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**INTERPRETING THE MMPI-2 K SCALE:
SELF-DECEPTION AND IMPRESSION MANAGEMENT REVISITED**

by

Kerry A. Collins

**A Thesis
Submitted to the College of Graduate Studies and Research
through the Department of Psychology
in Partial Fulfillment of the Requirements for
the Degree of Master of Arts at the
University of Windsor**

Windsor, Ontario, Canada

2000

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Abstract

Factor-analytic studies have revealed two underlying content dimensions of socially desirable responding: self-deception and impression management (Nichols & Greene, 1997; Paulhus, 1984, 1986). The K validity scale of the Minnesota Multiphasic Personality Inventory-2 (Butcher et al., 1989) has been associated with the self-deception factor without adequate empirical confirmation. The present study addressed this deficiency by examining the scale within Paulhus's (1984, 1986) two-component model of socially desirable responding. Participants were 712 undergraduate students (174 men, 538 women) from a medium-sized Canadian university who volunteered for partial course credit. As predicted, a two-factor model was found to underlie various measures of socially desirable responding. The MMPI-2 K scale and the Social Desirability Scale (Edwards, 1963) loaded on the self-deception factor, whereas the Impression Management scale (BIDR; Paulhus, 1991), the Eysenck Personality Inventory Lie scale, and the Self-Deceptive Enhancement scale (BIDR; Paulhus, 1991) loaded on the impression management factor. The results and discussion center on the interpretation of the K scale as a measure of self-deception in non-clinical populations.

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TABLE OF CONTENTS

	Page
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	vii
INTRODUCTION	1
General Overview	1
Socially Desirable Responding	1
MMPI K Scale	3
MMPI-2 K Scale	5
Structural Models of Socially Desirable Responding	7
Self-Deception	12
Impression Management	15
K Scale and the Two-Component Model of SDR	17
Present Study	18
METHOD	22
Participants	22
Measures	22
The MMPI-2 K Scale	22
The Self-Deceptive Enhancement Scale	23
The Impression Management Scale	23
The Social Desirability Scale	24
The Lie Scale	24

Demographic Information	24
Procedure	24
RESULTS	25
DISCUSSION	27
REFERENCES	34
APPENDIX A - MMPI-2 K SCALE	46
APPENDIX B - SELF-DECEPTIVE ENHANCEMENT SCALE	48
APPENDIX C - IMPRESSION MANAGEMENT SCALE	50
APPENDIX D - EDWARDS SOCIAL DESIRABILITY SCALE	52
APPENDIX E - LIE SCALE	55
APPENDIX F - DEMOGRAPHIC INFORMATION	57
APPENDIX G - CONSENT FORM	58
APPENDIX H - DEBRIEFING FORM	59
TABLES	60
FIGURE CAPTION	65
FIGURE	66
VITA AUCTORIS	67

LIST OF TABLES

Table 1	SDR Scales: Descriptive Statistics	60
Table 2	Scale Intercorrelations, Communalities, and Exploratory (Oblique Rotated) Factor Loadings	61
Table 3	Exploratory Factor Loadings and Principle Component Loadings Following Oblique and Orthogonal Rotations	62
Table 4	Correlations of MMPI-2 K Scale Items with the Two- Factors and Individual Measures of SDR	63

Interpreting the MMPI-2 K Scale:

Self-Deception and Impression Management Revisited

Psychological assessments are routinely conducted by professionals in medical, occupational, educational, forensic, and research settings to obtain an accurate evaluation of an individual's functioning, primarily through the administration of self-report inventories. However, research has demonstrated these instruments are subject to potential misrepresentations. Individuals may be motivated to lie, "fake bad," or "fake good," thus compromising the validity of the measure (Anastasi & Urbina, 1997). Such response biases involve "a systematic tendency to respond to a range of questionnaire items on some basis other than the specific item content" (Paulhus, 1991, p. 17). Considerable attention has been devoted to investigating the influence of response biases, and special scales have been constructed for this purpose. The K validity scale of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) was originally developed as a subtle measure of a defensive test-taking attitude (Meehl & Hathaway, 1946). However, factor-analytic studies have revealed that defensiveness cannot be subsumed under a single dimension (e.g., Nichols & Greene, 1997). Paulhus (1984, 1986) has identified self-deception and impression management as the two components of socially desirable responding. Researchers have commonly cited the K scale as loading on the self-deception factor without adequate empirical validation. The present study examines the K scale within Paulhus's structural model of socially desirable responding in an attempt to clarify its conceptual meaning.

Socially Desirable Responding

Socially desirable responding (SDR) refers to presenting oneself favorably on self-

report inventories with regards to current social norms and standards (Zerbe & Paulhus, 1987). This response bias has been a prominent concern of researchers since the 1920's, and consequently has been heavily investigated. SDR was originally considered a contaminant in self-report measures, leading to errors in the interpretation of test content. However, Jackson and Messick (1958, p. 244) stated "personal modes for responding should be enhanced and capitalized upon, rather than considered as sources of error to be avoided or minimized." Individual differences in rates of SDR have been described as representing a reliable personality trait or response style (Edwards, 1970; Jackson & Messick, 1958; Paulhus, 1991; Wiggins, 1973). Edwards (1953) first investigated this variable, postulating that it might indicate lack of insight into one's characteristics, self-deception, or an unwillingness to face up to one's limitations.

Special scales have been constructed to measure SDR, employing a variety of methods in the procedure. The Social Desirability Scale was developed by Edwards (1957) based on the agreement of judges ratings regarding the extreme high or low desirability values of MMPI items. Wiggins's Social Desirability Scale (1959) and the Positive Malinger Scale (Mp; Cofer, Chance, & Judson, 1949) were constructed by selecting MMPI items that effectively differentiated respondents' endorsement frequencies under "fake good" and normal conditions. The Other Deception Scale (Nichols & Greene, 1991) was derived by combining items from Wiggins' scale and the Positive Malinger Scale, and then deleting those with the lowest item-total correlation. Several other measures were developed by writing items on a rational basis, including the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), the Self- and Other-Deception Questionnaires (Sackeim & Gur, 1978), and the MMPI Lie scale (Hathaway &

McKinley, 1951). Considerable evidence has indicated that the various SDR measures can be incorporated within a two-factor model. This model will be described, followed by a review of its components and measures that mark the factors.

The MMPI K Scale

Meehl and Hathaway (1946) stated one of the most important defects of personality inventories is their susceptibility to “faking,” that is, the conscious distortion of scores due to individuals’ response tendencies. They further noted the susceptibility of such measures to unconscious self-deception and “role-playing” by the respondent. The K validity scale of the MMPI was originally developed as a subtle and effective index of attempts by respondents to deny psychopathology and present themselves in a favorable light (Meehl & Hathaway, 1946; McKinley, Hathaway, & Meehl, 1948). The scale was constructed by selecting 50 clinical patients (25 men and 25 women) whose scores on the MMPI L validity scale suggested possible response distortion (i.e., T scores ≥ 60), yet displayed profiles in the normal range. The responses of this group on the total MMPI item pool were empirically contrasted to those of the normative reference group, and 22 items were selected with a minimum 30% difference in response rates between the groups. While these items were found to adequately identify defensiveness in a clinical population, the scale tended to underestimate the amount of true psychopathology reported by individuals with severe depression and schizophrenia. To counteract this tendency, eight items were added which were answered in the keyed direction by depressed and schizophrenic patients, but were not selected by normal comparison samples under instructions to “fake” good or bad.

The resulting 30-item scale covers several different content areas for which an

individual can deny problems, including self-control, family and interpersonal relationships. Items include "At times I feel like smashing things," "I have very few quarrels with members of my family," and "People often disappoint me." The K scale was originally intended to be used as a suppressor variable to correct for the effects of response distortion on the clinical scales. McKinley, Hathaway, and Meehl (1948) found that discriminability between the normative and criterion groups improved on five of the clinical scales by adding a proportion of an individual's score on the K scale. Consequently, a K-correction procedure was established for the MMPI for the following five scales: Hypochondriasis (scale 1), Psychopathic Deviate (scale 4), Psychasthenia (scale 7), Schizophrenia (scale 8), and Hypomania (scale 9). The validity of the K scale has been investigated through its application as a correction factor. Investigations in this realm, however, have yielded poor results. The K-correction procedure was found not to improve the diagnostic efficiency among samples of pain patients, military patients, and state hospital patients (Jenkins, 1984, cited in Greene, 1991; Silver & Sines, 1962; Wooten, 1984). Heilbrun (1963) found that only three of the K-corrected scales improved discriminability between normal and maladjusted college students. Other investigators reported the K-correction to reduce the reliability and validity of the five clinical scales in college student samples (Tyler & Michaelis, 1953; Yonge, 1966).

