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SHYNESS AND SOCIAL DISCOMFORT AS MEASURED BY THE MMPI-2

A Thesis Submitted to the Graduate School  
in Partial Fulfillment of the Requirements  
for the Degree of  
Master of Science

By  
Lori Hebel

PITTSBURG STATE UNIVERSITY

Pittsburg, Kansas

December, 1998

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# SHYNESS AND SOCIAL DISCOMFORT AS MEASURED BY THE MMPI-2

An Abstract of the Thesis by  
Lori Hebel

The purpose of this study was to provide additional validity information for the Social Introversion Scale (Si), the Social Introversion Subscales (Si 1, Si 2 and Si 3), the Social Discomfort Content Scale (SOD) and the component scales (SOD 1 and SOD 2) of the MMPI-2. Previous research has focused on comparing the MMPI-2 with other self-report measures. The present study attempted to determine how well the MMPI-2 predicted behavioral observations of shyness and anxiety and self-reported discomfort in social situations. 88 participants took the MMPI-2 and then participated in a group activity. Observer and self-ratings of this activity were correlated with MMPI-2 scales. Results indicated that the MMPI-2 is effective at predicting shyness and social discomfort. Si 1 seemed to be the best predictor of both perceived discomfort and feelings of social inadequacy in social situations. Si 2 and SOD 1 seemed to be more related to social introversion than social anxiety. Based on this study, Si 3 seemed to be unrelated to social discomfort, shyness and social introversion.

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# CHAPTER I

## INTRODUCTION

### Introduction to the Problem

Shyness and social discomfort is a common problem. Reported prevalence rates of shyness range from 28% to 40% of the general population (Turner, Beidel & Townsley, 1990). One test that proposes to measure shyness is the MMPI-2. Validation studies of this test have thus far primarily focused on correlating the scales of the MMPI-2 with other self-report measures. The purpose of this study is to provide further validation of the MMPI-2 scales of shyness and social introversion by comparing them to observer and self-ratings of social performance as well as observed and self-perceived anxiety.

### Review of the Literature

Theories about shyness and social discomfort generally begin with the idea of social introversion, or the tendency of some individuals to prefer to be by themselves. In 1920, Carl Jung theorized that an individual's personality could be classified with four dichotomous, "psychological types." He believed that in combination with each other, these types made up a person's basic psychological style. "Extroversion versus Introversion" was to Jung the most important, psychological characteristic that determined the personality of an individual. According to Jung, people who are "extroverted" have a tendency to gain "energy" by being with people, while "introverted" individuals regain energy by being by themselves. Jung did not perceive either personality style as being

abnormal or pathological, just that they were different (Keirsey & Bates 1984). It is likely, however, that social introversion is not a unitary construct. Although some components of introversion may have positive or neutral connotations, other aspects of social introversion—such as social anxiety, social avoidance, self-consciousness, and shyness are seen as less desirable personality traits or as symptoms of various mental disorders. Recent research has linked shyness with depression (Henderson, 1997) and low self-esteem (Schmidt & Robinson, 1992).

Buss (1980) defines social anxiety as “discomfort in the presence of others.” (p. 204) There are various degrees of social anxiety. Some people are afraid only of public speaking (audience anxiety), whereas other individuals fear almost all social interaction (Buss, 1980). Because of social anxiety; some individuals may practice social avoidance, or staying away from situations in which they have to interact with others. However, not all people who are socially anxious avoid others, and some individuals practice social avoidance without experiencing social anxiety. Therefore, the behavior (social avoidance) does not always predict the feeling (social anxiety) or vice-versa. Another aspect of social introversion is self-consciousness, or excessive preoccupation with one’s self. Although to a certain degree, self-awareness can be healthy, some individuals’ preoccupation with themselves, and the impressions that they are making on others, becomes obsessive (Zimbardo, 1977).

These components of social introversion are not completely distinct. Shyness, has been particularly difficult to delineate (Turner, Beidel, & Townsley,



1990). According to Turner, Beidel, and Townsley (1990), most “lay” people conceive of shyness as “appearing nervous or uncomfortable in social situations and as being reticent to engage in social discourse though they truly desire to do so.” (p.498) Zimbardo (1977) believed that shyness was a problem characterized by inadequate social skills, self-consciousness, low self-esteem, and anxiety.

