onto Rorschach humans and animals.

(9) Denial: strongly related to Denial on the APT/BA and DAPQ for both males and females. It appears to be a good measure of Denial or the tendency to offer excessively positive appraisals of self and others.

(10) Demeaning: related to APT/BA Demeaning, positively related to MMPI-2 Paranoia for both males and females.

(11) Human Content: it was originally expected that Human Content would relate to maturity, with children scoring lower than adults, but to date no consistent relationships have been found with this scale.

(12) Animal Content: found to relate negatively, for women, to four MMPI-2 scales, Hypochondriasis, Hysteria, Paranoia, and Psychasthenia, and to APT/BA Character Distinction. Again, additional research is needed to discern and clarify the meaning of this scale.

KIRQ Reliability and Validity:

The KIRQ was designed to be a reliable psychometric instrument, presumably due to its standardized methods of administration and scoring. As hypothesized, Gemert (1992) found the KIRQ to be highly reliable in a test-retest reliability study. In a study involving 32 male subjects and 41 females, Gemert obtained reliability coefficients for time delays ranging from one hour to 61 days with a mean delay of 11.18 days. Correlation coefficients ranged from .97 for Animal and Human responses to .70 for Active. See Table 1 for a summary of KIRQ reliability data.

In a doctoral dissertation Gemert (1995) presented initial validation data for the KIRQ. Correlation analyses were performed between KIRQ measures and measures on

psychological tests recognized for their strong psychometric properties. These measures included the Anxiety Sensitivity Index (Peterson & Reiss, 1987), the State-Trait Anxiety Indicator (Spielberger, Gorsuch, & Lushene, 1970), the Beck Depression Inventory (Beck, 1978), the MMPI-2 (Butcher et. al., 1989) the Apperceptive Personality Test (Karp, Silber, & Holmstrom, 1993) and the Draw-a-Person Questionnaire (Karp, 1990). Thirty relationships were hypothesized. On a percentage basis hypothesized relationships were supported as follows: Anxiety Sensitivity Index (ASI) (67%); Apperceptive Personality Test (Full and Brief) (87%); Beck Depression Inventory (BDI) (25%); Draw A Person Questionnaire (57%), High School Leadership Questionnaire (100%); Minnesota Multiphasic Personality Inventory-2 (50%). The results of KIRQ validity analyses are included in detail in Appendices A-C.

The KIRQ has the potential to augment traditional Rorschach administration, adding a range of self-report scores to the rich data already contained in Rorschach protocols.

Table 1:

Test Retest Reliabilities for KIRQ scales (Gernert, 1995), Avg. test-retest delay = 11.18 days, (sd = 11.58).

<u>KIRQ scale</u>	<u>Test-Retest Reliability</u> (n = 73)
Unusual	.85
Harmless	.84
Trustworthy	.76
Gentle	.88
Active	.70
Smart	.85
Adventurous	.73
A Leader	.80
Denial	.90
Demearing	.82
Human Content	.97
Animal Content	.97

Minnesota Multiphasic Personality Inventory 2 (MMPI-2):

The MMPI-2, like its predecessor the MMPI, is widely recognized as the most frequently used psychological assessment measure (Lubin et al., 1984). The original version of the MMPI was developed in 1943. Hathaway and McKinley (1940) assembled 504 items from psychiatric textbooks, personality inventories, and their accumulated clinical experience. The items were written as declarative statements in the first person singular, and most were phrased in the affirmative. From these items the authors constructed a series of quantitative scales that could be used to diagnose abnormal behavior. Using an empirical approach, items had to be answered differently by a criterion group, (e.g. hypochondriacal patients), as compared with normal groups, in order to be included in a particular scale.

The revision of the MMPI, the MMPI-2 (1989) represented a response to concerns about whether items and norms for the MMPI, developed in the early 1940's, were appropriate for contemporary use. Restandardization of the MMPI was needed to provide current norms, to develop a larger, nationally representative, normative sample; to insure appropriate representation of minority groups, and to update item content as needed. The MMPI-2 was standardized on a sample of 2600 individuals chosen to reflect national census parameters on age, marital status, ethnicity, etc.... In this respect the later sample varied significantly from the original MMPI normative sample. Revision efforts included attempts to bring language up to date, as well as to eliminate dated or sexist material. Graham (1990) stated the assumption that, unless proven otherwise, research done using the MMPI should still be applicable to the MMPI-2.

MMPI-2 test-retest reliability data presented in this paper is taken from Butcher et al (1989) unless otherwise specified. MMPI-2 clinical scales are as follows:

(1) Hypochondriasis: 32 items tapping a variety of vague and nonspecific complaints about bodily functioning. Test-retest reliability coefficients for both men and women over a one week interval were reported as .85, among the highest reported reliabilities for MMPI-2 scales.

(2) Depression: 57 items measuring symptomatic depression. Symptomatic depression is a general attitude characterized by poor morale, lack of hope in the future, and dissatisfaction with one's own status. Test-retest reliability coefficients for a one week interval are .75 for men and .77 for women.

(3) Hysteria: 60 items reflecting specific somatic complaints and items that show the client considers him or her self to be well socialized and well adjusted. Test-retest reliabilities for one week were reported as .72, and .76, for men and women respectively.

(4) Psychopathic Deviate: 50 items assessing general social maladjustment and the absence of strongly pleasant experiences. This scale was constructed empirically using a criterion group of young persons diagnosed as psychopathic personality, asocial and amoral type. Test-retest reliabilities are .81, and .79, for men and women for a one week interval.

(5) Masculinity-Femininity: 56 items of which major content areas include interests in vocations and hobbies, aesthetic preferences, activity-passivity, and personal sensitivity. One week test-retest reliabilities are .82 for men and .73 for women.

(6) Paranoia: 40 items tapping interpersonal sensitivity, moral self righteousness and suspiciousness. Test retest reliabilities for one week are .67 for men and .58 for women. These reliabilities are substantially lower than coefficients for other scales, indicating that scores on scale 6 tend to be comparatively unstable over time.

(7) Psychasthenia: 48 items designed to assess the neurotic syndrome of psychasthenia, characterized by psychological turmoil, obsessive worry, and an inability to resist specific actions or thoughts regardless of their maladaptive nature. Test-retest reliabilities at one week, .89 for men, .88 for women.

(8) Schizophrenia: 78 items assessing bizarre thought processes, peculiar perceptions, social alienation, poor familial relationships, difficulties in concentration and impulse control, and questions of self-worth and self-identity. Test-retest reliabilities at one week, .87 for men, .80 for women.

(9) Hypomania: 46 items covering behavioral and cognitive overactivity, grandiosity, egocentricity, and irritability. Test-retest reliabilities at one-week for men, .83, and .68 for women.

(10) Social Introversion: 69 items; high scores reflect discomfort in social interactions and withdrawal from such interactions wherever possible. Test-retest reliabilities at one week, .92 for men, .91 for women.

MMPI-2 Validity Scales:

In addition to the basic clinical scales, the MMPI-2 has several validity scales which function as indices of the subject's attitude toward testing itself:

(1) Cannot Say (?) Scale: consists of the total number of items that the testing client omits. Protocols with a great many omissions should be interpreted carefully.

(2) Lie (L) Scale: 15 items selected on a rational basis to identify persons deliberately avoiding acknowledgement of personal shortcomings or social failings. Includes denial of personal dishonesties, aggression, bad thoughts and weakness of character. Test-retest reliabilities at one week, for men .77, for women .81.

(3) F Scale: 60 items selected to detect unusual or atypical ways of answering test items. The F scale taps a variety of content areas, including bizarre sensations, strange thoughts, feelings of isolation, and a number of unlikely or contradictory beliefs, expectations, and self-descriptions. Test-retest reliabilities at one week, for men, .78, and for women, .69.

(4) K scale: 30 items empirically selected to assist in identifying persons who displayed significant psychopathology yet had profiles within the normal range. This is a more subtle measure of "faking good" than the more blatant Lie scale. A K-corrected profile is automatically plotted if the standard profile sheet is used. Test-retest reliabilities at one week for men, .84, and women, .81.

Social Desirability:

Early in the development of the MMPI, psychologists recognized that item responses were susceptible to deception. Considerable effort went into establishing special scales to detect (L scale and F scale) and correct (K scale) for dissimulation (Meehl and Hathaway, 1946). The K scale was developed as a measure of test-taking defensiveness, contrasting MMPI responses of psychopathic inpatients who presented normal profiles with responses from normal subjects. Since it was first identified, the concept of Social Desirability Responding (SDR) has been studied with a wide variety of instruments and populations. SDR is an important concept first in the area of test construction and later in the areas of scoring and interpretation. Paulhus et al (1995) found that when subjects were instructed to "fake good", the utility of personality scales diminished. Clearly, susceptibility to SDR jeopardizes the utility of a psychometric instrument. Crowne (1979) advised that in the construction of a personality test, procedures to eliminate SDR bias should be followed from the beginning of the test construction process.

Factor analytic studies since the mid 1960's have supported the partitioning of SDR into two clusters, labeled Alpha (Block, 1965) and Gamma (Wiggins, 1964). However, over the years researchers have generated varying explanations regarding the significance of these two factors. Millham (1974) suggested labeling these factors as such: a denial component (tendency to deny undesirable characteristics), and an attribution component (tendency to attribute socially desirable characteristics to oneself). Ramanaiah et al (1977) tested and found support for this hypothesis. Ramanaiah investigated the differential validity of the two SDR factors for predicting scores on MMPI L and K scales. They found that items loading strongly on denial (Alpha factor) correlated with the MMPI K scale, while items loading strongly on the attribution component (Gamma factor) did not.

The denial/attribution model was challenged in the eighties and a second model consisting of self-deception and impression management was introduced (Paulhus, 1984). Paulhus conducted a factor analysis of the Edwards Social Desirability (SD) scale (Edwards and Diers, 1962), MMPI L scale, and Marlowe-Crowne Inventory (Crowne &

Marlowe, 1964). Results again revealed two factors emerging from the analysis, which that author interpreted as (1) self-deception (Alpha) and (2) impression management (Gamma). These findings were replicated in a later study (1991) by the same author. Findings were consistent with previous factor analytic studies.

Paulhus (1991) refers to the Alpha factor as "self-deceptive positivity". He stated that SDR is associated with Alpha because the healthy person is prone to "self-deceptive positivity". In the same study he found self-deceptive self-enhancement to be the best predictor of good psychological adjustment. Silverthorn & Gekoski (1995) also found a strong relationship between social desirability scores and positive adjustment in an undergraduate college population. Paulhus described the Gamma factor as "impression management", specifically, "People who have decided to present themselves favorably will calculate what response will most impress the audience and select it".

In an attempt to incorporate earlier attribution/denial findings with the self-deception/impression management model, Paulhus (1991) conducted factor analyses with all four dimensions: enhancement (formerly called attribution), denial, self-deception, and impression management. Factor analyses showed that impression management items (both enhancement and denial) loaded together. Self-deception items split up; where enhancement items formed a 2nd factor, and denial items fell closer to the impression management factor. The author concluded that the critical distinction in how the latter items split appeared to be whether item content refers to a positive or negative attribute.

A study was conducted in 1988 by Greene, Davis, and Welch examining Paulhus' model and the MMPI. Their sample included 958 psychiatric inpatients. Using the Wiggins Social Desirability Scale (Wiggins, 1959) and the Edwards SD Scale, patients were classified as either high or low in self-deception, and high or low in impression management. Greene and colleagues reported a trend for more male patients (70 %) to be classified as high in self-deception, and for more female patients (62%) to be classified in the low self-deception group. Elevations on scale 4 (Psychopathic Deviate) were particularly prominent in the high self-deception group, and scale 8 (Schizophrenia) elevations were more likely in the low self-deception group. Patients scoring high in

impression management consistently scored lower on IQ measures. Additionally, patients in the low impression management group were more likely to receive a diagnosis including depression while patients in the high impression management group were more likely to receive a diagnosis of schizophrenia or bipolar disorder.

SDR Responding and Specific Instruments:

Heilbrun (1964), reviewed factor analytic studies of the MMPI done prior to 1960 and identified two major factors emerging consistently. The first was termed "psychotic" (Cottle, 1950; Wheeler, 1951), "general maladjustment", (Welsh, 1956) and "ego weakness", (Kassebaum et al, 1959) with high loadings on Schizophrenia and Psychasthenia scales. It has also been referred to as degree of psychopathology. A second factor, loading heavily on Hysteria, Depression, and Hypochondriasis was also commonly extracted (Cottle, 1950, Wheeler et al, 1951). The second factor has been referred to as a "neurotic" factor.