Whether the K scale is an appropriate measure of defensiveness has also been examined without reference to the correction procedure. High scores on the K scale have been associated with lower profile elevations in adult and adolescent psychiatric populations (Dahlstrom, Welsh, & Dahlstrom, 1972). Ries (1966) compared psychiatric inpatients with high (≥ 16) and low (≤ 15) scores on the K scale and found a larger

percent of individuals in the high group were rated as unimproved after 60 days of hospitalization. Furthermore, 7 of the 19 patients in the high K group were rehospitalized within a 12 month period, compared to only 2 of the 25 in the low K group. Empirical literature examining the K scale with non-clinical populations, on the other hand, have revealed mixed conclusions as to its interpretation. Individuals with high scores on the K scale evince good behavioral insight, and were not viewed as defensive by others (Smith, 1959). Wheeler, Little, and Lehner (1951) examined the scale and concluded it should be interpreted as a measure of ego defenses. Other researchers have suggested the scale may be a measure of personality integration, reflecting a healthy positive self-image and consistency in personality organization over time (Gynther & Brilliant, 1968; McCrae et al., 1989; Reis, 1966; Sweetland & Quay, 1953; Yonge, 1966). Research addressing response styles on the MMPI has found large positive correlations between the K scale and Edwards Social Desirability Scale (Edwards, 1957; Wiggins 1964). The interpretation of the K scale as a measure of SDR has generally been retained, despite factor-analytic studies revealing SDR is not a unidimensional construct. Consequently, the meaning of the K scale has not been empirically clarified in spite of the widespread use of the MMPI with non-clinical populations.

The MMPI-2 K Scale

In the 1989 revision of the MMPI, one item from the K scale was modified due to the use of outdated language (Ben-Porath & Butcher, 1989). The K-correction procedure was retained in the MMPI-2, despite limited evidence for its discriminability. A recent study examined the utility of the procedure in a psychiatric inpatient sample and found it did not result in higher correlations with external criteria (Archer, Fontaine, & McCrae,

1998). Other investigators have evaluated the validity of the MMPI-2 K scale (Butcher et al., 1989) through its effectiveness to detect fake-good responding. Bagby et al. (1997) found the K and L scales in combination to be significant predictors of faking-good among undergraduate students and a sample of schizophrenic patients. However, the authors noted other validity indicators were superior or increased the predictive capacity of the two scales. Graham, Watts, and Timbrook (1991) compared the clinical and standard validity scales of the MMPI-2 under honest and fake-good instructions. They found the K scale was reasonably effective in discriminating standard from underreporting profiles among a college student sample. Scores on the scale were significantly higher for participants in the fake-good condition compared to those participants responding honestly. In several other studies utilizing undergraduate students, scores on the K scale significantly increased under fake-good instructions (Austin, 1992; Bagby, Rogers, Buis, & Kalemba, 1994; Cassisi & Workman, 1992). The K scale was also demonstrated to correctly classify 80% of fake-good respondents under both standard and fake-good instructional sets using a cutting T-score of 57 (Baer, Wetter, Nichols, Greene, & Berry, 1995). However, the authors found supplementing the K scale with additional scales (such as the Wiggins Social Desirability Scale) improved its discriminative powers. Thus, whereas research indicates the K scale is susceptible to conscious dissimulation, its original purpose as a subtle measure of defensiveness has not been empirically addressed. This clarification is at the essence of establishing the construct validity for a scale (Anastasi & Urbina, 1997), and its importance cannot be overemphasized given the extensive use of the MMPI-2. The clinical inventory is widely used in North America and around the world in a broad variety of settings. The present study addresses this

deficiency by including the K scale in a factor-analytic study of socially desirable responding.

Structural Models of Socially Desirable Responding

Two distinctions have been made in research addressing the structure of SDR. One approach centers on the content of SDR, differentiating between whether the target of deception is oneself or others. The second distinction focuses on the style of SDR, differentiating the attribution of positive features to oneself from the denial of negative features. Each of these models will be discussed in turn.

Content of SDR. Early factor-analytic studies of response styles revealed the various measures of SDR tended to converge on two general factors of the MMPI, namely, alpha and gamma (Block, 1965; Wiggins, 1964). The alpha factor was thought to indicate a variety of personality characteristics, including anxiety (Welsh, 1965), lack of ego resiliency (Block, 1965), and general maladjustment (Tyler, 1951). Other researchers argued this factor is best conceived as reflecting “social desirability” (Edwards, 1957; Edwards & Diers, 1962; Edwards, Diers, & Walker, 1962). The gamma factor has been referred to as the “lie” factor (Edwards et al., 1962), “dissimulation” factor (Liberty, Lunneborg, & Atkinson, 1964), and “social desirability role-playing” (Wiggins, 1964). Scores on inventories associated with the gamma factor have been demonstrated to increase in the socially desirable direction under special instructions to do so (Boe & Kogan, 1964; Cofer et al., 1949; Walker, 1962; Wiggins, 1959). The gamma factor has further been linked to agreeableness and traditionalism (Wiggins, 1964). Other researchers have made similar content distinctions among measures of SDR, although different labels have been utilized. Damarin and Messick (1965) argued for distinguishing various SDR

measures on the basis of conscious versus unconscious biases in self-regard. The label “propagandistic bias” was used to refer to the conscious, purposive, and systematic distortion aimed at a specific audience. The term “autistic bias” was utilized to describe the unconscious tendency to distort responses to be consistent with self-attitudes. Kusyszyn and Jackson (1968) applied the terms desirability and defensiveness, while Sackeim and Gur (1978) distinguished between self- and other-deception.

The most recent evidence for the two-component model of SDR was provided by Paulhus’ (1984, 1986) series of factor-analytic studies. Various measures of SDR clustered around two factors, best marked by the Self- and Other-Deception Questionnaires (Sackeim & Gur, 1978). The factors were interpreted as self-deception and impression management, consequently these labels will be retained in the present discussion. Self-deception was chosen in reference to the confirmed distortion of high scorers on certain forms of self-information, and refers to positively biased but honestly held self-reports (Paulhus, 1991). The label impression management was utilized “to represent one traditional view of SDR: that some subjects are purposefully tailoring their answers to create the most positive social image” (Paulhus, 1991, p. 21). Paulhus (1984, 1986) has established Edwards (1957) Social Desirability Scale and Block’s (1965) Ego-Resiliency scale to load on the self-deception factor, whereas the Eysenck Personality Inventory Lie scale (Eysenck & Eysenck, 1964) and the MMPI Lie scale (Hathaway & McKinley, 1951) load on the impression management factor. The Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) was demonstrated to load on both factors, although more so on impression management. Paulhus’s two-factor distinction was further supported by Nichols and Greene (1988) in a series of analyses with 11 non-

college samples. They found the self-deception factor was best marked by Edwards (1957) Social Desirability Scale, with loadings averaging .91 across samples. The impression management factor was distinctly marked by Wiggins' (1959) Social Desirability scale and the Positive Malingering Scale (Cofer, Chance, & Judson, 1949), with average loadings of .92 and .85, respectively. In a review of SDR, Paulhus (1991) cites the MMPI K scale (Meehl & Hathaway, 1946) as loading on the self-deception factor. However, this scale has not been included in factor-analytic studies of SDR to date.

Style of SDR. The second line of investigation differentiates attribution (enhancement) from denial in SDR. Attribution responses involve claiming socially desirable characteristics to oneself, while denial responses involve disclaiming that socially undesirable characteristics apply to oneself (Paulhus, 1984). Millham (1974) first made this distinction by partitioning the true- and false-keyed items of the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) into attribution and denial subscales. The two subscales were examined in relation to cheating behaviour, and different behaviour correlates were obtained. However, after balancing the subscales for keying direction these differences disappeared (Ramanaiah & Martin, 1980). The balanced subscales were also found to have approximately similar intercorrelations as the individual scale reliabilities, suggesting the same construct was being tapped. Jacobson, Kellogg, Cause, and Slavin (1977) developed a Social Desirability Inventory explicitly containing attribution and denial subscales. In addressing the reliability of the inventory, the subscale intercorrelations were found to be significantly lower than the correlations of subscales to total scores. The authors concluded the attribution and denial subscales assessed different

constructs, although external validity was not examined. Paulhus (1984) further noted that the subscale intercorrelations had not been stepped up to total test length before the comparison with overall test reliability. After utilizing the Spearman-Brown prophecy formula, the subscale intercorrelations were indeed found to approximate the observed reliability of the whole test, indicating a unidimensional construct. A rational distinction between enhancement and denial in SDR has also been made by assembling both types of statements (Roth, Snyder, & Pace, 1986). A confirmatory factor analysis showed the enhancement and denial items formed distinct factors, and the enhancement factor had higher correlations with several measures of adjustment. In a follow-up study, however, the findings were not replicated (Roth, Harris, & Snyder, 1988).