### Shyness Research

Symptoms of shyness can be observed in several areas: physiological, cognitive, affective, and behavioral (Turner, Beidel, & Townsley, 1990). Most shy individuals have some real or perceived social skill deficits. The conversation of shy people tends to be characterized by long silences, poor voice tone, and reduced eye contact. However, there seems to be a subgroup of “privately” shy individuals who do not have these deficits (Turner, Beidel, and Townsley, 1990). According to Zimbardo (1977), publicly shy individuals avoid social contact at least to some degree. However, although he or she may endure considerable discomfort, the privately shy individual continues to participate socially. Miller (1995) found that the best predictor of shyness was low self-esteem, and the second best was poor social skills. Miller found that shy individuals were more likely to have poor evaluations of themselves than they were to fear that others would evaluate them negatively. Zimbardo (1977), who has studied shyness in over 5000 individuals, mostly college students, found that shyness can range from mild discomfort to extreme neurosis. He found that 40% of the people he surveyed considered themselves presently shy, and 25% considered themselves to be chronically shy.

Schmidt and Robinson (1992) found that there is some evidence of different forms of shyness that differ in levels of low self-esteem. Although they found that shy individuals in general have lower self-concepts than non-shy individuals, some shy individuals tend to have especially low opinions of themselves. This subgroup tends to be more self-conscious or excessively aware of their behavior. These individuals tend to judge themselves harshly in regards to their social performance. In contrast there seems to be another group of shy individuals who have relatively higher self-esteem. This group seems to be characterized by being hyper-aroused and therefore afraid of new social interactions as opposed to being especially self-conscious about their social performance.

#### Shyness and Related Constructs

In a factor analysis of ten self-report scales, including Modigliani's Embarrassability Scale, Cheek and Buss Shyness Scale, Riggio's Social Skill Inventory and Leary's Brief Fear of Negative Evaluation Scale, Miller (1995) found three factors relating to shyness and social introversion. The first factor, "social self-confidence," was characterized by low shyness, high social self-esteem, high social control, and high emotional expressivity. "Social evaluation," the second factor, was composed of high fear of negative evaluation, social sensitivity, motive to avoid exclusion and embarrassability. "Asocial", the third factor, loaded with high private self-consciousness, high emotional control and absence of non-verbal expressivity.

Turner, Beidel, and Townsley (1990) attempted to distinguish between shyness and social phobia. They found that social phobia has a lower prevalence rate, is characterized by more severe daily functioning impairment, has a more chronic course, and is characterized by more social avoidance than shyness. However, shyness seems to develop at an earlier age than social phobia—as early as 21 months for shyness, and generally not until adolescence for social phobia. The researchers were not able to determine if social phobia is a more severe type of shyness or if it is a separate construct.

There have been various scales designed to measure social introversion, social anxiety, and shyness. The Minnesota Multiphasic Personality Inventory-2 contains several scales designed to measure this group of related constructs. These scales are: the Social Introversion Scale (Si or Scale 0); the Social Introversion (Si) subscales, Shyness / Self-consciousness (Si 1), Social avoidance (Si 2), Self / Other Alienation (Si 3); and the Social Discomfort Content Scale (SOD). In addition Ben-Porath and Sherwood have developed experimental content component scales or subscales for the SOD scale: Introversion (SOD 1); and Shyness (SOD 2). The Si scale was designed to measure an individual's preference for being alone rather than with others (Friedman, Webb, and Lewak, 1989). According to Ben-Porath, Hostetler, Butcher, and Graham (1989), elevations on the Si 1 subscale are associated with shyness and discomfort in social situations, and uncomfortableness with new situations. Individuals with elevations on Si 2 typically dislike group activities and avoid social situations such as parties. Elevations on the Si 3

subscale were associated with feelings of low self-esteem, lack of self-confidence, and feelings of ineptitude. (Ben-Porath, et al., 1989) The SOD discomfort scale was designed to be a content valid measure of uncomfortableness in social situations (Butcher, Dahlstrom, Graham, Tellegen, and Kaemmer, 1989).

