

ABSTRACT

Investigation of a Brief Measure of Psychological Distress: Factor and Confirmatory Analyses in Psychiatric and Collegiate Samples

Aimee Johnson, M.A.

Mentor: Gary R. Elkins, Ph.D.

With increasing costs and utilization of health care services in primary care, and evidence for gross under-diagnosis of acute psychological distress, a brief screening measure that includes the most salient constructs of psychological distress: depression, anxiety, hopelessness and anger, is critically needed. Such a scale may identify psychological distress without increasing the administration burden of the patient or professional and provide medical clinicians with a practical instrument that could identify patients who may require additional psychological evaluation and facilitate discussion.

This paper represents the findings of an investigation into a new measure which was initially constructed in a clinical sample, and cross-validated in a college sample and psychiatric sample. Item analyses, correlations of convergent and divergent validity, and confirmatory analyses suggest that this scale has potential as a reliable and valid clinical tool in psychiatric and collegiate populations to implement as a brief screening measure of psychological distress.

Investigation of a Brief Measure of Psychological Distress:
Factor and Confirmatory Analyses in Psychiatric and Collegiate Samples

by

Aimee Johnson, B.A.

A Thesis

Approved by the Department of Psychological & Neuroscience

Jaime L. Diaz-Grandos, Ph.D., Chairperson

Submitted to the Graduate Faculty of
Baylor University in Partial Fulfillment of the
Requirements for the Degree
of
Master of Arts

Approved by the Thesis Committee

Gary R. Elkins, Ph.D., Chairperson

Matthew S. Stanford, Ph.D.

James Kendrick, Ph.D.

Accepted by the Graduate School
August 2012

J. Larry Lyon, Ph.D., Dean

Copyright © 2012 by Aimee Johnson

All rights reserved

TABLE OF CONTENTS

ACKNOWLEDGMENTS	vii
DEDICATION	viii
LIST OF FIGURES	vi
LIST OF TABLES	vii
CHAPTER	
1. INTRODUCTION	1
The Impact of Psychological Distress	1
Defining Distress	2
Primary Care and Mental Health Care	4
Increase Demand and Cost for Mental Health Treatment	5
Psychological Distress: Undetected in Primary Care	6
Prevalence of Psychological Distress	7
Assessment of Psychological Distress	8
Critical Need of Psychological Distress Screening	8
Assessment of Psychological Distress	11
Developing a Screening Measure for Psychological Distress	10
Multidimensional Measures of Psychological Distress	10
The Need for a Multidimensional Screener of Psychological Distress	12
Depression	12
Anxiety	13
Anger	14
Hopelessness	15
Initial Development of a Brief Assessment of Psychological Distress	16
Item Generation	16
Construct Reliability Analyses	17
Principal Components Analysis	18
2. MATERIALS AND METHODS	19
Objectives	19
Specific Aims	19
Participants	19
Measures	20
Procedure	22
Hypotheses	23

3. RESULTS	
Demographic Variables: Descriptive Statistics	25
Item and Reliability Analysis: Psychiatric Sample	26
Confirmatory Factor Analysis: Psychiatric Sample	27
Item and Reliability Analyses: Collegiate Sample	29
Confirmatory Factor Analysis: Collegiate Sample	31
4. DISCUSSION AND CONCLUSION	34
Limitations of the Study	35
Directions for Future Research	36
WORKS CITED	37

LIST OF FIGURES

Figure 1. Model for Assessment of Psychological Distress	9
Figure 2. Measures of Psychological Distress	11
Figure 3. Developmental Stages of a Brief Assessment of Psychological Distress	17
Figure 4. Confirmatory Factor Analysis, Path Diagram for Psychiatric Sample	28
Figure 5. Confirmatory Factor Analysis, Path Diagram for Collegiate Sample	32

LIST OF TABLES

Table 1. Demographic Factors of Psychiatric Study Participants	25
Table 2. Demographic Factors of Collegiate Study Participants	26
Table 3. Multi-trait Matrix for Convergent and Divergent Validity in a Psychiatric Outpatient Sample	27
Table 4. Multi-trait-Matrix for Convergent and Divergent Validity in a Collegiate Sample	30
Table 5. Standardized factor loadings of the collegiate confirmatory factor analysis	31

ACKNOWLEDGMENTS

I would first like to acknowledge my chair, Dr. Gary Elkins, whose guidance and mentorship made this project possible. I would also like to acknowledge my committee members, Dr. Matthew Stanford, and Dr. James Kendrick for their time, involvement, and assistance in this process.