To verify the superior fit of the self-deception/impression management model of SDR, Paulhus (1984) compared the distinctions using confirmatory factor analyses. The self-deception/impression management model was found to account for more variance than the enhancement/denial model. However, there was some evidence for an interaction between the two models. Therefore, three studies were further designed to examine the models simultaneously (Paulhus & Reid, 1991). The items in the Self-Deception and Impression Management scales of the Balanced Inventory of Desirable Responding (Version 3; Paulhus, 1984, 1986) were partitioned into separate subscales of enhancement and denial. The two components of the Self-Deception scale were found to be relatively independent in a principal component analysis; the enhancement items loaded on a separate factor from the denial items. Consequently, the most recent version of the Self-Deception scale (BIDR, Version 6; Paulhus, 1991) reflects a shift from ego defense to ego enhancement. Both of the Impression Management components loaded on the same factor

in the analyses. The enhancement/denial separation was additionally shown not to be affected by the keying direction of the scales. To further inspect the conceptual distinction between enhancement and denial in self-deception, the components were correlated with several measures of adjustment. The enhancement subscale was positively associated with self-esteem, and negatively associated with social anxiety and personal distress. It also correlated with several cognitive biases, including dogmatic thinking, lack of procrastination, lack of parental conflict, illusion of control, and self-fulfilling prophecy. It was concluded that an exaggerated sense of control and confidence in one's thinking powers underlies the self-deception factor (Paulhus & Reid, 1991).

This structural distinction of SDR has been noted to resolve several issues in the literature (Paulhus, 1991). First, a positive relationship has been found between various measures of SDR and adjustment, while traditional theories have proposed a negative association. It has been demonstrated that only the self-deception component of SDR is strongly associated with adjustment (Linden, Paulhus, & Dobson, 1986; Paulhus & Reid, 1991). Therefore, the relationship between SDR and adjustment depends on the component involved. A second issue clarified is the need to control for SDR when investigating personality variables. Given the long-standing concern that response styles interfere with the accurate assessment of content variables (e.g., Edwards, 1953; McKinley et al., 1948), it has been argued (Norman, 1967, 1990) that removing an index of SDR from personality inventories clarifies the content dimension. However, several studies have shown controlling for SDR actually reduces the predictive validity of content measures (Borkenau & Amelang, 1985; Kozma & Stones, 1988; McCrae et al., 1989). It has become apparent that controlling SDR measures tapping self-deception (e.g.,

Edwards Social Desirability scale) will lower the predictive validity of variables involving a self-deceptive positivity, such as anxiety, self-esteem, perceived control, and well-being (Paulhus, 1991). Thus, self-deception appears intrinsically linked to the content variance of several personality variables and should not be controlled for. On the other hand, the influence of impression management in self-report inventories should be controlled under certain circumstances, such as when motives arise for conscious manipulation (e.g., personnel selection, child-custody settlements). These two forms of SDR will now be examined.

Self-Deception

Self-deception has been conceived as distinctively different from “faking” or “playing-acting” (Edwards, Edwards, & Clark, 1988; Tanaka-Matsumi & Kameoka, 1986; Wiggins, 1964). The various measures of SDR associated with the self-deception factor entail a less conscious attempt to look good to oneself (Paulhus, 1986). Scores on these measures remain consistent across public and anonymous conditions, thus assessing a stable personality characteristic. This conception is consistent with the socioanalytic theory of personality put forth by Hogan and colleagues (Cheek & Hogan, 1983; Hogan, 1983; Mills & Hogan, 1978). Hogan argued responses in self-report inventories are guided by underlying self-images that are unconscious and not situationally contingent. Sackeim and Gur (1978) provided an explicit definition of self-deception, outlining and experimentally testing the following four criteria necessary for confirming the construct exists: (1) the individual holds two contradictory beliefs, (2) the contradictory beliefs are held simultaneously, (3) the individual is not aware that one of the beliefs is held, and (4) a motivated act determines which belief is and which belief is not subject to awareness.

Thus, self-deception involves the unconscious attempts of an individual to avoid perceiving something that would be unpleasant to conscious experience, such as negative feedback. Instances of self-deception occurred when individuals misidentified their own voice on a tape recording as another's, yet demonstrated psychophysiological responses consistent with baseline levels for their own voice (Gur & Sackeim, 1979). Individuals tended to evaluate their own voice more favorably during instances of self-deception than correct identification. Moreover, the occurrence of self-deception on the task correlated positively with individuals' scores on the Self-Deception Questionnaire (Sackeim & Gur, 1978). This scale loads on the self-deception factor of SDR, thus providing further evidence that this tendency can be reliably assessed.

A respondent's motivation for self-deception has been assumed to be the protection of self-beliefs, including the maintenance of self-esteem (Paulhus, 1986). Supporting this claim, high self-deceivers were found to display more of a self-serving bias than low self-deceivers after a failure experience (Paulhus, 1991). The construct of self-deception, however, is apparently complex in the literature. It has been proposed to be relevant for instances of behavioral and attitudinal change based on cognitive dissonance, and reactance theories (Sackeim, 1983). Self-deception has been linked to the psychoanalytic notion of defense mechanisms, defined as a motivated unawareness of one or two conflicting representations of the same target (Paulhus, 1991; Sackeim, 1983; Sackeim & Gur, 1978). Kral and Johnson (1996, p. 77) argued the goal of self-deception "is to draw a preferred interpretation of the facts, thereby preempting a more accurate but painful conclusion." Sackeim (1983) suggested the intention of self-deception was for gaining pleasure, through enhanced drive expression and self-esteem, as well as for

avoiding pain. Such distortive strategies have been thought to play a role in the maintenance of psychological well-being, specifically through the regulation of mood. This notion is consistent with literature suggesting depressed individuals are less susceptible than nondepressed to a number of biases which distort reality in a self-serving fashion (e.g., Alloy & Abramson, 1979; Feather, 1983; Tabachnik et al., 1983). Taylor and Brown (1988) have argued that self-deceivers exhibit pervasive and enduring positive distortions, stemming from the basic motive toward self-enhancement. These positive illusions about the self play a significant role in the maintenance of mental health, as well as in the ability to sustain caring interpersonal relationships and a sense of well-being. Robins and John (1998) related self-deception to the egoist metaphor, stating that people naturally want to like themselves and will therefore adopt cognitive and interpersonal strategies to create a positive self-image. Thus, the concept of self-deception appears to be intrinsically linked to such personality constructs as adjustment, optimism, self-esteem, and general capability (Paulhus, 1991).

Consistent with this conceptualization, measures of self-deception have been associated with several indices of adjustment. The Edwards (1957) Social Desirability Scale correlates negatively with neuroticism, introversion, hostility, anxiety, depression, dependency, and insecurity (Edwards, 1957, 1970; Fernandez-Ballesteros & Zamarron, 1996; Tanaka-Matsumi & Kameoka, 1986). Conversely, this scale correlates positively with measures of ego-resiliency, status, responsibility, cooperativeness, agreeableness, and objectivity (Block, 1965; Edwards, 1957). The Self-Deception Questionnaire has been negatively related to neuroticism and depression (Sackeim & Gur, 1978). The Self-Deceptive Enhancement scale (BIDR, Version 6; Paulhus, 1991) correlates positively with

self-esteem, and negatively with depression (Sinha & Krueger, 1998). It also correlates with measures of defense and coping (Paulhus, 1991; Turvey & Salovey, 1993), including a repressive style (Repression-Sensitization scale; Byrne, 1964), reversal (Defense Mechanism Inventory; Ihilevich & Gleser, 1986), positive re-appraisal, distancing, and self-controlling (Ways of Coping Scale; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). To overcome the inherent limitations of self-report measures of outcome, Johnson addressed the adaptiveness of self-deception by utilizing problem-solving tasks as outcome criteria (as cited in Kral & Johnson, 1996). Individuals with high scores on the Self-Deception scale (BIDR, Version 3; Paulhus, 1986) performed significantly worse on an anagram task following a failure versus success experience. In a second study, this decrease in performance was clarified to occur only when self-deceivers were confronted with unambiguous conditions in the failure experience. Thus, self-deception appears to be an adaptive personality characteristic as long as the interpretive context does not constrain the information available to an individual.

Impression Management

Measures associated with the impression management factor of SDR have been thought to indicate conscious dissembling on the respondent's behalf in order to create favorable impressions in others (Paulhus, 1991). The impression underlying this factor is thought to be one of a socially conventionally, conforming, and dependable persona (Granleese & Barrett, 1990; Paulhus, 1991). This tendency has been shown to vary according to situational demands and motives for self-presentation. Scores on impression management scales have been demonstrated to significantly increase under public versus private conditions, and to be particularly responsive to administration conditions

(Lautenschlager & Flaherty, 1991; Paulhus, 1986). Consequently, impression management has been viewed as a contaminant of self-report data that must be assessed and minimized wherever possible (Anastasi & Urbina, 1997). However, it has been shown to be more of a contaminant in situations where anonymity is impossible, such as in laboratory studies, clinical settings, and personnel selection (Zerbe & Paulhus, 1984). Under anonymous group-testing situations, measures of impression management are thought to assess a reliable personality characteristic or style (Lautenschlager & Flaherty, 1991; Paulhus, 1991). Impression management scales have been associated with a positive self-evaluation, and negatively related to depression and psychoticism (Davies, French, & Keogh, 1998; Sinha & Krueger, 1998). The Eysenck Personality Inventory Lie scale has been demonstrated to correlate positively with emotional stability, conscientiousness, and agreeableness, and correlate negatively with openness to experience (McCrae & Costa, 1985).