### Development of the MMPI-2

The Minnesota Multiphasic Personality Inventory (MMPI) was developed in 1943, and has been found to be the most widely used personality test in clinical settings, with an extensive research base of over 10,000 studies (Freidman, Webb & Lewak, 1989). However, because the MMPI was developed so long ago, the normative group had become outdated. In addition, critics argued that the wording of some of the items was outdated, awkward, sexist, and possibly inapplicable to current test takers. For these reasons, the owners of the MMPI decided to update the test, and in 1989 a new version was published, the MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, and Kaemmer, 1989).

According to the MMPI-2 manual the new version includes: a new normative sample (N = 2,600) which approximates 1980 U.S. census data; new validity scales designed to detect inconsistent responding (VRIN and TRIN); a scale (Fb) which was designed to detect test taker fatigue; and new content scales (Butcher, Dahlstrom, Graham, Tellegen, and Kaemmer, 1989). The Social Introversion (Si) scale was developed for the original MMPI; it was included in the MMPI-2 with only minor revisions. However the Si subscales and the Social Discomfort Content scale are new scales on the MMPI-2.

### Social Introversion Scale (Si)

Lewis E. Drake, from the University of Wisconsin, developed the original MMPI Social Introversion Scale (Si) in 1946, by comparing subject responses to various MMPI items with social introversion scores on the Minnesota Thinking-Social-Emotional Introversion-Extroversion Inventory (T-S-E). The original normative sample was 350 female and 193 male college students. (Drake, 1946). This scale had only minor revisions during the restandardization project. The original Si scale lost one item, leaving a total of 69 items, and six items were slightly reworded because of outdated or grammatically incorrect language (Graham, 1993). Although most of the MMPI-2 standard clinical scales utilize uniform T scores, in order to allow more accurate comparisons between scales, the MMPI-2 developers decided to continue using linear T scores with the Social Introversion Scale (Butcher, Dahlstrom, Graham, Tellegen, and Kaemmer, 1989). Rojdev, Nelson, Hart, and Fercho (1994) found that the MMPI-2 Si scale correlated modestly with the interpersonal sensitivity scale of the SCL-90-R ( $r=.28$ ).

### Social Introversion Subscales (Si 1, Si 2 & Si 3)

Because early researchers did not consider the Social Introversion scale to be a standard clinical scale, subscales were not developed by Harris and Lingoes at the same time they developed them for the other major parent scales (Graham, 1993). It was not until 1975 that K. Serkownek developed Si subscales. However the internal consistency of the Serkownek subscales was found to be unacceptable (Ben-Porath, Hostetler, Butcher, & Graham, 1989). To

replace these subscales, Ben-Porath, et al. developed new subscales for the Social Introversion scale, using a college population. An item analysis found three factors which Ben-Porath et al. named Shyness / self-consciousness (Si 1), Social Avoidance (Si 2) and Self / Other Alienation (Si 3). Although these three scales contain only 39 of the full scale's 69 items, the researchers found that they account for almost 90% of the variance of the full scale. Ben-Porath et al. found that the internal consistency using a Cronbach's coefficient alpha was (for Si 1, Si 2 and Si 3 respectively) .82, .77, .77, in the college men; and .82, .75, .77 for college women. When the alphas were computed for the original MMPI-2 sample there were no significant differences found. In contrast, the inter-correlations between subscales ranged from .43 (Si 1 and Si 2) to .06 (Si 2 and Si 3), suggesting that the subscales are indeed measuring different constructs. The normative sample was used to develop linear T scores for the subscales. As with the full Social Introversion scale, the mean for the subscales is a T score of 50 and the standard deviation is 10.

Ben-Porath et al. (1989) determined validity of the subscales by examining behavioral ratings by spouses in a subsample of the MMPI-2 restandardization normative group. The subscale Shyness / Self-consciousness correlated most (either positively or negatively) with such statements as, "Acts very shy;" "Avoids contact with people for no reason;" "Is friendly;" and "Talks too much." Typical values were between .33 and .19. Correlations of the Social Avoidance subscale were highest with "Enjoys parties, entertainment, or having friends over;" and "Acts to keep people at a distance." Typical correlations were

.21, .18, and .19. The Self / Other Alienation scale correlated most with statements such as "Is self-confident," "Gets nervous and jittery," and "Gives up too easily." Correlational values were around .25 to .18. Correlations of the subscale scores and the behavioral ratings demonstrated divergent and convergent validity of the subscales.