This project would not have been possible without the help and assistance of friends and colleagues at the Mind Body Medicine Research Laboratory. I am deeply indebted to my good friend, William Fisher, for his friendship, collaboration, and constant encouragement. Special thanks to Cassie Kendrick for her help in paving the way.

DEDICATION

To my mom and dad, Candace and Joe Johnson, whose constant love and support make the accomplishment of my dreams possible.
Thank you, I love you.

CHAPTER ONE

Introduction

The Impact of Psychological Distress

A brief instrument that allows clinicians to assess and screen psychological functioning of their patients is critically needed. Though many instruments exist to capture multiple and unitary constructs of psychological distress, there is currently no brief, single measure that is practical to the time-pressed nature of the current medical model, that adequately assesses immediate levels of functioning across multiple constructs of psychological distress.

Psychological distress has received increased attention in recent years as empirical investigation has shed light on the broad domain of its effects, which include decreased health-related quality of life in persons with conditions such as obesity and multiple sclerosis (Kern, Schrepf, Schneider, Schultheib, Reichmann, & Ziemssen, 2009; Mannucci, Petroni, Villanova, Rotella, Apolone, & Marchesini, 2010); decreased levels of functioning and increased disease activity in patients with systemic lupus erythemathosus (Duvdevany, Cohen, Minsker-Valtzer, & Lorber, 2011); increased symptom severity associated with gastroparesis (Hasler, Parkman, Wilson, Pasricha, Koch, Abell *et al.*, 2010) cardiac pathologies (e.g., Song, Son, & Lennie, 2009); and decreased rehabilitation and functional outcomes in stroke patients (Hilari, Northcott, Roy, Marshall, Wiggins, Chataway, *et al.*, 2010). Research has also accounted for numerous secondary effects of psychological distress, such as abnormal development in fetuses of distressed mothers (Henrichs, Schenk, Roza, van den Berg, Schmidt, Steegers,

et al., 2009) and greater incidence of falls and fractures in Alzheimer's patients cared for by distressed care givers (Maggio, Ercolani, Andreani, Ruggiero, Mariani, Mangialasche, *et al.*, 2010). In the workforce, distress has been linked to decrements in employee productivity (Hilton, Scuffham, Vecchio, & Whiteford, 2010), among college students, investigation has related distress to increased incidence of impaired academic performance in students of color (Rosenthal & Wilson, 2003) and greater risk of infidelity in romantic relationships (Hall & Fincham, 2009). Further, empirical investigation has related distress to a number of mental health risks, including increased nicotine usage in persons with schizophrenia (Hamera, Schneider, & Deviney, 1995); greater internal pressure to self-injury (Bohus, *et al.*, 2000) and increased motivation to attempt suicide (e.g., Holm & Severinsson, 2008; Leiner, Compton, Houry, & Kaslow, 2008). Given the growing evidence of the myriad deleterious effects of psychological distress, the need for effective assessment is self-evident.

Defining Distress

Psychological distress serves as a widely utilized, but generally loosely operationalized indicator of mental health among clinical and general populations, and as an outcome measure in clinical trials (Drapeau, Marchang, Beaulieu-Prevost, 2012). Generally, psychological distress can be defined as a state of emotional suffering characterized by symptoms of depression (i.e. loss of interest, sadness, hopelessness) and anxiety (Mirowsky & Ross, 2002). Furthermore, psychological distress may include somatic symptoms (i.e. insomnia, headaches and fatigue) with varying cross-cultural symptomology. Other conceptualizations of psychological distress, implicates an

emotional disturbance in which the social functioning of the individual and quality of life is significantly reduced (Wheaton, 2007).

Definitions and models of distress show considerable variation within the literature. Although some conceptualizations of distress potentially confound the domain by including stress, it is important to distinguish the two, particularly when attempting to evaluate symptoms of distress. In attempt to add clarity, Ridner (2004) proposed a concept analysis providing contextual distinctions between the terms *stress*, *distress*, *biological distress*, and *psychological distress*. According to Ridner, the term *stress* is defined as a “non-specific biological response to a demand or stressor that is not necessarily harmful to the individual”.