Several conceptualizations of impression management are apparent in the literature. It has been conceived as a personality dimension reflecting a lack of self insight (Brown & Kodadek, 1987; Kirton, 1977). Impression management has been viewed as strategic simulation in which the person enacts a socially desirable role in order to gain power or advantage over a particular target (e.g., Edwards, 1970; Jones & Pittman, 1982). Several motives have also been suggested to underlie impression management, including an avoidance of social disapproval (Crowne, 1979), need for approval (Crowne & Marlowe, 1964), an overcontrol of needs and impulses (Gough, 1987), or status seeking (Hogan, 1983). Another conceptualization sees impression management as a skill allowing one to successfully tailor self-presentation in order to fit within the stream of

interaction (e.g., Snyder, 1974). It is evident within these views that an instrumental nature is proposed to underlie the construct of impression management (Paulhus, 1991). Thus, impression management scales have successfully been used to distinguish instructed dissimulation from honest self-reports (e.g., Baer, Wetter, Nichols, Greene, & Berry, 1995; Bagby et al., 1997; Wiggins, 1959).

The K Scale and the Two-Component Model of SDR

The K scale has been cited by researchers as loading on the self-deception factor of SDR (e.g., Paulhus, 1986, 1991; Nichols & Greene, 1997). This conclusion has been drawn from early factor-analytic studies of response styles on personality tests. Wiggins (1964) found the K scale loaded highly on the Alpha factor of the MMPI, which was significantly marked by Edwards (1957) Social Desirability Scale. However, the K scale was also found to load on a second factor, uniquely marked by the Agreement Response Set and Impulsivity (Couch & Keniston, 1960). This factor was interpreted as reflecting a cautious, controlled, good impression. Other evidence supporting the association of the K scale with the self-deception factor includes its significant correlation with Edwards (1957) Social Desirability scale ($r = .77$; Wiggins, 1959). The correlation between these two scales may be somewhat skewed, however, given that Edwards's scale shares five items with the K scale. Moreover, the K scale of the MMPI-2 (Butcher et al., 1989) has not been included in structural investigations of socially desirable responding. Thus, empirical validation is non-existent for the interpretation of the K scale purely as a measure of self-deception. Given the widespread use of the MMPI-2 by professionals in various settings, there is an important need for this clarification.

Present Study

The present study addresses this deficiency by examining the K scale within Paulhus's (1984, 1986) two-component model of SDR. The purpose of this investigation is to clarify the content meaning of the K scale by determining its interpretation as a measure of self-deception or impression management. Thus, professionals utilizing the MMPI-2 can make accurate inferences about individual's response style and personality functioning. Additionally, this study attempts to replicate previous findings that the various measures of SDR can be incorporated within a two-factor model (Nichols & Greene, 1997; Paulhus, 1984, 1986, 1991). Following previous investigations,

(1) it is hypothesized that a two-factor model will underlie measures of SDR.

In a series of confirmatory factor analyses, Paulhus (1984, Study 2) verified the superior fit of the self-deception/impression management model of SDR compared to a single factor or attribution/denial model. However, a moderate correlation ($r = .50$) was obtained between the two factors. Consequently, in the present study:

(2) it is hypothesized that the two SDR factors will be moderately correlated.

The measures utilized in the present study to mark the self-deception factor include the Social Desirability Scale (Edwards, 1963), and the Self-Deceptive Enhancement scale of the Balanced Inventory of Desirable Responding (BIDR, Version 6; Paulhus, 1991).

Markers of the impression management factor will include the Lie scale of the Eysenck Personality Inventory (Eysenck & Eysenck, 1964), and the Impression Management scale of the Balanced Inventory of Desirable Responding (BIDR, Version 6; Paulhus, 1991).

These measures and the rationale for their inclusion will be addressed in the next section.

Markers of Self-Deception and Impression Management. In Paulhus's original

factor-analytic study of SDR (Paulhus, 1984), the two components were found to be best marked by the Self- and Other-Deception Questionnaires (Sackeim & Gur, 1978). These questionnaires were both developed on a rational basis. The Self-Deception Questionnaire contained statements judged to be universally true but psychologically threatening to admit to oneself, based on psychoanalytic theory. The items in the Other-Deception Questionnaire concerned overtly desirable and undesirable behaviors. Paulhus (1984) addressed a number of psychometric deficiencies with these measures, including writing reversals to balance for keying direction and replacing psychopathology items. The resulting instrument was labeled the Balanced Inventory of Desirable Responding (BIDR) and it contains two scales corresponding to the two-factors of SDR, that is, Self-Deception and Impression Management. The most recent version of the BIDR (Version 6; Paulhus, 1991) reflects a shift from ego defense to ego enhancement within the self-deception construct. This revision was based on the finding that items in the Self-Deception scale divided between the two factors of SDR according to enhancement and denial (Paulhus & Reid, 1991). The present study includes the Self-Deceptive Enhancement and Impression Management scales of the BIDR (Version 6; Paulhus, 1991). The Self-Deceptive Enhancement scale and Impression Management scale both contain 20 7-point items stated as propositions. Items from the Self-Deceptive Enhancement scale include “I don’t care to know what other people really think of me,” and “I am fully in control of my own fate.” Examples from the Impression Management scale include “I sometimes tell lies if I have to,” and “When I hear people talking privately, I avoid listening.” Consistent with previous research (Paulhus & Reid, 1991), the following are hypothesized in the present study:

(3) the Self-Deceptive Enhancement scale will load on the self-deception factor;

(4) the Impression Management scale will load on its coordinating factor.

In subsequent factor analyses of SDR, Edwards (1957) Social Desirability scale has been found to load primarily on the self-deception factor (Nichols & Greene, 1997; Paulhus, 1991). Nichols and Greene (1988) conducted a series of analyses utilizing 11 non-college populations and found Edwards's scale to be the best marker of self-deception, with loadings averaging .91 across samples (as cited in Nichols & Greene, 1997). Edwards developed the scale based on the agreement of 10 judges regarding the social desirability of 79 items selected from the K, F, L, and Taylor Anxiety scales of the MMPI. Although this scale has demonstrated good reliability and validity, it has been criticized for containing items drawn from an item pool relevant to psychopathology (Edwards, Edwards, & Clark, 1988). The scale contains 22 items overlapping with Taylor's (1953) Manifest Anxiety scale, thus it was thought to be another anxiety measure (Paulhus, 1991). Responding to such criticisms, the psychopathology items were replaced and it was demonstrated that correlations between the scale and other measures remained unchanged (Edwards & Walsh, 1964). The alternate version of Edwards's (1957) scale containing the nonpsychopathology items (Social Desirability Scale; Edwards, 1963) has recently been published (Edwards & Clark, 1987). The Social Desirability Scale (Edwards, 1963) contains 39 items selected from an experimental inventory of 566 normal personality descriptors. All of the items have approximately the same proportion of endorsement frequency and social desirability value as those in the original scale (Edwards & Clark, 1987). Items include "I am happy most of the time," and "I sometimes feel that I am about to go to pieces." While it has been found to correlate highly with Edwards's

original measure ($r = .92$; Edwards, 1970), it has not been included in previous structural investigations of SDR. Thus, the inclusion of the Social Desirability Scale (Edwards, 1963) in the present study will address its construct validity.

(5) It is hypothesized that the Social Desirability Scale will load on the self-deception factor.

Wiggins's (1959) Social Desirability scale and the Eysenck Personality Inventory Lie scale (Eysenck & Eysenck, 1964) have been demonstrated to load primarily on the impression management factor (Nichols & Greene, 1997; Paulhus, 1991). Eysenck's Lie scale was chosen to be included in the present study due to its superior psychometric properties. The internal consistency of Wiggins's (1959) Social Desirability scale has been found to be .41 using the Kuder-Richardson Formula 21 (Edwards, 1963), and a Cronbach's alpha of .51 has also been reported (Paulhus, 1984). In addition, information on the test-retest reliability of the scale is unavailable. In contrast, the Eysenck Personality Inventory (Eysenck & Eysenck, 1964) is a widely used instrument for which extensive item analyses and factor analyses have been carried out over the years (e.g., Gibson, 1962). Eysenck's Lie scale consists of 18 items phrased as questions, which were rewritten and adapted from the MMPI Lie scale (Hathaway & McKinley, 1951). Items include "Are all your habits good and desirable ones?" and "Have you ever been late for an appointment or work?" Consistent with previous research (Paulhus, 1986),

(6) it is hypothesized that the Lie scale will load on the impression management factor.

Factor-analytic studies including the MMPI-2 K scale are unavailable. As such, the position of individual K scale items within the model will be exploratory in nature.

However, given the significant correlation demonstrated between the K scale and Edwards Social Desirability scale,

(7) it is hypothesized that the K scale will correlate greater with the self-deception factor than the impression management factor.

Method

Participants

Approximately 712 undergraduate students (174 men, 538 women) enrolled in an introductory psychology class participated in the study. All individuals attend the University of Windsor in Southwestern Ontario, and were offered partial course credit for their participation in the study. The mean age of participants was 20, while the most frequently reported age was 19 (N=369). The highest level of education completed for the majority of participants was high school (76.1%). Participants reported an average family income of within the \$45,000 to \$59,999 range. The ethnic composition of participants included Caucasian (67.7%), Black (5.8%), Asian (8.9%), First Nations/Aboriginal (3%), and other (14.6%).

