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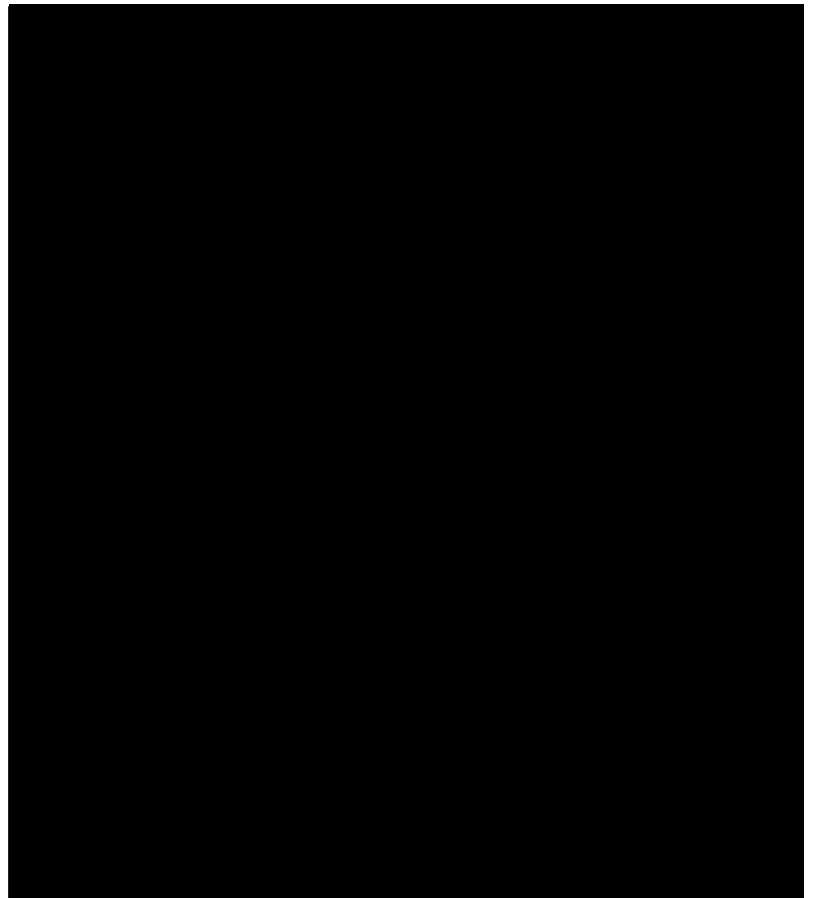
The University of Southern Mississippi

A PSYCHOMETRIC EVALUATION OF THE REVISED

OPTIMISM-PESSIMISM SCALE OF THE MMPI-2

by

Ginger Burge DeBrule

A Dissertation
Submitted to the Graduate Studies Office
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

Approved:

August 2009

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ABSTRACT

A PSYCHOMETRIC EVALUATION OF THE REVISED OPTIMISM-PESSIMISM

SCALE OF THE MMPI-2

by Ginger Burge DeBrule

August 2009

The present study tested the psychometric properties of the Revised Optimism-Pessimism

Scale (PSM-R) of the MMPI-2. This scale purportedly measures the respondent's

explanatory style on a dimension of optimism and pessimism. Participants included 92

college undergraduates and 2,729 participants from archived outpatient data. The PSM-R

is a reliable measure, based on test-retest reliability and internal consistency. However,

the construct validity of the measure is questionable. Evaluation of the PSM-R items

suggests that the items are not all related to the optimism-pessimism construct. In

addition, convergent validity of the PSM-R was assessed using measures of attributional

style, dispositional optimism, hope, depression, neuroticism, extraversion, and positive

and negative affect. Discriminant validity was assessed using measures of social

desirability and self-consciousness. The PSM-R was significantly correlated with all of

these validity measures, except attributional style. The pattern of results with these

measures and the PSM-R resembled the results of the dispositional optimism measure,

rather than that of attributional style. Results from the principal components analysis

suggest that the PSM-R does not contain a single factor of optimism-pessimism, but

rather contains several factors, some of which are unrelated to the construct of optimism-

pessimism. The extracted principal factor is a more pure form of optimism-pessimism,

based upon evaluation of the items within the factor, and the correlations between this factor and the other measures of optimism-pessimism. The extracted principal factor appears to resemble dispositional optimism-pessimism rather than explanatory style optimism-pessimism. Current findings suggest that the PSM-R is not accurately measuring what it claims, and use of the measure is questionable as psychometric research on the measure continues.

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CHAPTER I

INTRODUCTION

The psychological concepts of optimism and pessimism have been widely researched since the 1980s (Peterson, et al., 1982; Scheier & Carver, 1985), and have become a focus of the positive psychology movement. Optimism has been related to positive outcomes such as positive growth (Carver et al., 1993) and coping (Dougall, Hyman, Hayward, McFeeley, & Baum, 2001), whereas pessimism has been related to negative outcomes such as depression (Abramson, Metalsky, & Alloy, 1989) and heart disease (Kubzansky, Sparrow, Vokonas, & Kawachi, 2001). The precise meaning of these relationships may depend on the theoretical nature of optimism and pessimism. Many investigators have utilized measures of dispositional optimism and pessimism, such as the Life Orientation Test (LOT; Scheier & Carver, 1985), which insists that the constructs are stable, personality traits based on positive and negative future expectations. However, other researchers have utilized measures of optimism and pessimism, such as the Attributional Style Questionnaire (ASQ; Peterson et al., 1982), which suggests that the constructs are dependent on explanatory style. Explanatory style is learned, and is based upon the perceived causality of positive and negative life events that have occurred, and then applied to future events.

The focus of the current study is to examine the psychometric properties of a relatively novel measure of optimism and pessimism that is grounded in explanatory style theory. The Revised Optimism and Pessimism Scale (PSM-R; Malinchoc, Offord, & Colligan, 1995) is a 263-item measure of explanatory style that was derived from the Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Butcher et al., 2001). The

measure yields one composite score, so that optimism and pessimism are assessed as a unidimensional construct. The PSM-R is utilized predominantly in the medical field, and although the measure has been used in research with meaningful outcomes such as mortality (Maruta, Colligan, Malinchoc, & Offord, 2000, 2002), the PSM-R has several limitations. The first limitation is the lack of published reliability and validity. The second limitation is that the technique that was utilized to create the measure may not have been appropriate, resulting in inaccurate item selection. A third limitation is the lack of evidence for a unidimensional factor structure. The PSM-R uses a large number of MMPI-2 items from all of the clinical and validity scales, so it is possible that the measure reflects multiple constructs, rather than a unidimensional factor of optimism and pessimism.

<center>Construct of Optimism-Pessimism</center>

Optimism and pessimism are lay terms that are commonly used to describe a general positive or negative outlook. Psychology currently has two main theories of defining and explaining these constructs: dispositional and explanatory style. These two theories use the same terms to describe the unidimensional construct, but they vary considerably with regard to the theory that is used to define the construct.

Dispositional Theory of Optimism-Pessimism

The dispositional theory is somewhat similar to the layman's definition of optimism-pessimism. This theory focuses on future events, and defines optimism as having the future expectation that good things will happen, and pessimism as having the future expectation that bad things will happen. Scheier and Carver (1985) support the idea that all behavior is motivated by goals, as explained by the expectancy-value models

of motivation. According to this model, there are two things to consider when assessing a situation: the first is how to move toward desirable goals and away from undesirable goals, and the second is the attainability of the goal (Carver & Scheier, 2002; Peterson & Steen, 2002). If individuals believe that they can obtain the desirable goal, they are optimistic; if they do not believe that they can obtain the desirable goal, they are pessimistic. The amount of control that the person has over obtaining the goal may influence the level of optimism-pessimism. In addition, any factor that could be included in assisting the person to the goal, such as luck or ability, may also affect the amount of optimism-pessimism towards obtaining goal (Scheier & Carver, 1985). Specific pathways to the goal are not necessary to the theory. The dispositional theory includes only the generalized expectation that good or bad events will occur in the future, not the causes for the events to occur.

Explanatory Style Theory of Optimism-Pessimism

The explanatory style theory of optimism and pessimism is less intuitive than the dispositional theory, and defines future expectations as being formed from a person's perceptions of the causes of past events. This theory originates from the Learned Helplessness Theory (LHT: Maier & Seligman, 1976). The LHT is based on animal behavior in uncontrollable and controllable situations, and stated that exposure to uncontrollable situations can lead to a generalized expectation that outcomes occur independently of one's actions (Seligman, Maier, & Geer, 1968). This expectation of noncontingency results in motivational deficits, such as passivity and lack of attempting responses. In addition, this expectation also interferes with the learning of new

relationships in which the animal may be able to exert control, thus producing a cognitive deficit (Seligman et al., 1968).

Maier et al. (1976) reviewed the literature and found similar findings in human participants using controllable and uncontrollable situations through the use of human analogues to the shuttlebox. Frequently cited in the LHT literature is Hiroto's (1974) study that illustrated helplessness in college students using noise as the aversive stimulus. Students who were exposed to uncontrollable noise were less likely to move a lever to stop the aversive noise in later trials with controllable noise. These students passively endured the aversive noise, even when the ability to end the noise was possible (Hiroto, 1974).

The LHT had several limitations when it was applied to humans, because it did not account for human cognition and the attributions that people make regarding the events that they experience. Also, the LHT did not provide the details stipulating why an event may be viewed as uncontrollable, and how these distinctions in perceiving causation have an impact on future behavior (Abramson, Seligman, & Teasdale, 1978). For example, the event could be considered uncontrollable due to deficiencies within themselves, or due to environmental reasons and uncontrollable for everyone. Thus in 1978, the LHT was revised to include attributions, and the Reformulated Learned Helplessness Theory (RLHT: Abramson et al., 1978) was proposed. The RLHT incorporated attributions, and stated that people's reactions to events are based not only in the events that they experience, but also on why they believe that the event occurred.

The RLHT adds three dimensions when considering how an individual attributes the cause of events: internality-externality, stability-instability, and globality-specificity

(Abramson et al., 1978). Internality-externality is how much that people perceive that a situation was caused by themselves, or caused by forces external to themselves, such as the situation or other people. Stability-instability is how much that the cause of the event was viewed as being consistent or frequently occurring, or inconsistent and transient over time. Globality is how much that the cause of the event was perceived as situation-specific, or likely to occur across situations (Abramson et al., 1978).

According to the RLHT, people will tend to use the same pattern of attributions across similar situations, called an attributional style. However, Peterson and Seligman (1984) explain that the term "attribution" is used by several theorists, and may be unclear and too general of a term to reflect their theory. As a result, the term explanatory style was suggested as the preferred term by Peterson and Seligman (1984). Explanatory style is viewed as more specific than attributional style because what is being examined is the individual's interpretation of the cause, or explanation, of events that occur within his or her life. Explanatory style also incorporates the specific three attributional dimensions (internality-externality, stability-instability, and globality-specificity) to describe the perceived cause of the event. Based on the combination of the attributions, explanatory style is theoretically described as a dimension, with optimism and pessimism at each end of the continuum (Peterson, 1991).

An individual's optimistic or pessimistic explanatory style differs depending on whether the event that the individual is experiencing is a *good* or *bad* event. Pessimistic individuals are defined as people who attribute *negative* events in their lives to themselves (internal), consistently occurring (stable), and across situations (global); and *positive* events to forces outside of themselves (external), inconsistently occurring

(unstable), and related to that situation only (situation-specific; Peterson & Seligman, 1984). Optimistic individuals have the opposite pattern. They are defined as people who attribute *negative* events to external, unstable, situation-specific causes; and *positive* events to internal, stable, global causes. Chronically optimistic attributions lead to a sense of resilience regarding negative events, whereas chronically pessimistic attributions lead to feelings of helplessness regarding negative events (Peterson, Seligman, & Vaillant, 1988).

The use of the terms *optimism* and *pessimism* were not only chosen because the selected attributions were believed to define the constructs, but also for conventional acceptance. Peterson (1991) wrote that the explanatory style theory does not lend itself to common speech, therefore "people pay more attention to these constructs with these designations" (p. 5). By using the terms *optimism* and *pessimism*, the two types of explanatory style are easily identifiable and can be used as an abbreviated way of describing the two polarities of the explanatory style dimension.

Measurement of Optimism-Pessimism

There are various techniques that are used to measure optimism-pessimism, just as there are various definitions of the construct. Because dispositional theory is focused on expectations and explanatory style is focused on perceived causation, it is understandable that the two theories would have different means to measure the construct. There are three primary methods of measuring optimism and pessimism: the Life Orientation Test, Attributional Style Questionnaire, and Content Analysis of Verbatim Explanations.

The Life Orientation Test (LOT; Scheier & Carver, 1985) is the most common self-report questionnaire that is used to measure dispositional optimism and pessimism. This measure directly asks the respondent about general, future expectations. There are only 12 items included in the measure. Four items are scored as answered (e.g., "I'm always optimistic about my future."), four items are reverse scored (e.g., "I hardly ever expect things to go my way."), and another four are considered filler items (e.g., "I enjoy my friends a lot."), that are not included in the score. The participant selects a response to each item from 0 (*strongly disagree*) to 4 (*strongly agree*). Responses to these items produce one total score that ranges between 0 and 32, with higher scores reflecting optimism and lower scores reflecting pessimism (Scheier & Carver, 1985).

The Attributional Style Questionnaire (ASQ; Peterson et al., 1982) is the most common measure of optimism and pessimism based on explanatory style. It is a self-report measure that asks the respondent to read about six positive and six negative events as if they were to happen to the respondent (Peterson et al., 1982). Following each situation, the respondent is asked to determine the causality of each event on a seven-point scale, based on the three dimensions (internality-externality, stability-instability, globality-specificity) of explanatory style. Scale scores based on these dimensions are not recommended for use because of the low reliability. Instead, the scores for the six positive-event items yield a composite positive attributional style score (CoPos), and six negative-event items yield a composite negative attributional style score (CoNeg). A total score (CPCN) is derived by subtracting the CoNeg from the CoPos. The higher the CPCN score, the more positive the attributions indicating an optimistic explanatory style,

and the lower the score the more negative the attributions, indicating a pessimistic

explanatory style (Peterson, et al., 1982).

The Content Analysis of Verbatim Explanations (CAVE: Peterson, Luborsky, &

Seligman, 1983) is a technique that is used for analyzing written and spoken language for

explanatory style. The CAVE has been utilized as a means of measuring explanatory

style from speeches, diary entries, and therapy session recordings (Schulman, Castellon,

& Seligman, 1989). To obtain enough information regarding the respondent, the language

samples are required to be of a particular word length (500-1,000 words according to

Kamen & Seligman, 1987). The CAVE technique involves two steps that are completed

by raters who are trained in explanatory style theory. First, attributions that are made by

the individual for positive and negative events are extracted from the individual's written

or spoken language. Second, the attributions are scored on three dimensions: internality-

externality, stability-instability, and globality-specificity (Reivich, 1995). Similar to the

ASQ, the scores that are obtained across the positive and negative events are totaled, and

result in one score that indicates the level of optimistic and pessimistic explanations

(Schulman et al., 1989).

There are a few published studies that have compares these widely-used measures

of optimism-pessimism. Schulman et al. (1989) authored the only investigation

comparing the ASQ and CAVE. The study included a sample of college undergraduates.