In contrast, *distress* is defined as a “non-specific biological response to a demand/stressor that is harmful to the individual”. According to proposed model, the concept of distress is categorized into biological distress and psychological distress. *Biological distress* refers to “potentially harmful physiological changes that occur in the body in response to a stressor”, whereas *psychological distress* refers to the “unique discomforting, emotional state experienced by an individual in response to a specific stressor that results in temporary or potentially permanent harm to the individual”. Ridner proposes that psychological distress contains five defining components: perceived inability to cope effectively, change in emotional status, discomfort, communication of discomfort, and harm. According to the model, for psychological distress to occur, antecedents must be present. First, a stressor must be present that incites stress or distress. The stressor must induce the perception of a personal threat, which then activates the fight or flight response leading to psychological distress (Selye, 1976;

Masse, 2000). Although the model may be criticized for oversimplifying complicated processes, it provides an initial, overall attempt to understand the complexities of psychological distress. This model aids in the development of construct specific to psychological distress, enabling a more parsimonious clinical measure.

Primary Care and Mental Health Care

Recent findings demonstrate that primary care is becoming the “front line” in the treatment of mental disorders (Kessler et al., 2005; Cwikel, Zilber, Feinson, & Lerner, 2008). In 2007, data suggested that one out of every five primary care patients had at least one diagnosable anxiety or depressive disorder in the past year (Kroenke, Spitzer, Willaims, Monahan & Lowe, 2007). Further, Kroenke and colleagues also showed that mental health treatment rate had increased more than 150% in the general medical services sector. Despite this increase, there was no accompanied increase in efficacy, data showing that many patients receiving treatment did not complete the clinical assessment or receive the appropriate monitoring in accordance with accepted standards of care (Wang, Berglung, & Kessler, 2000; Kessler et al., 2005).

Due to the high employ of primary care services for the treatment of symptoms associated with psychological distress, research has sought to establish relationship variables associated with psychological distress in primary care. Findings show, there is a strong association between anxiety, depression, and pain, making implications for screening and assessment in primary care patients reporting pain (Mean-Christensen, Roy-Byrne, Sherbourne, Craske, & Stein, 2007). Given the increasing estimates, of patients seeking alleviation from psychological distress through means of primary care

clinics, it is critical to implement efficient and effective detection methods within primary care settings.

Increase in Demand and Cost for Mental Health Treatment

In addition to the demand for mental health treatment in primary care, there is accompanied increase in cost and need to demonstrate effectiveness in mental health treatment. Psychological distress is continuously associated with increasing costs and labor demands of healthcare facilities (Gill, Sharpe, 1999; Hansen, Fink, Frydenberg, Oxhoj, 2002). Data from the Agency for Healthcare Research and Quality's (AHRQ's) Medical Expenditure Panel Survey, estimates that total expenditures in mental healthcare cost for Americans in 2006, was approximately \$57.5 billion. In 2006, the average expenditure per person on mental health was \$1,591. Data collected in 1996 and 2006, comparing the five most costly medical conditions; mental health care cost showed the greatest increase in cost. In 1996, 19.3 million people procured expenses for mental disorders; however, in 2006, mental disorders increased to 36.2 million people.

Recently psychological distress research, has sought to identify specific constructs that would allow for greater prediction of psychological distress. Results of a longitudinal study, showed at the five year follow up depression alone predicted an increase of inpatient (24.1%) and outpatient costs (8.9%) (Grabe, Baumeister, John, Freyberger, & Volzke, 2009). Additionally, comorbidity of somatization and depression along with somatization and anxiety, predicted an overall increase in overall health costs of greater than 50%. Furthermore, twenty-eight European countries, the economic cost associated with anxiety disorders alone, were estimated at \$58 billion. With increasing worldwide cost attributed to the effects associated with psychological distress, there is an

increasing demand for accountability of economic resources and demonstrations of effectiveness in treatment interventions (Iyer, Rothmann, Vogler, & Spaulding, 2005). Furthermore, Grabe and colleagues (2009) recommend the use of simple and time-efficient screening procedures to assist in identifying patients at risk for future health care utilizations.

Psychological Distress: Undetected in Primary Care

Despite primary care's new status as the most frequently employed treatment for mental health and the demand to demonstrate cost-effective procedures in identification and treatment, psychological distress is frequently undetected in medical settings. Research indicates that physicians do not often recognize patient's emotional distress (Levinson, Gorawara-Bhat, & Lamb, 2000; Epstein, Hadee, Carroll, Meldrum Lardner, Shields, 2007) when patients do not request help, which may explain why one-fourth of people with major depression are underdiagnosed (Barbui & Tansella, 2006) and fewer than half receive treatment (Young, Klap, Sherbourne, & Wells, 2001). Data collected on the use of mental health services, indicate that 34.3% of individuals receiving treatment for anxiety disorders are receiving minimally adequate treatment and 38.1% for major depressive disorders (Wang, Lane, Olfson, Pincus, Wells & Kessler, 2005).