Measures

MMPI-2 K Scale. The K validity scale of the MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) contains 30 statements for which participants respond “true” or “false” (see Appendix A). There is one item keyed true, and the rest are keyed false, with one point being added for each response in the keyed direction. Total scores on this measure range from 0 to 30. The MMPI Restandardization Committee found test-retest reliability coefficients of .84 for men and .81 for women over a one-week interval (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989). Gocka (1965)

reported a Cronbach's alpha of .82 for a patient sample utilizing the MMPI K scale, indicating good internal consistency (as cited in Graham, 1993). Test-retest reliability coefficients for the original scale were found to be .72 and .74 for two groups tested at varying intervals of one day to 15 months (Meehl & Hathaway, 1946). Other researchers have reported correlations ranging from .78 to .92 for intervals up to 2 weeks, and between .52 to .67 for intervals of 8 months to 3 years (Dahlstrom, Welsh, & Dahlstrom, 1975; Greene, 1991).

Self-Deceptive Enhancement Scale. The Self-Deceptive Enhancement scale of the Balanced Inventory of Desirable Responding (Version 6; Paulhus, 1991) contains 20 propositional statements (see Appendix B). Individuals rate their agreement on a 7-point Likert scale (1 = not true to 7 = very true), and one point is scored for each extreme response (6 or 7) after reversing negatively keyed items. In the present study the measure was compressed to a 5-point Likert scale in order for computer bubble sheets to be conveniently utilized. The scale is balanced for keying direction, and total scores range from 0 to 20. The internal consistency of the Self-Deceptive Enhancement scale has been found to range from .68 to .80, and a test-retest reliability coefficient of .69 was obtained over a five week period (Paulhus, 1991).

Impression Management Scale. The Impression Management scale of the Balanced Inventory of Desirable Responding (BIDR, Version 6; Paulhus, 1991) contains 20 propositional statements (see Appendix C). The measure was also compressed to a 5-point Likert scale for the present study. The scale is balanced for keying direction, and total scores range from 0 to 20. Internal consistency of the Impression Management scale has ranged from .75 to .86, and a test-retest reliability coefficient of .65 was obtained over

a five week period (Paulhus, 1984, 1991; Mellor, Conroy, & Masteller, 1986).

Social Desirability Scale. The Social Desirability Scale (Edwards, 1963) contains 39 items for which participants answer “true” or “false” (see Appendix D). One point is added for each response in the keyed direction (9 items scored True, 30 scored False), thus total scores range from 0 to 39. This scale has been found to be a reliable measure, with internal consistency ranging from .74 to .82 (Edwards, Edwards, & Clark, 1988; Edwards & Walsh, 1964). Edwards (1964) reported a test-retest reliability coefficient of .87 for the scale.

Lie Scale. The Lie scale of the Eysenck Personality Inventory (EPI; Eysenck & Eysenck, 1964) consists of 18 items phrased as questions for which an individual responds “Yes” or “No” (see Appendix E). Total scores on the scale can range from 0 to 18, with one point being added for each keyed response. There are two versions of the EPI, Form A and Form B, both containing 9 items from the Lie scale. Test-retest reliability coefficients are .78 for Form A and .74 for Form B Lie scale items, and alternate form reliability was reported to be .54 (Eysenck & Eysenck, 1963).

Demographic Information. A questionnaire was administered to assess participants’ gender, age, level of education, socio-economic status, and ethnicity (see Appendix F).

Procedure

A questionnaire booklet containing the measures was distributed to potential participants during their introductory psychology class. The position of each scale within the booklet was counterbalanced in order to minimize the possible influence of fatigue. Individuals were asked to independently complete the booklet over a 2-week period and

return them to an arranged location. The participants were requested to sign their name on a consent form in order to receive partial course credit. The form outlined the general purpose of the study, the voluntary nature of participation, and the confidentiality of individual scores (see Appendix G). Following the collection of data, written debriefing was posted for participants (see Appendix H).

Results

Table 1 displays the range, mean, standard deviation, number of items, and reliability coefficient for all scales included in the study. Cronbach's alpha revealed the Social Desirability Scale and Self-Deceptive Enhancement scale had good inter-item reliabilities, as scores were above the .70 level. The Impression Management, Lie and MMPI-2 K scales had satisfactory reliabilities (>.60 level), although heterogeneity in item content is suggested.

The five scales were tested for the underlying factor structure using principal axis factor analysis through SPSS. An examination of the assumptions of normality revealed that the Self-Deceptive Enhancement, Impression Management, and Lie scale were positively skewed, while the Social Desirability Scale was negatively skewed. Given the purpose of the present study and publication of included scales, no deletion of variables or transformations were performed. However, it is expected that the analysis may be weakened due to lowering of intercorrelations. Curvilinearity did not exist between variables, as examined through bivariate scatterplots.

Table 2 shows the scale intercorrelations which was tested for its underlying factor structure. Several correlations exceeded .30, and all were significant at an alpha level of .01, suggesting factorability. Results showed the presence of two factors, as indicated by

eigenvalues greater than 1 and significant regression weights of the variables. Thus, as hypothesized a two-factor model was found to underlie the included measures of SDR (see Figure 1). The first factor explained a considerable portion of shared variance (42.4%; eigenvalue = 2.12, 1.65 after rotation), the second factor a moderate proportion of shared variance (25.2%; eigenvalue = 1.26, .84 after rotation). As expected, the two factors were modestly correlated ($r = .35$). Table 2 displays the communalities and factor loadings following oblique rotation (direct oblimin with Kaiser normalization). The first factor was interpreted as IMPRESSION MANAGEMENT, and consisted of the Impression Management scale and the Lie scale as predicted. Contrary to expectation, the Self-Deceptive Enhancement scale also loaded on this factor. The second factor was interpreted as SELF-DECEPTION, and consisted of the Social Desirability scale, and the MMPI-2 K scale. The difference between the K scale correlation with the self-deception factor versus the impression management factor was significant, $t(709) = -20.6, p < .001$, further verifying its interpretation as a measure of self-deception.

To test the stability of the solution, the variable correlation matrix was separately analyzed using principal-factor extraction followed by varimax rotation, principal component analysis followed by direct oblimin rotation ($\Delta = 0$), as well as principal component analysis with varimax rotation. Results for the four models are displayed in Table 3. Correlations between scales and factors were consistent across the analyses, further verifying the configuration of scales.

Post-hoc analyses were conducted to examine the position of individual K scale items within the two-factor model. Table 4 displays the correlations of K scale items with the two-factors and included measures of SDR. It is apparent that all K scale items

correlate greater with Factor 2 (self-deception) than Factor 1, except for items 1, 12, 13, and 23. However, the magnitude of the item correlations with Factor 1 was minimal. Furthermore, the correlations of items 1 and 23 may be truncated given the uneven splits (90-10) between the two categories. While item 13 appears complex, correlating equally with both factors, item 12 correlates significantly with Factor 1 (impression management). Therefore, item 12, "I have never felt better in my life than I do now," seems to assess impression management rather than self-deception. The correlations of K scale items with the Social Desirability Scale (also loading on Factor 2) was compared to correlations with the Self-Deceptive Enhancement scale, Impression Management scale, and Lie scale (all loading on Factor 1). As expected, the majority of K scale items correlated greater with the Social Desirability Scale, with the exception of items 1, 2, 3, 8, 20, and 27. However, the items had low correlations with the other scales.

Discussion

The purpose of this study was to clarify the content meaning of the MMPI-2 K scale (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) by examining it within Paulhus's (1984, 1986) two-component model of SDR. The main finding revealed that the various measures of SDR can be incorporated within a two-factor model (see Figure 1), confirming hypothesis (1). This finding is consistent with previous factor-analytic studies demonstrating SDR is not a unidimensional construct (Nichols & Greene, 1988; Paulhus, 1984, 1986), thereby replicating Paulhus's self-deception and impression management distinction. Self-deception refers to positively biased but honestly held self-reports (e.g., above average IQ), whereas impression management reflects the conscious and purposeful distortion of responses (e.g., "I never swear"; Paulhus, 1991). The self-deception factor

was best marked by the MMPI-2 K scale (Butcher et al., 1989), and the impression management factor was best marked by the Impression Management scale (BIDR, Version 6; Paulhus, 1991). As hypothesized (2), the two factors were found to be modestly correlated ($r = .35$), slightly lower than the correlation ($r = .50$) obtained by Paulhus (1984, Study 2).