Factor analyses indicated that the MMPI's clinical scales tended to load inversely to social desirability, instead loading on the MMPI's first factor (degree of psychopathology). Heilbrun interpreted this as demonstrating the inverse relationship between deviancy and social acceptability of behavior. He stated that socially desirable behaviors are typically those which conform to group standards, while deviant behaviors (which define psychopathology) are usually socially undesirable.

The Marlowe Crowne Social Desirability Scale (Crowne & Marlowe, 1964) was designed to measure SDR. The Marlowe-Crowne consists of 18 culturally acceptable but improbable statements keyed in the true direction and 15 socially undesirable but probable statements keyed in the false direction. It was thought that if people endorsed positive but probably untrue, and simultaneously denied negative but probably true items, they were displaying a social desirability response set. Crowne (1979) later went on to state that persons demonstrating a social desirability response set were operating in a way geared toward obtaining external approval, and that this approval seeking was part of a self-protective and defensive style. An internal consistency reliability of .88 and

a test-retest reliability of .88 over a one month interval was reported for the Marlowe-Crowne.

During development the scale's authors sought to explore the Marlowe-Crowne's relationship to MMPI scales. They found a general tendency of Marlowe-Crowne scales to correlate negatively with most MMPI clinical scales. This finding supports Heilbrun's (1964) assertion. As already mentioned, Crowne (1979) stated that the Marlowe-Crowne scale is an indirect measure of need for approval. He conceptualized an approval motive as follows: (1) People differ in the need to be thought well of by others, (2) those with a high need for approval generally expect that it is gained by engaging in culturally acceptable behavior and by avoiding behavior that would elicit disapproval.

The Marlowe-Crowne scale has been found to load strongly on both self-deception and impression management factors (Paulhus, 1984), indicating that the scale taps both components of SDR. This contrasts with other scales such as the Edwards SD scale and MMPI K scale, which load strongly on self-deception, but less on impression management. In turn, the MMPI L scale loads primarily on impression management (Paulhus, 1991).

THE PRESENT STUDY

Many past criticisms of the Rorschach Inkblot Test have centered upon the subjectivity which unavoidably enters the administration and scoring of projectives, even with sophisticated systems such as Exner's. On the other hand, projectives have typically been regarded as less susceptible to Social Desirability Responding (SDR) than more face-valid and obvious objective measures. Self-report measures such as the MMPI are known to be susceptible to SDR, a source of variance which interferes with the precise measurement of whatever construct is being examined. However the assertion that projectives are less susceptible to SDR bias has not been empirically validated.

In response to these two psychometric issues, the present study proposed that an objective, standardized, self-report measure such as the Karp Inkblot Response Questionnaire (KIRQ) would demonstrate two important properties. The first is a uniformity, reliability, and standardization in administration and scoring associated with objective personality tests. These strong psychometric qualities are essential attributes of a sound and useful clinical instrument. Past studies found the KIRQ to be both reliable and valid psychometrically (Gernert, 1992, 1995). The present study sought evidence confirming past findings. The second quality presumably built into the KIRQ is a freedom from SDR, due to the KIRQ's utilization of projective as well as objective data.

SDR was assessed using three different instruments. These were the MMPI-2 L and K Scales, and the Marlowe Crowne Inventory. Interpretation of results used Paulhus' (1984) model as a framework, positing the two major SDR factors as self-deception and impression management. Factor analysis of SDR instruments has revealed that the K scale loads more heavily on self-deception while the L scale loads more significantly on

impression management. The Marlowe-Crowne has been found to load strongly on both SDR factors.

Hypotheses:

The following hypotheses were tested statistically, seeking support for the above assertions:

1) It was hypothesized that no weighted combination of Rorschach nor of KIRQ scales, generated through multiple regression analysis, would relate significantly to any of the three SDR measures.

2) It was hypothesized that a weighted combination of MMPI-2 scales, generated through multiple regression analysis, would relate significantly to each SDR measure.

3) It was hypothesized that the current study's findings (where possible) would yield confirmatory data supporting Gernert's initial reliability and validity data.

The term "weighted combination" refers to the regression equation which is the product of multiple regression analysis. Each variable entered into the regression equation is assigned an optimal weight in relation to the other predictor variables and in relation to the dependent variable. The solution therefore consists of a weighted combination of predictor variables which together have the strongest relationship to the dependent variable.

METHODS

Participants:

Subjects were taken from a sample of college students enrolled in psychology classes at a private university in Washington, D.C. Data collection began in the summer of 1994 and continued until 1996. Subjects were given extra credit toward their psychology grades in return for participation in this study.

Analyses were conducted on data from one-hundred-three subjects. Although roughly one-hundred-fifty Rorschach protocols were administered, many were unusable for a variety of reasons including subjects who spoke English as a second language, subjects who failed to complete all supporting measures, and subjects who repeatedly gave too few Rorschach responses.

Because of the reduced number of subjects available for analyses, males and females were combined in order to achieve a sufficiently large N. Since males and females were combined and gender differences are known to occur with the MMPI-2, MMPI-2 T-scores were used rather than uncorrected raw scores as originally planned. The alternative was to analyze the genders separately which would have resulted in insufficient N's. It is important to note that this may have compromised analyses involving the MMPI-2 K scale and MMPI-2 clinical scales, considering the overlap which exists among MMPI-2 scales. Overlapping items and the possible consequences of such overlap are discussed in this paper's Discussion Section.

Subjects were administered the MMPI-2 and Marlowe-Crowne as part of a research packet completed in class. Rorschach and KIRQ protocols were administered on an individual basis by doctoral level psychology graduate students. Rorschach protocols were scored according to the Exner Comprehensive System. Structural summaries were

obtained using the RIAP-3 computer scoring program. KIRQ and MMPI-2 protocols were scored using computer software, while the Marlowe Crowne was scored by hand.

The three measures of Social Desirability Responding (SDR) utilized in this study were the Marlowe Crowne Social Desirability Scale, MMPI-2 L scale, and the MMPI-2 K scale. Reliability and validity data for these measures are as follows:

Marlowe Crowne Social Desirability Scale:

18 culturally acceptable but improbable statements keyed in the true direction and 15 socially undesirable but probable statements keyed in the false direction. An internal consistency reliability of .88 and a test-retest reliability of .88 over a one month interval was reported for this scale, (Crowne and Marlowe, 1964). Correlations between the Marlowe Crowne and the MMPI L and K scales are .54, and .40 respectively (Crowne & Marlowe, 1960).

MMPI-2 L (Lie) Scale:

15 items selected to identify persons deliberately avoiding acknowledgement of personal shortcomings or social failings. Includes denial of personal dishonesties, aggression, bad thoughts, and weakness of character. Test-retest at one-week for men .77, for women .81 (Butcher et al, 1989).

MMPI-2 K Scale:

30 items selected to identify persons who displayed significant psychopathology yet had profiles within the normal range, a more subtle measure of "faking good" than the Lie scale. Test-retest (one-week) for men, .84, and women, .81 (Butcher et al, 1989). See Table 3 for complete MMPI-2 reliabilities.

KIRQ:

To review information discussed earlier in this paper, tentative meanings of the 12 KIRQ scales are as follows (Karp, 1995):

- (1) Unusual: Found to correlate with MMPI-2 Paranoia scores for both males and females; high Paranoia scorers tended to rate percepts as more usual than unusual.
- (2) Harmless: Appears to reflect a tendency toward denial.
- (3) Trustworthy: Appears similar to APT and DAPQ measures of trust and other KIRQ measures of denial.
- (4) Gentle: Correlates most highly with KIRQ Harmless, Trustworthy, and Denial. Appears to reflect a tendency toward denial.
- (5) Active: At present the meaning of this scale is unclear. It was originally hypothesized to correlate with MMPI-2 Hypomania, but support was not found for this hypothesis.
- (6) Smart: Related positively to ratings of various positive characteristics and negatively to ratings of various negative characteristics on the APT/BA and DAPQ. As with APT and DAPQ scales, Smart seems associated with projections of smartness and appears to carry an overall positive valence.
- (7) Adventurous: Relates negatively with hostility in males, and shows a positive relationship with Extreme Positive Outlook and with MMPI-2 Hypochondriasis. Further research is needed to clarify the meaning of this scale. KIRQ Adventurous may tap a positive, affirming perspective.
- (8) A Leader: Appears to reflect projections of leadership characteristics.
- (9) Denial: Appears to measure denial or the tendency to offer excessively positive appraisals of self and others.
- (10) Demeaning: Related to APT/BA Demeaning, positively related to MMPI-2 Paranoia for both males and females. High Demeaning scores may signal the presence of paranoid ideation.
- (11) Human Content: It was expected that Human Content would relate to maturity, with children scoring lower than adults but to date no consistent relationships have been found for this scale.
- (12) Animal Content: For women, Animal Content related negatively to four MMPI-2 scales, Hypochondriasis, Hysteria, Paranoia, and Psychasthenia, and to APT/BA

Character Distinction. Additional research is needed to discern and clarify the meaning of this scale.

Again reviewing information previously discussed, Gemert (1995) obtained initial reliability data for the KIRQ, utilizing a test retest method. For a sample of college students, 32 males and 41 females, retest data was collected with an average delay of 11.18 days between test and retest, (sd = 11.58). Complete reliabilities for each KIRQ scale are contained in Table 1.

Rorschach:

Six Rorschach indices were used in the present study. These diagnostic constellations were taken from the Comprehensive System's Structural Summary. Use of these composite indices is in line with Weiner's (1995) comment:

Rorschach variables selected for research should reflect the fact that basic scores or contents of the test, taken individually, rarely have specific or consistent implications for personality functioning. For the most part, meaningful inferences from Rorschach data derive from conjoint examination of several features of the structural summary.

The Rorschach indices are as follows:

1) S-Constellation (Suicide Potential): designed to detect suicidal ideation and to assess risk for suicidal behavior. If 8 or more of the following conditions are present then the index is considered positive: [Color-Shading Blends >0, FV+VF+V+FD>2, Egocentricity Index < .31 or > .44, MOR>3, Zd > +3.5 or Zd < -3.5, es > EA, CF + C > FC, X+% < .70, S > 3, P < 3 or > 8, Pure H < 2, or R < 17].

2) DEPI (Depression Index): designed to assess presence and severity of depression. If five or more of the following conditions are present, the DEPI is considered positive: [FV+VF+V > 0 or FD > 2, Color-Shading Blends > 0 or S > 2, Egocentricity Index > .44 and Fr+rF=0 or Egocentricity Index < .33, Afr. < .46 or Blends < 4, SumShading > FM+m or SumC' > 2, Mor > 2 or 2xAB+Art+Ay > 3, Cop < 2 or [Bt+2xCI+Ge+Ls+2xNa]/R > .24].

3) HVI (Hypervigilance Index): identifies clients exhibiting a hyper-alert, mistrustful attitude. The HVI is considered positive if condition 1 is true and at least 4 other conditions are also true: [Conditions (1): $FT+TF+T=0$, (2) $ZF > 12$, (3) $Zd > +3.5$, (4) $S > 3$, (5) $H+(H)+Hd+(Hd) > 6$, (6) $(H)+(A)+(Hd)+(Ad) > 3$, (7) $H+A:Hd+Ad < 4:1$, (8) $Cg > 3$].

4) SCZI (Schizophrenia Index): assesses presence or absence of schizophrenic symptoms, considered positive if 4 or more of the following conditions are true: [Either $X+% < .61$ and $S-% < .41$ Or $X+% < .50$, $X-% > .29$, Either $FQ- \geq Fqu$ Or $FQ- > Fqo + FQ+$, Sum Level 2 Special Scores > 1 and $FabCom 2 > 0$, Either Raw Sum of 6 Special Scores > 6 Or Weighted Sum of 6 Special Scores > 17 , Either $M- > 1$ Or $X-% > .40$].

5) CDI (Coping Deficit Index): measures discomfort or impoverishment in social relationships, considered positive if 4 or more conditions are true:[$EA < 6$ Or $AdjD < 0$, $Cop < 2$ and $Ag < 2$, Weighted Sum $C < 2.5$ Or $Afr < .46$, $Passive > Active+1$ Or $Pure H < 2$, $Sum T > 1$ Or $Isolate/R > .24$, Or $Food > 0$].