Patient-level barriers to disclosure may include lack of knowledge, socio-cultural factors, psychological factors, discomfort discussing personal issues, and the belief that physicians are not interested in or not able to treat distress (Barney, Griffiths, Christensen, & Jorm, 2009; Mohr, Hart Howard et al, 2006; Kravitz, Paterniti, Epstein et al, 2009). A brief measure evaluating psychological distress may provide medical clinicians with a

practical instrument to identify whether patients require additional psychological evaluation and to facilitate discussion with the patients.

Prevalence of Psychological Distress

The under-detection of psychological distress in primary care poses a significant problem, given that primary care is now the front line of mental health treatment. In order to increase the effectiveness of detection in primary care, it is necessary to understand the prevalence of psychological distress in the general population. The task of such estimates is laborious due to the multitude of conceptualizations and assessments of the domain of distress. It is difficult to ascertain the prevalence of psychological distress, as it is largely dependent upon on how researchers operationalize the term. After evaluation of commonly utilized constructs associated with psychological distress, (e.g. anxiety, depression, anger, hopelessness), the phenomena of psychological distress is universal to the human condition. Prevalence estimates are difficult given the variety of measures used to assess distress, the time window used in documentation of symptoms, and cutoff points applied to dichotomize the score (Drapeau, Marchand, Beaulieu-Prevost). However, prevalence estimates of psychological distress in the general population range between 5% and 27% at any given point (Benzeval & Judge, 2001, Chittleborough, et al, 2001, Gispert et al, 2003; Kuriyama et al, 2009).

If you consider patients seeking mental health care to be in a state of potential psychological distress, estimates for prevalence in primary care in Europe, range from 20% to 55% (Anseau, Dierick, Buntinckx, De Snedt, Van Den Haute, Vander Mijnsbrugge, 2004; Aragonés, Pinol, Labad, Masdeu, Pino, Cervera, 2004). A recent study using Spanish versions of the Structured Clinical Interview for DSM-IV Axis I

Disorders (SCID; First, Spitzer, Gibbon, Williams, 1996) and the Mini Neuropsychiatric Diagnostic Interview (MINI; Sheehan, Lecrubier, Sheehan, Amorim, Janavs, Weiller, Hergueta, Baker, & Dunbar, 1999) on patients (n=3,815) attending primary care centers (Serrano-Blanco, Palo, Luciano, Pinto-Meza et al, 2010). Results showed that 45.1% of patients reported at least one lifetime mental disorder, and 30.2 % reported at least one mental disorder in the previous 12 months with the most prevalent of disorders being major depression and anxiety disorders. Given the widespread prevalence of psychological distress found within the general population, in order to assist in the complex task of detecting psychological distress, a brief instrument assessing psychological distress is necessary to implement into primary care facilities which may potentially improve detection rates.

Assessment of Psychological Distress

The assessment of psychological distress has been studied in numerous settings each using an array of psychological distress measures for multiple functions (i.e. clinical treatment evaluation, screening in primary care).

Carr (2008) proposed a model to meet the complexities associated with the development of effective assessment and evaluation of psychological distress (Figure 1). This model suggests assessment should begin with a broad screening measure for psychological distress symptoms. If symptoms are present, a more detailed instrument that further assesses a particular symptom should follow (i.e. for hopelessness the Beck Hopelessness Scale). If elevated scores on these instruments occur, it is appropriate to conduct a structured interview to assess psychological distress from a syndromal perspective with the mood disorder module with interviews such as the Structured

Clinical Interview for the DSM-IV (SCID; First, Spitzer, Williams & Gibbon, 1995), MINI International Neuropsychiatric Interview (MINI; Sheehan et al, 1998), or the Longitudinal Interval Follow-up Evaluation (LIFE; Keller et al., 1987).