Siebert and Meyers (1992) did a further validation study of the Social Introversion subscales. They found that the internal consistency of the subscales was .81, .75 and .78 for Si 1, Si 2 and Si 3 respectively. The researchers correlated the subscale scores with a variety of self-report measures to determine construct validity. The Shyness / Self-consciousness scale (Si 1) correlated highest with the social anxiety subscale of Fenigstein's Self-consciousness Scale (.75), the California Psychological Inventory—Sociability scale (-.72), the Cheek and Buss Shyness Scale (.71), and the Social Avoidance and Distress Scale (.70). The Social Avoidance Subscale (Si 2) correlated most with the Cheek and Buss Sociability Scale (-.56), the California Psychological Inventory—Sociability scale (-.52), and the Social Avoidance and Distress Scale (.51). The Self / Other Alienation subscale (Si 3) correlated highest with the Self-Esteem Inventory (-.62), and the Intellectual Efficiency Scale (-.56). It is interesting to note that the Shyness/ Self-consciousness subscale (Si 1) correlated to a greater degree with the measure of social avoidance and distress scale than did the Social Avoidance subscale (Si 2), which highlights the problem of distinguishing between the constructs. In summary Siebert and Meyers found that Si 1 and Si 2 were the most closely related of the three

subscales, but Si 1 correlated more with measures of shyness than did Si 2, whereas Si 2 was more likely to correlate negatively with measures of sociability.

Ward and Perry (1998) found that Si 1 and Si 2 seem to be more closely related to each other and to the parent scale. According to Ward and Perry these two subscales seem to be measuring aspects of social introversion, whereas Si 3 is more closely related to general negative emotion not specific to social anxiety or social introversion.

#### Social Discomfort Content Scale

The MMPI-2 contains new content scales which replace the original Wiggins content scales. Researchers rationally identified 22 separate clinically relevant categories. Three clinical psychologists acted as judges and assigned MMPI-2 items to the various categories. Any item that was placed in the same category by two of the three judges was placed into a provisional scale.

Following this the judges met and discussed disagreements until they reached a unanimous decision. Then an item analysis was performed and any item which did not correlate highly with the entire scale was discarded. The content scales use uniform T scores.

One of the content scales identified was named Social Discomfort. This is a 24-item scale which proposes to measure shyness or anxiety in social situations. Internal consistency (utilizing a Cronbach's coefficient alpha) was found to be .84 for women and .83 for men. Test-retest reliability (9 days) was found to be .90 for women and .91 for men. This scale correlates highly with scale 0 (.84-.85), suggesting that the two scales are measuring similar



constructs (Graham, 1993). However, this is not surprising, since there is considerable item overlap between the two scales.

### Current Status of Research

Although reliability of the scales designed to measure social introversion, social avoidance, and shyness on the MMPI-2, has been fairly well established, validity for these scales has been limited to correlations with self-report measures and with behavioral ratings by spouses. Most researchers agree that there are behavioral correlates to shyness. Individuals who are shy frequently have either real or perceived social skill deficits. In order to provide additional validity of the related social introversion scales of the MMPI-2, this study examined the correlation between these scales and social performance in a group activity.

### Hypotheses

1. It was hypothesized that Si, Si 1, Si 2, Si 3, SOD, SOD 1, and SOD 2 would correlate significantly with participant comfort level, perceived performance, amount of speech, blushing, eye contact, hand gestures, initiative, self-disclosure, and visible anxiety.
2. It was further hypothesized that participant perceived comfort level, and observer ratings of blushing and visible anxiety would have the highest correlations with Si 1 and SOD, because these subscales seem to be most directly related to the affective components of shyness and social anxiety.
3. It was also expected that Si 2 would be negatively correlated with amount of speech, because this subscale is associated with behavioral avoidance.

4. Finally it was hypothesized that Si 3 would correlate highly with lack of perceived social efficacy, because this subscale is associated with low self-esteem, especially in social situations.

## CHAPTER II

### METHOD

#### Participants

Participants were general psychology students at Pittsburg State University, who received class credit for their participation. Participants were treated in accordance with American Psychological Association (1992) ethical principles.