The researchers took the answers from the completed ASQ, typed them out, and

randomized the events among the participants. This information was provided to the three

raters, who then applied the CAVE technique to the typed-out responses. The raters'

results were compared to the results that were obtained on the ASQ. The results of the

CAVE were highly consistent with the ASQ ($r = .71, p < .01, N = 159$). These results suggest a strong relationship between that of self-reported explanatory style, and the explanatory style that is extracted through rater interpretation (Schulman et al., 1989). This relationship is important because both the CAVE and ASQ will be included in the current study, and they are expected to yield a strong correlation ($r > .70$).

Peterson (2000) reported that the dispositional-theory-based Life Orientation Test (LOT; Scheier & Carver, 1985), the explanatory-style-theory-based ASQ, and explanatory-style-theory based CAVE, all had negative relationships with measures of other constructs, such as health problems or depression. However, although the associations that these measures have with other constructs are similar, the relationship between the optimism and pessimism measures themselves is inconsistent in the few studies that are available. Hjelle, Belongia, and Nesser (1996) reported correlations between the ASQ and LOT in previous studies that ranged between $r = .25$ and $r = .45$, but failed to provide more specific information about these studies. In their own study using undergraduate students, Hjelle et al. (1996) reported that the relationship found between the LOT and ASQ was $r = .41$ ($p < .01, N = 436$). In addition, Gillham, Shatté, Reivich, and Seligman (2002) reported correlations between the ASQ total score and LOT of $r = .63$ and $r = .41$ in two different samples in an unpublished study by Gillham, Tassoni, Engel, DeRubeis, and Seligman. Because of the potential for low reliability with the ASQ, disattenuated correlations were also calculated with these two samples to statistically remove measurement error, resulting in the correlation increasing to $r = .77$ and $r = .49$ respectively. A weaker relationship was found in an unpublished study by Kamen (as cited in Gillham et al., 2002) of $r = -.25$ between the LOT and the ASQ

negative composite score. No additional information is provided about these unpublished data.

The results across the few studies that compare the LOT, ASQ, and CAVE vary considerably. Although each measure is rooted in a different theory (expectation versus causation), both theories are reporting to measure optimism and pessimism as described by positive and negative cognitions, suggesting some overlap between the concepts. The LOT will be included in the current study, and is expected to have a moderate correlation (r = -.40 to -.70) with the PSM-R and the ASQ.

A New Measure of Optimism-Pessimism

The Revised Optimism-Pessimism Scale of the MMPI-2 (PSM-R) is a relatively new self-report measure of explanatory-style optimism and pessimism using items from the MMPI-2 item pool. The interest in developing such a measure was twofold. First, the MMPI-2 is used in a large variety of clinical and research environments. By using the MMPI-2 there would be no need for an additional measure specifically for optimism-pessimism. In addition, MMPI-2 data is archived from previous studies. This allows for longitudinal studies by going back and obtaining MMPI-2 scores from the past, and correlating them with current measures of psychological and physical health (Brummett, Helms, Dahlstrom, & Siegler, 2006; Kubzansky et al., 2002; Kubzansky et al., 2001; Maruta et al., 2000, 2002).

Development of the original PSM

The original PSM was created to measure optimism and pessimism by applying the CAVE technique to the original 566 MMPI items (Colligan, Offord, Malinchoc, Schulman, & Seligman, 1994). Researchers, reported only as "Seligman and colleagues"

(p. 76), read the MMPI items and placed each of them in a category of *good event* (e.g., feeling life is meaningful), *bad event* (e.g., wishing he or she was deceased), or *unclassifiable* (e.g., liking a magazine; Colligan et al., 1994). For the few duplicate items on the MMPI, only the first of the pair were included, and the second item was removed, resulting in no duplicate items being present on the PSM. The analysis resulted in 106 items that reflected *good events* and 192 items that reflected *bad events* that were included on the measure. Items were included from each of the ten MMPI clinical scales and the three validity scales (Colligan et al., 1994).

After selecting the 298 items for the measure, the items were rated by "three independent raters, each experienced in the CAVE technique" (p. 77) on the three, seven-point Likert scales of internality-externality, stability-instability, and globality-specificity for scoring purposes (Colligan et al., 1994). The mean rating across the three raters was calculated for each scale. Then, the means from the three scales for each item were summed, which created a composite weight for each item that could range from 3-21. Items with low weights had causal explanations that were external, unstable, and specific; items that had high weights had causal explanations that were internal, stable, and global.

The items of the MMPI were treated as a cohesive language sample to satisfy Kamen and Seligman's (1987) suggested word limit for applying the CAVE technique. Thus, each item on the MMPI was treated as if it was spontaneously written or spoken, rather than a true-or-false answer to a presented question. This is in contrast to the original design of the CAVE technique, which was to identify attributions that people made on their own in a written or verbal language sample (Peterson et al., 1983).

Obtaining the multiple causal attributions necessary for explanatory style from the single statement items on the MMPI-2 appears to be questionable. The items are phrased as questions about what the respondent has experienced, or is currently experiencing, and interpretations of the causation about those experiences are not included within any question. When the CAVE technique was applied to the MMPI-2, the causation of each item was inferred by the raters. However, in reading the items, there is no clear indication of causation. Thus, some PSM items appear to be somewhat related to the construct of optimism and pessimism because they illustrate positive and negative thoughts. However, the items do not appear to be measuring explanatory style because there is no reference to causation.

Much like the ASQ and CAVE, the endorsed PSM items were summed to create composite scores. The summary raw score for the items that were determined to reflect good events is referred to as the positive composite (CoPos) raw score, and the summary raw score for the items that reflect negative events is referred to as the negative composite (CoNeg) raw score. A high CoPos raw score indicates an optimistic explanatory style for good events, such that positive events are viewed as internal, stable, and global. A low CoPos raw score indicates a pessimistic explanatory style for good events, suggesting that negative events are external, unstable, and specific. The CoNeg score is just the opposite. A high CoNeg raw score indicates a pessimistic explanatory style for bad events (internal, stable, and global), and a low raw CoNeg score indicates an optimistic explanatory style for bad events (external, unstable, and specific). The CoPos and CoNeg scores are combined for a total composite score (CPCN) that reflects the level of optimistic and pessimistic explanations in both good and bad situations. To fit the

PSM with the design of the other MMPI scales, CPCN is converted into a normalized

T-score, and is scored in the direction of psychopathology. Thus, high overall scores

indicate pessimism, and low overall scores indicate optimism, with the majority of

individuals scoring around the middle of the scale, which suggests a blend of pessimism

and optimism (Colligan et al., 1994).

Reliability estimates for the original PSM have been adequate, with an internal

reliability of α = .95 for the bad-event items, and α =.85 for good-event items (Colligan et

al., 1994). Test-retest reliability for the PSM for 150 undergraduate students after a one-

week interval was r = .90. During test development, the PSM items were only validated

against the other scales of the MMPI. This process poses a problem, because many of the

items are the same for the PSM and MMPI scales, which results in item overlap. Not

surprisingly, the PSM correlated with the validity and clinical scales of the MMPI (using

the K correction), ranging from r = .13 to .68 (p < .01, N = 1,401). However, no

significant correlation between the PSM and the Mf or Ma scales was found. The degree

of relationship between the PSM score and each of the clinical scales was related to the

proportion of items that were included from the scale (Colligan et al., 1994).

Development of the PSM-R

To accommodate the changes between the MMPI and the MMPI-2, the PSM was

revised, and became the PSM-R (Malinchoc et al., 1995). Rather than re-apply the CAVE

technique to the new MMPI-2, the 35 PSM items that were removed in the revision of the

MMPI were simply removed from the PSM-R. The resulting 263 items on the PSM-R

include 85 MMPI-2 items that reflect good events, and 178 MMPI-2 items that reflect

bad events (Malinchoc et al., 1995). The list of copyrighted MMPI-2 item numbers that

are included on the PSM-R can be found in Appendix A, but cannot be presented

verbatim. Similar to the original PSM, the PSM-R items are drawn from all the primary

scales of the MMPI-2. The PSM-R uses a large proportion of items from the

Hypochondriasis (Hs), Depression (D), Psychasthenia (Pt), and Schizophrenia (Sc)

clinical scales (see Table 1).

Table 1

Number of PSM-R Items per MMPI-2 scale

Clinical Scale	Number of Items (Total Number of Items)	Validity Scale	Number of Items (Total Number of Items)
Hs	29 (32)	L	2 (15)
D	40 (57)	F	35 (60)
Hy	38 (60)	K	18 (30)
Pd	32 (50)		
Mf	16 (56)		
Pa	24 (40)		
Pt	40 (48)		
Sc	56 (78)		
Ma	23 (46)		
Si	36 (69)		

Upon review of the PSM-R, it is evident that there is a rather diverse, extensive

collection of items, although only the construct of optimism-pessimism is supposedly

being measured. Some items are about experiencing positive beliefs (e.g., Items #9 and #109) or experiencing negative beliefs (e.g., Items # 71 and #73), which would appear to be related to the construct. However, there are also items that appear to be unrelated to the construct of optimism-pessimism, such as the experience of hallucinations (e.g., Item #198), asthma (e.g., Item #181), paranoia (e.g., Item #144), fear of blood (e.g., Item #115), and spiritual possession (e.g., Item #24). Inclusion of items such as these suggests that the PSM-R has low face validity. In addition, with such diverse item content, the PSM-R may be measuring more than just optimism and pessimism, which illustrates the questionable construct validity of the measure.

The inclusion of such unrelated items is not specifically addressed in the PSM-R literature. However, by examining the process in selecting the items, it is clear that the CAVE technique is not sufficient for screening appropriate items because the technique simply responds to the polarity of the statement. All items that could be interpreted by the raters as being descriptive of a good or bad event or experience were included in the measure. An item with worry content is considered a *bad event* and an indication of pessimism; however, so is an item including paranoid delusions. On the other hand, an item with content regarding competence is viewed as a *good event* and an indication of optimism, but so is having good vision. Thus, the CAVE technique may have inappropriately included MMPI-2 items based on the mere valence of the terms that were used.

The PSM-R has exhibited some preliminary evidence of reliability. Separate Cronbach's alphas for internal consistency were calculated for the positive ($\alpha = .84$) and negative items ($\alpha = .95$) of the PSM-R, based on the normative sample of 1,408

participants (Malinchoc et al., 1995). CoPos and CoNeg scores were significantly

correlated in this same sample ($r = -.59$, $p < .01$). Upon comparison, the distribution of

scores was similar for the PSM and PSM-R. T-scores were exactly the same in 34% of

the normative sample, and were within two T-score units in 96.5% of the sample. It is

suggested that scoring less than 50 reflects an optimistic explanatory style, and scoring

over 50 reflects a pessimistic explanatory style (Malinchoc et al., 1995).

Validity of the PSM-R

There were no measures of validity reported when the PSM-R was established.

However, since the publication of the PSM-R, it has been correlated with several

measures of mental and physical health (Hermann, Trenerry, & Colligan, 1996;

Kubzansky et al., 2002; Kung et al., 2006). The lack of established validity is a potential

weakness of the PSM-R. However, comparing constructs similar and dissimilar to the

optimism-pessimism construct may address this concern. For the current study, the

following constructs were expected to significantly correlate with explanatory style, and

were used as measures of convergent validity: dispositional optimism-pessimism,

attributional style, hope, extraversion-neuroticism, positive and negative affect, and

depression. The constructs of social desirability and self-consciousness were not expected

to have a relationship with explanatory style optimism-pessimism, and were therefore

used as measures of discriminant validity.

Hope is a cognitive construct that is similar to optimism. Both hope and

dispositional optimism are based on the expectancy theory of motivation, which means

that they are based on the expectancy that goals can be achieved (Snyder, Sympson,

Michael, & Cheavens, 2002). There are, however, unique additions to hope that

distinguish it from both theories of optimism. These additions are the measure of the

belief that successful pathways are available, and the belief that the individual has the

ability to take action to reach those goals. Thus, to have hope, it is necessary, but not

sufficient, to think that positive events or goals will be achievable in the future, but there

must also be a course of action and the belief the action is possible to reach the event or

goal (Snyder et al., 2002). In support of this relationship, The Hope Scale (Snyder et al.,

1991) was found to be correlated with the LOT in two undergraduate student samples

($r = .60, p < .01, N = 241$; and $r = .50, p < .01$ $N = 158$). However, the exact empirical

relationship between hope and explanatory style has not been fully addressed. Hope does

not include causal attributions in developing expectancies for future events, and

explanatory style does not include goals or pathways to achieve those goals. Hope was

evaluated in the current study as a measure of convergent validity, and was expected to

be moderately correlated ($r = -.30$ to $-.60$) with the PSM-R.

It has been suggested that optimism and pessimism may only be new names for

the personality constructs of extraversion and neuroticism, respectively (Smith, Pope,

Rhodewalt, & Poulton, 1989). Extraversion consists of positive emotions, warmth, and

activity, whereas neuroticism is described as emotional instability, with the tendency to

worry and experience negative emotions. Marshall, Wortman, Kusulas, Hervig, and

Vickers (1992), using 889 men who were Naval recruits, found that the LOT correlated

with neuroticism and extraversion, as measured by the NEO-Personality Inventory

(NEO-PI; Costa & McCrae, 1989). In a separate study, the LOT correlated with

neuroticism as measured by the Taylor (1953) Manifest Anxiety Scale (TMAS; $r = -.50$,

$p < .01, N = 103$) and with the trait form of the Spielberger, Gorsuch and Lushene (1974)

State-Trait Anxiety Inventory (STAI; $r = -.66$, $p < .01$, $N = 103$), although other

components of neuroticism were not assessed in this undergraduate sample (Smith et al.,

1989). In another undergraduate study, optimism was found to have a significant negative

relationship with the trait form of the STAI ($r = -.59$, $p < .01$, $N = 1,420$), and with

neuroticism as measured by the Guilford-Zimmerman (1976) Temperament Survey

($r = -.50$, $p < .01$, $N = 1, 692$; Scheier, Carver, & Bridges, 1994).

Neuroticism and extraversion tend to have lower associations with explanatory

style than with dispositional optimism. Cheng and Furnham (2001), using 120

undergraduate students, found that the relationships differed based on the positive and

negative events that are listed on the ASQ. Neuroticism, as measured by the Eysenck

Personality Questionnaire, (Eysenck & Eysenck, 1975) was significantly associated for

the negative situations ($r = .26$, $p < .01$), but not for positive situations. In addition,

extraversion had a significant relationship ($r = .33$, $p < .001$) for positive events, but no

significant relationship for negative events.

Because of their consistent overlap with extraversion and neuroticism, some

researchers have statistically controlled for these constructs when looking at relationships

between optimism and pessimism and other constructs. Smith et al. (1989) found that the

predictive relationship between optimism and pessimism (as measured by the LOT) and

report of physical symptoms, became nonsignificant when neuroticism (as measured by

the STAI) was statistically controlled. However, this pattern of results was not found for

other variables. During the reevaluation of the LOT, neuroticism was statistically

controlled, but a significant negative relationship between optimism and depression

($r = -.28$, $p < .01$, $N = 542$), and a significant positive relationship between optimism and

coping ($r = .24$, $p < .01$, $N = 390$) were still found (Scheier et al., 1994). Both neuroticism

and extraversion will be used in the current study as measures of convergent validity. It is

predicted that the PSM-R will be positively correlated with neuroticism, and negatively

correlated with extraversion. Based on previous studies, these relationships are predicted

to be moderate ($r = .30 - .60$), suggesting that the constructs are related, but distinct.