6) OBS (Obsessive Style Index): measures perfectionism, preoccupation with details, indecision, and difficulty expressing emotion. This index is considered positive if: [conditions 1 to 5 are all true, if 2 or more of 1 to 4 are true and $FQ+ > 3$, if 3 or more of 1 to 5 are true and $X+% > .89$, or if $FQ+ > 3$ and $X+% > .89$. Conditions 1 to 5 are as follows: (1) $Dd > 3$, (2) $Zf > 12$, (3) $Zd > +3.0$, (4) $Populars > 7$, (5) $FQ+ > 1$], (Exner, 1991).

Rorschach Inter-Rater Reliability:

In order to obtain a measure of inter-rater reliability for the Rorschach, five scorers scored ten protocols each to yield a total of fifty protocols. Each set of ten was then re-scored by a second scorer, to yield five sets of ten protocols scored by two independent scorers. For those five sets of ten protocols, a version of Cohen's (1960) kappa was calculated for each relevant variable within the set, providing an index of inter-rater agreement for each pair of scorers.

Inter-rater reliability was calculated for all Rorschach indices and their component variables on a subset of 48 subjects, (30 females and 18 males). Two subjects from the original fifty were dropped from the set because of insufficient data.

Reliabilities were calculated using the method described by Fleiss (1971). Fleiss described a method building upon Cohen's (1960) original kappa statistic. Originally, Cohen introduced kappa to measure the degree of agreement between two raters who rate each of a sample of subjects on a nominal scale. Kappa incorporates a correction for the extent of agreement expected by chance alone. Fleiss devised an extension of the kappa statistic to the measurement of agreement among any constant number of raters where there is no connection between the raters judging the various subjects. As pertaining to this study, Fleiss presents a method for calculating kappa when subjects are rated by different pairs of raters. This is precisely the situation of the five pairs of raters scoring Rorschach responses for this study.

For each of the Rorschach indices and their subvariables, judges scored a subject's protocol as either: a) positive, meaning that the specified condition is present or, b) negative, meaning that the specified condition is not present. When a specified number of subvariables are scored positive (that number varying from index to index), then the composite for that index is also scored positive. Judges were considered to be in agreement when they both rated an item positive, or conversely when they both rated an item as negative.

Kappas were calculated for the 6 Rorschach diagnostic indices and all their component variables, resulting in a total of 53 separate reliability statistics. Values range from -0.1 for the Suicide Constellation Composite to 0.947 for Suicide Constellation Variable 12 (R<17). Twenty-two of the fifty-three kappas yielded coefficients of .60 or above. Clearly, these numbers do not represent an ideal level of inter-rater reliability. See Table 2.

A primary reason for this is that for this particular set of variables the possibility of chance agreement is quite high. After removing that possibility for chance agreement, as when calculating the kappa statistic, in many instances the coefficient remaining is quite

small. However, because kappa is considered to be the more rigorous reliability statistic, the author of this study decided to include the obtained kappa reliabilities. In order to provide a more complete picture of inter-rater reliability, per cent agreement was also calculated.

Per cent agreement yields a number indicating the percentage of cases in which the raters agreed out of the total number of observations. Again, the inter-rater data set consisted of 48 subjects' protocols (30 females and 18 males), each rated by two judges, yielding a total of 96 observations. For each of the Rorschach indices and their subvariables, judges scored a subject's protocol as either: a) positive, meaning that the specified condition is present or, b) negative, meaning that the specified condition is not present. When a specified number of subvariables are scored positive (that number varying from index to index), then the composite for that index is also scored positive. Judges were considered to be in agreement when they both rated an item positive, or conversely when they both rated an item as negative.

The following provides an example of how per cent agreement was calculated. One of the conditions making up the Rorschach Coping Deficit Index (CDI) is that the Weighted Sum of Color (WSumC) < 2.5 or the Affective Ratio $< .46$. Both the Weighted Sum of Color and the Affective Ratio are included in the Comprehensive System's Structural Summary generated for each Rorschach protocol. If either WSumC $< .25$ or Affective Ratio $< .46$, the condition is scored positive for that protocol. If two judges each score 48 protocols for this variable, they generate 96 observations. In the case of this variable, for 15 protocols both judges scored the variable negative, yielding 30 observations which were in agreement. For 30 protocols, both judges scored the variable positive, yielding sixty observations which were in agreement. For 3 protocols, one judge rated the variable positive and one rated the variable negative, yielding six observations not in agreement. Therefore out of 96 observations, the judges agreed for ninety of them, yielding a per cent agreement of .9375.

Per cent agreement values range from .6042 for Suicide Constellation Variable 7 (CF +C>FC) to 1.00 for Obsessive Style Index Variables 5 (FQ+>1), 6 (Dd>3, Zf>12,

Zd>+3.0, Pop>7, FQ+>1) , 7(Two or more of the first four variables listed in number 6 are positive and FQ+>3), 8 (3 or more of the five variables listed in number 6 are positive and X+%>.89) , 9 (FQ+ >3 and X+%>.89), and Obsessive Style Index Composite. Per cent agreement values exceed .60 for all 53 variables. 39 of the 53 values exceed .80 per cent agreement. Clearly, such numbers yield a far more favorable picture of inter-rater agreement and a more favorable picture of the overall reliability of the Rorschach data used in the present study. Although reliabilities were calculated for all indices and subvariables, only the composite indices were used for hypothesis testing. Therefore inter-rater reliabilities are reported for those indices only. See Table 2.

Table 2:
Inter-rater Reliabilities for Rorschach Indices, Kappa and Percent Agreement.

<u>VARIABLE</u>	<u>KAPPA</u>	<u>PER CENT AGREE- MENT</u>
Schizophrenia Index	.51	.79
Depression Index	.53	.77
Coping Deficit Index	.52	.77
Obsessive Style Index	.00	1.00
Hypervigilance Index	.38	.90
Suicide Potential	-.10	.83

Nine MMPI-2 clinical scales were correlated with social desirability measures. The one exception was scale 5 (Masculinity-Femininity). Scale 5 was excluded on the grounds that it has not been as thoroughly researched as the other clinical scales, is particularly laden with traditional cultural beliefs about gender roles, and has historically been excluded by clinicians in making clinical diagnoses (Greene, 1991). Descriptive information regarding MMPI-2 clinical scales reiterates information presented earlier in this paper. Those MMPI-2 clinical scales included in the study are as follows:

- 1) Hypochondriasis: 32 items tapping a variety of vague and nonspecific complaints about bodily functioning.
- 2) Depression: 57 items measuring symptomatic depression, which is a general attitude characterized by poor morale, lack of hope in the future, and general dissatisfaction with one's own status.
- 3) Hysteria: 60 items reflecting specific somatic complaints and items that show the client considers him/her self well socialized and adjusted.
- 4) Psychopathic Deviate: 50 items assessing general social maladjustment and the absence of strongly pleasant experiences.
- 6) Paranoia: 40 items tapping interpersonal sensitivity, moral self righteousness and suspiciousness.
- 7) Psychasthenia: 48 items designed to assess the neurotic syndrome of psychasthenia, characterized by psychological turmoil, obsessive worry, and an inability to resist specific actions or thoughts regardless of their maladaptive nature.
- 8) Schizophrenia: 78 items assessing bizarre thought processes, peculiar perceptions, social alienation, poor familial relationships, difficulties in concentration and impulse control, and questions of self-worth and self-identity.
- 9) Hypomania: 46 items covering behavioral and cognitive overactivity, grandiosity, egocentricity, and irritability.
- 0) Social Introversion: 69 items; high scores reflect discomfort in social interactions and withdrawal from such interactions wherever possible.

Test-retest reliabilities are provided for both males and females in Table 3. Reliability data were taken from Butcher et al (1989) and may be found in Greene (1991). Retest data were collected one week following the initial administration.

Table 3:
MMPI-2 Clinical and Validity Scales, Test-Retest Reliabilities at One Week, (Butcher, Dahlstrom, Graham, Tellegen & Kaemmer, 1989).

<u>MMPI-2 Scale</u>	<u>Test-Retest Reliability (males)</u>	<u>Test-Retest Reliability (females)</u>
Hypochondriasis	.85	.85
Depression	.75	.77
Hysteria	.72	.76
Psychopathic Deviate	.81	.79
Masculinity-Femininity	.82	.73
Paranoia	.67	.58
Psychasthenia	.89	.88
Schizophrenia	.87	.80
Hypomania	.83	.68
Social Introversion	.92	.91
L Scale	.77	.81
F Scale	.78	.69
K Scale	.84	.81

RESULTS

Statistical Analyses:

To test hypotheses 1 and 2 a series of 9 stepwise multiple regression analyses were performed. There were 3 such analyses of Rorschach indices, each analysis predicting a different social desirability responding (SDR) measure. The same was done for MMPI-2 clinical scales and KIRQ scales respectively, yielding a total of 9 regression analyses. This approach permitted comparisons of how Rorschach, MMPI-2, or KIRQ measures might differentially predict SDR.

In addition, all measures of the present study were intercorrelated to identify specific scales that were higher or lower in their relationship to SDR measures.

Hypothesis 1:

It was hypothesized that no weighted combination of Rorschach indices nor of KIRQ scales, generated through multiple regression analysis, would relate significantly to any of the three SDR measures.

Three out of six regression analyses supported this hypothesis, as did the majority of correlations conducted on individual variables.

Rorschach and Marlowe-Crowne:

Forward stepwise regression analysis was conducted using Rorschach indices as the independent variable and the Marlowe-Crowne as the dependent variable. One-hundred-three subjects were included (85 females and 18 males, mean age = 21.56 years). Analysis yielded an R of .21, an R of .04, $F(2,100) = 2.22$, $p = n.s.$ Results were not significant. No individual correlation performed between the Marlowe-Crowne and

individual Rorschach indices proved statistically significant. The above findings support hypothesis one.

Rorschach and K Scale:

Forward stepwise regression was conducted again using Rorschach indices as the independent variable and the MMPI-2 K scale as the dependent variable. One-hundred-three subjects were included (85 females and 18 males, mean age = 21.56 years). Analysis yielded an R of .12, an R^2 of .01, $F(1,101) = 1.40$, $p = n.s.$ Results were not significant, again supporting hypothesis one. No individual correlation performed between Rorschach indices and the K scale was significant.

KIRQ and K Scale:

The third regression analysis which supported hypothesis one used KIRQ scales as the predictor and scores from the MMPI-2 K scale as the dependent variable. One-hundred-three subjects were included (85 females and 18 males, mean age = 21.56 years). Forward stepwise regression yielded an R of .25, R^2 of .06, $F(3,99) = 2.28$, $p = n.s.$ Results were not significant. No individual correlation between KIRQ scales and the MMPI-2 K scale emerged as statistically significant.

Rorschach and L Scale:

Forward stepwise regression using Rorschach indices as the predictor and the MMPI-2 L scale as the dependent variable yielded a statistically significant relationship between measures. One-hundred-three subjects were included, (85 females and 18 males, mean age = 21.56 years). Regression analysis yielded an $R = .30$, $R^2 = .09$, $F(3,99) = 3.23$, $p < .05$. See Table 4. Although this result was statistically significant, it was small, only explaining 9% of the variance in the predicted variable. It is additionally important to note that no single Rorschach index correlated significantly with the MMPI-2 L scale.

KIRQ and Marlowe-Crowne:

Forward stepwise regression was conducted using KIRQ scales as the predictor and the Marlowe-Crowne as the dependent variable. One-hundred-three subjects were included (85 females and 18 males, mean age= 21.56 years). Regression analysis yielded an R of .33, an R of .11, $F(5,97) = 2.37$, $p < .05$, a statistically significant result. See Table 5. The individual correlation between the KIRQ Leader scale and the Marlowe-Crowne was also significant, ($r = .20$, $p < .05$). For a summary of individual correlations between KIRQ scales and SDR measures, see Table 7.

KIRQ and L Scale:

Forward stepwise regression was again conducted using KIRQ scales as the predictor and the MMPI-2 L scale as the dependent variable. One-hundred-three subjects were included, (85 females and 18 males, mean age = 21.56 years). Regression analysis yielded an R of .27, an $R = .07$, $F(2, 100) = 3.89$, $p < .05$, another statistically significant relationship. See Table 6. Individual correlations yielded a significant correlation between the KIRQ Human scale and the L scale ($r = .25$, $p < .01$). See Table 7.