Another main finding was the MMPI-2 K scale correlated greater with the self-deception factor than the impression management factor, confirming hypothesis (7). In fact, the K scale was found to be the best marker of the self-deception factor, thereby supporting its interpretation as a measure of self-deception. Thus, in non-clinical populations the K scale assesses an individual's tendency to make unconscious attempts to look good to oneself (Paulhus, 1986). Self-deceivers avoid perceiving information that would be unpleasant to conscious experience (such as negative feedback; Sackeim & Gur, 1978), in an attempt to protect one's self-beliefs. This personality characteristic has been thought to maintain self-esteem (Paulhus, 1986) and has been associated with several indices of adjustment (e.g., Fernandez-Ballesteros & Zamarron, 1996; Paulhus, 1991). Paulhus and Reid (1991) concluded that an exaggerated sense of control and confidence in one's thinking powers underlies self-deception. As such, high scores on the MMPI-2 K scale may reflect an individual's psychological well-being when utilized in non-clinical populations. Furthermore, this study challenges the originally intention of the K scale to be used as a suppressor variable to correct for the effects of response distortion on the clinical scales. Controlling SDR measures that tap self-deception has been found to lower the predictive validity of several personality variables (Paulhus, 1991). Individuals with high scores on the K scale give positively biased but honestly held self-reports, in contrast

to the conscious and purposeful tailoring of responses involved in impression management. Thus, the use of the MMPI-2 K-correction procedure may not be appropriate in non-clinical settings.

This finding suggests fundamental differences in the interpretation of the MMPI-2 K scale when used with clinical versus non-clinical populations. While research has shown the K scale assesses defensiveness in clinical populations (e.g., Dahlstrom, Welsh, & Dahlstrom, 1972; Ries, 1966), the present study found it to be a measure of self-deception in non-clinical populations. Such discrepancies have also been found for other MMPI-2 scales. High scores on scale 6 (Paranoia) reflect suspiciousness, hostility, extreme sensitivity, and argumentative characteristics in clinical samples. However, high scorers in normal samples are described as interpersonally sensitive, emotional, rational, and clear thinking (Greene, 1991). Similarly, scale 9 (Hypomania) assesses impulsiveness, competitiveness, narcissism, and amorality in clinical populations, whereas it taps friendliness, sociability, and enthusiasm in non-clinical populations (Greene, 1991). Furthermore, minimal research exists concerning the use of the MMPI-2 with non-clinical subjects (Graham, 1993). Clearly the MMPI-2 scales should be interpreted with caution (if at all) when utilized in non-clinical settings.

As predicted, Edwards's (1963) Social Desirability Scale was found to load on the self-deception factor (hypothesis 5). Whereas Edwards's (1957) Social Desirability Scale was found to be a marker of self-deception (Nichols & Greene, 1997; Paulhus, 1991), this alternate version containing nonpsychopathology items has not previously been included in structural investigations of SDR. Consequently, this study provides preliminary evidence for the construct validity of the scale. High scores on the Social Desirability

Scale (Edwards, 1963) reflect positively biased but honestly held self-reports. Controlling for this response style has been demonstrated to lower the predictive validity of variables (such as anxiety, self-esteem; Paulhus, 1991). Supporting Edwards (1953) original conception of SDR, the scale appears to tap the personality trait of self-deception. Thus, the scale measures one's tendency to unconsciously distort reality to look good to oneself, which has been associated with numerous indices of adjustment (e.g., Paulhus, 1991).

The hypothesis (4) that the Impression Management scale (BIDR, Version 6; Paulhus, 1991) would load on the IMPRESSION MANAGEMENT factor of SDR was confirmed in the present study. This finding validates the consistency of the Impression Management scale across editions, as a previous version of the scale (BIDR, Version 3; Paulhus, 1991) was found to load on the impression management factor (Paulhus, 1984; Paulhus & Reid, 1991). Thus, the Impression Management scale assesses an individual's tendency to consciously distort responses on self-report inventories in order to create favorable impressions in others (Paulhus, 1991). This response style has been viewed as a contaminant of self-report data that must be assessed and minimized wherever possible (Anastasi & Urbina, 1997). Individuals with high scores on the Impression Management scale try to convey the self-image of a socially conventionally, conforming, and dependable persona to others (Granleese & Barrett, 1990; Paulhus, 1991). Motives suggested to underlie this tendency include an avoidance of social disapproval (Crowne, 1979), an overcontrol of needs and impulses (Gough, 1987), or status seeking (Hogan, 1983). This personality characteristic has been associated with positive self-evaluation (Sinha & Krueger, 1998), and has been thought to reflect a lack of self-insight (Brown & Kodadek, 1987).

As predicted (hypothesis 6), the Eysenck Personality Inventory Lie scale (Eysenck & Eysenck, 1964) was also found to load on the impression management factor of SDR. This finding is consistent with previous investigations (Nichols & Greene, 1997; Paulhus, 1991), and suggests that the Lie scale taps conscious dissembling on the respondent's behalf in order to create favorable impressions in others (Paulhus, 1991). The influence of this response style should be controlled in situations where motives arise for strategic manipulation (e.g., child-custody settlements). Individuals with high scores on the Lie scale try to convey a socially conventionally and conforming self-image to others (Granleese & Barrett, 1990; Paulhus, 1991). Consistent with this characterization, impression management has been positively correlated with conscientiousness and agreeableness (McCrae & Costa, 1985).

Contrary to the hypothesis, the Self-Deceptive Enhancement scale (BIDR, Version 6; Paulhus, 1991) was found to load on the impression management factor, rather than self-deception. This finding is inconsistent with previous research that demonstrated an earlier version of the scale (BIDR, Version 3; Paulhus & Reid, 1991) loaded on the self-deception factor of SDR. Whereas the present study included five SDR scales, Paulhus and Reid (1991) only included two scales in their structural investigation (the Impression Management and Self-Deception scales of the BIDR), thereby failing to adequately establish the two-components of SDR. Revisions to the Self-Deception scale were based on their finding that the 10 items solely reflecting ego enhancement loaded on the self-deception factor. Given the limited empirical evidence for the revisions to the scale, the findings in the present study are likely more accurate. The most recent version of the Self-Deceptive Enhancement scale appears to be a measure of impression management. High

scores on the scale reflect an individual's tendency to consciously convey to others the image of a socially conventional and dependable persona (Granleese & Barrett, 1990).

Limitations

There were a few limitations in the present study. First, while the use of an undergraduate student sample is convenient, it limits the generalizability of the findings as inferences cannot be made to the general population. The voluntary nature of the participation also might have yielded a non-representative sample. Furthermore, the statistical procedure utilized in the study was exploratory in nature. Thus, decisions about number of factors and rotational scheme were based on pragmatic rather than theoretical criteria.

Conclusions

In summary, this study contributed to existing knowledge by providing empirical validation for the interpretation of the MMPI-2 K scale as a measure of self-deception in non-clinical populations. Thus, professionals utilizing the MMPI-2 can make accurate inferences about an individual's response style and personality functioning. The study also provided further validation for Paulhus's (1984, 1986) structural distinction of SDR, and provided preliminary evidence for the construct validity of the Social Desirability Scale (Edwards, 1963).

Future research should attempt to replicate the two-factor model of SDR, and verify the interpretation of the K scale as a measure of self-deception in non-clinical populations. The use of the K-correction procedure in non-clinical populations also requires investigation. That is, does the K-correction procedure improve the discriminability of the five MMPI-2 scales in non-clinical populations? The meaning of the

MMPI-2 K scale in clinical populations additionally needs to be clarified, as well as the use of the K-correction procedure. Furthermore, the interpretation of the Self-Deceptive Enhancement scale requires supplementary clarification.

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Appendix A

MMPI-2 K Scale

Note. Item 5 is keyed true; all other items are keyed false.

Read each statement and decide whether it is TRUE as applied to you or FALSE as applied to you. Please indicate your response on the computer bubble sheet according to the following:

(A)

TRUE

(B)

FALSE

1. At times I feel like swearing.
2. At times I feel like smashing things.
3. I think a great many people exaggerate their misfortunes in order to gain the sympathy and help of others.
4. It takes a lot of argument to convince most people of the truth.
5. I have very few quarrels with members of my family.
6. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.
7. Often I can't understand why I have been so irritable and grouchy.
8. At times my thoughts have raced ahead faster than I could speak them.
9. Criticism or scolding hurts me terribly.
10. I certainly feel useless at times.
11. It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important.
12. I have never felt better in my life than I do now.

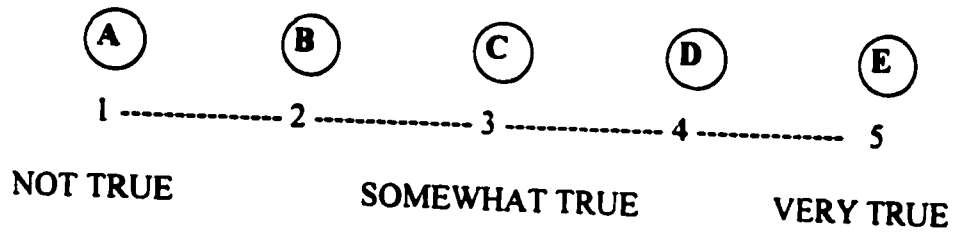
13. What others think of me does not bother me.
14. It makes me uncomfortable to put on a stunt at a party even when others are doing the same sort of things.
15. I find it hard to make small talk when I meet new people.
16. I am against giving money to beggars.
17. I frequently find myself worrying about something.
18. I get mad easily and then get over it soon.
19. When in a group of people I have trouble thinking of the right things to talk about.
20. I have periods in which I feel unusually cheerful without any special reason.
21. I think nearly anyone would tell a lie to keep out of trouble.
22. I worry over money and business.
23. At times I am full of energy.
24. People often disappoint me.
25. I have sometimes felt that difficulties were piling up so high that I could not overcome them.
26. At periods my mind seems to work more slowly than usual.
27. I have often met people who were supposed to be experts who were no better than I.
28. I often think, "I wish I were a child again."
29. I find it hard to set aside a task that I have undertaken, even for a short time.
30. I like to let people know where I stand on things.