Similar to the concern that optimism and pessimism may overlap with

neuroticism and extraversion, is that optimism and pessimism may not be distinct from

the constructs of positive and negative affect. Watson and Clark (1984) combined several

personality components, stating that they are a part of larger, more stable traits of

positive and negative affect. Negative and positive affect are not the opposite of each

other, as the names may suggest. Negative affect reflects subjective distress and a variety

of negative mood states (e.g., anger, anxiety), versus feelings of confidence and

peacefulness (Watson & Clark, 1984). Positive affect measures feelings of eagerness and

engagement, versus lethargy (Watson & Clark, 1984). Relationships between optimism

and positive affect, as well as pessimism and negative affect, are inconsistent. In a study

that used the LOT, pessimism displayed a stronger association with negative affect,

anxiety, and depression, than did optimism (Marshall et al., 1992). A similar relationship

was found using the ASQ, in which a significant relationship emerged between the ASQ

total score and negative affect ($r = .33$, $p < .01$, $N = 259$), but no significant relationship

was found with positive affect (Luten, Ralph, & Mineka, 1997). In addition, Luten et al.

(1997) found the relationship between depression and ASQ remained significant when

controlling for negative affect and positive affect. Both positive and negative affect will

be measured in the current study and it is predicted that the PSM-R will have a positive

relationship with negative affect, and a negative relationship with positive affect. The relationships are expected to be moderate ($r = .30$ to $.60$) because of the construct overlap, but not strong, because the constructs are expected to be distinct.

Depression is a construct that is strongly associated with explanatory-style based optimism and pessimism. The LH and RLHT theories were initially applied to explain the etiology of depression (Abramson et al., 1978). The explanatory style that is associated with depression is the same style that is associated with pessimism, with regard to positive (external, unstable, situation-specific) and negative events (internal, stable, global). The negative relationship between the ASQ and depression (as measured by the Beck Depression Inventory [BDI; Beck, 1978]) has been well established (Hirsch, Wolford, LaLonde, Brunk, & Parker-Morris, 2009; Luten et al., 1997; Peterson & Seligman, 1984; Schulman et al., 1989). This finding has also emerged between the PSM-R and the BDI, and the Center for Epidemiological Studies Depression Scale (CES-D; Radloffe, 1977) measures of depression in a sample of epilepsy patients (r's $= .58$ and $.67$ respectively, $p < .01$, $N = 143$; Hermann, Trenerry, & Colligan, 1996). A negative relationship between explanatory style and suicidal ideation has also been found in a sample of college students (Hirsch et al., 2009). In this study, the ASQ was significantly correlated with the BDI, and the Beck, Kovacs, and Weissman (1979) Scale for Suicidal Ideation (r's $= -.48$ and $-.47$ respectively, $p < .01$, $N = 138$).

The relationship between dispositional optimism-pessimism and depression has also been thoroughly investigated. Scheier et al. (1994) found the LOT and BDI were negatively correlated ($r = -.42$, $p < .001$) in 1,900 undergraduate students. A second study had a similar finding between the LOT and the BDI ($r = -.49$, $p < .01$) in a study of 322

undergraduate students (Scheier & Carver, 1985). The CES-D was used in the current

study and was expected to be positively correlated with the PSM-R ($r = .40$ to .70). This

range is slightly higher than the other predictions, which is because the same attributional

dimensions that are being used to describe depressive attributional style, are also used to

describe pessimistic explanatory style. However, the constructs should not completely

overlap, because pessimism, by definition, is a more generalized construct than

depression.

Social desirability and self-consciousness were included for discriminant validity,

and are expected to have no significant association with the PSM-R. Social desirability

has been used in previous studies (Scheier & Carver, 1985; Snyder et al., 1991) for a

similar purpose because the way in which people explain the causation of events to

themselves is not expected to correlate with maintaining a false, desirable appearance

towards other people. Similarly, it is expected that one's level of private or public self-

consciousness should not relate to one's level of optimism or pessimism, nor to the

perception of the cause of experienced events. Self-consciousness has been used as a

discriminant validity measure in other optimism-pessimism studies (Scheier & Carver,

1985; Snyder et al., 1991). Neither the Hope Scale nor the LOT has been found to have a

significant relationship to public self-consciousness or private self-consciousness

(Scheier & Carver, 1985; Snyder et al., 1991).

Investigations Using the PSM and PSM-R

The PSM and PSM-R have been used particularly to examine the impact of

optimism-pessimism on general health. This is largely because of the popularity of the

MMPI, and the availability of archived MMPI data. Two longitudinal studies from the

Mayo Clinic used general medical outpatients as participants, to study the relationship

between optimism and pessimism and self-reported health and survival rate, over a 30-

year period (Maruta et al., 2000, 2002). In the first study, pessimism, as measured by the

PSM, was positively associated with increased mortality, and optimism was associated

with a reduced risk of mortality. The study included 723 participants, and the relationship

persisted, even after controlling for such things as age and gender. The second study

consisted of 447 participants of the original 723 that had also completed measures on

quality of life and physical symptoms. Maruta et al. (2002) found that optimists reported

both a psychologically and physically healthier life, than did pessimists. In addition,

pessimists were found to have poorer physical health, weaker immune systems, more

depressive symptoms, and more frequent use of medical and psychological services. A

more recent study on mortality and pessimism found consistent findings with Maruta et

al. (2000). Brummett, Helms, Dahlstrom, and Siegler, (2006) used MMPI scores for

6,958 incoming freshman students and compared it to mortality after a 40-year period.

The researchers found an increase in mortality for those indicating a pessimistic

explanatory style, as measured by the PSM (and conversely, an optimistic explanatory

style and longevity), even after accounting for gender differences.

Support has also been found for the relationship between specific illnesses and

pessimism, as measured by the PSM-R. Kubzansky et al. (2001) found an increased risk

for coronary heart disease in a sample of 1,306 men over the course of 10 years. This

relationship between coronary heart disease and pessimism remained, even after

statistically controlling for anxiety, anger, and depression. The PSM-R was also

positively related to poor pulmonary function in a sample of 670 men over the course of eight years (Kubzansky et al., 2002).

The PSM-R has also been used with patients who were suffering from illness to assess quality of life and mental health. In a study of 190 patients who had survived thyroid cancer, those patients who had an optimistic explanatory style reported a higher quality of life than did those patients who had a pessimistic explanatory style (Kung et al., 2006). Also, in a sample of 143 participants who had epilepsy, a pessimistic explanatory style (as measured by the PSM) was associated with development of depression (Hermann, Trenerry, & Colligan, 1996). This relationship remained even after removing the effects of age, gender, laterality of the epilepsy, and age of onset of epilepsy.

Current Study

The growing popularity of positive psychology has led to an increase in the research on the constructs of optimism and pessimism. The measurement of these constructs with the MMPI-2 has made the study of optimism and pessimism more viable in health settings, especially with archival data. If the PSM-R continues to be utilized in medical and psychological research, then it is important to ensure that the psychometric properties of the scores from the test are sound. Thus, researchers can either apply their conclusions with confidence, or consider the use of more valid measures of optimism and pessimism. The lack of published reliability and validity, as well as questionable development of the measure, warrants a more in-depth study of the PSM-R.

The current study evaluated the psychometric properties of the PSM-R, including reliability, validity, and factor structure. Reliability of the PSM-R was determined

through internal consistency and test-retest reliability across four weeks. Construct

validity was examined by convergent and discriminant validity with other measures of

optimism and related constructs. The PSM-R authors suggest the scale is a

unidimensional measure of optimism and pessimism. A principal components analysis

was used to evaluate the factorial validity. The results of the analysis were further

examined to determine which factor, or factors, best represents optimism and pessimism.

CHAPTER II

METHOD

Participants

Participants were obtained from two different sources, an undergraduate sample, and an archived sample. The undergraduate sample included 111 student participants who were given extra credit in their psychology classes for participation. Twenty-eight of these participants completed the MMPI-2 a second time after a period of four weeks, to provide test-retest reliability. The archived sample was obtained from Pearson Assessments, and included 3,668 outpatient MMPI-2 protocols from their 2004 and 2005 national archives (NCS Pearson, 2004-2005). Specific details regarding the outpatient settings were not included with the archived data.

Inclusion criteria for both samples were used to assist in removing those participants who had potentially invalid responses. The criteria were based on the participant's MMPI-2 scores according to the cutoff recommendations in the MMPI-2 manual (Butcher et al., 2001). Similar criteria have also been used in factor analytic studies using the MMPI-2 (Arnau, Handel, & Archer, 2005; Hoelzle & Meyer, 2008). The first criterion was the Cannot Say score < 30, meaning that the data are removed if 30 or more items are unanswered. Second, the Infrequency scale, F, and the Infrequency (back) scale, F(b), both had the criterion of a T-Score < 100, to remove those participants who had atypical response patterns on the first portion or the back portion of the test. This is important because the amount of time that is required to complete the MMPI-2 has the potential for participant fatigue. Third, the Variable Response Inconsistency (VRIN) score and True Response Inconsistency (TRIN) scores both had a criterion of a

T-Score < 80. The VRIN provides an additional measure of inconsistent responding, and the TRIN score is particularly important because all of the items on the PSM-R are scored if answered *true*. In addition to the scale cutoffs, participants who left any of the PSM-R items blank were also removed.

Based on these criteria, 19 participants were removed from the student sample, which yielded a final sample size of 92. No students were excluded for only leaving PSM-R items unanswered. This 17% exclusion rate is similar to those that have been found in other studies that have used similar criteria on college students (16.8 %, $N = 131$, Sprock, 2000; 22%, $N = 358$, Sellbom, Ben-Porath, Lilienfeld, Patrick, & Graham, 2005; 13.1%, $N = 1,194$ Forbey & Ben-Porath, 2008). The resulting student sample for the current study included 28 men and 64 women, with a mean age of 22 years, ranging from 18 to 55 years old. Using the ethnicity categories listed on the MMPI-2 answer sheet, there were 42 White participants, 45 Black participants, and 5 Asian participants.

The retest sample was also affected by the inclusion criteria. Of the 28 participants, 25 participants had MMPI-2 data for both test administrations that passed the inclusion criteria. This retest sample included 2 men and 23 women, with a mean age of 22 years, ranging from 19 to 34 years old. The participants included 9 White participants, 15 Black participants, and 1 Asian participant.

The archived sample (NCS Pearson, 2004-2005) had 437 participants removed based on the inclusion criteria. Because of missing data for the PSM-R items, 491 additional participants were removed. Finally, 11 participants were under age 18, so their data were removed because the MMPI-2 was normed on people who were 18 years and

older. The total number of participants who were included in the final analysis from the archived sample was 2,729. The ages of the participants ranged from 18 to 83, with a mean of 38 years old. There were 1,407 men and 1,322 women. Ethnicity of the participants in the archived sample was not provided.

Measures

The *Revised Optimism-Pessimism Scale* (PSM-R; Malinchoc et al., 1995) is a measure of optimistic and pessimistic explanatory style that contains 263 items of the MMPI-2. The listing of the specific MMPI-2 items that are included in the PSM-R measure can be found in Appendix A. The following nine scales were given to the college sample, and correlated with the PSM-R to assess convergent and discriminant validity of the PSM-R.

The *Attributional Style Questionnaire* (ASQ; Peterson et al., 1982) is a self-report questionnaire that measures explanatory style by including items that ask about the causes for positive and negative events. Internal consistency in the current study was CoPos $\alpha = .76$, and for the CoNeg was $\alpha = .62$. This is consistent with previous literature that found CoPos $\alpha = .75$ and CoNeg $\alpha = .72$ (Peterson et al., 1982). Peterson et al. (1982) also reported test-retest reliability for 100 participants after a period of five weeks to be $r = .70$ ($p < .01$) for the CoPos, and $r = .64$ ($p < .01$) for CoNeg. The ASQ was significantly related to the CAVE, including the CPCN ($r = .71, p < .01, N = 159$), CoNeg ($r = .48, p < .01, N = 159$), and CoPos ($r = .52, p < .01, N = 159$; Schulman et al., 1989). The ASQ also correlated with the BDI, including the total composite ($r = -.51$, $p < .01, N = 160$), CoNeg ($r = .46, p < .01, N = 160$), and CoPos ($r = -.35, \quad p < .01$, $N = 160$; Schulman et al., 1989).

The *Life Orientation Test* (LOT; Scheier & Carver, 1985) is a self-report

questionnaire that is used to measure dispositional optimism and pessimism. The LOT

has demonstrated internal consistency ($a = .76$) and test-retest reliability ($r = .79$) after

four weeks, in the initial study that created the measure (Scheier & Carver, 1985). The

current study found similar internal consistency of $a = .80$. The LOT exhibits positive

correlations with Rotter's (1966) measure of internal-external locus of control ($r = .34$,

$p < .01$, $N = 320$) and the Rosenberg (1965) Self-Esteem Scale ($r = .48$, $p < .01$, $N = 324$).

The LOT exhibited negative correlations with the Hopelessness Scale (Beck, Weissman,

Lester, & Trexler, 1974; $r = -.47$, $p < .01$, $N = 322$), BDI ($r = -.49$, $p < .01$, $N = 322$),

Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983; $r = -.55$, $p < .01$,

$N = 140$), and Social Anxiety subscale of the Self-Consciousness Scale (Fenigstein,

Scheier, & Buss, 1975; $r = -.33$, $p < .01$, $N = 467$). A later study also found correlations

between the LOT and the optimism scale of the Optimism and Pessimism Scale (OPS;

Dember, Martin, Hummer, Howe, & Melton, 1989; $r = .67$, $p < .01$, $N = 93$), pessimism

scale of the OPS ($r = -.76$, $p < .01$, $N = 93$), STAI ($r = -.62$, $p < .01$, $N = 93$), and the

TMAS ($r = -.52$, $p < .01$, $N = 93$; Terrill, Friedman, Gottschalk, & Haaga, 2002).

The *Hope Scale* (Snyder et al., 1991) is a self-report questionnaire that is used to

measure the construct of hope, which is thought to include goal-directed thoughts, and a

path to meet those goals. The measure consists of four hope-agency items (e.g., "I've

been pretty successful in my life."), four hope-pathway items (e.g., "I can think of many

ways to get out of a jam."), and four filler items (e.g., "I feel tired most of the time.").

Each item is answered on an eight-point scale from 1 (*definitely false*) to 8 (*definitely*

true). The filler items are not included in the total score, resulting in a total Hope Scale score that ranges between 8 and 64.

Eight samples totaling 4,126 participants were used to create the test, including college students, and individuals who were in psychological treatment. Internal consistencies ranged from α = .74 to .84 across the eight samples (Snyder et al., 1991). Internal consistency for the Hope Scale in the current study fell within this range (α = .80). Test-retest correlations were calculated on four samples of college students, after three weeks (r = .85, p < .01, N = 130), eight weeks (r = .73, p < .01, N = 115), and ten weeks (r = .76 to .82, p < .01, N = 205). Convergent validity was calculated between the Hope Scale and the Rosenberg (1965) Self-Esteem Scale (r = .58, p < .01, N = 241), and the Hope Scale and Generalized Expectancy for Success Scale (Fibel & Hale, 1978; r = .55, p < .01, N = 241). The Hope Scale had a negative relationship with the Hopelessness Scale (r = -.51, p < .01, N = 241), and with the BDI (r = -.42, p < .01, N = 241). The Hope Scale was found to be correlated with the LOT in two samples (r = .60, p < .01, N = 241, and r = .50, p < .01 N = 158). The scale was also found to have a positive correlation with the PANAS-PA (r = .30, p < .01, N = 126) and negative correlation with the PANAS-NA (r = -.18, p < .05, N = 126; Snyder et al., 1991).