#### Materials

The paper and pencil version of the MMPI-2 was used. Subjects were provided with test booklets and asked to mark their responses on separate answer sheets. Although the focus of this study was on the Social Introversion scales of the MMPI-2, the entire test was administered according to standard procedures. Subjects also filled out a demographic form (see appendix A), and a questionnaire (see appendix B) about the group activity detailing the amount of anxiety felt during the activity, how easy or difficult it was for them, and how well they believe they performed. A rating scale (see appendix C) was used by trained individuals to identify observable signs of shyness and social anxiety. This scale was partially based on Zimbardo's (1977) observations of shy college students. He felt that these behaviors were observable indicators of shyness and social discomfort. Each of the five point ratings was taken to be a separate score, these scores were not combined to make an overall rating. Raters were upper-level undergraduate students who were trained in observation with a

video tape of a mock group activity. These raters were given instructions what sort of behaviors were indicative of ratings on each of the observations. Two independent raters observed each group and their individual ratings were averaged for data analysis.

### Procedure

Participants were given the MMPI-2 in four separate testing sessions. After completing the assessment, the participants assembled into groups of approximately 5-8 and were asked to form a circle for the group activity. A group facilitator was present to supervise the activity and two observers were positioned outside the circle. The participants wore name tags with first names only. The facilitator told the participants that this portion of the experiment involved a group discussion, during which each subject was expected to participate. The facilitator did not direct the discussion, but allowed the group to decide on the topic. However, if after about 10 minutes, one or more participants had not participated, the facilitator prompted the group member(s), one time only, with a question, "What do you think about that \_\_\_\_\_?" The observers rated the speaker as to the degree of visible anxiety and observable signs of shyness. After two more minutes the facilitator ended the group. Following this activity, the participants filled out the self-report questionnaire.

## CHAPTER III

### RESULTS

#### Sample Characteristics

132 subjects participated in the experiment. Following the advice of Green, Gwin, and Staal (1997), who provided suggested guidelines for MMPI-2 research, subjects were excluded from analysis for any of the following reasons: 1) they omitted more than 10 items; 2) they achieved a T score of over 69 on the Variable Response Consistency Scale (VRIN); 3) their F or Fb T score was greater than 100. Of the 132 subjects, 43 met one of these criteria. An additional subject was excluded because he stated that he had filled in half of the test randomly. Statistical analyses were conducted on the 88 participants that remained. The sample was evenly distributed between male and female participants (49% and 51% respectively). Most of the subjects were single (94%) and Caucasian (93%). Age of participants ranged from 18 to 45, with a mean age of 19.6. The participant's educational level ranged from 12 to 15 years of education with a mean of 12.36 years. See Table 1 for a list of means and standard deviations for MMPI-2 scores, as well as observer and self-ratings.

Table 1: Means and Standard Deviations of Observer Ratings,  
Self-Ratings and MMPI-2 T-scores.

<i>Variable</i>	<i>mean</i>	<i>SD</i>	<i>variable</i>	<i>mean</i>	<i>SD</i>
amount of speech	2.9716	1.1802	Si	47.9432	10.9622
initiative	2.9091	1.3636	Si 1	49.6705	10.8857
self disclosure	2.8068	1.2559	Si 2	44.4091	9.5708
eye contact	3.7102	.9088	Si 3	54.3409	11.2555
visible anxiety	1.7841	.7342	SOD	47.2386	11.2495
hand gestures	1.3295	.6059	SOD 1	46.4828	10.6976
blushing	2.1136	.9581	SOD 2	47.8621	10.1960
comfort level	2.8068	1.3801			
perceived performance	3.0682	1.4044			
perceived shyness	3.5227	1.5609			

#### Inter-Rater Reliability

Inter-rater reliability for the observer ratings varied considerably according to the category being measured. Ratings on the amount of speech had a reliability coefficient of .7109 ( $p < .001$ ). Ratings between observers for amount of self-disclosure and initiative correlated .6428 ( $p < .001$ ) and .5766 ( $p < .001$ ) respectively. Inter-rater reliability for participant eye contact ( $r = .2879$ ,  $p < .01$ ), gestures ( $r = .2526$ ,  $p < .01$ ) and visible anxiety ( $r = .2061$ ,  $p < .05$ ) were considerably lower, but still statistically significant. However, inter-rater reliability of observer rating of blushing was not statistically significant ( $r = -.0218$ ,  $p > .05$ ).