Table 4:

Results of Forward Stepwise Regression, Predictor Variable = Rorschach Indices,
Dependent Variable = MMPI-2 L Scale.

<u>Variable</u>	<u>BETA</u>	<u>St. Err. of BETA</u>	<u>B</u>	<u>St. Err. of B</u>	<u>t (99)</u>	<u>Signif. of t</u>
<u>CDI</u>	-.31	.11	-1.64	.57	-2.86	.01
<u>HVI</u>	.27	.11	1.47	.60	2.45	.02
<u>DEPI</u>	.11	.10	.80	.77	1.03	.30

Table 5:
Results of Forward Stepwise Regression, Predictor Variable = KIRQ Scales, Dependent Variable = Marlowe-Crowne

<u>Variable</u>	<u>BETA</u>	<u>St. Err. of BETA</u>	<u>B</u>	<u>St. Err. of B</u>	<u>t(97)</u>	<u>Signif. of t</u>
<u>Leader</u>	.16	.11	.01	.01	1.45	.15
<u>Human</u>	.13	.10	.05	.04	1.32	.19
<u>Unusual</u>	-.16	.11	-.01	.01	-1.55	.12
<u>Active</u>	.11	.10	.01	.01	1.12	.27
<u>Denial</u>	.13	.12	.05	.05	1.09	.28

Table 6:
Results of Forward Stepwise Regression, Predictor Variable = KIRQ Scales, Dependent
Variable = MMPI-2 L Scale

<u>Variable</u>	<u>BETA</u>	<u>St Err.</u> <u>of Beta</u>	<u>B</u>	<u>St Err.</u> <u>of B</u>	<u>t(100)</u>	<u>Signif.</u> <u>of t</u>
<u>Human</u>	.25	.10	.16	.06	2.63	.01
<u>Gentle</u>	.11	.10	.01	.01	1.12	.27

Table 7:

Correlations Between KIRQ Scales and SDR Measures, Intercorrelations Between KIRQ Scales, (N = 103).

	<u>Crowne</u>	<u>L</u>	<u>K</u>	<u>Unusual</u>	<u>Harmless</u>	<u>Trust- worthy</u>
<u>Crowne</u>	1.00	.40**	.34**	-.14	-.01	.05
<u>L</u>	.40	1.00	.36**	-.07	-.01	.10
<u>K</u>	.34**	.36**	1.00	.05	.19	.15
<u>Unusual</u>	-.14	-.07	.07	1.00	.36**	.33**
<u>Harmless</u>	-.01	-.01	.19	.36**	1.00	.61**
<u>Trustworthy</u>	.05	.10	.15	.33**	.61**	1.00
<u>Gentle</u>	.00	.09	.14	.26**	.70**	.57**
<u>Active</u>	.14	-.05	.10	-.03	.01	-.06
<u>Smart</u>	.15	-.05	.09	.14	.09	.26**
<u>Adventurous</u>	.18	-.07	.08	.07	-.02	.11
<u>A Leader</u>	.20	-.13	-.01	.07	.05	.18
<u>Denial</u>	.14	.01	.01	.35**	.42	.52**
<u>Demearing</u>	.02	.01	-.18	-.28**	-.34**	-.28**
<u>Human Cont.</u>	.15	.25**	.10	-.21*	-.15	.06
<u>Animal Cont.</u>	-.09	-.14	-.12	.00	-.17	-.20*

* $p < .05$. ** $p < .01$.

Table 7:

Correlations Between KIRQ Scales and SDR Measures, Intercorrelations Between KIRQ Scales, (N = 103), cont.

	<u>Gentle</u>	<u>Active</u>	<u>Smart</u>	<u>Adventurous</u>	<u>A Leader</u>
<u>Crowne</u>	.00	.14	.15	.18	.20*
<u>L</u>	.09	-.05	-.05	-.07	-.13
<u>K</u>	.14	.10	.09	.08	-.01
<u>Unusual</u>	.26**	-.03	.14	.07	.07
<u>Harmless</u>	.70**	.01	.09	-.02	.05
<u>Trustworthy</u>	.57**	-.06	.26**	.11	.18
<u>Gentle</u>	1.00	-.28**	.13	-.12	-.05
<u>Active</u>	-.28**	1.00	.06	.36**	.13
<u>Smart</u>	.13	.06	1.00	.36**	.50**
<u>Adventurous</u>	-.12	.36**	.36**	1.00	.48**
<u>A Leader</u>	.05	.13	.50**	.48**	1.00
<u>Denial</u>	.39**	-.01	.45**	.35**	.45**
<u>Demearing</u>	-.26**	-.16	-.02	-.07	.07
<u>Human Cont.</u>	-.07	.06	.01	.05	-.16
<u>Animal Cont.</u>	-.13	.06	-.10	-.20**	-.09

*p<.05. **p<.01.

Table 7:

Correlations Between KIRQ Scales and SDR Measures, Intercorrelations Between KIRQ Scales, (N = 103), cont.

	<u>Denial</u>	<u>Demearing</u>	<u>Human Content</u>	<u>Animal Content</u>
<u>Crowne</u>	.14	.02	.15	-.09
<u>L</u>	.01	.01	.25**	-.14
<u>K</u>	.01	-.18	.10	-.12
<u>Unusual</u>	.35**	-.28**	-.21*	.00
<u>Harmless</u>	.42**	-.34**	-.15	-.17
<u>Trustworthy</u>	.52**	-.28**	.06	-.20*
<u>Gentle</u>	.05	-.26**	-.07	-.13
<u>Active</u>	-.01	-.16	.06	.06
<u>Smart</u>	.45**	-.02	.01	-.10
<u>Adventurous</u>	.35**	-.07	.05	-.20*
<u>A Leader</u>	.45**	.07	-.16	-.09
<u>Denial</u>	1.00	.33**	.01	-.26**
<u>Demearing</u>	.33**	1.00	.06	-.02
<u>Human Cont.</u>	.01	.06	1.00	-.40**
<u>Animal Cont.</u>	-.26**	-.02	-.40**	1.00

* $p < .05$. ** $p < .01$.

Hypothesis Two:

It was hypothesized that a weighted combination of MMPI-2 scales, generated through multiple regression analysis, would relate significantly to each SDR measure.

All three regression analyses conducted testing hypothesis two yielded results in the expected direction. In each of the three regression analyses, one-hundred-three subjects were included, (85 females and 18 males, mean age = 21.56 years). Analyses were conducted on one-hundred-three subjects (instead of the proposed 150), because, as already stated, of the roughly one-hundred-fifty Rorschach and KIRQ protocols administered, many were unusable for a variety of reasons.

Males and females were combined in order to achieve a sufficiently large N. Since males and females were combined and gender differences are known to occur with the MMPI-2, MMPI-2 T-scores were used rather than uncorrected raw scores as originally planned. MMPI-2 T-scores take into consideration gender differences and yield equivalent values for males and females. However, MMPI-2 T-scores also contain K-correction. It is important to note that this may have compromised analyses. Of particular concern are those analyses involving the K scale, considering the overlap which exists between MMPI-2 clinical scales and the K scale. Overlapping items and the possible consequences of such overlap are identified and discussed further on in this paper.

MMPI-2 Clinical Scales and Marlowe-Crowne:

Forward stepwise regression was conducted using MMPI-2 clinical scales as the independent variable and the Marlowe-Crowne as the dependent variable. Results are as follows: $R=.36$, $R^2=.13$, $F(4,98) =3.54$, $p <.01$, indicating a significant predictive relationship between the measures. See Table 8. No individual correlation between the Marlowe-Crowne and MMPI-2 clinical scales reached statistical significance.

MMPI-2 Clinical Scales and L Scale:

Regression analysis predicting the MMPI-2 L scale from MMPI-2 clinical scales yielded a significant result, supporting hypothesis two. Results were as follows: $R=.39$,

$R = .15$, $F(6,96) = 2.79$, $p < .05$. See Table 9. Individual correlation between MMPI-2 scale 9 (Hypomania) and the L scale yielded an $r = -.20$, $p < .05$. See Table 11. No other MMPI-2 clinical scale demonstrated a statistically significant relationship with the L scale.

MMPI-2 Clinical Scales and K Scale:

Forward stepwise regression predicting the MMPI-2 K scale from the MMPI-2 clinical scales yielded a significant relationship. Analysis yielded an $R = .63$, and an $R = .40$, $F(6,96) = 10.80$, $p < .001$. See Table 10.

While this last finding was in the predicted direction, it showed a very strong relationship between the predictor and the dependent variables. This was in part an artifact of the K scale itself being part of the MMPI-2, and the existence of overlapping variables. MMPI-2 scale 0 (Introversion) and scale 9 (Hypomania) were the best predictors of K. With regard to overlapping items between the K scale and scale 0 (Social Introversion), those scales share 9 items (110, 127, 158, 167, 243, 267, 284, 338, 348). This represents 13% of scale 0's 69 items, items which are also included in the K scale. The K scale and scale 9 (Hypomania) share 5 items (122, 136, 158, 167, 243), representing 11% of scale 9's 46 items. For a complete listing of overlapping items for MMPI-2 scales included in analyses, see Table 12.

With regard to individual correlations performed between MMPI-2 clinical scales and the MMPI-2 K scale, several emerged as statistically significant: MMPI-2 scale 3 (Hysteria) and K, ($r = .20$, $p < .05$), MMPI-2 scale 8 (Schizophrenia) and K, ($r = -.21$, $p < .05$), MMPI-2 scale 9 (Hypomania) and K, ($r = -.22$, $p < .05$), and MMPI-2 scale 0 (Social Introversion) and K, ($r = -.45$, $p < .01$). As was mentioned above, both scale 9 and scale 0 share a substantial number of items with the K scale and that overlap contributes to the statistically significant relationships between those clinical scales and the K scale. See Table 11 for summary.

Because of the substantial overlap between MMPI-2 clinical scales and the K scale, correlations obtained in these analyses should be regarded with caution and cannot

be interpreted as indicating pure relationships between a specific clinical construct and an SDR measure. This issue is addressed further in the Discussion Section.

Table 8:
Results of Forward Stepwise Regression, Predictor Variable = MMPI-2 Clinical Scales,
Dependent Variable = Marlowe-Crowne

<u>Variable</u>	<u>BETA</u>	<u>St. Err.</u> <u>of BETA</u>	<u>B</u>	<u>St. Err.</u> <u>of B</u>	<u>t(98)</u>	<u>Signif.</u> <u>of t</u>
<u>MMPI8</u>	-.15	.14	-.06	.06	-1.10	.28
<u>MMPI1</u>	.31	.11	.18	.07	2.82	.01
<u>MMPI4</u>	-.20	.13	-.10	.07	-1.54	.12
<u>MMPI0</u>	-.14	.10	-.08	.05	-1.40	.15

Table 9:
Results of Forward Stepwise Regression, Predictor Variable = MMPI-2 Clinical Scales,
Dependent Variable = MMPI-2 L Scale

<u>Variable</u>	<u>BETA</u>	<u>St. Err.</u> <u>of BETA</u>	<u>B</u>	<u>St. Err.</u> <u>of B</u>	<u>t(96)</u>	<u>Signif.</u> <u>of t</u>
<u>MMPI9</u>	-.14	.11	-.12	.10	-1.29	.20
<u>MMPI1</u>	.30	.11	.30	.11	2.63	.01
<u>MMPI4</u>	-.17	.13	-.14	.11	-1.28	.20
<u>MMPI6</u>	.29	.14	.20	.10	2.10	.04
<u>MMPI8</u>	-.22	.19	-.15	.13	-1.16	.25
<u>MMPI7</u>	-.15	.15	-.13	.12	-1.01	.32

Table 10:

Results of Forward Stepwise Regression, Predictor Variable = MMPI-2 Clinical Scales,
Dependent Variable = MMPI-2 K Scale

<u>Variable</u>	<u>BETA</u>	<u>St. Err.</u> <u>of BETA</u>	<u>B</u>	<u>St. Err.</u> <u>of B</u>	<u>t(96)</u>	<u>Signif.</u> <u>of t</u>
<u>MMPI0</u>	-.55	.10	-.49	.09	-5.56	.00
<u>MMPI9</u>	-.53	.10	-.45	.08	-5.42	.00
<u>MMPI1</u>	.18	.10	.18	.10	1.81	.07
<u>MMPI4</u>	.15	.10	.12	.08	1.47	.14
<u>MMPI2</u>	-.24	.13	-.20	.10	-1.91	.06
<u>MMPI7</u>	.14	.13	.11	.10	1.12	.26

Table 11:

Correlations between MMPI-2 and SDR measures, Intercorrelations between MMPI-2 measures, (N = 103)

	<u>Crowne</u>	<u>L Scale</u>	<u>K Scale</u>	<u>Hypochon-</u> <u>driasis</u>	<u>Depression</u>	<u>Hysteria</u>
<u>Crowne</u>	1.00	.40**	.34**	.14	-.02	.08
<u>L</u>	.40**	1.00	.36**	.13	.13	.12
<u>K</u>	.34**	.36**	1.00	.09	-.17	.20*
<u>Hypochondriasis</u>	.14	.13	.09	1.00	.48**	.76**
<u>Depression</u>	-.02	.13	-.17	.48**	1.00	.44**
<u>Hysteria</u>	.08	.12	.20*	.76**	.44**	1.00
<u>Psychopathic</u> <u>Deviate</u>	-.17	-.15	.04	.46**	.39**	.48**
<u>Paranoia</u>	-.13	.03	-.15	.36**	.48**	.39**
<u>Psychasthenia</u>	-.09	-.09	-.15	.50**	.60**	.37**
<u>Schizophrenia</u>	-.18	-.16	-.21*	.46**	.37**	.40**
<u>Hypomania</u>	-.03	-.20*	-.22*	.15	-.24*	.00
<u>Social Introv.</u>	-.16	.07	-.45**	.06	.50**	-.10

*p<.05. **p<.01.