The *Center for Epidemiological Studies Depression Scale* (CES-D; Radloffe, 1977) is a depression measure that was developed for use with a community population, rather than a psychiatric population. The items were derived from other previously validated measures of depression, and selected as being descriptive of the major components of depression (Radloffe, 1977). The CES-D is composed of 20 items, with 16 items that are worded negatively (e.g., "I felt lonely) and 4 items that are worded

positively and reversed scored (e.g., "I was happy"). Each item is answered with one of

the following responses, based on the frequency of experiencing the symptom during the

past week: 0 (*Rarely or none of the time, less than 1 day*), 1 (*Some or a little of the time,*

1-2 days), 2 (*Occasionally or a moderate amount of time, 3-4 days*), 3 (*Most or all of the*

time, 5-7 days). The total score ranges between 0 and 60, with the higher scores

indicating more depressive symptoms.

Internal consistency of the CES-D for the general population was $\alpha = .85$

($N = 2,514$), and after a four-week interval, the test-retest reliability was $r = .67$ ($N = 105$;

Radloffe, 1977). The internal consistency for the current study was comparable ($\alpha = .86$).

The CES-D was found to have a relationship with interview ratings of depressive

symptoms ($r = .46, p < .01, N = 2, 514; r = .53, p < .01, N = 1, 060$), and the Bradburn's

(1969) Negative Affect Scale ($r = .60, p < .01, N = 2, 514; r = .63, p < .01, N = 1, 060$;

Radloffe, 1977). A later study found that the correlation between the CES-D and the BDI

was $r = .75$ ($p < .01$) in a group of 261 college students (Skorikov & VanderVoort, 2003).

The *Positive and Negative Affect Schedule* (PANAS; Watson, Clark, & Tellegen,

1988) is used to measure the two major dimensions of mood. There are a total of 20

items, with ten items reflecting positive affect (PA; e.g., "Proud"), and ten items

reflecting negative affect (NA; e.g., "Irritable"). Each item is answered on a five-point

scale from 1 (*very slightly or not at all*) to 5 (*extremely*). Because different time intervals

can be used in the instructions for the PANAS, the current study used the instructions

"Indicate to what extent you have felt this way during the past few weeks," to obtain a

more general report of affect. In the initial study developing the scale, internal

consistency was $\alpha = .87$ for both PA and NA, and the intercorrelation between the PA

and NA scales was $r = -.22$ ($p < .05$, $N = 586$). In the current study, the internal

consistency for PA was $\alpha = .91$ and for NA was $\alpha = .84$, and the intercorrelation between

the scales was not significant ($r = -.19$). Test-retest reliability after an eight-week interval

was $r = .58$ for PA, and $r = .48$ for NA ($p < .05$, $N = 101$ for both PA and NA; Watson et

al., 1988).

Correlations were found between the PANAS-NA and Hopkins Symptom

Checklist (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974; $r = .74$, $p < .05$,

$N = 398$), BDI ($r = .56$, $p < .05$, $N = 880$), and the state form of the STAI ($r = .51$,

$p < .05$, $N = 203$). Correlations with such different measures of negative symptoms

provide support for the PANAS-NA as a generalized measure of psychological distress.

Correlations were found between the PANAS-PA and Hopkins Symptom Checklist

($r = -.19$, $p < .05$, $N = 398$), BDI ($r = -.35$, $p < .05$, $N = 880$), and the state form of the

STAI ($r = -.35$, $p < .05$, $N = 203$; Watson et al., 1988).

The *International Personality Item Pool – Neuroticism Scale* (IPIP-N;

International Personality Item Pool, 2001) is a measure that includes items that are

similar to items from the Neuroticism Scale of the revised NEO-PI. The IPIP – N

includes 20 items, with 10 of the items positively scored (e.g., "I fear for the worst"), and

10 of the items reverse-scored (e.g., "I seldom get mad"). Each item is answered on a

five-point scale from 1 (*very inaccurate*) to 5 (*very accurate*). The IPIP-N has a reported

internal consistency of $\alpha = .91$, and a mean item intercorrelation of $r = .33$. A similar

internal consistency of the IPIP-N was found in the current study ($\alpha = .87$). The IPIP – N

was found to correlate with the NEO – PI Neuroticism Scale ($r = .86$, $p < .05$, $N = 501$;

International Personality Item Pool, 2001).

The *International Personality Item Pool – Extraversion Scale* (IPIP-E; International Personality Item Pool, 2001) is a measure that includes items that are similar to items from the Extraversion Scale of the revised NEO – PI. The IPIP – E is composed of 20 items, with 10 of the items positively scored (e.g., "Warm up quickly to others"), and 10 items reverse-scored (e.g., "Avoid contacts with others"). Each item is answered on a five-point scale from 1 (*very inaccurate*) to 5 (*very accurate*). In the current study, the internal consistency of the IPIP-E was $\alpha = .92$, which is similar to the published internal consistency ($\alpha = .91$). The IPIP – E has a mean item intercorrelation of $r = .35$, and is correlated with the NEO – PI Extraversion Scale ($r = .79, p < .05, N = 501$; International Personality Item Pool, 2001).

The *Marlowe-Crowne Social Desirability Scale* (M-C SDS; Crowne & Marlowe, 1960) is composed of 33 items, with 18 positively scored items (e.g., "I never resent being asked to return a favor") and 15 negatively scored items (e.g., "I like to gossip at times"). Each item is responded to with either *true* or *false*. Internal consistency for the current study was $\alpha = .83$. In the original study, the M-C SDS had an internal consistency of $\alpha = .88$ ($N = 39$) and test-retest reliability of $r = .89$ ($N = 31$) after a one-month interval (Crowne & Marlowe, 1960).

A correlation between the M-C SDS and a similar measure, the Edwards Social Desirability Scale (Edwards SDS; 1957b) was .35 ($p < .01, N = 120$). The Edwards SDS was significantly correlated with twelve MMPI scales, whereas the M-C SDS only correlated with five of the scales. This finding, along with the moderate but significant positive relationship between the Edwards SDS and M-C SDS, provided support for the creation of a measure of social desirability that did not include psychopathology (Crowne

& Marlowe, 1960). This measure was included in the current study because the M-C SDS

has shown a weak but significant relationship with the Hope Scale ($r = .30$, $p < .005$,

$N = 241$; Snyder et al., 1991) and the LOT ($r = .26$, $p < .01$, $N = 102$; Terrill et al., 2002).

The *Self-Consciousness Scale* (SCS; Fenigstein, Scheier, & Buss, 1975) is a

measure of the components of self-consciousness. The SCS is composed of 23 items that

are divided into three factors, private self-consciousness (e.g., "I'm always trying to

figure myself out"), public self-consciousness (e.g., "I'm concerned about the way I

present myself"), and social anxiety (e.g., "Large groups make me nervous"). Each item

is answered on a five-point scale from 0 (*extremely uncharacteristic*) to 4 (*extremely*

characteristic). In the current study, the internal consistency for the SCS was α = .78. In

the original study, test-retest reliability was calculated using 84 participants after a two-

week interval for each scale: public self-consciousness, $r = .84$; private self-

consciousness, $r = .79$; social anxiety, $r = .73$; and the total score, $r = .80$ (Fenigstein et

al., 1975). Based on a sample of 105 participants, both the Total Scale and Private scale

had no significant correlations with the Test Anxiety Questionnaire (Mandler & Sarason,

1952), Edwards Personal Preference Schedule achievement (Edwards, 1957a), or EASI

III Temperament Survey (Buss & Plomin, 1975). Public self-consciousness scale was

correlated with emotionality ($r = .20$, $p < .05$) and sociability ($r = .22$, $p < .05$) subscales

of the EASI III. The social anxiety scale correlated negatively with the activity level

($r = -.27$, $p < .01$) and sociability ($r = -.46$, $p < .05$) subscales of the EASI III. No

significant relationship was found between the social anxiety score and the test anxiety

score (Carver & Glass, 1976).

Procedure

There were two steps in the current study. The first step used the student sample to obtain data from all the measures to analyze the validity of the PSM-R, and the PSM-R's test-retest reliability. The second step used the student data plus the archival data to analyze the PSM-R's factor structure.

Data Collection for Analysis of Validity

Participants registered for the study by self-selection through an undergraduate psychology research website that detailed the experiment. Ten self-report measures were given in one packet to each participant, and instructions for completing each measure were explained by the experimenter. The participants who were included in the test-retest group, completed the MMPI-2 a second time, four weeks after their initial testing, following the same instructions.

Data Collection and Statistical Procedure for Analysis of Factor Structure

The student data were combined with the archived data, to provide a large sample size ($N = 2, 821$) for the factor analysis of the PSM-R. An exploratory factor analysis was selected because it was unknown how many factors were present. A principal components analysis (PCA) was chosen because it accounts for a maximum of the variance, with a minimum of components. PCA is the most common analysis for exploratory factor analysis (Thompson, 2004).

The first step of the PCA is to generate a correlation matrix of item response associations for the analysis. However, the Pearson correlation coefficient assumes continuous variables, and the items in the current study were dichotomous. One concern was that the relationship between the items may be lower than the actual correlation that

is obtained when product-moment coefficients are used with dichotomous data (Greer, Dunlap, & Beatty, 2003). Therefore, tetrachoric correlation coefficients were used instead of product-moment coefficients. Tetrachoric coefficients are used with dichotomous data when it is assumed that the actual variable would have a continuous distribution (Cohen & Cohen, 1983). Although the response scale is dichotomous (*true/false*) on the PSM-R, the underlying variable is not, and could be answered in degrees of agreement or disagreement.

The number of factors within the PSM-R was determined using parallel analysis (Horn, 1965). In a parallel analysis, the actual eigenvalues that are obtained from the PCA are compared to the 95th percentile values of the eigenvalues that are generated from multiple random datasets. This method uncovers components that account for more variance than would random data, by including the number of actual eigenvalues that are larger than the random-data eigenvalues (Horn, 1965). Parallel analysis has been suggested as the most consistently accurate method of extracting the number of factors, based on a comparison with other methods, including the minimum average partial, scree test, chi-square test, and the eigenvalue-greater-than-1.0 rule (Zwick & Velicer, 1986).

The factors were rotated using the Promax method to assist in identifying the items that load on each factor. This method was selected because it is the recommended technique to use when the factors are predicted to be correlated with one another (Thompson, 2004). There is an assumed relationship between the factors because they are all currently on a unidimensional measure. Each resulting rotated factor was then evaluated for number of items. It is suggested that factors contain at least three items with significant loadings (Zwick & Velicer, 1986). To determine the loading of the items on

the factors, the rotated factor pattern matrix was used, versus the rotated factor structure. The pattern matrix allows for easier interpretation when the factors are correlated because it controls for the relationships among the factors (Pett, Lackey, & Sullivan, 2003). Use of the pattern matrix was necessary in the current study because of potential relationships between the factors of the PSM-R. Thus, the unique relationship between the item and the factor is revealed by the matrix. After evaluating the factors based on the number of significant item loadings ($r = .40$), the items within each factor were evaluated for theoretical salience. The factors were also evaluated empirically based on correlations with the measures of optimism-pessimism and hope. The final step of the analysis involved evaluating the reliability and validity of the factor that best resembled the construct of optimism-pessimism.

CHAPTER III

RESULTS

The PSM-R has no previous documentation of test-retest reliability. Based on the

25 participants from the student sample after a period of four weeks, the PSM-R test-

retest reliability for the current study was $r = .93$ ($p < .01$). The internal consistency of

the PSM-R was calculated using the combined sample of students and archived data

(N = 2,821) and was $a = .97$ (when *good event* items were reverse-scored). Separate

Cronbach alphas for internal consistency were also calculated for the positive and

negative items. The negative items had $a = .97$ and the positive items had $a = .91$ in the

current study (N = 2, 821). This result is comparable to the normative data that had

$a = .95$ for the negative items and $a = .84$ for the positive items (*N* = 1,408; Malinchoc et

al., 1995).

Analysis of Validity

The ten measures were given to the student sample. The means, standard

deviations, and range of scores for each of these measures are listed in Table 2. Because

the ASQ has improved reliability when the positive and negative events are separated

(Peterson et al., 1982), the CPCN, CoPos, and CoNeg scores were all calculated. The

single PANAS measure was also separated into positive affect and negative affect scores.

These nine measures were correlated with the PSM-R to evaluate construct

validity of the measure through convergent and discriminant validity (see Table 3). The

PSM-R was expected to be strongly correlated with the ASQ ($r > .70$), which is also a

measure of positive and negative explanatory style. However, the PSM-R was not found

to be significantly related to the ASQ-CPCN (r = -.16), ASQ-CoPos (r = -.07), or

Table 2

Descriptive Statistics for Validity Measures (N = 92)

	Mean	SD	Actual Range	Possible Range
1. PSM-R	54.85	9.46	33.03 – 74.09	17.72 – 85.00
2. ASQ-CPCN	4.16	2.87	-3.83 – 12.17	-18 – +18
3. ASQ-CoPos	16.27	2.00	11.50 – 19.83	3 – 21
4. ASQ-CoNeg	12.12	1.93	7.00 – 17.17	3 – 21
5. CESD	12.57	8.52	1 – 44	0 – 60
6. Hope Scale	49.80	7.00	28 – 64	8 – 64
7. IPIP-E	73.21	13.32	27 – 100	20 – 100
8. IPIP-N	48.41	12.49	20 – 95	20 – 100
9. LOT	21.59	5.08	5 – 32	0 – 32
10. M-C SDS	17.22	6.05	4 – 31	0 – 33
11. PANAS-PA	28.48	5.07	14 – 50	10 – 50
12. PANAS-NA	25.28	4.70	10 – 42	10 – 50
13. SCS	54.98	11.11	24 – 82	0 – 92

Note: 1 = Revised Optimism-Pessimism Scale; 2 = Attributional Style Questionnaire – Total Score; 3 = Attributional Style Questionnaire – Negative Score; 4 = Attributional Style Questionnaire – Positive Score; 5 = Center for Epidemiological Studies Depression Scale; 6 = Hope Scale; 7 = International Personality Item Pool – Extraversion Scale; 8 = International Personality Item Pool – Neuroticism Scale; 9 = Life Orientation Test; 10 = Marlowe-Crowne Social Desirability Scale; 11 = Positive and Negative Affect Schedule – Positive Affect; 12 = Positive and Negative Affect Schedule – Negative Affect; 13 = Self-Consciousness Scale

Table 3

Correlations of Validity Measures (N = 92)

	1	2	3	4	5	6	7	8	9	10	11	12
1. PSM-R	-											
2. ASQ-CPCN	-.16	-										
3. ASQ-CoNeg	.17	-.72**	-									
4. ASQ-CoPos	-.07	.74**	-.07	-								
5. CESD	.67**	-.14	.19	-.01	-							
6. Hope Scale	-.38**	.15	.04	.25*	-.35**	-						
7. IPIP-E	-.39**	.15	-.11	.11	-.34**	.34**	-					
8. IPIP-N	.62**	-.05	.02	-.05	.56**	-.60**	-.35**	-				
9. LOT	-.61**	.15	-.04	.17	-.54**	.59**	.42**	-.65**	-			
10. M-C SDS	-.55**	-.24*	.11	.24*	-.34**	.26*	.29**	-.38**	-.43**	-		
11. PANAS-PA	-.36**	.18	-.02	.24*	-.44**	.38**	-.31**	-.45**	.47**	.30**	-	
12. PANAS-NA	.50**	-.23*	.29**	-.05	.70**	-.29**	-.21*	.48**	-.33**	-.38**	-.19	-
13. SCS	.48**	.17	-.00	.24*	.35**	.02	-.43**	.23*	-.19	-.38**	-.12	.28**

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

Note: 1 = Revised Optimism-Pessimism Scale; 2 = Attributional Style Questionnaire – Negative Score; 4 = Attributional Style Questionnaire – Positive Score; 5 = Center for Epidemiological Studies Depression Scale; 6 = Hope Scale; 7 = International Personality Item Pool – Extraversion Scale; 8 = International Personality Item Pool – Neuroticism Scale; 9 = Life Orientation Test; 10 = Marlowe-Crowne Social Desirability Scale; 11 = Positive and Negative Affect Schedule – Positive Affect; 12 = Positive and Negative Affect Schedule – Negative Affect; 13 = Self-Consciousness Scale

ASQ-CoNeg (r = .17). The PSM-R was significantly correlated with the LOT (r = -.61), which is the dispositional measure of optimism-pessimism. This relationship is negative and moderate, which was consistent with the hypothesis.