## Correlational Analyses

The Social Introversion scales of the MMPI-2 were correlated with observer and subject ratings. See Table 2 for a full list of Pearson correlation coefficients. It was hypothesized that participant-perceived comfort level and visible signs of anxiety such as blushing, lack of eye contact and restricted hand gestures would correlate highest with Si and SOD. Consistent with this hypothesis, the comfort level of participants correlated highest with Si 1 ( $r=.4968$ ), followed by SOD 2 ( $r=.4749$ ), SOD ( $r=.4687$ ), and SOD 1 ( $r=.4056$ ). These correlations were all significant at the  $p<.001$  level. Lack of eye contact correlated most highly with Si 1 ( $r=-.3693$ ,  $p<.001$ ); as did number of observed hand gestures ( $r=-.1994$ ,  $p<.05$ ). The average observer rating of visible anxiety correlated highest with SOD 2 ( $r=-.3218$ ,  $p<.001$ ) followed by Si 1 ( $r=-.2923$ ,  $p<.01$ ).

It was predicted that lack of involvement in the discussion would correlate highest with Si 2. This correlation was significant ( $r=-.3185$ ,  $p<.001$ ), but the highest correlation with amount of speech was with Si 1 ( $r=-.4074$ ,  $p<.001$ ).

Finally, it was expected that Si 3 would correlate highly with lack of perceived performance. However, this correlation was not significant ( $r=.1170$ ,  $p>.05$ ). It is interesting to note that Si-3 correlated significantly with only two measures, lack of eye contact and visible anxiety.

Table 2: Correlational Analyses Between MMPI-2 Standard Scores  
and Observer and Self-Ratings

	Si	Si-1	Si-2	Si-3	SOD	SOD-1	SOD-2
amount of speech	**-.3124	***-.4074	***-.3185	-.0637	***-.4021	***-.3575	***-.3465
blushing	*.1763	*.2268	.0563	.0811	.1324	.0724	**-.2607
eye contact	***-.3662	***-.3693	**-.2954	*-.2369	*-.3580	***-.3371	**-.2976
hand gestures	-.0819	*-.1994	-.1662	.0339	*-.1803	-.1662	*-.1790
initiative	**-.2795	***-.3764	**-.2600	-.0515	***-.3605	**-.3060	***-.3461
self- disclosure	*-.2308	***-.3494	*-.2166	-.0229	**-.3087	*-.2273	***-.3222
visible anxiety	**-.2827	**-.2923	.1452	**-.2663	**-.2756	*.2003	***.3218
comfort	***.3685	***.4968	***.3802	.0420	***.4687	***.4056	***.4749
how well performed	**-.2847	***.3955	**-.2758	.1170	***.3475	**-.2890	***.3373

\* $p < .05$

\*\* $p < .01$

\*\*\* $p < .001$

#### Post-hoc T-tests

Based on MMPI-2 scale results, scores on the various measures were analyzed by comparing the upper and lower third of the data. For the Si parent scale significant differences (at or below  $p < .01$ ) were found for amount of speech, initiative, reported shyness, eye contact, perceived comfort level, and perceived performance (see Table 3 for t-test values). For the Si 1 scale



differences between the high and low scoring group were found on amount of self disclosure, perceived comfort level, eye contact, perceived performance, initiative, amount of speech and reported shyness. Significant differences for Si 3 were found only for visible anxiety. High and low scorers on the SOD content scale differed significantly in regards to self-disclosure, perceived comfort level, eye contact, perceived performance, initiative, reported shyness, visible anxiety and amount of speech. T-test analyses were not conducted for Si 2 because so few participants scored above an average T score of 50, that it was difficult to split the data set in a way that allowed for any meaningful comparisons. In order to control for multiple comparisons, significance level was dropped to  $p < .01$ .

Table 3: T-test Analysis Between Observer/Self-Ratings  
and MMPI-2 Standard Scores

	Si	Si 1	Si 3	SOD	SOD 1	SOD 2
	t=	t=	t=	t=	t=	t=
spch	**3.13	***4.07	.54	***4.14	**3.09	**2.97
init	**2.86	***3.75	.42	***4.54	2.22	**2.84
discl	2.38	**3.25	.21	**2.91	.96	**2.83
eye	**3.34	***3.41	1.83	***3.74	**3.08	**2.81
hand	1.47	2.38	-.84	1.61	.89	1.48
vis	-1.88	-2.17	-2.17	**3.07	-1.30	**2.69
blu	-1.40	-1.97	-1.21	-2.53	-1.30	**2.67
com	**3.02	***4.26	-.37	***4.20	**3.28	***3.95
perf	**3.03	**3.41	-1.21	***4.39	**3.24	**2.99

spch= amount of speech; init= initiative; eye= eye contact; hand= hand gestures;  
vis= visible anxiety; blu= blushing; com= perceived comfort level; perf=  
perceived performance.