Table 11:

Correlations between MMPI-2 and SDR measures, Intercorrelations between MMPI-2 measures, (N = 103), cont.

	<u>Psychopathic Deviate</u>	<u>Para- noia</u>	<u>Psychas- thenia</u>	<u>Schizo- phrenia</u>	<u>Hypo- mania</u>	<u>Social Introv.</u>
<u>Crowne</u>	-.17	-.13	-.09	-.18	-.03	-.16
<u>L</u>	-.15	.03	-.09	-.16	-.20*	.07
<u>K</u>	.04	-.15	-.15	-.21*	-.22*	-.45**
<u>Hypochondriasis</u>	.46**	.36**	.50**	.46**	.15	.06
<u>Depression</u>	.39**	.48**	.60**	.37**	-.24	.50**
<u>Hysteria</u>	.48**	.39**	.37**	.40**	.00	-.10
<u>Psychopathic Deviate</u>	1.00	.50**	.53**	.68**	.27**	.05
<u>Paranoia</u>	.50**	1.00	.64**	.69**	.24*	.24*
<u>Psychasthenia</u>	.53**	.64**	1.00	.72**	.21*	.37**
<u>Schizophrenia</u>	.68**	.69**	.72**	1.00	.45**	.22*
<u>Hypomania</u>	.27**	.24*	.21*	.45**	1.00	-.29**
<u>Social Introv.</u>	.05	.24*	.37**	.22*	-.29*	1.00

*p<.05. **p<.01.

Table 12:
Item Overlap, Percentage of Overlapping Items for MMPI-2 Clinical Scales with L Scale,
K Scale.

<u>CLINICAL SCALE</u>	<u>L Scale</u>	<u>% items shared</u> <u>w/L Scale</u>	<u>K Scale</u>	<u>% items shared</u> <u>w/ K Scale</u>
1: Hs (32 items)	0	.00	0	.00
2: D (57 items)	2	.04	8	.14
4: Pd (50 items)	0	.00	8	.16
6: Pa (40 items)	1	.03	2	.05
7: Pt (48 items)	1	.02	2	.04
8: Sc (78 items)	1	.01	1	.01
9: Ma (46 items)	2	.04	5	.07
0: Si (69 items)	0	.00	9	.13

Other Significant Correlations:

Individual correlations performed between SDR measures revealed strong positive relationships between all measures: Marlowe-Crowne and MMPI-2 L scale ($r = .40, p < .01$), MMPI-2 L scale and MMPI-2 K scale ($r = .36, p < .01$), Marlowe-Crowne and MMPI-2 K scale ($r = .34, p < .01$). See Table 11 for summary.

Hypothesis 3:

It was hypothesized that (where possible) the current study's findings would yield confirmatory data supporting Gemert's initial reliability and validity data.

Gemert's (1995) initial validity data found significant relationships between several KIRQ variables and MMPI-2 scales. Although correlations between all KIRQ scales and all MMPI-2 clinical scales were calculated for the current study, only those correlations that reached statistical significance will be discussed.

Gemert found positive but nonsignificant correlations between KIRQ Smart and MMPI-2 scale 1 (Hypochondriasis). The current study's findings show a significant correlation, ($r = .26, p < .01$). A similar pattern emerged for Smart and MMPI-2 scale 6 (Paranoia), scale 7 (Psychasthenia), and scale 8 (Schizophrenia), respectively. In each case both Gemert's data and the current study's data showed positive relationships but only the current study's correlations reached statistical significance, (scale 6: $r = .20, p < .05$, scale 7: $r = .34, p < .01$, scale 8: $r = .22, p < .05$).

Gemert found a correlation between KIRQ Adventurous and MMPI-2 Hypochondriasis for Males ($r = .22, p < .05$). The current study's data, using a mixed sample ($N = 103$, 18 males and 85 females) yielded a similar correlation ($r = .24, p < .05$). Gemert found a correlation for Females ($r = .14, p < .05$) between KIRQ Leader and MMPI-2 scale 9 (Hypomania). This finding was replicated with the mixed sample for the current study, ($r = .24, p < .05$).

Gemert found no significant correlation between KIRQ Human and MMPI-2 scale 2 (Depression) for either males or females. However a positive finding emerged for the current mixed sample, ($r = .21, p < .05$). Finally, one correlation emerged in the current study

which differs from Gemert's earlier finding. For KIRQ Leader and MMPI-2 scale 7 (Psychasthenia) Gemert obtained mixed but nonsignificant results. For males, the correlation was nonsignificant but indicated a negative trend ($r = -.12$, $p=n.s.$). For females, results were also nonsignificant but in a positive direction ($r = .07$, $p=n.s.$). The current study obtained a significant positive correlation with a mixed sample, ($r = .24$, $p<.05$). This finding is not altogether surprising considering the greater percentage of females included in the study.

Some Gemert findings were not replicated. These include significant positive correlations between KIRQ Unusual and MMPI-2 scale 6 (Paranoia), KIRQ Demeaning and MMPI-2 scale 6 (Paranoia), and negative correlations between KIRQ Animal with 4 MMPI-2 Clinical scales: 1 (Hypochondriasis), 3 (Hysteria), 6 (Paranoia), and 7 (Psychasthenia). While Gemert found all of these relationships to be statistically significant, they did not appear significant in the current set of analyses. For a complete summary of KIRQ / MMPI-2 correlations, see Table 13.

Table 13 :
Correlations between KIRQ Scales and MMPI-2 Clinical Scales

	<u>Hypochon</u> <u>-driasis</u>	<u>Depression</u>	<u>Hysteria</u>	<u>Psychopathic</u> <u>Deviate</u>	<u>Paranoia</u>
<u>Unusual</u>	.00	-.05	.04	-.06	.05
<u>Harmless</u>	-.07	-.09	-.02	-.16	-.14
<u>Trustworthy</u>	.11	.01	.18	-.02	.05
<u>Gentle</u>	.09	.09	.12	.01	.06
<u>Active</u>	-.05	-.16	.07	.05	.04
<u>Smart</u>	.26**	.15	.17	.16	.20
<u>Adventurous</u>	.24*	-.07	.15	-.01	.11
<u>A Leader</u>	.14	-.08	.07	.02	.10
<u>Denial</u>	.17	.05	.17	.00	.19
<u>Demeaning</u>	.04	.03	.02	.09	.08
<u>Human Cont.</u>	-.01	.21*	.04	.07	.16
<u>Animal Cont.</u>	-.02	-.02	.00	.09	.00

*p<.05. **p<.01.

Table 13 :
Correlations between KIRQ Scales and MMPI-2 Clinical Scales

	<u>Psychas- -thenia</u>	<u>Schizo- phrenia</u>	<u>Hypo- mania</u>	<u>Social Introv.</u>
<u>Unusual</u>	-.03	.01	.04	-.08
<u>Harmless</u>	-.14	-.19	-.08	-.18
<u>Trustworthy</u>	-.01	-.01	-.09	-.07
<u>Gentle</u>	.01	-.04	-.16	-.05
<u>Active</u>	-.01	.01	.14	-.02
<u>Smart</u>	.34**	.22*	.02	.04
<u>Adventurous</u>	.18	.13	.16	-.09
<u>A Leader</u>	.24*	.19	.24*	-.01
<u>Denial</u>	.11	.13	.08	-.07
<u>Demeaning</u>	.00	.11	.12	-.02
<u>Human Cont.</u>	.05	.04	-.06	.04
<u>Animal Cont.</u>	.05	.05	.06	.10

* $p < .05$. ** $p < .01$.

Finally, the current analyses generated correlations between Rorschach indices and KIRQ scales, comparisons that had not been made previously. Overall, the majority of correlations, (68 of 72), were nonsignificant and demonstrated no discernible relationship between KIRQ scales and Rorschach diagnostic indices. Four relationships emerged as significant. KIRQ Trust correlated negatively with the Rorschach Schizophrenia Index, ($r=-.22$, $p<.05$). KIRQ Demeaning correlated positively with the Rorschach Schizophrenia Index, ($r=.26$, $p<.01$). KIRQ Human correlated negatively with the Rorschach Depression Index, ($r=-.27$, $p<.01$). And finally KIRQ Human correlated negatively with the Rorschach Coping Deficit Index, ($r=-.30$, $p<.05$). See Table 14 for summary.

Table 14:
Correlations between KIRQ Scales and Rorschach Indices.

	<u>Suicide</u> <u>Potential</u>	<u>Depression</u> <u>Index</u>	<u>Hypervi</u> <u>-gilance</u> <u>Index</u>	<u>Schizophrenia</u> <u>Index</u>	<u>Coping</u> <u>Deficit</u> <u>Index</u>	<u>Obsess.</u> <u>Style</u> <u>Index</u>
<u>Unusual</u>	-.06	.08	.00	-.26**	-.06	-.04
<u>Harmless</u>	.03	.15	-.06	-.16	-.04	.02
<u>Trustworthy</u>	.00	.14	-.13	-.22*	-.14	-.04
<u>Gentle</u>	.03	.10	-.12	-.13	-.14	-.02
<u>Active</u>	.02	-.17	.08	-.06	.03	.06
<u>Smart</u>	.04	.09	-.18	-.14	-.05	-.08
<u>Adventurous</u>	-.03	.04	-.08	-.17	-.10	-.07
<u>A Leader</u>	.10	.19	-.18	-.09	-.02	-.02
<u>Denial</u>	.08	.08	-.11	-.08	-.02	.05
<u>Demeaning</u>	-.06	-.18	.06	.26**	.13	.11
<u>Human Cont.</u>	-.13	-.27**	.13	.12	-.30**	.03
<u>Animal Cont.</u>	-.05	.04	.00	.09	.11	-.14

*p<.05. **p<.01.

DISCUSSION

Relevance of Results to Hypotheses:

In general, results support the study's experimental hypotheses. With regard to hypothesis one, (No weighted combination of Rorschach indices nor of KIRQ scales would relate significantly to any social desirability responding [SDR] measure), results showed no relationship between any of the six Rorschach indices and the Marlowe-Crowne. This includes both stepwise regression analyses and individual correlations between each Rorschach index and the Marlowe-Crowne.

Additional support for this assertion exists in the non-significant findings resulting from analysis of the relationship between Rorschach indices and the MMPI-2 K scale. Again, neither regression nor individual correlations yielded evidence of any statistically significant relationship. Therefore, these findings support the assertion that the Rorschach Inkblot Test is free from SDR bias as measured by the Marlowe-Crowne and MMPI-2 K scale.