Appendix B

Self-Deceptive Enhancement Scale (BIDR, Version 6)

Note. Items 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 are keyed negatively.

Using the scale below as a guide, fill in the letter for each statement to indicate how much you agree with it.



1. My first impressions of people usually turn out to be right.
2. It would be hard for me to break any of my bad habits.
3. I don't care to know what other people really think of me.
4. I have not always been honest with myself.
5. I always know why I like things.
6. When my emotions are aroused, it biases my thinking.
7. Once I've made up my mind, other people can seldom change my opinion.
8. I am not a safe driver when I exceed the speed limit.
9. I am fully in control of my own fate.
10. It's hard for me to shut off a disturbing thought.
11. I never regret my decisions.
12. I sometimes lose out on things because I can't make up my mind soon enough.
13. The reason I vote is because my vote can make a difference.
14. My parents were not always fair when they punished me.

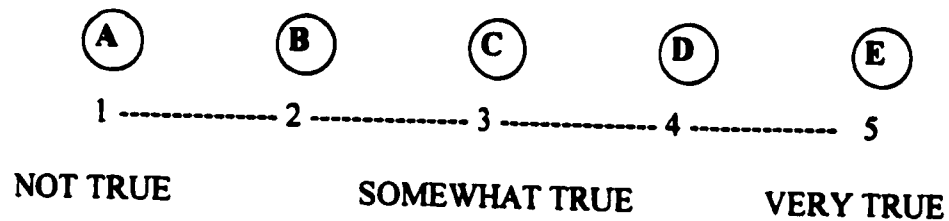
15. I am a completely rational person.
16. I rarely appreciate criticism.
17. I am very confident of my judgments.
18. I have sometimes doubted my ability as a lover.
19. It's all right with me if some people happen to dislike me.
20. I don't always know the reasons why I do the things I do.

Appendix C

Impression Management Scale (BIDR, Version 6)

Note. Items 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 are negatively keyed.

Using the scale below as a guide, fill in the letter for each statement to indicate how much you agree with it.



1. I sometimes tell lies if I have to.
2. I never cover up my mistakes.
3. There have been occasions when I have taken advantage of someone.
4. I never swear.
5. I sometimes try to get even rather than forgive and forget.
6. I always obey laws, even if I'm unlikely to get caught.
7. I have said something bad about a friend behind his or her back.
8. When I hear people talking privately, I avoid listening.
9. I have received too much change from a salesperson without telling him or her.
10. I always declare everything at customs.
11. When I was young I sometimes stole things.
12. I have never dropped litter on the street.
13. I sometimes drive faster than the speed limit.
14. I never read sexy books or magazines.

15. I have done things that I don't tell other people about.
16. I never take things that don't belong to me.
17. I have taken sick-leave from work or school even though I wasn't really sick.
18. I have never damaged a library book or store merchandise without reporting it.
19. I have some pretty awful habits.
20. I don't gossip about other people's business.

Appendix D

Edwards Social Desirability Scale

Note. Items 1, 2, 7, 8, 13, 14, 22, 32, and 37 keyed true; the remaining items are keyed false.

Read each statement and decide whether it is TRUE as applied to you or FALSE as applied to you. Please indicate your response on the computer bubble sheet according to the following:

(A)

TRUE

(B)

FALSE

1. I strongly defend my opinions in discussions with others.
2. I am able to concentrate on one thing at a time.
3. I become somewhat impatient with people who do not quickly understand something I tell them.
4. I can be counted upon to be five or ten minutes late if I say I will meet you at a specified time.
5. I lose most of my arguments I have with others.
6. I love mankind; it is just people I hate.
7. I like to associate with persons of the opposite sex.
8. I do not run away when faced with a problem.
9. I get upset if I have four or five things requiring my attention at the same time.
10. I dislike lending my possessions to others.
11. I worry considerably about the bad things that could happen to me.
12. I have a strong need to be dependent on others.

13. I do what is expected of me without complaint.
14. I make up my own mind on most things.
15. I am uncomfortable if I become the center of attention in a public place.
16. I have difficulty in getting things done in time.
17. I tend to blame others for my own unhappiness.
18. I either like or dislike others; I can't be neutral toward them.
19. I don't like anything that is new or strange to me.
20. I am not willing to admit my mistakes.
21. I seldom complete things I begin.
22. I take pride in being able to help others who need help.
23. I haven't given any serious thoughts to what I might be doing ten years from now.
24. I am afraid that I will be something in a group that will prove to be embarrassing to me.
25. I have difficulty in controlling my feelings of aggression toward others.
26. I have difficulty in carrying on a conversation about anything other than my work.
27. I have difficulty controlling my temper.
28. I always write to my friends when I am away or when they are away.
29. I have serious doubts as to whether I will ever be a success.
30. I sometimes give others the impression that I never listen to the advice given to me.
31. I have difficulty in controlling my impulses.
32. I give a great deal of thought to what makes people do the things they do.
33. I put off unpleasant tasks and assignments for as long as possible.
34. I become depressed if I am separated from my friends for any length of time.

- 35. I am very fussy about minor things.**
- 36. I expect my friends to be sympathetic and understanding when I have problems.**
- 37. I am able to convince others that my opinions are right.**
- 38. I tend to take almost any remark personally.**
- 39. I feel that I lack the drive and ambition that most people have.**

Appendix E

Lie Scale (Eysenck Personality Inventory)

Note. Items 1, 4, 6, 11, and 13 are keyed yes; the remaining items are keyed no.

Here are some questions regarding the way you behave, feel and act. Try and decide whether “Yes”, or “No” represents your usual way of acting or feeling. Please indicate your response on the computer bubble sheet according to the following:

A

YES

B

NO

1. If you say you will do something do you always keep your promise, no matter how inconvenient it might be to do so?
2. Once in a while do you lose your temper and get angry?
3. Do you occasionally have thoughts and ideas that you would not like other people to know about?
4. Are all your habits good and desirable ones?
5. Do you sometimes gossip?
6. Would you always declare everything at the customs, even if you knew that you could never be found out?
7. Have you ever been late for an appointment or work?
8. Of all the people you know are there some whom you definitely do not like?
9. Do you sometimes talk about things you know nothing about?
10. Have you ever said anything bad or nasty about anyone?
11. Do you always practice what you preach?
12. Do you sometimes put off until tomorrow what you ought to do today?

13. Do you always wash before a meal?
14. Have you ever insisted on having your own way?
15. Would you dodge paying taxes if you were sure you could never be found out?
16. Have you ever cheated at a game?
17. Were you ever greedy by helping yourself to more than your share of anything?
18. Have you ever taken the praise for something you knew someone else had really done?

Appendix F
Demographic Information

Please provide answers to the following questions on the computer bubble sheet provided:

1. Gender: a) Male b) Female

2. Age (in years): a) 18 b) 19 c) 20 d) 21 e) ≥ 22

3. What is the highest level of education that you have completed?

- a) High school
- b) 1st year university
- c) 2nd year university
- d) 3rd year university
- e) 4th year university

4. What is your ethnic background?

- a) Caucasian
- b) African-Canadian
- c) Asian
- d) Native-Canadian
- e) Other

5. What is your family's combined yearly income?

- a) Under \$30, 000 _____
- b) \$30,000 - \$44, 999 _____
- c) \$45,000 - \$59,999 _____
- d) \$60,000 - \$74,999 _____
- e) \$75,000 or greater _____

Appendix G
University Participation Consent Form

My name is Kerry Collins and I am a Psychology graduate student at the University of Windsor. I would like you to participate in a study for my master's thesis that assesses your general thoughts, behaviours, feelings, and attitudes about yourself and your interpersonal relationships. If you decide to participate in the study, it will take approximately one hour of your time. You will be requested to fill out the questionnaire booklet within a 2-week period and return it to your course coordinator, Dr. Ken Cramer.

Your participation is voluntary and you may withdraw from the study at any time. Furthermore, you may refrain from answering any specific questions that you may find particularly offensive. Your responses are anonymous so that individual's cannot be identified, and all responses are confidential. If you wish, you may contact the Chairperson of the Ethics Committee (Dr. D. Shore) at the University of Windsor, Department of Psychology (519) 253-4232 Ext. 2249.

In order to receive course credit in your Introductory Psychology class you must sign this consent form and return the completed questionnaire booklet. If you have any questions please my supervisor, Dr. Ken Cramer (Department of Psychology, 253-4232 Ext. 2239). Once the study has been completed, you may receive a copy of the study results if you wish, by leaving your name and address on a sign-up sheet after completing the questionnaires. Thank-you for your cooperation.