The PSM-R was also correlated with other constructs, in addition to measures of optimism-pessimism. Hope is theoretically similar to optimism, and the PSM-R had a significant negative correlation with the Hope Scale (r = -.38), which is within the expected range (r = -.30 to -.60). This correlation suggests that the constructs are related, but not strongly enough to conclude that they are measuring the same construct. Also as predicted, the PSM-R had a significant, positive relationship with the CES-D (r = .67).

The Positive Affect scale was negatively correlated (r = -.36, predicted r = -.30 to -.60) with the PSM-R, and the Negative Affect scale was positively correlated (r = .50, predicted r = -.30 to -.60) with the PSM-R. The IPIP-N had a significant positive relationship (r = .62), whereas the IPIP-E had a significant negative relationship (r = -.39), with the PSM-R. The correlation with extraversion was within the expected range (r = -.30 to -.60), but, the correlation with neuroticism was slightly higher than expected.

Social desirability and self-consciousness measures were used for discriminant validity. No relationship was anticipated between the PSM-R and M-C SDS based on theory, and because of the elimination of participations based on inclusion criteria. However, a significant negative relationship was found (r = -.55). The SCS was also used as a measure of discriminant validity. However, just as for social desirability, a significant correlation was found between the PSM-R and the SCS (r = .48). Therefore, all measures that were used for convergent validity had an expected significant

relationship with the PSM-R at the $p < .01$ level, except for the ASQ, which had no

significant relationship with the PSM-R. However, the two measures that were used for

discriminant validity had unexpected significant relationships with the PSM-R.

<center>Analysis of Factor Structure</center>

The first step of the PCA was calculating the tetrachoric correlations. During this

process, three items did not converge because of linear dependence, and were removed

from further analysis. These items were: Item #162 on the topic of poisoning, Item #216

on the topic of robbing, and Item #336 on the topic of mind control. Based on the content

of the items, it was assumed that they were not measuring the construct of optimism-

pessimism, and that their absence would not greatly affect the analysis.

Eigenvalues for the actual data were obtained through the PCA. These values

were used in a parallel analysis, resulting in an extraction of 26 factors that consisted of

211 items from the 260 items of the PSM-R. This analysis was followed by a Promax

rotation. Upon each rotation, only the items that had coefficients of $r = .40$ or above were

viewed, to assure that the relationship of the item to the factor was meaningful (Pett et al.,

2003). The 26-factor solution resulted in several factors that had only one or two items,

so they were not retained. The factor pattern of best fit was calculated by successively

reducing the number of factors, and repeating the rotation until all factors contained at

least three items. This process resulted in 11 factors that contained 194 of the 260 PSM-R

items. Items that loaded onto multiple factors were assigned to the factor with the

strongest loading (see Appendix B for the factor pattern matrix).

The items that made salient contributions to each of the 11 factors were evaluated

to determine differentiation of content. Factor 1 contained 81 items that are similar to the

construct of optimism-pessimism. The items contain topics such as life being interesting and meaningful, failure, success, happiness, or giving up easily. Factor 2 consisted of a variety of physical symptoms, including, pain, numbness, and overall health, across 40 items. Factor 3 included 12 items of paranoia, such as being talked about, or being plotted against. Factor 4 had 15 items illustrating fears of a variety of entities, including, fire, lightning, and mice. Factor 5 consisted of eight items of mania/energy, such as excitement, racing thoughts, and inability to sleep. Factor 6 contained ten items that described family relationships, from getting along, to being frightened or irritated by family. Factor 7 had nine items of anger/assertiveness, including fighting, being hotheaded, and using a direct interpersonal style. Factor 8 may best be described as self-hygiene, including five items that relate to appearance, and two items regarding substance use. Factor 9 consisted of six items of social skills such as meeting new people, talking to others, and making friends. Factor 10 contained three items of odd/eccentric experiences, such as hearing voices, and having strange thoughts. Factor 11 contained four items that are specifically related to fears of being in the dark.

Internal consistency for each of the factors was calculated. Some of the items had negative correlations with the factor it loaded onto, so those items were reverse coded because alpha is affected by negative correlations (Pett et al., 2003). The Kuder-Richardson formula was originally created to calculate internal consistency with dichotomous data; however, alpha is considered to be equivalent (Pett et al., 2003). The internal consistencies for each of the factors were: $\alpha = .96$ for Factor 1, $\alpha = .92$ for Factor 2, $\alpha = .72$ for Factor 3, $\alpha = .73$ for Factor 4, $\alpha = .57$ for Factor 5, $\alpha = .74$ for Factor 6,

α = .63 for Factor 7, α = .55 for Factor 8, α = .80 for Factor 9, α = .34 for Factor 10, and α = .49 for Factor 11.

The amount of variance explained by each factor, ignoring the other factors, was also calculated. Total variance was chosen because the factors are expected to overlap considerably because the original design had all the items on one measure. Each factor accounted for the following variance: Factor 1 = 62.42%, Factor 2 = 44.74%, Factor 3 = 21.69%, Factor 4 = 11.52%, Factor 5 = 9.37%, Factor 6 = 11.95%, Factor 7 = 13.47%, Factor 8 = 10.17%, Factor 9 = 19.56%, Factor 10 = 9.90%, and Factor 11 = 8.98%. The unique variance contributed by each factor is: Factor 1 = 18.13%, Factor 2 = 12.34%, Factor 3 = 5.40%, Factor 4 = 5.95%, Factor 5 = 6.78%, Factor 6 = 4.80%, Factor 7 = 4.91%, Factor 8 = 4.87%, Factor 9 = 4.24%, Factor 10 = 4.72%, and Factor 11 = 3.50%.

The 11 factors were correlated with each other (see Table 4). The relationships vary in strength from moderate to no relationship, suggesting that all the factors are not measuring the same construct. The strongest relationship can be seen between Factor 1, which contains the items similar to optimism and pessimism, and Factor 2, which contains the physical symptoms.

Table 4

Interfactor Correlations for the PSM-R

	1	2	3	4	5	6	7	8	9	10
Factor 1	-									
Factor 2	.57	-								
Factor 3	.38	.30	-							
Factor 4	.18	.20	.18	-						
Factor 5	.03	.02	.15	.27	-					
Factor 6	.27	.05	.23	.01	.06	-				
Factor 7	.24	.22	.27	-.04	.13	.18	-			
Factor 8	-.23	-.16	-.03	-.06	-.07	-.01	-.12	-		
Factor 9	.40	.30	.11	.24	.22	.11	.07	-.15	-	
Factor 10	.20	.12	.16	-.06	.06	.11	.21	.10	.07	-
Factor 11	.23	.22	.26	.02	-.03	.04	.17	-.15	.05	-.10

To obtain a more empirical result that identified which factor best describes the optimism-pessimism construct, each factor was correlated with the measures of optimism-pessimism and hope (see Table 5). The PSM-R was significantly related to most factors, but item overlap must be taken into consideration. The ASQ continued to lack significant relationships with all but one factor of the PSM-R. Factor 1 stood out as having the strongest correlations with other measures of optimism-pessimism, and as the only factor to have three significant correlations (with the PSM-R, LOT, and Hope) at the $p < .01$ level.

Table 5

Correlations between the Factors of the PSM-R and Measures of Optimism-Pessimism

	PSM-R	ASQ-CPCN	ASQ-CN	ASQ-PN	LOT	Hope
Factor 1	.88**	-.16	.12	-.11	-.66**	-.40**
Factor 2	.75**	-.06	.11	.03	-.41**	-.20
Factor 3	.43**	-.03	.14	.10	-.23*	.03
Factor 4	.14	.20	-.14	.15	.07	-.11
Factor 5	-.15	.17	-.09	.15	.23*	.18
Factor 6	.57**	-.06	.12	.03	-.29**	-.09
Factor 7	.18	-.12	.11	-.06	-.31**	-.07
Factor 8	-.44**	.07	-.02	.09	.22*	.16
Factor 9	.53**	-.24*	.21*	-.15	-.41**	-.21*
Factor 10	.40**	-.07	.05	-.05	-.17	-.05
Factor 11	.19	.06	-.05	.03	-.06	-.10

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

Note. PSM-R = Revised Optimism-Pessimism Scale; ASQ-CPCN = Attributional Style Questionnaire-Total Score; ASQ-CN = Attributional Style Questionnaire-Negative Score; ASQ-CP = Attributional Style Questionnaire-Positive Score; LOT = Life Orientation Test; Hope = Hope Scale.

Additional emphasis was placed on Factor 1 because the item content is the most relevant to the optimism-pessimism construct, and the correlations with the established optimism-pessimism measures suggest it is the most related to the construct. Interitem reliability was examined for Factor 1. The lowest interitem correlation was .04, and the highest was .68. The correlations that remain under .80 suggest that there are no duplicate

items, or items that measure the exact same content (Pett et al., 2003). Upon further inspection, Item #246 stood out as correlating very little with the overall scale (r = .16). When this item was removed, the scale's internal consistency had a negligible change (α = +.0001). Interitem correlations for all final items ranged from r = .25 to r = .68.

The score for Factor 1 was calculated by summing the number of endorsed negative items, and the reverse-scored positive items (Pett et al., 2003). These scores were based only on the student data because the archival data did not allow for comparison to the additional measures. The Factor 1 scores ranged from 3 to 63 (M = 25, SD = 13.40, range = 0 – 80). The refined Factor 1 was correlated with the other measures, in an effort to determine construct validity (see Table 6). Factor 1 significantly correlated with the PSM-R (r = .88). This strong correlation was expected because they overlap on the Factor 1 items. Factor 1 was also positively correlated with the CES-D (r = .66), IPIP-N (r = .68), PANAS-NA (r = .44) and SCS (r = .37). Factor 1 was negatively correlated with the LOT (r = -.66), Hope Scale (r = -.40), IPIP-E (r = -.32), PANAS-PA (r = -.44), and the M-C SDS (r = -.46). Although Factor 1 was derived from a measure designed to measure explanatory style, it had no significant correlation with the ASQ (r = -.16).

The relationships between Factor 1 and the other measures are consistent with the pattern of correlations that were observed between the PSM-R and the same measures (see Table 6). One strength of Factor 1 is that it does not include the additional, unrelated items that are found on the PSM-R. Table 6 also allows for the comparison of Factor 1 to the traditional measures of optimism and pessimism, the LOT and the ASQ. It is apparent

Table 6

Correlations Between the Measures of Optimism-Pessimism and Validity Measures

	Factor 1	PSM-R	ASQ	LOT
PSM-R	.88**	-	-.16	-.61**
ASQ	-.16	-.16	-	.15
CESD	.66**	.67**	-.14	-.54**
Hope Scale	-.40**	-.38**	.15	.59**
IPIP-E	-.32**	-.39**	.15	.42**
IPIP-N	.68**	.62**	-.05	-.65**
LOT	-.66**	-.61**	.15	-
M-C SDS	-.46**	-.55**	-.24*	-.43**
PANAS-PA	-.44**	-.36**	.18	.47**
PANAS-NA	.44**	.50**	-.23*	-.33**
SCS	.37**	.48**	.17	-.19

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

Note. PSM-R = Revised Optimism-Pessimism Scale; ASQ = Attributional Style Questionnaire; CES-D = Center for Epidemiological Studies Depression Scale; IPIP-E = International Personality Item Pool – Extraversion Scale; IPIP-N = International Personality Item Pool – Neuroticism Scale; LOT = Life Orientation Test; M-C SDS = Marlowe-Crowne Social Desirability Scale; PANAS-PA = Positive and Negative Affect Schedule – Positive Affect; PANAS-NA = Positive and Negative Affect Schedule – Negative Affect; SCS = Self-Consciousness Scale

that the relationships that Factor 1 has with the other constructs is more similar to the

LOT than the ASQ. The pattern of associations between Factor 1 and the LOT with the

other measures is not identical, but the pattern does suggest a more probable link to

dispositional optimism rather than to explanatory style. This outcome was unexpected

because the items on Factor 1 were extracted from the PSM-R, which is a measure that

claims to assess explanatory style.

CHAPTER IV

DISCUSSION

The current study examined the psychometric properties of a relatively new measure of explanatory style, the PSM-R. The literature on the psychometrics of the PSM-R is limited, but, it continues to be used in medical research. The current results suggest that although the PSM-R's reliability is acceptable, the construct validity is inadequate. Most importantly, the PSM-R did not correlate significantly with the ASQ, but did have a significant correlation with all the remaining measures. Thus, it is not clear which construct the PSM-R consistently measures.

In addition, the PSM-R is reported to be a single measure of optimism and pessimism, but several factors were found within the measure. Furthermore, most of these factors have no relationship to the factor that was found to best depict the construct of optimism-pessimism. Thus, based on the validity and factor structure in the current study, continued use of the PSM-R as a measure of optimism-pessimism is not recommended.

Reliability of the PSM-R

The current study found evidence of internal consistency of the PSM-R, which was similar to that found in the only other report of reliability for the measure in Malinchoc et al. (1995). The current study also found good test-retest reliability for the PSM-R, after four weeks. This is comparable to the test-retest reliability that was reported for the original PSM after one week, also with undergraduate college students (Colligan et al., 1994).

The current reliability results illustrate the consistency of the PSM-R, which was an anticipated finding. The PSM-R contains approximately half of the items from the MMPI-2, which has well-established reliability (Graham, 1993). In addition, the large number of items that are included on the PSM-R also contribute to internal consistency, because increasing the number of items on a measure increases the coefficient alpha simply because of how the coefficient is calculated (Pett et al., 2003). Thus, even if items yield small interitem correlations, if the item pool is large enough, the resulting alpha coefficient will be inflated. Despite this concern, the reliability of the PSM-R is more than adequate.