Analysis of the relationship between the Rorschach and the MMPI-2 L scale yielded mixed findings. Stepwise regression yielded an $R = .30$ and an $R = .09$, significant at the $p < .05$ level. This accounts for 9% of variance in the L scale, explained by its relationship with the Rorschach. While such a correlation reaches statistical significance, it is not indicative of a profoundly meaningful relationship. Because no individual correlation between the six Rorschach indices and the MMPI-2 L scale reached statistical significance, the relationship between the Rorschach and the MMPI-2 L scale appears to be a modest one.

With regard to Paulhus' self-deception/impression management model, the finding of no relationship between the Rorschach and the K Scale supports the idea of the Rorschach's freedom from self-deceptive bias. Both SDR factors (self-deception and impression management) are measured by the Marlowe Crowne. Therefore, as evidenced by no significant relationship between the Rorschach and the Marlowe-Crowne, we can interpret this finding as demonstrating the Rorschach's freedom from both types of SDR bias, as measured by that instrument. The finding of a statistically significant relationship between the Rorschach and the MMPI-2 L scale is less clearcut, suggesting that a modest relationship may exist between those measures. Therefore, if the Rorschach does have a degree of vulnerability to SDR bias, it is most likely to be in the area of impression management as measured by the MMPI-2 L scale.

With regard to the second half of hypothesis one, stating that no relationship would be found between any KIRQ scales and any SDR measure, findings were mixed. Stepwise regression using KIRQ scales as the predictor and the MMPI-2 K scale as the dependent variable yielded no significant relationship between the two measures. No individual correlation between any of the KIRQ scales and the K scale achieved statistical significance. Therefore, as measured by the MMPI-2 K scale the KIRQ appears to be free from SDR bias. As with the Rorschach, the finding of no relationship between the KIRQ and the K Scale supports the idea of the KIRQ's freedom from self-deceptive bias.

Regression using KIRQ as the predictor and Marlowe-Crowne as the predicted yielded an $R = .33$, $R = .11$, a statistically significant but modest relationship. The KIRQ scales entered into the regression equation were Leader, Human, Unusual, Active, and Denial. In individual correlations between KIRQ scales and the Marlowe-Crowne only the correlation with the Leader scale emerged as statistically significant. These findings suggest that, with the exception of the Leader scale, the KIRQ is mostly free from SDR bias as measured by the Marlowe-Crowne. The Leader scale does demonstrate some susceptibility to SDR bias and this finding should be taken into consideration if revisions of the KIRQ are made.

Regression using the KIRQ as the predictor and the MMPI-2 L scale as the dependent variable yielded an $R = .27$, and an $R = .07$, $p < .05$. This relationship explains 7% of the variance in the dependent variable, including two KIRQ scales in the regression equation, Human and Gentle. In individual correlations one KIRQ scale, Human, showed a significant correlation with the L scale ($r = .25$, $p < .01$). In individual correlations, eleven of the twelve KIRQ scales showed no relationship with the L scale. Therefore, as suggested above with respect to the KIRQ Leader scale, the KIRQ Human scale demonstrates susceptibility to SDR bias as measured by the MMPI-2 L scale. This finding should be considered if changes in the KIRQ are made. If the KIRQ is vulnerable to SDR bias it appears to be in the area of impression management as measured by the L scale. This is similar to findings with the Rorschach.

The majority of findings suggest that few Rorschach indices or KIRQ scales bear any significant relationship to SDR measures. Of sixty comparisons performed to test hypothesis one, 55 findings supported the hypothesis of no relationship. Of those findings that are statistically significant, the relationships are small, small enough that in some cases the purported relationship could also be due to chance. However, for those KIRQ scales that demonstrated susceptibility to SDR bias in regression analysis and in individual correlations, it is recommended that those findings be considered when interpreting KIRQ data or revising the actual KIRQ scales.

Hypothesis Two:

With regard to hypothesis two, stating that a weighted combination of MMPI-2 clinical scales would relate significantly to each SDR measure, findings consistently emerged in support of the hypothesis. All regression analyses performed using MMPI-2 clinical scales as the predictor and the three SDR measures, respectively, as dependent variables, achieved statistical significance. Additionally, several correlations performed between individual MMPI-2 scales and SDR measures emerged as significant. MMPI-2 scale 9 (Hypomania) and the MMPI-2 L scale correlated significantly, while Hysteria,

Schizophrenia, Hypomania, and Social Introversion all yielded significant relationships with the K scale.

It should be noted that correlations between MMPI-2 clinical scales and SDR measures, while consistently in the hypothesized direction and consistently reaching statistical significance, were not overly large. Therefore interpretation of the present data should proceed with caution and should also involve previously gathered evidence (Heilbrun, 1964; Crowne, 1979) which document a correlation between the MMPI and SDR measures.

Hypothesis Three:

It was hypothesized that (where possible), the current study's findings would yield confirmatory data supporting Gernert's (1992, 1995) initial reliability and validity data. No reliability measures were included with the current set of analyses, therefore only findings relating to validity will be discussed. All significant correlations between KIRQ scales and MMPI-2 clinical scales will be discussed in relation to Gernert's (1995) findings. However, most correlations between KIRQ scales and MMPI-2 clinical scales were nonsignificant, with only 6 of 108 correlations reaching the $p < .05$ level of significance. This is approximately the level of significance one might expect due to chance alone. The following correlations should be examined with this caveat in mind.

In several instances Gernert (1995) reported positive but nonsignificant findings for correlations between KIRQ scales and MMPI-2 scales. In turn the current study yielded findings in the same direction, but in several cases at the level of statistical significance.

This is the case for KIRQ Smart and MMPI-2 Hypochondriasis, which correlated positively at the ($p < .01$) level. KIRQ Smart is thought to be associated with projections of smartness or intelligence and according to the current findings may also be related to vague concerns about bodily functioning. Clearly, because this is the first time a significant finding has emerged, correlations in this direction should be replicated before they are considered reliable.

A similar pattern emerged for Smart and 3 other MMPI-2 scales: Paranoia (6), Psychasthenia (7), and Schizophrenia (8). It is unclear at this point how to interpret these correlations in terms of the KIRQ Smart scale. However, one can say that positive relationships exist between this scale and several measures of serious psychopathology. As stated above, results should be replicated. However, if these results prove reliable, at that time revisions may be indicated in the standard interpretation of the KIRQ Smart scale.

This study found a correlation between KIRQ Adventurous and MMPI-2 Hypochondriasis with a mixed sample, providing support for Gemert's finding with a male sample. A relationship may exist between the tendency to view percepts as having adventurous attributes and vague concerns about bodily function. Similarly, the current mixed sample study found a correlation between KIRQ Leader and MMPI-2 Hypomania, providing support for Gemert's finding with a female sample. High scores on the KIRQ Leader scale appear somewhat related to manic symptomatology. This may be truer for females than for males.

New findings emerging from the current study include a significant positive correlation between KIRQ Human and MMPI-2 Depression. This finding should of course be replicated but may indicate some relationship between depressive symptomatology and the tendency to assign human-like qualities in KIRQ ratings. The current study also found a significant positive relationship between KIRQ Leader and Psychasthenia, where Gemert only found a nonsignificant positive relationship for females and a negative but nonsignificant trend for males. The current finding is not interpretable at this point and any interpretation of the Leader Scale's relationship to obsessive/compulsive symptomatology should only occur after additional validity studies.

Some Gemert findings were not replicated. These include positive correlations between KIRQ Unusual and MMPI-2 scale 6 (Paranoia), KIRQ Demeaning and MMPI-2 scale 6 (Paranoia), and negative correlations between KIRQ Animal with 4 MMPI-2 Clinical scales: 1 (Hypochondriasis), 3 (Hysteria), 6 (Paranoia), and 7 (Psychasthenia). Although Gemert found these relationships to be statistically significant, they did not

emerge as such in the current set of analyses. Because the current study did not provide corroborating evidence of these relationships, additional replication of Gernert's findings is still recommended before those relationships are considered to be reliable.

New findings emerged from correlation of KIRQ scales with Rorschach indices, correlations that had not been performed previously. Overall, the majority of correlations were nonsignificant, with only 5 of 72 correlations reaching the $p < .05$ level of significance. For the most part KIRQ scales did not appear to correlate with the Rorschach Diagnostic Indices. Those correlations that did emerge as significant are discussed next.

A significant negative relationship emerged between KIRQ Trust and the Rorschach Schizophrenia Index. This could tentatively be interpreted as a relationship between perception of others as trustworthy and symptomatology associated with schizophrenia. The negative relationship could mean that as symptomatology increases, perceptions of others as trustworthy decreases and vice versa. Again, findings should be replicated before definitive interpretations are attempted.

KIRQ Demeaning correlated positively with the Rorschach Schizophrenia Index. This could represent a relationship between a tendency to perceive the world in a demeaning fashion and symptomatology associated with schizophrenia. KIRQ Human correlated negatively with the Rorschach Depression Index, possibly representing a decreased tendency to perceive human forms in the presence of depressive symptomatology. However, this finding should be interpreted with extreme caution for it contradicts another finding in the study, namely the positive correlation between KIRQ Human and the MMPI-2 Depression scale. Finally, KIRQ Human correlated negatively with the Rorschach Coping Deficit Index, possibly indicating an inverse relationship between amount of human percepts in Rorschach responses and presence of coping deficits as measured by the Rorschach. It should be reiterated that because these correlations between KIRQ scales and Rorschach Indices are the first of their kind to be performed, all analyses require replication.

Limitations of Study:

Several limitations should be considered when examining and interpreting this study's results. These include the age and gender makeup of the sample, the larger number of females than males included in the sample, and the possible contamination of MMPI-2 data due to use of K corrected scores.

Subjects were taken from a pool of college-age students enrolled in psychology classes at a private university located in Washington, D.C.. Data obtained from these subjects can only be considered generalizable to other young adults of similar SES, educational background, and educational interests, in short, to other young adults with similar socio-cultural backgrounds. Students were given extra credit for participating in data collection, and for that reason it is possible that their responses may differ from subjects who volunteer without any compensatory arrangement.

Subjects in the current sample numbered 85 females and 18 males. The genders were combined into a single sample when numbers proved insufficient to yield adequate single-gender samples. Clearly, females outnumber males more than four to one. Results cannot be considered generalizable for males alone or females alone. Results are weighted heavily toward the responses of female subjects and should always be evaluated with that consideration in mind.

Another limitation to bear in mind regarding the sample of subjects is that of subject attrition. Due to a number of factors already discussed, data collected from roughly one third of subjects was not included in statistical analyses. Reasons for subject attrition included subjects who spoke English as a second language, subjects who failed to give an adequate number of responses on Rorschach protocols, and subjects who failed to complete all measures. This attrition may have biased the resulting sample in that it may have excluded subjects who were less motivated toward external approval, or subjects who were less compliant with task demands. This possible bias in the sample could have impacted results obtained in the study.

Finally, another limitation arises because MMPI-2 T scores, (with K correction), were used vs. the originally proposed uncorrected raw scores, (without K correction). In

order to achieve a sufficiently large N, male and female subjects were combined. Because gender differences are known to occur with the MMPI-2, T-scores, which take those differences into consideration, were used rather than uncorrected raw scores. T-scores take into consideration gender differences and yield equivalent values for males and females. MMPI-2 T-scores also contain K-correction. It is important to note that this may have compromised analyses, particularly those involving the K scale. A significant overlap exists between certain MMPI-2 clinical scales and the K scale. It is inevitable that contamination occurred due to overlapping items shared between scales. This is particularly a matter of concern for correlations between the K-scale and scale 0, (Social Introversion), scale 4, (Psychopathic Deviate), and scale 2, (Depression). All these scales share 13% or more of their items with the K scale. Therefore, strong correlations between these clinical scales and the K scale were inevitable. Although MMPI-2 scales have been shown in the past to correlate significantly with SDR measures, the analyses performed in this study should be replicated, (without K correction), before MMPI-2 results are considered interpretable.

Research Implications:

The research implications of the current study are numerous and basically deal with one of two issues, replication or exploration. First, a list of findings in need of replication is presented below.

Certain validation findings emerged for the first time in this study, specifically between, (a) KIRQ scales and MMPI-2 scales and, (b) KIRQ scales and Rorschach indices. Because some of these relationships had not been measured previously, in order to consider them reliable and not spurious occurrences, experimental effects should be replicated. Additionally, because some of Gernert's (1995) validity findings were not replicated, specifically for KIRQ scales and MMPI-2 clinical scales, full replication of validity analyses is recommended. Were such a replication completed, interpretation and refinement of KIRQ scale definitions could proceed with greater confidence and empirical support than presently exists.