Please read and sign the following declaration of informed consent if you agree:

I, _____ (name of participant), have read the description of the study, understand its purpose, and recognize that there are no known or expected discomforts or risks involved in my participation. I understand that my answers will be kept confidential and that my name will not be associated with my answers. I voluntarily consent to participate.

(Participant's Signature)

Appendix H

Debriefing Form

Title of project: Interpreting the MMPI-2 K Scale: Self-Deception and Impression Management Revisited.

Researcher: Kerry Collins

Thank-you for participating in my study. As you may already know from my title, I am interested in clarifying the content meaning of the MMPI-2 K scale. The Minnesota Multiphasic Personality Inventory-2 (MMPI-2) is a self-report personality inventory routinely administered by professionals in medical, occupational, educational, forensic, and research settings in order to assess an individual's functioning. The K scale of the MMPI-2 is a built-in validity scale, which assists in determining the honesty of individuals' responses. I am hoping to determine whether the K scale is a measure of self-deception or impression management. Self-deception involves a less conscious attempt to look good to oneself, whereas impression management involves conscious dissembling in order to create favorable impressions in others. This clarification will enable professionals to make accurate inferences about an individual's response style and personality functioning.

Table 1

SDR Scales: Descriptive Statistics

Scale	Mean	SD	Minimum	Maximum	Items	KR-20
MMPI-2 K	12.74	4.24	2.00	26.00	30	.63
Self-Deceptive Enhancement	3.10	2.79	0.00	14.00	20	.71
Impression Management	3.16	2.64	0.00	15.00	20	.68
Social Desirability	26.89	5.86	8.00	37.00	39	.81
Lie	4.99	2.73	0.00	15.00	18	.64

Note. KR-20 = Kuder-Richardson Formula 20.

N = 712

Table 2

Scale Intercorrelations, Communalities, and Exploratory (Oblique Rotated) Factor Loadings

Scale	1	2	3	4	5	Factor 1	Factor 2
1. MMPI-2 K	.67					.28	.82
2. SDE	.14**	.28				.53	.21
3. IM	.15**	.46**	.78			.88	.18
4. Social Desirability	.55**	.18**	.13**	.46		.25	.67
5. Lie	.24**	.29**	.47**	.17**	.31	.55	.28

Note. SDE = Self-Deceptive Enhancement; IM = Impression Management. Rotated communality estimates appear along the diagonal in boldface type. Primary factor loadings are also in boldface type.

* $p < .05$

** $p < .01$

Table 3

Exploratory Factor Loadings and Principle Component Loadings Following Oblique and Orthogonal Rotations.

Scale	Factor Loadings				Component Loadings			
	<u>Oblique</u>		<u>Orthogonal</u>		<u>Oblique</u>		<u>Orthogonal</u>	
	SD	IM	SD	IM	SD	IM	SD	IM
1. MMPI-2 K	.82	.28	.80	.14	.88	.23	.87	.12
2. Self-Deceptive Enhancement	.21	.53	.12	.51	.17	.74	.08	.74
3. Impression Management	.18	.88	.03	.88	.14	.85	.03	.85
4. Social Desirability	.67	.25	.66	.13	.88	.20	.87	.10
5. Lie	.28	.55	.19	.52	.27	.74	.19	.72

Note. SD = SELF-DECEPTION; IM = IMPRESSION MANAGEMENT. Primary loadings are in boldface type.

Table 4

Correlations of MMPI-2 K Scale Items with the Two-Factors and Individual Measures of SDR

K Scale Item	Factor 1	Factor 2	SD	SDE	IM	LIE
1	.22**	.18**	.01	.10*	.19**	.23**
2	.26**	.33**	.19**	.13**	.19**	.26**
3	.15**	.33**	.12**	-.00	.09*	.19**
4	.02	.37**	.26**	-.01	-.04	-.00
5	.12**	.25**	.15**	.08*	.07	.15**
6	.16**	.28**	.12**	.03	.12**	.11**
7	.20**	.49**	.35**	.13**	.12**	.17**
8	.12**	.23**	.03	.06	.08*	.12**
9	.06	.51**	.41**	.11**	-.05	.08*
10	.18**	.51**	.37**	.19**	.08*	.16**
11	.11**	.31**	.26**	-.02	.07	.11**
12	-.15**	-.07	-.12**	-.14**	-.13**	-.12**
13	-.14**	-.13**	-.19**	-.22**	-.07	-.19**
14	-.04	.22**	.19**	.01	-.08*	-.07
15	.01	.39**	.38**	.05	-.06	-.02
16	.05	.19**	.13**	-.03	.02	.02
17	.12**	.42**	.30**	.13**	.03	.07
18	.22**	.37**	.24**	.11**	.15**	.20**
19	.05	.42**	.41**	.07	-.02	-.04
20	.14**	.19**	.01	.11**	.10**	.13**
21	.19**	.30**	.13**	.07	.15**	.15**
22	.14**	.33**	.16**	.04	.09*	.11**
23	.05	.00	-.18**	-.01	.05	.11**

Table Continues

K Scale Item	Factor 1	Factor 2	SD	SDE	IM	LIE
24	.13**	.46**	.34**	.03	.06	.06
25	.19**	.49**	.36**	.19**	.08*	.18**
26	.11**	.32**	.15**	.15**	.04	.10**
27	.05	.22**	.02	-.05	.03	-.01
28	.18**	.33**	.19**	.09*	.12**	.15**
29	.01	.26**	.14**	.01	-.03	-.02
30	-.05	-.08*	-.14**	-.05	-.03	-.03

Note. SD = Social Desirability Scale; SDE = Self-Deceptive Enhancement scale; IM = Impression Management scale; LIE = Lie scale. Primary loadings are in boldface type.

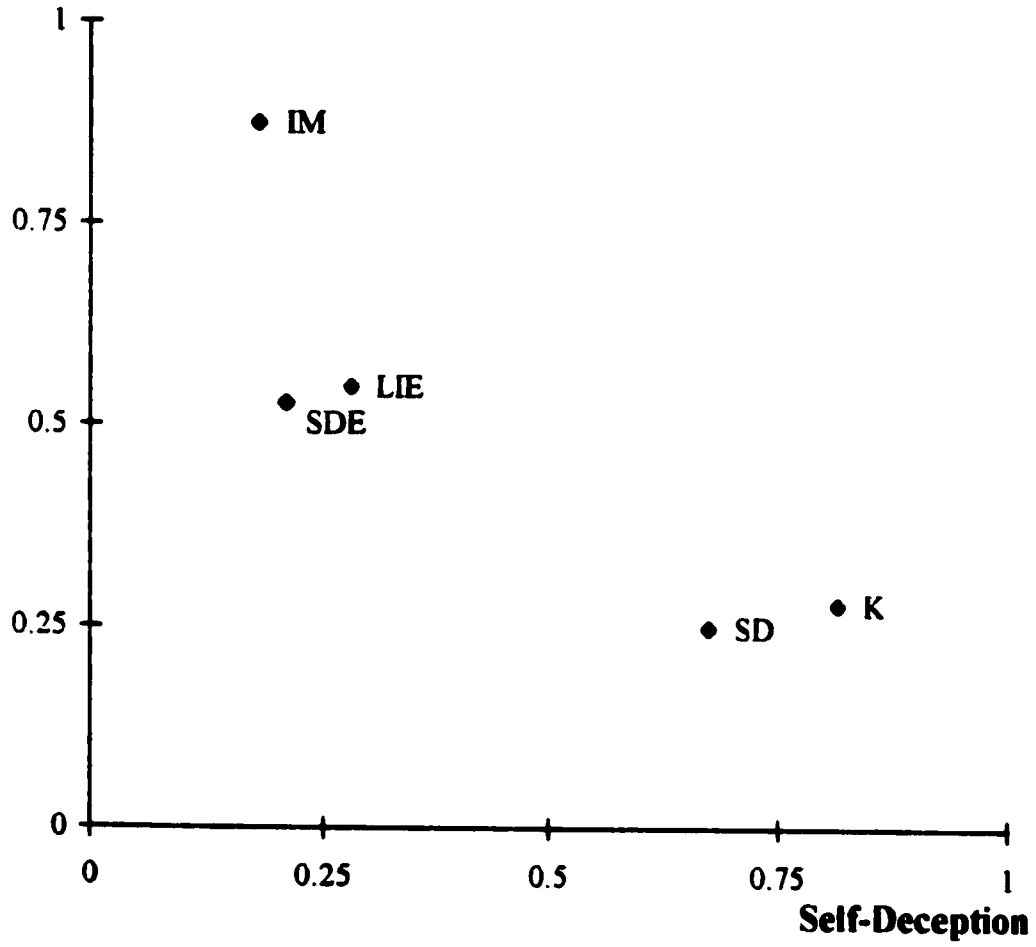
* $p < .05$

** $p < .01$

Figure Caption

Figure 1. Plot of factor loadings of social desirability scales. IM = Impression Management scale; SDE = Self-Deceptive Enhancement scale; LIE = Lie scale; SD = Social Desirability Scale; K = MMPI-2 K scale.

Impression Management



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