<div align="center">Validity of the PSM-R</div>

Although no previous study has focused on the validity of the PSM-R, the original PSM was correlated with the clinical and validity scales of the MMPI (Colligan et al., 1994). This method is clearly problematic because of the item overlap between the measures. The PSM-R has been included in research that has used measures of depression and physical health, but none of these studies were conducted specifically to establish construct validity. Also, some studies that assume that the measure is valid have reached strong conclusions, such as pessimism being positively associated with mortality (Maruta et al., 2000, 2002). The current study responded to this limitation by examining construct (convergent and discriminant) validity.

A close examination of the PSM-R reveals that the items within the measure do not appear to be related to the explanatory-style theory of optimism and pessimism. Raters using the CAVE technique selected the items of the MMPI-2 based on a subjective interpretation of the item as reflecting a *good* or *bad* event. This inappropriate method of

item selection resulted in including half of the MMPI, and items from all of the clinical

scales. The PSM-R contains such a wide array of items that over 80% of the items from

the Hs and Pt scales of the MMPI-2 are included on this measure. This diverse selection

is inconsistent with optimism and pessimism because items on topics such as physical

illness, paranoia, phobias, and hallucinations were included on this measure of

explanatory style. Thus, many of the PSM-R items are indicative of clinical pathology,

rather than a generalized positive or negative view of the world. The current study

revealed several unique factor structures that consisted of items that loaded together on

these topics, such as Factor 2 (physical illness), Factor 3 (paranoia), Factor 4

(fears/phobias), and Factor 10 (odd experiences). The current factor structure of the PSM-

R strongly suggests that the majority of the items could be inappropriate for measuring

optimism-pessimism.

These inappropriate items on the PSM-R may be because of the flawed use of the

CAVE technique to select from the MMPI items. This is a questionable process because

the CAVE technique was originally created for use with verbatim verbal and written

language samples, but the MMPI-2 items are not derived from a language sample.

Although all of the items on the PSM-R satisfy the word-length requirement when they

are added together, the MMPI-2 items are not actual language samples from a

respondent, but are isolated statements that are given to them with which to agree or

disagree. The current study provides evidence for the criticism that the CAVE technique

was inappropriately applied to the MMPI-2 to produce the PSM-R. The PSM-R was not

significantly correlated with the ASQ as an established measure of explanatory style,

which highlights the inappropriateness of the CAVE technique.

Convergent Validity

In the current study, the PSM-R was correlated with several measures to determine convergent and discriminant validity, most importantly, with the traditional measure of explanatory-style optimism and pessimism, the ASQ, to determine if the PSM-R was actually measuring what it purports to measure. Unexpectedly, no significant relationship was found between the measures, even though both instruments claim to measure the same attributional dimensions (internal-external, stable-unstable, and global-specific). Despite the lack of construct validity for explanatory style, it was still expected that there would be some degree of relationship between the ASQ and PSM-R because they are both measuring positive and negative cognitive constructs. In addition, the CAVE technique, which was used to create the PSM-R, has been found to have a positive relationship with the ASQ (Schulman et al., 1989). However, this finding was based on applying the CAVE technique to written-out ASQ items. The ASQ includes hypothetical situations that participants are instructed to imagine are occurring to them, followed by specific questions that address the attributional dimensions. In contrast, the PSM-R is a list of brief statements that contain symptoms that participants endorse as true or false. It is possible that the difference in the style of question may influence the degree of relationship between the PSM-R and ASQ; however, it does not explain the absence of relationship that was found in the current study. This lack of relationship between the PSM-R and ASQ strongly suggests that the PSM-R is not measuring explanatory style.

The PSM-R did have a have a significant relationship with the measure of dispositional optimism. In addition to this direct relationship, the PSM-R and the LOT had a similar, though not identical, pattern of significant relationships with the other

measures of validity, and lack of significant relationship to the ASQ. Based on these similarities, it is possible that the PSM-R items are reflective of expectancy-based dispositional optimism rather than causation-based explanatory-style optimism.

The potential for items on the PSM-R to imply future expectancy may explain why dispositional optimism, not explanatory style, is possibly being measured. Although the wording of the MMPI-2 items focuses on past and current experiences, some future expectations can easily be inferred. If an item states that something "usually happens," it can be inferred that the respondent expects that the same pattern will continue to occur in the future. Thus, the empirical relationship found between the PSM-R and the LOT may be attributed to a possible theoretical relationship between how the PSM-R items are interpreted and the dispositional theory of optimism and pessimism.

The PSM-R was correlated with several related constructs such as depression that are viewed as similar, but distinct from, optimism and pessimism. Pessimism is frequently viewed as being a risk factor for experiencing depression (Peterson & Vaidya, 2001), and is sometimes a focus for treatment in cognitive-behavioral therapies. In the current study, a strong relationship was found between the PSM-R and depression, which is consistent with the literature on optimism and pessimism, which has used measures such as the LOT, ASQ, and the PSM-R for optimism and pessimism, and the BDI and CES-D for depression. In addition, 40 of the 263 PSM-R items are taken from the Depression scale of the MMPI-2 (Hermann et al., 1996; Hirsch et al., 2009; Luten et al., 1997; Peterson & Seligman, 1984). Thus, some of the relationship between these constructs could be an artifact of how they are related to the MMPI-2 Depression scale.

Furthermore, no separate factor reflecting depression emerged, because many of the items that seemed to reflect depression loaded onto Factor 1.

The PSM-R was also found to be significantly related to the personality constructs of neuroticism and extraversion. A strong relationship was found between the PSM-R and neuroticism, consistent with previous findings of a relationship between pessimism, as measured by the LOT, and neuroticism (Marshall et al., 1992). In the current study, the LOT also had a strong relationship with neuroticism. Such a strong association between these three constructs (PSM-R, LOT, and neuroticism) supports the hypothesis that pessimism may overlap considerably with neuroticism. However, overlap between constructs does not necessarily mean that the constructs are equivalent (Scheier et al., 1994). Regardless of the debate as to whether optimism-pessimism and neuroticism are distinct, the PSM-R correlates to neuroticism similarly to how measures of dispositional optimism and hope correlate to neuroticism. The PSM-R and extraversion were found to be modestly related in the current study, relative to the strong relationship found with neuroticism, which is consistent with other theoretical and empirical studies (Marshall et al, 1992; Scheier et al., 1994).

A moderate relationship was found between the PSM-R and the Hope Scale, which was expected because both instruments are measuring positive and negative cognitions, but the constructs are somewhat different in theory. This finding provides some support for the uniqueness of the PSM-R as being related to, but distinguishable from, hope. The ASQ was not found to have a significant relationship with hope. The LOT had a moderate relationship with hope in the current study, which is consistent with

past research because dispositional optimism and hope are both rooted in expectancy theory (Snyder et al., 1991).

The PSM-R had a significant relationship with the mood constructs of positive and negative affect. These findings are consistent with previous research in which a relationship was exhibited between affect and the LOT and the ASQ (Marshall et al., 1992). The correlations were not so strong as to support the common criticism that pessimism is simply another term for negative affect. This study demonstrated support for the reasonable separation of optimism and pessimism, which are cognitive constructs, and that of affect, which is an emotional construct.

Discriminant Validity

Although measures of social desirability have been used as measures of discriminant validity, previous studies have found a relationship between social desirability and hope, and social desirability and dispositional optimism. In the current study, this unexpected relationship between the PSM-R and social desirability was also found. The statements that are used on measures of social desirability are extremely positive, and this may have created overlap with the positively worded items of the PSM-R. The other measures of optimism in the current study (ASQ and LOT) also correlated with social desirability.

The PSM-R was unexpectedly found to have significant correlation with self-consciousness. The SCS was not found to be related to the other measures of optimism (ASQ and LOT), or to the measure of hope, and was used as a measure of discriminant validity, as it had been used in previous studies (Scheier & Carver, 1985; Snyder et al., 1991). However, it may be possible to explain the positive relationship that was found

between the PSM-R and self-consciousness, because the PSM-R is composed of a variety of symptoms. People who report more awareness of their symptoms may also have a more general conscious awareness of their experiences. The measure of self-consciousness that was used in this study also contains an anxiety subscale, which may also strengthen the relationship, because the PSM-R contains numerous anxiety items from the MMPI-2.

In summary, the PSM-R performed similarly to other another measure of optimism and pessimism. However, contrary to the hypothesis, the PSM-R exhibited a similar pattern of results as the LOT, not the ASQ. Furthermore, the most surprising lack of relationship was observed for the ASQ and the PSM-R, because both measures are claimed to measure similar constructs. The PSM-R may be measuring dispositional optimism and pessimism, but is clearly not measuring explanatory style.

Factor Structure of the PSM-R

The current factor structure of the PSM-R suggests that it is unidimensional measure of explanatory style, with optimism at one end and pessimism at the other. A debate exists as to whether pessimism is a distinct variable from optimism (Chang & McBride-Chang, 1996; Kubzansky, Kubzansky, & Maselko, 2004), or if the difference is merely a methodological artifact that is created by comparing forward- versus reverse-scored items (Carver & Scheier, 2002; Scheier et al., 1994). Although this issue continues to be debated, the PSM-R was designed to be consistent with the other measures of the MMPI-2, by combining optimism and pessimism into a single dimension. The current findings support this single dimensional structure for optimism and pessimism; however,

there is also evidence that the PSM-R is measuring more than just the optimism-pessimism construct.

The concern that there may be additional factors included in the PSM-R is based on both the large number and the diversity of the items that are included from the MMPI-2. The results of the current principal component analysis supported the hypothesis that the PSM-R is measuring more than one construct. After completing the analysis and necessary rotations, it was determined that there were eleven factors, with the principal factor appearing to describe the characteristics of optimism and pessimism. The other factors that were found, in order, included: somatic symptoms, paranoia, fears, mania/energy, family relationships, anger/assertiveness, self-hygiene, social skills, odd/eccentric experiences, and fears of the dark. Interestingly, these additional factors appear to be similar to clinical scales of the MMPI-2, which may be explained by the large number of PSM-R items that are drawn from specific MMPI-2 scales. Although a relationship between these factors, such as somatic symptoms or paranoia, and optimism and pessimism may be understandable, the factors are measuring constructs that do not fit within the definition of explanatory style, or even dispositional optimism-pessimism.

Factor 1 contains many of the items that appear related to the general concept of optimism and pessimism. For example, some items suggest that life is worthwhile and happy, or involve loneliness, or that certain behavior is unforgivable. There are also some items that load onto Factor 1 that initially do not appear to be related to the optimism and pessimism construct. For example, there is one item on poor sleep, and another on difficulty in keeping the mind focused. Although items such as these may not be obviously related to optimism-pessimism, it is understandable that these items would load

on this factor, because individuals may find it more difficult to sleep or keep their minds focused while experiencing pessimistic cognitions.

To obtain empirical support for identifying Factor 1 as the optimism-pessimism factor, all of the factors were correlated with the optimism-pessimism measures (ASQ, PSM-R, LOT, and Hope). Factor 1 had the most significant and numerous correlations out of the eleven factors. Thus, Factor 1 appears to be a more pure form of the optimism-pessimism construct than is the PSM-R, based on the current results. The number of items on the scale was reduced from 263 to 81, clarifying the scale, and removing the items that are not similar to optimism-pessimism. The result also produced a single-factor solution of the optimism-pessimism construct. Items that were considered to be *good* or *bad* (or rather forward- and reverse-scored items), loaded onto the same factor. Thus, the principal component derived by the analysis supports a unidimensional factor for optimism and pessimism.

The interfactor correlations that were observed in the current study show that the relationships between Factor 1 and the other PSM-R factors are weak, except for the relationship with Factor 2. This lack of relationship between the factor that is believed to measure optimism and pessimism, Factor 1, with the other factors, suggests that the items on those factors are not measuring optimism and pessimism, and that inclusion of such factors may contaminate results when the PSM-R is used. Thus, inclusion of many additional items on the PSM-R is not only unnecessary, but inappropriate for a measure of optimism and pessimism.

The strongest interfactor relationship between Factor 1 and Factor 2, physical symptoms, is consistent with the research that has continually shown a relationship

between health and dispositional optimism and pessimism (Scheier & Bridges, 1995) and with explanatory style (Peterson et al., 1988). However, having a correlation between optimism-pessimism and health does not suggest that physical symptoms are an actual part of the optimism-pessimism construct; but that physical symptoms are consequences of explanatory style. According to the explanatory style theory, optimism-pessimism is viewed as a cognitive style that is developed over time, from perceived causations for experienced events. This cognitive style may then have an effect on health because the person may feel helpless to act to improve health or to change negative health patterns, or may fail to maintain treatment regimens because it is believed that it will not improve the situation. In addition, pessimists tend to have less effective coping styles, and less involvement of social support, which has a negative influence on health outcomes (Peterson et al., 1988).

The inclusion of the items that loaded on Factor 2 in the PSM-R is of special interest because the primary users of the PSM-R are in the medical field. Most of the current studies that have used the PSM-R have examined the relationship between optimism-pessimism and health outcomes (Brummett et al., 2006; Kubzansky et al., 2001; Kubzansky et al., 2002; Maruta et al., 2000, 2002). However, current findings suggest that the PSM-R scores are influenced by the somatic items that are found on Factor 2. The strength of the relationships between the PSM-R and health outcomes could be a result of the endorsement of actual physical symptoms on the PSM-R, rather than the influence of pessimism alone. Thus, the PSM-R score for optimism and pessimism appears to be confounded by the MMPI-2 items that measure physical symptoms. For example, there are items on the PSM-R that pertain to chest pains (#47), coughing up

blood (#117), and tachycardia with shortness of breath (#208), which may influence medical studies of heart disease and mortality much more than items that more accurately describe the cognitive nature of pessimism. One major implication of current results is that studies of the PSM-R and health outcomes should be re-examined.

When Factor 1 was correlated with the scales that were used for validity, a very similar pattern to the PSM-R appeared. Several measures (depression, hope, extraversion, neuroticism, positive and negative affect, social desirability, self-consciousness) had a significant relationship with Factor 1 as well as the PSM-R. No significant relationship was found between Factor 1 and the ASQ. Although the pattern of significant relationships between the PSM-R and Factor 1 were similar, the construct validity of Factor 1 may be better than the PSM-R because of the removal of the unrelated items that loaded onto the separate factors.

Factor 1 was also compared to the other measures of optimism and pessimism, the LOT and ASQ. Similar to the PSM-R, Factor 1 displayed a pattern of results that was much more similar to the pattern that was observed for the LOT, but not for the ASQ. This suggests that Factor 1 may be more similar to dispositional optimism-pessimism, but is clearly not measuring explanatory-style optimism-pessimism. Therefore, not only does the PSM-R show little evidence of measuring explanatory style, but the principal component that emerged from the PSM-R may better represent dispositional optimism.

Limitations and Future Studies

The majority of MMPI-2 items that were included on the PSM-R reflect only the presence or absence of certain events or symptoms, and appear to have no reference to causation. According to the explanatory-style theory of optimism and pessimism,

perceived causation for good and bad events is the core of the theory. Furthermore, the exact training, qualifications, and decision process used by the PSM-R raters is not fully explained. The results of the current study support the idea that the PSM-R is not measuring explanatory style, which is the goal behind the measure. It is suggested that future studies replicate the item selection process with other raters. In addition, comparison between the CAVE technique and a content analysis with systematic evaluation of the items using other raters may also be a useful comparison to determine if the same items would be chosen.