The majority of experimental findings emerged in support of hypothesis one. Because this is the first time such an evaluation of SDR has been performed for the KIRQ, effects should be replicated. At the time of replication, particular attention should be focused upon relationships between, (a) KIRQ scales and Marlowe-Crowne and, (b) KIRQ scales and the MMPI-2 L scale. These two SDR measures demonstrated statistically significant, if modest, relationships with the KIRQ. KIRQ Leader and Human scales also demonstrated significant individual correlations with SDR measures. If relationships between KIRQ Leader and Human scales and SDR measures are replicated, the makeup of those scales (item composition, wording, etc...) should be carefully examined and possibly re-designed. The goal of such revision would be to remove any SDR bias from the KIRQ.

Because statistically significant effects from the present study were modest, replication will guide future interpretation of the KIRQ's susceptibility to SDR bias. If future findings are similar to those of the present study and again find significant relationships between KIRQ scales and SDR measures, important questions about the KIRQ's SDR vulnerability should be addressed. However, if future studies indicate no relationship between KIRQ scales and SDR measures, more support will exist for the present study's initial hypothesis.

Additionally, when findings are replicated for hypothesis one, analyses should be performed separately for males and females. This would allow a proper examination of any gender effects. Initially a goal of the current study, separate male and female samples were not realized due to an insufficient number of subjects. In order to test the generalizability of the current findings, replications should take place with different kinds of subject samples. Such samples might include different age groups, or young adults of similar age with different SES or educational backgrounds. Replications should be performed with clinical populations to determine if their responses would be affected by SDR bias, and to look for significant differences from a non-clinical population.

Although both Rorschach and KIRQ appeared largely free from SDR bias, each demonstrated a modest but statistically significant relationship with the MMPI-2 L scale.

According to Paulhus' self-deception/impression management model and factor analyses using that model, the L scale is thought to tap SDR bias involving impression management. If future studies involving the KIRQ and SDR yield evidence of SDR bias, Paulhus' model and specifically, the concept of an impression management factor, could guide interpretation.

Several MMPI-2 clinical scales correlated significantly with the KIRQ Smart scale. Because there were several of these correlations, all associated with different types of psychiatric symptomatology, clear interpretation of KIRQ Smart is not immediately possible. Analyses should be repeated, using separate male and female samples. At that time if the effects of the current study are replicated, interpretation of the Smart scale and what it measures can proceed with greater confidence.

The current study yielded conflicting findings for the KIRQ Human scale and its relationships with the MMPI-2 Depression scale and with the Rorschach Depression Index respectively. KIRQ Human was found to correlate positively with the MMPI-2 measure of depression and to correlate negatively with the Rorschach measure. In order to clarify the relationship of the KIRQ Human scale to depressive symptomatology, analyses should be repeated and should be widened to include other measures of depressive symptoms such as the Beck Depression Inventory.

Clinical Implications:

With regard to the clinical applications of the KIRQ, findings provide support for this study's initial assertion, namely that the KIRQ provides an assessment measure largely free from SDR bias, building upon the Rorschach while adding objective, standardized data to traditional Rorschach scores.

Findings from this study suggest that the KIRQ is mostly free from SDR bias. In a clinical situation where the clinician has reason to believe that subjects will try to, "fake good", or, "put their best face forward", an instrument largely free from SDR bias would prove highly useful.

An example which comes to mind involves custody evaluations during which parents are court ordered to undergo psychological evaluation as part of a pending decision. In some cases parents, hoping to appear as strong, stable, healthy caregivers, will give invalid MMPI-2 protocols, invalid because of their social desirability response set. Were these same persons given a Rorschach and a KIRQ, personality data without SDR bias would more likely be obtained.

As an objective, paper-and-pencil adjunct to the Rorschach, the KIRQ is potentially useful in a number of other situations, both clinical and forensic, where SDR bias is a concern. As stated in this paper's introduction, if the KIRQ generates the objective data which projective tests have consistently lacked, and retains the freedom from SDR bias which projectives typically offer, it represents a brief, straightforward test incorporating the strengths of both objective and projective data. The findings from the current study support these assertions and suggest that the KIRQ may offer a valuable adjunct measure to the venerable Rorschach Inkblot Test.

APPENDIX A

Correlations: KIRQ v. Anxiety Sensitivity Index, State-Trait Anxiety Inventory, Beck Depression Inventory (Gemert 1995).

	<u>Anxiety Sensitivity Index</u> (males) n=94	<u>Anxiety Sensitivity Index</u> (females) n=102	<u>STAI State Anxiety</u> (males) n=117	<u>STAI State Anxiety</u> (females) n=79
<u>Unusual</u>	-.06	-.02	-.19*	-.02
<u>Harmless</u>	-.22*	-.18	-.01	-.04
<u>Trustworthy</u>	-.28**	-.13	-.10	-.01
<u>Gentle</u>	-.40**	-.09	.02	-.03
<u>Active</u>	.17	.06	.06	.10
<u>Smart</u>	.03	-.13	.07	-.15
<u>Adventurous</u>	.10	-.03	.08	.11
<u>A Leader</u>	-.04	-.12	.09	-.01
<u>Denial</u>	.04	-.16	.09	-.03
<u>Demeaning</u>	.22*	.06	.23*	-.01
<u>Human Content</u>	.09	.14	-.01	.18
<u>Animal Content</u>	-.05	-.11	-.07	-.02

	<u>STAI Trait Anxiety</u> (males) n=117	<u>STAI Trait Anxiety</u> (females) n=79	<u>Beck Depression Inventory</u> (males) n=109	<u>Beck Depression Inventory</u> (females) n=178
<u>Unusual</u>	-.06	-.06	.06	-.15*
<u>Harmless</u>	.01	-.11	.03	-.32**
<u>Trustworthy</u>	-.01	-.03	-.02	-.31**
<u>Gentle</u>	.06	-.01	.00	-.22**
<u>Active</u>	.12	.14	-.08	-.03
<u>Smart</u>	.00	-.19	-.20*	-.11
<u>Adventurous</u>	.22*	.14	-.08	-.01
<u>A Leader</u>	-.01	-.01	-.18*	.05
<u>Denial</u>	.14	-.05	.02	-.18*
<u>Demeaning</u>	.21*	-.03	.13	.11
<u>Human Content</u>	-.12	.12	-.08	.01
<u>Animal Content</u>	-.02	.03	-.06	.04

* $p < .05$. ** $p < .01$.

APPENDIX B

Correlations: KIRQ v. MMPI-2, (Gernert, 1995).

	<u>Unusual</u> (males)	<u>Unusual</u> (females)	<u>Harmless</u> (males)	<u>Harmless</u> (females)	<u>Trust- worthy</u> (males)	<u>Trust- worthy</u> (females)
<u>Hypochondriasis</u>	-.10	.00	-.17	-.03	-.13	-.06
<u>Depression</u>	-.09	-.02	-.08	-.06	.05	-.12
<u>Hysteria</u>	-.13	.01	.02	-.02	-.06	-.05
<u>Psychopathic</u>						
<u>Deviate</u>	-.14	-.06	-.02	-.02	.01	-.08
<u>Masc./Fem.</u>	-.18	-.14*	.02	.14*	-.02	.14*
<u>Paranoia</u>	-.23*	-.18*	.07	-.09	-.03	-.14*
<u>Psychasthenia</u>	-.10	-.02	-.02	-.01	-.03	-.08
<u>Schizophrenia</u>	-.11	-.05	.04	-.09	-.02	-.16*
<u>Hypomania</u>	-.02	.05	.01	-.13	-.11	-.04
<u>Social</u>						
<u>Introversion</u>	-.01	-.06	.05	.00	.04	-.15*
<u>L</u>	-.06	-.05	-.20*	.06	.05	.02
<u>F</u>	-.15	-.06	.04	-.15*	-.07	-.17*
<u>K</u>	-.02	.02	-.03	.14*	.00	.12*
<u>?</u>	-.05	.10	-.04	.02	.03	-.05

	<u>Gentle</u> (males)	<u>Gentle</u> (females)	<u>Active</u> (males)	<u>Active</u> (females)	<u>Smart</u> (males)	<u>Smart</u> (females)
<u>Hypochondriasis</u>	-.19	-.03	.07	.00	.17	.03
<u>Depression</u>	-.17	.00	.11	.02	.06	-.04
<u>Hysteria</u>	-.06	-.01	-.09	.06	.07	-.01
<u>Psychopathic</u>						
<u>Deviate</u>	-.01	-.01	-.10	.18*	.11	-.01
<u>Masc./Fem.</u>	-.01	.17*	-.02	-.03	-.05	.09
<u>Paranoia</u>	-.02	.00	-.06	.08	.07	.01
<u>Psychasthenia</u>	-.13	.00	.04	.07	.07	.00
<u>Schizophrenia</u>	-.08	-.07	-.01	.08	.05	.02
<u>Hypomania</u>	-.09	-.16*	.09	.11	.14	.07
<u>Social</u>						
<u>Introversion</u>	.00	.03	.07	-.07	-.06	-.08
<u>L</u>	-.18	.02	.02	-.11	.17	.06
<u>F</u>	-.05	-.11	-.03	.03	-.02	.00
<u>K</u>	.00	.09	-.10	-.04	.09	.06
<u>?</u>	-.15	-.02	-.03	.02	-.08	-.01

* $p < .05$. ** $p < .01$.

APPENDIX B

Correlations: KIRQ v. MMPI-2, (Gernert, 1995), con't.

	<u>Adven- turous</u> (males)	<u>Adven- turous</u> (females)	<u>A Leader</u> (males)	<u>A Leader</u> (females)	<u>Denial</u> (males)	<u>Denial</u> (females)
<u>Hypochondriasis</u>	.22*	.07	.06	.08	.18	.04
<u>Depression</u>	.13	-.08	-.07	-.07	.06	-.03
<u>Hysteria</u>	.10	.12	-.05	.03	.10	.05
<u>Psychopathic</u>						
<u>Deviate</u>	.03	.05	-.14	.04	.11	.00
<u>Masc./Fem.</u>	.01	-.04	-.01	-.02	.03	.07
<u>Paranoia</u>	.07	.15*	-.05	.15*	.07	.07
<u>Psychasthenia</u>	.13	.03	-.12	.07	.10	.01
<u>Schizophrenia</u>	.10	.06	-.07	.14*	.20*	.00
<u>Hypomania</u>	.11	.11	.08	.14*	.14	.02
<u>Social</u>						
<u>Introversion</u>	.13	-.14*	-.13	-.04	.07	-.10
<u>L</u>	.05	.03	.01	-.05	.02	.05
<u>F</u>	.07	.04	-.09	.09	.11	-.03
<u>K</u>	-.07	.01	-.01	-.02	-.01	.04
<u>?</u>	.00	.01	.08	-.03	-.02	-.02

	<u>Demean ing</u> (males)	<u>Demean ing</u> (females)	<u>Human Content</u> (males)	<u>Human Content</u> (females)	<u>Animal Content</u> (males)	<u>Animal Content</u> (females)
<u>Hypochondriasis</u>	.32**	.05	-.10	.11	.00	-.19**
<u>Depression</u>	.08	.05	.00	.06	-.11	-.13
<u>Hysteria</u>	.19	.00	.05	.07	-.07	-.14*
<u>Psychopathic</u>						
<u>Deviate</u>	.23*	-.01	-.02	.11	.00	-.12
<u>Masc./Fem.</u>	.25**	.01	.04	.12	-.03	.01
<u>Paranoia</u>	.26**	.17**	.01	.19*	-.06	-.18*
<u>Psychasthenia</u>	.20*	.00	.02	.09	-.09	-.16*
<u>Schizophrenia</u>	.34**	.05	.01	.12	-.06	-.13
<u>Hypomania</u>	.21*	.02	-.08	-.08	.00	-.06
<u>Social</u>						
<u>Introversion</u>	.11	.01	-.07	.11	-.02	-.03
<u>L</u>	-.01	.06	-.05	.05	.04	-.04
<u>F</u>	.30**	.14*	-.05	.06	-.03	-.03
<u>K</u>	-.05	-.12	.09	.01	-.05	-.01
<u>?</u>	-.03	-.08	-.07	.00	.06	.06

* $p < .05$. ** $p < .01$.