\*\*p<.01 \*\*\*p<.001

## CHAPTER IV

### SUMMARY AND CONCLUSIONS

These results offer some further validity evidence for the MMPI-2's utility in measuring shyness and social discomfort. Several of the initial hypotheses were supported, although not all results were as predicted. First, it was expected that the social introversion and shyness scales of the MMPI-2 would correlate significantly with observer ratings of anxiety and shyness and with participant-perceived discomfort and performance. This hypothesis was partially supported. For the Si scale, Si 2, SOD, and SOD 1 the majority of the correlations were significant. All correlations were significant for Si 1 and SOD 2. Counter to the hypothesis, Si 3 correlated significantly with only one measure. Implications of these findings are that with the exception of Si 3, the social introversion scales of the MMPI-2 are useful for predicting social introversion and shyness.

Secondly it was hypothesized that participant perceived comfort level, observer ratings of blushing, and visible anxiety would have the highest correlations with Si 1 and SOD. This prediction was supported in general. Correlations between Si 1, SOD, and SOD 2 and measures of anxiety were higher than the correlations between these measures and the other MMPI-2 scales. However, the inter-rater reliability for the blushing measure was so low that this measure should not really be considered as supporting or disproving this hypothesis. These findings suggest that there is some utility in using the Si, SOD, and SOD 2 scales for predicting anxiety in social situations.

It was also predicted that Si 2 would be negatively correlated with the amount of participation in the group discussion, because this scale was designed to measure behavioral avoidance. This hypothesis was supported in that there was a high correlation between Si 2 and amount of participation. However, the correlation between participation and Si 2 was not as high as the correlations between participation and some of the other MMPI-2 scales. Therefore Si 2 is not the best predictor of an individual's contribution to a group discussion.

Finally, it was hypothesized that Si 3 would correlate highly with lack of perceived social efficacy, because this subscale is associated with low self-esteem, especially in social situations. This hypothesis was not supported; the correlation between perceived performance and Si 3 was not statistically significant, which suggests that Si 3 does not reliably predict feelings of competence or incompetence of social performance. These results were supported by the exploratory analysis; the t-test between perceived performance and Si 3 was not statistically significant.

The Si scale and the SOD scale appear to be fairly useful at predicting social introversion, shyness and social discomfort. The majority of measures correlated significantly with Si and SOD. However, the subscales of Si and the component scales of SOD do seem to be measuring different, although possibly related, aspects of personality.

Based on this study the Si 1 subscale seems to be the best predictor of both perceived discomfort and feelings of social inadequacy in social situations.

In general this subscale seems to be measuring what it was proposed to measure: shyness. In this respect the SOD content component scale Shyness (SOD 2) appears to be similar. Based on this study, there did not seem to be a meaningful difference between these two scales. Further research could be done in this area to determine which of these scales is more useful in predicting shyness.

Si 2, which based on content appears to measure social avoidance, seems to be less related to anxiety than some of the other scales, as did SOD 1 (Introversion). This study provides some evidence that Si 2 and SOD 1 may distinguish between shyness and introversion.

It was hypothesized that the Si 3 subscale would be related to feelings of low performance in social situations. However this did not turn out to be the case. In fact the Si 3 subscale seems to be measuring something different from the other subscales. The correlations between this subscale and observer/self-ratings, as well as the contrasted group t-scores were generally not statistically significant, suggesting that it is not related to shyness, social discomfort or introversion. The findings of the present study are consistent with other research on the Si 3 subscale (for example, Sieber & Meyers, 1992; Ward & Perry 1998). It is possible that a high Si 3 score is indicative of general pathology or some other construct. Further research would be useful to determine what exactly this subscale is measuring.