This is the first study to compare the PSM-R to other measures of optimism-pessimism, and replications are necessary. Further investigation into the lack of relationship with the ASQ is of particular interest. If the PSM-R is not related to explanatory style, then future studies may need to discover what the PSM-R actually measures. The answer to this question is critical if the PSM-R continues to be used for research and clinical purposes.

The current study utilized an exploratory factor analysis to elucidate multiple factors within the PSM-R. Future studies should include a confirmatory factor analysis with a new sample. A confirmatory analysis would determine if these 11 factors continue to be demonstrated within the PSM-R. Further analysis of Factor 1 is also warranted. If the items on Factor 1 continue to be the items that are associated the best with what is defined as optimism and pessimism, then Factor 1 should be considered for use in future research as an MMPI-2 scale of optimism and pessimism. The use of Factor 1 as an alternative would reduce the overlap with items and factors that are not considered to be within the optimism-pessimism construct, and may increase the accuracy of the measure.

The sample that was used for the factor analysis included archival data, which only included the MMPI-2 scores. The limited amount of information in the archival data prevented correlations between the PSM-R and validity measures for all the participants, and reduced the sample size for determining validity. After Factor 1 was obtained and evaluated, the only correlations that could be obtained for comparison and validity were for the student sample, which substantially reduced the number of participants for the correlations. Also, another significant limitation for the current sample was best illustrated by the lack of data for ethnicity. Thus, although the current study demonstrates validity for Factor 1, extensive demographic information for the population that was utilized is not fully known.

The majority of the data that were used in the factor analysis consisted of outpatient participants, which may limit the generalizability of the current findings. This population may have a particular bias in terms of MMPI-2 scores because their scores may be indicating more pathology, which is not necessary in determining an optimistic or pessimistic explanatory style. Future studies should use a more diverse participant sample, particularly one that is physically and mentally healthy, to improve external validity.

Conclusions

The main conclusion of the current study is that the PSM-R is a reliable measure that exhibits little evidence of validity for explanatory style. The intended use of the PSM-R has allowed researchers to evaluate archived MMPI-2 data, and to complete new longitudinal studies of the long-term health relationships with explanatory style (Brummett et al. 2006; Kubzansky et al., 2001; Maruta et al. 2000, 2002). The PSM-R is

used primarily in the medical field to better understand the relationship between optimistic and pessimistic explanatory styles and health. This endeavor is a worthy one, especially because a pessimistic explanatory style could be changed with treatment techniques, such as cognitive therapy, that are focused on altering attributions (DeRubeis & Hollon, 1995). This change in attributions may reduce the associated health consequences that are reported with a pessimistic explanatory style.

The current results suggest that the PSM-R is not validly measuring the constructs that it purports to measure. The lack of relationship with the established measure of explanatory style, the ASQ, is a primary illustration of the lack of validity of the PSM-R. In addition, the PSM-R includes a variety of factors that are unrelated to the construct of optimism and pessimism. Thus, a more established measure of explanatory style, such as the ASQ, should be used to assess explanatory style rather than the PSM-R.

There are several potential benefits in attempting to create a measure of explanatory style from the MMPI-2, because the widely used measure is a convenient way to obtain a wealth of additional data from various clinical scales. The principal component of the current analysis may provide a more valid measure that can be extracted from the MMPI-2 than does the PSM-R, but the factor structure of Factor 1 needs to be confirmed by future research. Factor 1 contains the extracted items of the PSM-R that are more related to optimism and pessimism than do the other PSM-R factors. However, like the PSM-R, this factor does not have a significant relationship with the ASQ, which strongly suggests that it is not measuring explanatory style. Factor 1 and the LOT yielded a similar pattern of correlations with the validity measures, which suggests that Factor 1 may be more of a measure of dispositional optimism, rather than

explanatory style. There are items on the MMPI-2 that do suggest a generalized sense of positive and negative past and current experiences, which coincides with the dispositional theory. Because of the nature of the items on the MMPI-2, obtaining explanatory style may be impossible using this measure. Causality is at the core of the explanatory style theory, but the MMPI-2 items do not appear to contain reference to causation. Further study of Factor 1 is merited to determine if a valid measure of optimism-pessimism can indeed be extracted from the MMPI-2.

The current study examined the psychometric properties of the PSM-R. Internal consistency and test-retest reliability estimates for the PSM-R were acceptable; however there were numerous problems with the construct validity of the measure. A principal component analysis illustrated problems with the construct validity of the PSM-R, finding that one primary factor best measures optimism-pessimism, and that the PSM-R actually measures eleven distinct factors. Continued use of the PSM-R should be restricted, based on the results of the current study. In addition, further study of the utility of Factor 1 as a measure of optimism-pessimism that is derived from the MMPI-2, is required.

APPENDIX A

OPTIMISM-PESSIMISM SCALE OF THE MMPI-2 (PSM-R)

The PSM-R is composed of the following items from the MMPI-2, and was published in the *Journal of Clinical Psychology* (Malinchoc, Offord, & Colligan, 1995). See Malinchoc et al. (1995) for scoring information.

The following items are considered "Good events" if the item is answered "True":

2, 3, 8, 9, 10, 12, 20, 33, 36, 43, 45, 47, 49, 57, 61, 63, 75, 78, 79, 83, 91, 95, 106, 109, 115, 117, 118, 120, 125, 140, 141, 148, 152, 157, 163, 164, 165, 173, 176, 177, 179, 181, 186, 194, 204, 208, 214, 217, 220, 223, 224, 226, 237, 239, 242, 244, 245, 249, 255, 261, 278, 280, 295, 314, 318, 321, 330, 335, 363, 366, 372, 385, 388, 401, 404, 405, 429, 437, 440, 452, 453, 455, 459, 460, 462

The following items are considered "Bad events" if the item is answered "True":

5, 11, 15, 16, 17, 18, 21, 22, 23, 24, 28, 30, 31, 32, 36, 38, 39, 40, 44, 48, 52, 53, 54, 55, 60, 65, 70, 71, 73, 82, 87, 92, 93, 94, 96, 97, 99, 101, 111, 116, 122, 124, 127, 130, 134, 135, 136, 138, 144, 145, 146, 147, 149, 150, 151, 154, 156, 162, 166, 167, 168, 170, 172, 178, 180, 182, 190, 195, 196, 198, 205, 215, 216, 218, 219, 225, 228, 229, 233, 234, 243, 246, 247, 251, 252, 256, 259, 264, 273, 274, 277, 288, 289, 290, 291, 292, 294, 296, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 313, 316, 317, 319, 320, 322, 323, 325, 326, 327, 328, 329, 331, 333, 334, 336, 338, 339, 341, 347, 348, 351, 356, 358, 361, 364, 368, 369, 386, 389, 391, 392, 394, 395, 397, 400, 403, 407, 408, 409, 411, 413, 414, 415, 420, 421, 424, 428, 430, 435, 438, 441, 442, 444, 446, 447, 449, 450, 451, 454, 458, 461, 463, 464, 466, 468, 469, 471, 472

The MMPI-2 is under the following copyright:

APPENDIX B

PROMAX ROTATED COMPONENT PATTERN MATRIX BY FACTOR

Item Number	Fac 1	Fac 2	Fac 3	Fac 4	Fac 5	Fac 6	Fac 7	Fac 8	Fac 9	Fac 10	Fac 11
364	**.854**	-.086	-.089	.083	-.029	.020	-.029	.004	.075	-.053	.001
450	**.843**	.061	-.127	-.061	-.007	-.054	-.314	.269	-.021	.021	-.012
347	**.838**	-.265	-.090	.048	.005	.134	.031	-.119	.019	-.046	-.062
411	**.828**	.011	.022	-.033	-.032	.071	-.089	-.066	-.010	.075	-.003
94	**.792**	-.122	.187	-.026	.037	.029	-.086	-.015	-.087	.075	-.008
368	**.774**	-.121	-.020	.138	-.019	-.046	-.172	-.008	.114	-.047	.003
325	**.766**	.274	-.153	-.099	.167	-.119	-.012	.085	-.007	.018	-.107
299	**.728**	.231	-.112	-.042	.170	-.097	.028	.098	.005	.090	-.052
82	**.727**	-.185	.099	.032	.121	.149	.036	-.022	-.053	.010	.019
326	**.723**	-.060	-.126	.113	.109	.082	-.163	-.151	.071	.054	-.018
318	**-.721**	.010	.088	-.022	.122	-.046	.348	-.054	.007	-.004	-.011
130	**.707**	.216	.023	-.111	-.035	.032	-.108	-.070	.040	.073	-.046
454	**.705**	.166	.125	-.035	-.342	-.038	-.030	.123	-.065	-.012	-.021
73	**.702**	.137	-.059	-.096	-.062	.082	-.235	-.067	.193	-.073	.073
31	**.695**	.303	-.113	-.104	.092	-.162	.011	-.004	-.025	.051	-.081
394	**.690**	.096	.013	.077	.122	.048	-.052	.002	-.008	.036	-.059
233	**.688**	.182	-.204	-.041	-.010	-.039	-.009	-.121	.057	.084	-.056
408	**.685**	-.077	.090	.009	.091	.026	.054	-.074	.011	-.072	-.037
273	**.680**	.228	.066	-.038	-.142	-.020	.039	-.054	-.026	.017	-.006
331	**.674**	.025	.075	.080	.104	.006	.039	-.092	-.013	-.303	-.012
65	**.672**	.224	.105	-.053	-.254	-.077	.097	.006	-.013	-.038	.043
92	**.667**	.046	-.084	-.206	-.124	.070	.059	.201	.056	.215	-.043
180	**.666**	.173	-.009	-.016	-.077	-.088	.013	-.120	-.083	.241	-.071
277	**.664**	.096	.042	-.098	-.103	.071	-.010	-.034	.175	.064	.039
215	**.654**	-.045	.002	.025	-.006	.041	.152	-.130	-.029	-.111	-.010
400	**.649**	.090	-.167	-.083	-.071	.000	.249	.082	.067	.181	.045
415	**.633**	-.012	.194	.107	.072	-.088	.092	-.083	.011	-.071	.021
95	**-.623**	-.236	-.093	.045	.392	-.002	-.117	.048	-.028	.053	.038
48	**.621**	.020	-.116	.007	.079	-.015	-.014	.043	.097	.139	.054
301	**.619**	.191	.179	-.051	.027	-.108	-.008	-.130	-.048	-.110	.100
303	**.608**	.142	.011	-.064	-.341	.121	-.072	.094	-.125	.223	.081
388	**-.605**	-.222	-.052	-.010	.182	-.070	-.072	.094	.031	.047	-.013
127	**.596**	-.018	.027	.117	.094	.070	-.105	-.071	.112	-.318	.004
469	**.594**	.251	.145	.015	.009	-.038	-.023	-.130	-.141	.012	.317
405	**-.589**	-.122	.035	-.036	.078	-.024	-.353	-.016	.068	.244	-.146
339	**.586**	.179	.143	-.045	.072	.014	-.102	-.250	-.078	.011	-.010
196	**.583**	.159	.181	.035	.040	-.080	.024	-.174	-.016	-.162	.130
150	**.578**	-.009	-.038	-.046	-.085	-.037	.109	-.127	-.094	.318	.046
421	**.578**	-.030	.061	.055	.215	.024	-.237	.100	.165	-.041	-.077
22	**.564**	.051	.121	-.115	-.004	.240	.024	.097	.063	.068	.116
70	**.560**	-.039	.094	.012	.060	.057	**-.470**	.035	.219	-.071	-.048
442	**.554**	.039	-.051	.141	.259	-.050	.062	-.127	-.033	-.036	.048
61	**-.551**	.042	.019	.161	.362	.022	.095	-.018	-.177	-.067	.059
116	**.549**	.128	-.135	-.062	.164	-.008	.263	.016	.075	-.005	.110
71	**.546**	.060	.105	-.047	.052	.043	-.087	.219	-.072	-.033	.044
63	**-.543**	.006	.040	-.142	-.015	-.051	.110	.175	-.006	.265	-.157

Item Number	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
170	**.535**	.174	.081	.124	.024	-.094	.043	-.028	-.103	.205	-.012
75	**-.533**	-.115	.018	.021	.332	-.085	-.044	-.192	-.009	-.117	-.121
109	**-.531**	-.316	.050	-.053	.174	-.034	.253	-.083	-.020	-.057	.140
391	**.520**	-.060	.009	-.037	-.020	.064	.051	.054	.283	.155	-.021
430	**.519**	.094	-.047	.054	.080	-.052	.335	-.001	.075	-.122	.124
308	**.501**	.300	-.143	-.068	.171	-.083	.072	.123	.161	.097	-.186
369	**.499**	-.071	.003	.025	.134	.024	-.196	.015	.273	-.092	-.027
420	**.498**	.077	-.003	.095	.164	-.106	.182	.000	.111	-.130	-.042
223	**-.496**	-.208	-.136	-.014	.129	.079	.060	.047	-.049	.098	-.014
328	**.494**	.125	.067	.043	.286	-.064	.109	-.027	.027	.097	.065
463	**.488**	.126	.378	.056	-.040	-.192	-.000	-.032	-.002	.123	.027
9	**-.486**	-.255	.084	-.014	.319	-.072	-.089	.027	-.047	-.110	-.037
87	**.484**	.022	.112	-.095	.272	.026	-.150	-.194	.013	.098	.009
218	**.482**	.221	-.027	-.115	.248	-.050	.125	-.007	-.023	.105	.123
335	**-.482**	.049	-.054	-.083	.053	-.072	.073	-.048	-.164	.096	-.073
38	**.481**	.357	-.078	-.065	.008	.029	-.002	-.193	-.034	.130	-.022
289	**.478**	-.120	-.006	.110	.007	.034	-.152	-.029	**.450**	-.195	.086
444	**.474**	-.001	.067	.031	.241	.002	.294	.031	-.195	-.289	.100
43	**-.473**	-.317	.034	-.022	.222	.086	-.056	.036	.088	.021	.158
52	**.461**	-.153	.094	.036	-.095	.312	.022	-.045	-.074	.162	.030
246	**.456**	-.180	.085	.078	.121	.064	-.108	.104	-.104	.181	.091
300	**.448**	-.138	.009	.039	.074	.234	-.071	-.121	-.034	.022	.087
135	**.442**	.014	.061	.052	.276	.127	-.033	.064	.134	.090	-.008
306	**.433**	.008	.281	-.022	-.154	.218	.026	.123	.131	.055	-.086
348	**.433**	-.081	.038	.047	.151	.072	.130	.070	-.005	.148	.095
341	**.430**	.368	-.107	-.048	.198	-.070	-.062	-.153	.054	.168	-.178
16	**.429**	.042	.080	-.049	.045	.075	.048	-.195	.024	.186	.023
156	**.429**	.047	.001	-.037	.185	.127	.152	.111	-.009	.046	-.112
125	**-.428**	-.050	-.092	.037	.198	-.378	-.001	.151	.074	.103	.116
472	**.426**	.281	-.034	.092	.232	-.072	.105	.003	-.011	.060	-.102
451	**.425**	-.131	-.024	.161	.220	.110	.166	-.047	.110	.114	.014
166	**.408**	.088	-.061	.027	-.020	.083	.116	-.228	.056	-.028	-.099
309	**.408**	.145	.047	.095	.241	-.088	.001	.272	.055	.069	-.107
409	**.407**	-.024	-.012	-.001	.091	.128	.013	-.047	.371	.021	.060
225	**.400**	.030	.232	-.088	.213	.223	.039	.102	.107	.107	-.062
224	.069	**-.846**	-.031	.016	.044	-.091	-.026	.056	.022	.087	.052
247	-.158	**.775**	.048	-.006	.008	.009	.042	-.043	-.044	.081	-.175
10	-.067	**-.752**	-.027	-.016	.238	.039	-.017	-.043	-.003	-.014	.191
179	.039	**-.725**	.061	-.076	.045	-.103	-.016	-.094	-.038	-.112	.180
45	.093	**-.722**	.093	-.069	.133	-.160	.059	-.021	-.007	.015	-.008
53	-.083	**.717**	.034	.008	.071	.062	.069	.015	.078	.137	.048
149	-.119	**.714**	.016	.125	.029	.040	.083	.008	-.017	.076	-.059
164	.040	**-.684**	.048	-.166	-.018	-.091	.068	-.035	.049	-.189	-.117
295	.223	**-.673**	-.125	-.083	.002	-.111	-.003	.030	.093	-.181	.184
28	.084	**.659**	.006	-.128	.060	.008	-.073	.049	.053	-.076	.327
111	.068	**.659**	-.015	-.040	.061	.035	-.106	.014	-.032	-.082	.328
91	-.051	**-.656**	-.012	-.026	-.085	-.063	.042	-.041	.065	-.110	.027
57	.041	**-.642**	-.050	.048	-.086	.007	-.056	.067	.010	.100	-.022
177	-.005	**-.638**	-.008	-.100	-.013	-.072	.028	-.078	-.001	-.072	.138
141	-.141	**-.631**	.021	-.112	.158	-.144	.007	.093	.149	-.013	.009
101	.103	**.627**	.103	.001	-.015	-.085	.098	.067	-.009	.087	.007
18	-.019	**.608**	-.002	.022	.024	.098	-.129	.060	-.088	.002	.319