APPENDIX C

Correlations: KIRQ v. APT (Gemert, 1995)

	<u>Unusual</u> (males)	<u>Unusual</u> (females)	<u>Harmless</u> (males)	<u>Harmless</u> (females)	<u>Trust- worthy</u> (males)	<u>Trust- worthy</u> (females)
<u>APT/Brief Adult</u>						
<u>Host.Feel-Direct</u>	.01	.19*	.01	.09	.09	.23**
<u>Host.Feel-Indirect</u>	-.21	-.02	-.01	-.03	.24*	-.07
<u>Host.Feel-Total</u>	-.17	.02	.00	-.03	.24*	.01
<u>Activity</u>	.12	-.11	-.06	-.08	-.05	-.09
<u>Control</u>	.24*	-.04	-.08	-.03	-.24*	-.15
<u>Hostile Action</u>	-.09	.01	.12	-.09	-.09	-.04
<u>Smart</u>	.15	-.05	-.12	.06	.10	.15
<u>Happy</u>	.01	-.02	.16	.00	.14	.02
<u>Kind</u>	.09	.07	.15	.15	.10	.18*
<u>Leader</u>	.12	-.01	-.02	.02	.10	.04
<u>Good-Looking</u>	.10	.01	.19	.05	.11	.14
<u>Denial</u>	.05	-.06	.38**	.03	.13	.23**
<u>Demearing</u>	.03	.09	.11	.06	.05	.07
<u>Emot. Immaturity</u>	.05	-.01	.38**	.05	.14	.25**
<u>Outlook-Avg</u>	-.02	.13	.02	.09	.13	.16
<u>-Extreme Pos.</u>	.01	.01	.01	.13	.18	.20**
<u>-Extreme Neg.</u>	.08	.01	-.01	.05	.03	-.05
<u>-Extreme Tot.</u>	.06	.02	.01	.14	.20	.19*
<u>Character Distinction</u>	.01	-.01	-.03	-.05	.09	.03

* $p < .05$. ** $p < .01$.

APPENDIX C

Correlations: KIRQ v. APT (Gernert, 1995), con't.

	<u>Gentle</u> (males)	<u>Gentle</u> (females)	<u>Active</u> (males)	<u>Active</u> (females)	<u>Smart</u> (males)	<u>Smart</u> (females)
<u>APT/Brief Adult</u>						
<u>Host.Feel-Direct</u>	.18	.09	-.25*	.08	-.29**	-.01
<u>Host.Feel-Indirect</u>	.14	-.07	-.10	-.05	-.03	-.03
<u>Host.Feel-Total</u>	.20	-.09	-.19	-.06	-.15	-.07
<u>Activity</u>	.00	.03	.05	.08	-.10	-.05
<u>Control</u>	-.08	.07	.05	.01	.00	.15
<u>Hostile Action</u>	-.24*	-.10	.14	.10	.02	-.09
<u>Smart</u>	.20	.16	.07	-.08	.23*	.21**
<u>Happy</u>	.08	.15	-.04	-.09	-.01	-.06
<u>Kind</u>	.14	.10	-.07	-.11	.04	.14
<u>Leader</u>	.03	.05	-.02	-.10	.12	.10
<u>Good-Looking</u>	.15	.02	.03	-.02	-.05	.12
<u>Denial</u>	.17	.07	.03	-.13	.06	.18*
<u>Demeaning</u>	-.06	.05	-.02	.05	-.15	.14
<u>Emot. Immaturity</u>	.14	.09	.02	-.11	.01	.23**
<u>Outlook-Avg</u>	.06	-.02	.13	-.01	.19	.10
<u>-Extreme Pos.</u>	.08	.05	.12	-.06	.16	.24**
<u>-Extreme Neg.</u>	.00	.06	-.22*	.02	-.16	-.08
<u>-Extreme Tot.</u>	.09	.07	.00	-.03	.07	.19*
<u>Character Distinct.</u>	-.02	.03	-.04	-.02	-.15	.04

* $p < .05$. ** $p < .01$.

APPENDIX C

Correlations: KIRQ v. APT (Gernert, 1995), con't.

<u>APT/Brief Adult</u>	<u>Adven- turous</u> (males)	<u>Adven- turous</u> (females)	<u>A Leader</u> (males)	<u>A Leader</u> (females)	<u>Denial</u> (males)	<u>Denial</u> (females)
<u>Host.Feel-Direct</u>	-.18	.14	-.12	-.18*	-.11	.25**
<u>Host.Feel-Indirect</u>	-.23*	-.05	-.13	-.12	-.07	-.10
<u>Host.Feel-Total</u>	-.27*	-.06	-.16	-.20*	-.11	-.07
<u>Activity</u>	.18	.00	.07	-.05	.11	-.11
<u>Control</u>	.18	.13	.00	.15	.03	.02
<u>Hostile Action</u>	-.05	.16	.24*	-.11	.06	.02
<u>Smart</u>	.06	.04	-.01	.24**	.13	.22*
<u>Happy</u>	.03	-.12	-.04	.08	-.04	-.04
<u>Kind</u>	.15	-.16	.02	.26**	.31**	.17
<u>Leader</u>	.01	-.02	.12	.17*	.17	.13
<u>Good-Looking</u>	-.02	.13	.03	.19*	.21	.20*
<u>Denial</u>	.14	-.10	.18	.12	.42**	.39**
<u>Demeaning</u>	-.02	.04	.10	.01	.22*	.34**
<u>Emot. Immaturity</u>	.12	-.08	.20	.12	.45**	.50**
<u>Outlook-Avg</u>	.14	.07	-.07	.25**	-.01	.11
<u>-Extreme Pos.</u>	.24*	-.06	.00	.20*	.16	.27**
<u>-Extreme Neg.</u>	-.03	.00	.18	-.08	.09	.19*
<u>-Extreme Tot.</u>	.20	-.06	.10	.15	.20	.36**
<u>Character Distinct.</u>	.01	.02	.03	-.10	.08	-.03

*p<.05. **p<.01.

APPENDIX C

Correlations: KIRQ v. APT (Gemert, 1995), cont.

<u>APT/Brief Adult</u>	<u>Demean</u> <u>-ing</u> (males)	<u>Demean</u> <u>-ing</u> (females)	<u>Human</u> <u>Content</u> (males)	<u>Human</u> <u>Content</u> (females)	<u>Animal</u> <u>Content</u> (males)	<u>Animal</u> <u>Content</u> (females)
<u>Host.Feel-Direct</u>	.07	-.04	.23*	.06	-.12	.01
<u>Host.Feel-Indirect</u>	-.01	-.01	.14	-.02	-.01	-.05
<u>Host.Feel-Total</u>	.02	-.02	.22*	.00	-.06	-.08
<u>Activity</u>	.06	-.01	-.19	.09	.06	.10
<u>Control</u>	-.03	.02	-.30**	.07	.15	.03
<u>Hostile Action</u>	.08	-.04	.05	.05	-.02	-.11
<u>Smart</u>	-.15	.07	-.01	.08	-.07	-.09
<u>Happy</u>	-.15	-.01	-.15	-.06	.03	.02
<u>Kind</u>	.16	.08	-.12	.06	.06	-.04
<u>Leader</u>	-.09	.04	.06	-.07	-.09	.07
<u>Good-Looking</u>	.01	.06	.02	.01	.11	.08
<u>Denial</u>	.12	.28**	.12	.03	-.09	-.07
<u>Demearing</u>	.20	.21**	-.03	.13	.12	.06
<u>Emot. Immaturity</u>	.18	.35**	.12	.08	-.04	-.04
<u>Outlook-Avg</u>	-.16	-.18*	.00	.04	-.06	.02
<u>-Extreme Pos.</u>	-.12	.03	.03	.07	-.12	-.01
<u>-Extreme Neg.</u>	.10	.18*	.03	-.08	.01	-.02
<u>-Extreme Tot.</u>	-.07	.13	-.02	.02	-.13	-.03
<u>Character Distinct.</u>	.12	.05	-.07	.12	.14	-.23**

*p<.05. **p<.01.

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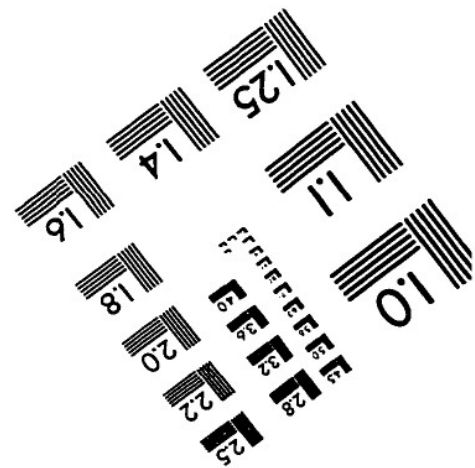
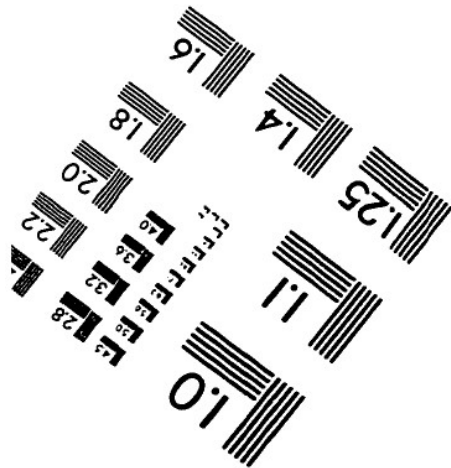
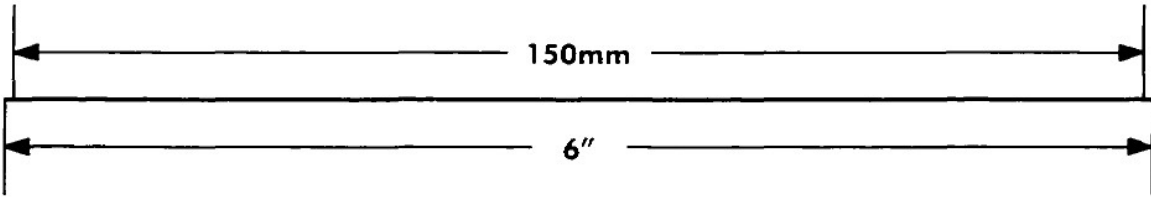
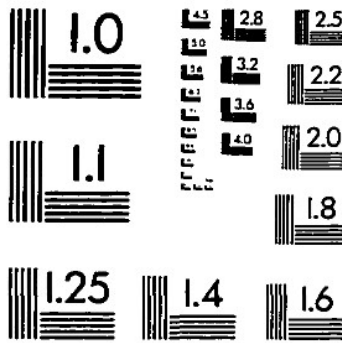
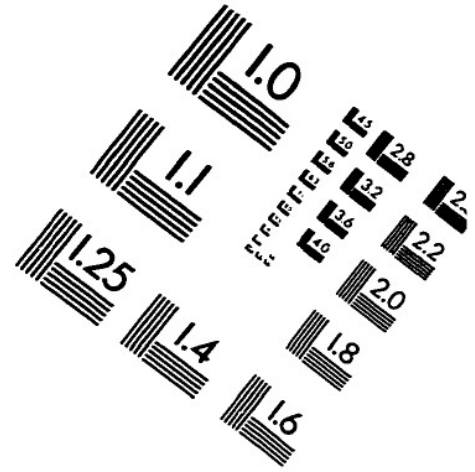
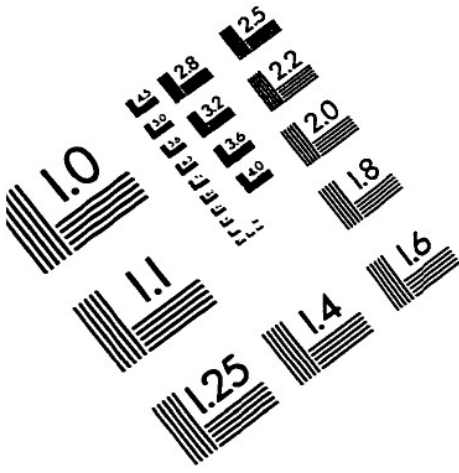
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IMAGE EVALUATION TEST TARGET (QA-3)



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