All but one of the inter-rater reliability coefficients of observer ratings were statistically significant. The inter-rater reliability of participant participation, self-

disclosure and initiative were acceptable. Although the inter-rater reliability of eye contact, number of hand gestures and visible anxiety were low, they were statistically significant. However the observer ratings of blushing did not appear to be related to one another. Possibly, it was difficult for the raters to tell if a subject was blushing or not. In any case the inter-rater reliability for this rating was so low that any conclusions based on this score are likely inaccurate. As a result, analyses based on rater observations of blushing are not included as evidence or lack of validity of MMPI-2 scales in this study. It is interesting that the inter-rater reliability of visible anxiety was somewhat low. In addition, although the correlations between most of the MMPI-2 scales and this measure were statistically significant, they were not as high as the correlations between the test scores and some of the other measures. This suggests that people interpret non-verbal signals differently from one another. It is possible that this may be indicative of one of the difficulties that shy individuals face: that observers do not always interpret the shy individual's anxiety as such.

In conclusion, the present study provides additional validity information about the MMPI-2. Previous research had shown that the social introversion scales of the MMPI-2 correlated significantly with other self report measures of social discomfort and shyness. The present demonstrated that the MMPI-2 is a valid predictor of observer and self-ratings of shyness and social discomfort.

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## APPENDIX

Appendix A

Demographic Form

Code\_\_\_\_\_

Please circle:

Gender: female    male

Race: Asian    Black    Hispanic    White    Other\_\_\_\_\_

Class: Freshman    Sophomore    Junior    Senior    Other\_\_\_\_\_

Marital status: Single    Married    Divorced    Separated

What is your current age? \_\_\_\_\_

What is your major?\_\_\_\_\_

## Appendix B

### Subject Questionnaire

Please answer the following questions about the group exercise you just completed. Circle the number that corresponds to your feelings.

How comfortable did you feel during the group activity?

- 1—very comfortable; it didn't bother me at all
- 2—quite comfortable
- 3—fairly comfortable
- 4—neither comfortable nor uncomfortable
- 5—somewhat uncomfortable; it bothered me a little
- 6—uncomfortable; I was bothered by the activity
- 7—very uncomfortable; I was bothered very much by it

How well do you think you performed during the group activity?

- 1—excellent
- 2—good
- 3—pretty well
- 4—OK
- 5—a little bit bad
- 6—pretty bad
- 7—terrible

How did your feelings during this activity compare to how you usually feel during social situations?

- 1—extremely similar; I always feel the way I did
- 2—similar; I usually feel the way I did
- 3—somewhat similar; I feel the same more often than not
- 4—neither similar nor dissimilar; sometimes I feel that way sometimes I don't
- 5—somewhat dissimilar; I feel differently more often than not.
- 6—dissimilar; I usually feel differently than I did today
- 7—extremely dissimilar; I always feel differently than I did

How shy do you consider yourself to be?

- 1—not at all shy; I'm very outgoing
- 2—not shy; I'm outgoing
- 3—more outgoing than shy
- 4—neither shy nor outgoing
- 5—somewhat shy
- 6—pretty shy
- 7—extremely shy

Before today did you know any of the members of the group you were in?

## Appendix C

Rating scale—based on Zimbardo's (1977) observation of shy college students.

Eye contact:

- 1 (None or rare; looked at floor or off into space most or all of the time)
- 2
- 3 (Moderate)
- 4
- 5 (Very much; looked at person speaking all or almost all of the time)

Self disclosure—amount of personal information, opinions, or feelings shared:

- 1 (None or very little)
- 2
- 3 (Moderate amount)
- 4
- 5 (A great deal)

Blushing—reddening of face and neck

- 1 (None)
- 2
- 3 (Some)
- 4
- 5 (Very apparent or frequent)

Visible anxiety—such as: voice trembling, apparent shaking

- 1 (None or very little)
- 2
- 3 (Moderate)
- 4
- 5 (A great deal)

Amount of speech

- 1 (Almost none, only when asked direct question)
- 2
- 3 (Moderate amount)
- 4
- 5 (Talked a lot)

Initiative—took initiative in conversation, such as: changed topic, asked questions

- 1 (None or almost none)
- 2
- 3 (Some initiative)
- 4
- 5 (A lot; seemed to be a leader in the conversation)

Number of hand gestures

- 1 (None or almost none)
- 2
- 3 (Moderate number)
- 4
- 5 (A large number of gestures)