Item Number	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
40	.050	**.606**	.037	.071	.014	-.040	.034	.179	-.013	.089	.227
44	.055	**.598**	.012	.038	.091	.018	-.068	-.017	-.010	.007	.108
176	.013	**-.596**	.015	-.011	-.012	-.019	-.021	.016	-.035	.022	-.202
39	.161	**.582**	.115	-.073	-.084	-.031	.035	-.032	-.011	.005	.114
152	-.139	**-.582**	.153	-.118	.014	-.092	-.010	.064	-.145	.030	-.027
165	-.363	**-.562**	.093	.005	.059	.051	.050	.048	-.014	-.080	.226
464	.322	**.555**	-.095	-.031	-.042	.035	.012	-.104	.097	-.066	.064
404	-.024	**-.528**	.109	-.103	-.054	-.144	.029	-.064	.072	.003	.110
3	-.247	**-.527**	.073	.191	.091	-.094	-.031	.135	-.095	.063	-.117
97	.162	**.522**	.023	-.109	.166	-.043	-.066	-.086	.069	.122	-.156
2	-.118	**-.506**	-.043	-.010	.149	.047	-.008	-.174	-.022	-.094	-.182
106	-.051	**-.494**	.016	.003	-.062	-.108	.009	.051	.005	-.168	.109
172	.173	**.493**	.046	-.046	.081	-.010	-.024	.035	.014	.109	.043
47	.056	**-.487**	-.145	-.088	.008	-.068	-.026	-.016	.044	-.072	-.106
11	.279	**.487**	-.012	-.023	.023	-.044	-.036	.132	.047	-.112	.110
147	**.423**	**.482**	-.068	.057	-.042	-.128	.003	.075	.043	.020	-.255
148	-.253	**-.464**	-.042	.028	.300	-.003	-.060	.235	-.008	.102	.162
296	.017	**.462**	.031	.067	.161	.127	.012	-.044	.033	.177	-.116
208	-.028	**-.456**	-.113	-.100	.076	-.039	-.024	-.045	-.071	-.035	-.120
229	.186	**.439**	-.040	.037	.242	-.079	.023	.013	-.023	**.403**	-.146
182	.012	**.436**	.143	.115	.061	.049	-.025	-.032	-.138	.337	-.079
249	-.003	**-.429**	-.080	-.076	.099	.004	.077	.113	-.016	.048	.280
252	.141	**.422**	-.174	-.081	-.037	-.041	.216	.391	.086	-.012	-.010
138	.014	.058	**.876**	-.071	-.086	-.118	-.035	.019	-.021	-.000	-.159
99	.026	-.016	**.840**	-.070	-.058	-.040	.033	-.050	-.000	-.068	-.137
314	.204	-.102	**-.710**	.062	.025	.006	-.015	.102	-.047	-.016	.097
333	.061	-.053	**.636**	-.069	.111	.235	-.005	.054	.053	.065	.005
144	-.202	.223	**.599**	-.036	-.135	-.218	.013	.066	.249	.276	.093
259	.279	-.085	**.550**	-.022	.076	.059	.011	-.047	.114	.004	-.050
361	.041	-.067	**.535**	.113	.167	.032	-.113	-.189	-.020	.238	-.183
145	.134	.127	**.521**	-.093	.089	.211	-.040	.133	.076	.038	.065
228	.067	-.129	**.503**	.047	.282	.010	.212	-.212	-.009	.037	-.235
329	.242	.129	**.413**	.122	.007	-.252	-.066	-.137	.020	.075	.004
24	.336	-.147	**.411**	.183	.028	-.132	.022	-.140	-.141	.399	-.053
358	-.040	.054	**.403**	.041	.346	.140	.289	.204	.090	-.033	-.073
385	.101	-.123	.026	**-.682**	.173	-.021	.000	.023	.047	.064	-.061
397	.088	.060	.046	**.673**	.039	-.080	.061	.110	.023	.022	.009
392	-.143	.107	-.011	**.648**	-.036	.011	.033	.008	.035	.009	-.012
462	.027	-.072	.021	**-.640**	.094	.006	.020	.034	.079	.011	-.092
163	.019	-.070	.074	**-.606**	.033	-.058	-.030	-.081	.074	.083	-.072
458	-.039	.006	-.017	**.555**	.000	.039	.055	-.187	-.012	.156	.041
115	-.052	.011	.027	**-.534**	.172	.026	.053	.115	.003	.013	-.056
438	-.101	.137	.098	**.532**	.112	.019	.012	.145	-.035	-.084	.036
447	.093	.034	.116	**.528**	.039	.007	.091	.171	.015	.114	-.088
322	.150	-.020	-.035	**.521**	.042	-.014	.010	.101	-.083	.243	-.067
453	.054	-.057	.070	**-.500**	.048	-.053	.079	.180	.043	-.032	-.208
401	.105	-.130	-.022	**-.476**	.125	-.058	-.007	.199	-.055	-.033	-.009
154	.033	.096	-.093	**.447**	-.084	-.014	-.050	-.125	.022	-.016	.123
459	-.152	-.081	.023	**-.440**	.151	-.099	.001	-.043	.071	.017	.021
468	.163	.088	-.014	**.405**	.051	-.040	-.046	.027	.132	.090	.317
242	.182	-.062	-.031	-.062	**.666**	-.015	.030	-.043	-.227	.108	.117
244	-.233	-.077	-.060	.015	**.561**	.036	-.018	.047	-.112	-.089	.064

Item Number	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11
330	-.133	**-.413**	-.026	-.034	**.512**	.065	-.006	-.125	-.177	.099	.140
226	.037	-.055	-.035	-.030	**.505**	.068	.122	.075	-.093	.242	.036
304	.138	.071	-.012	-.082	**.482**	.046	.055	-.160	-.056	.063	.106
363	-.075	-.128	-.027	-.086	**.477**	.044	-.019	-.050	-.129	-.106	-.029
366	.299	.021	.017	-.085	**.421**	.056	.088	.142	-.163	.166	.077
122	.291	.139	-.060	-.066	**.416**	.063	.090	-.161	-.044	.119	.041
288	.153	.130	.087	-.053	.111	**.673**	-.088	.008	.058	-.074	-.003
455	-.107	-.098	.032	-.046	.085	**-.590**	-.021	.093	-.101	.098	.022
195	.271	.011	-.052	.072	-.112	**.557**	.099	-.008	.083	-.047	-.119
83	-.213	-.112	.059	.037	-.039	**-.511**	-.192	.080	.075	.101	-.075
449	.058	.178	-.086	.023	.232	**.475**	.136	-.144	-.031	-.081	-.002
205	.091	.164	-.084	.073	.217	**.464**	.068	-.248	.063	-.048	.026
292	-.099	.193	.112	.093	.165	**.456**	-.088	-.244	-.024	.044	-.046
256	.269	.020	-.070	.038	.079	**.438**	.125	-.244	.040	.037	.030
54	.136	.102	.059	-.083	.133	**.421**	-.133	.108	.028	-.032	-.009
190	.368	.092	.037	-.077	.120	**.403**	-.200	.053	.064	.084	.057
389	.320	-.045	-.015	-.014	.097	.161	**.577**	.045	-.043	-.100	.166
452	-.146	.085	.015	.015	.153	.026	**.556**	.049	-.174	-.167	-.101
302	**.545**	-.040	-.101	.004	.013	-.032	**.553**	-.025	.148	-.141	.005
372	**-.458**	.011	.086	-.060	.023	-.061	**-.552**	.002	.011	.140	-.141
437	-.138	-.010	.086	.041	.202	-.041	**.520**	.163	-.180	.003	-.014
323	.298	-.229	-.003	.134	-.107	.147	**.509**	-.262	.071	.133	-.169
446	**.438**	-.016	.102	-.058	.020	-.048	**-.472**	-.004	**.458**	-.005	-.060
414	-.040	.041	.073	.073	.179	.150	**.456**	.016	-.002	.162	-.029
134	.300	-.025	.044	-.164	.104	.031	**.429**	-.139	.032	.232	.155
220	-.072	.068	.014	-.146	.020	-.060	.143	**.620**	-.004	.098	-.019
157	-.359	.099	-.020	-.060	.068	.066	.141	**.533**	-.058	.264	.052
239	**-.406**	-.137	.109	.086	.151	-.071	.283	**.471**	-.159	.084	-.010
264	.230	-.216	-.006	-.137	.039	-.006	.146	**-.456**	-.049	.213	-.050
194	-.008	-.182	-.085	-.068	-.038	-.108	.022	**.447**	-.021	-.079	.140
93	-.038	.240	-.098	-.065	.102	-.033	.262	**-.416**	.180	-.140	.113
429	-.152	.099	.002	.101	-.049	-.087	-.060	**.415**	.142	-.242	-.123
167	.236	-.007	.033	-.086	-.256	.044	-.110	.006	**.735**	.004	-.026
49	-.186	-.058	-.086	.108	**.447**	.011	.041	.057	**-.648**	-.039	.077
360	-.139	-.074	-.027	-.145	.354	-.070	.055	-.074	**-.635**	.014	-.105
243	**.443**	.016	.021	-.060	-.106	.008	-.049	.051	**.610**	-.012	-.118
280	-.280	-.016	-.071	.043	.374	-.137	.076	.032	**-.563**	-.048	.086
321	-.288	.026	.001	-.160	.250	-.084	.047	.045	**-.502**	.021	-.081
424	.136	.032	.243	.181	-.072	-.054	.042	-.090	**.408**	.163	.144
198	-.014	.266	.122	.044	-.042	-.079	-.101	.054	.035	**.618**	.169
319	-.025	.227	.096	.150	-.016	-.133	-.046	-.018	.136	**.572**	.249
316	**.429**	-.068	.104	-.051	.168	.002	.044	-.250	.007	**.445**	.061
395	.096	-.102	-.159	**.438**	.086	-.060	-.035	-.089	.167	.198	**.526**
435	.067	-.013	-.197	**.438**	.071	-.008	-.003	-.093	.162	.217	**.529**
471	.100	.324	.005	.230	.147	-.033	.030	-.052	.030	.194	**.412**
204	-.070	-.292	-.155	.028	.077	.017	.052	.136	-.083	.012	**.403**

Note: Pattern coefficients with an absolute value of .40 or greater are in bold.

APPENDIX C

OFFICIAL APPROVAL FORM FROM INSITUTIONAL REVIEW BOARD

Protocol # _____(office use only)   *26032203*

HUMAN SUBJECTS REVIEW FORM
UNIVERSITY OF SOUTHERN MISSISSIPPI
(Submit this form in duplicate)

Name: Ginger Burge DeBrule   Phone: 4588 or 434-1936

Mailing Address: 133 Cooper St. Hattiesburg, MS 39401
(address to receive information regarding this application)

College/Division: Education and Psychology   Dept: Psychology

Department Box # 5025   Phone: 4177

Proposed Project Dates: From: 12-02-05   To: 3-15-07
(specific month, day and year of the beginning and ending dates of full project, not just data collection)

Title: Psychometric Properties of the Revised Optimism-Pessimism Scale of the MMPI-2

Funding Agencies or Research Sponsors: N/A

Grant Number (when applicable): N/A

_____ New Project

___X___ Dissertation or Thesis

_____ Renewal or Continuation: Protocol #

_____ Change in Previously Approved Project: Protocol #

Principal Investigator _Ginger Burge DeBrule, MA_   Date _03/13/2006_

Advisor _____   Date _3-13-06_

Department Chair _____   Date _3/13/06_

RECOMMENDATION OF HSPRC MEMBER

_____ Category I, Exempt under Subpart A, Section 46.101 ( ) ( ), 45CFR46.

___✓___ Category II, Expedited Review, Subpart A, Section 46.110 and Subparagraph (6l).

_____ Category III, Full Committee Review. The applicant has been requested to provide the Office of Research and Sponsored Programs (ORSP) with twelve (12) additional copies of the application.

_____   _03/19/2002_
HSPRC College/Division Member   Date

_____
HSPRC Chair   Date _3-23-2006_

APPENDIX D

OFFICIAL LETTER OF APPROVAL FROM INSITUTIONAL REVIEW BOARD

The University of
Southern Mississippi

Institutional Review Board

118 College Drive #5147
Hattiesburg, MS 39406-0001
Tel: 601.266.6820
Fax: 601.266.5509
www.usm.edu/irb

HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **26032203**
PROJECT TITLE: **Psychometric Properties of the Revised Optimism-Pessimism Scale of the MMPI-2**
PROPOSED PROJECT DATES: **12/02/05 to 03/15/07**
PROJECT TYPE: **Dissertation**
PRINCIPAL INVESTIGATORS: **Ginger Burge DeBrule**
COLLEGE/DIVISION: **College of Education & Psychology**
DEPARTMENT: **Psychology**
FUNDING AGENCY: **N/A**
HSPRC COMMITTEE ACTION: **Expedited Review Approval**
PERIOD OF APPROVAL: **03/22/06 to 03/21/07**

Lawrence A. Hosman   3-23-2006

Lawrence A. Hosman, Ph.D.   Date
HSPRC Chair

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