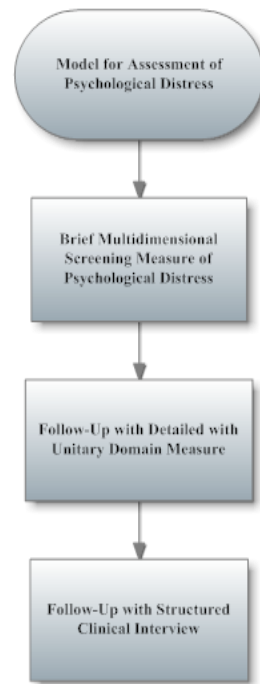


Figure 1. Model for Assessment of Psychological Distress

To integrate the proposed model, to meet the need for assessment in primary care, a broad screener of psychological distress should be implemented. A brief screening instrument of psychological distress is appropriate and feasible, given physician's restricted time and lack of training in administering lengthy structured clinical interviews. Brief self-report measures of psychological distress are advantageous over structured interviews, which are intensive and costly. Self-report measures can be easily administered by non-clinicians such as nurses or office administrative staff in a waiting room setting. As psychological distress may increase health care costs, prolong medical

treatment, and lead to unnecessary hospitalization, early identification and intervention may produce a significant financial benefit to both health care providers and patients alike.

Developing a Screening Measure for Psychological Distress

There have been several published mental health measures developed to assess multiple unitary dimensions of psychological distress. To date, examples of the frequently employed, well validated unitary domain measures of psychological distress include: the Beck Depression Inventory–II (BDI–II; Beck, Steer, & Brown, 1996), the Beck Anxiety Inventory (BAI; Beck & Steer, 1988), the Beck Hopelessness Scale (BHS; Beck & Steer, 1988), the State-Trait Anger Expression Inventory (STAXI–2; Spielberger, Gorsuch, & Lushene, 1970).

Multidimensional Measures of Psychological Distress

Several measures exist which assess and screen for psychological distress (Figure 2). These measures vary by construct and validating samples, however none of these scales measures include all four constructs that have been suggested to be critical in assessing psychological distress in a clinical sample (BDI–II: Beck, Steer, & Brown, 1996; BAI: Beck & Steer, 1993; BHS: Beck & Steer, 1988; Spielberger, 1999). The administration time for existing measures range from 30 minutes to 2 minutes. This represents a significant time burden upon patients and time-constrained health care professionals.

Scale	Number of Items	Time for Administration	Depression	Anxiety	Hopelessness	Anger
Symptom Checklist-90-R (SCL-90-R; Derogatis, 1977)	90	12-15 minutes	✓	✓		
Brief Symptom Inventory (BSI; Derogatis, 1992)	53	8-12 minutes	✓	✓		
Psychological Screening Inventory (PSI; Lanyon, 1970)	130	10- 20 minutes				
General Health Questionnaire (GHQ; Goldberg & Blackwell, 1970)	12,28,30 & 60	3- 8 minutes	✓	✓		
Derogatis Stress Profile (Derogatis, 1977)	77	12-13 minutes	✓	✓		
Four-Dimensional Symptom Questionnaire (4DSQ; Terluin, 1996)	50	Not Provided	✓	✓		
5 Item Screening Tool for Psychological Distress (STOP-D; Young et al, 2007)	5	1-2 minutes	✓	✓		✓
Distress Thermometer (DT; National Comprehensive Cancer Network; 2005)	2	Not Provided	✓	✓		
Kessler Psychological Distress Scale (K-10 and K-6; Kessler et al., 2002)	6 or 10	Not Provided	✓	✓		
Talbieh Brief Distress Inventory (TBI; Ritsner et al., 1995)	24	Not Provided	✓	✓		

Figure 2. Measures of Distress

Given the increasing cost and employ of mental health care services in primary care, and the underdiagnoses of psychological distress, a brief screening measure that includes the commonly utilized constructs of distress is critically needed to identify psychological distress without increasing the administration burden of the patient or professional.

Administering multiple commercially available validated measures may be prohibitive for clinical practice with patients with limited financial means, or in research where funding is limited or nonexistent. Currently there are no brief screening tools that assess all four of the most prominent constructs of psychological distress in a single measure. Patients would require between 15 and 25 minutes to complete a full battery of even the briefest of the current validated measures to screen for depression, anxiety, anger, and hopelessness. In addition, 5 to 10 minutes of staff time would be required, per patient, to

score and interpret the results of the screening tools. Also, most of the existing measures have a user fee associated with them, creating an additional cost of approximately US\$5 per patient (Young, Ignaszewski, Fofonoff, Kaan, 2007). Most importantly, there is no single, brief screening measurement that assesses anger, a known confound to clinical care, and hopelessness the most consistent predictor of suicidality

The Need for a Multidimensional Screener of Psychological Distress

Based on these considerations, a brief scale is in development to capture both commonly employed constructs of psychological distress (i.e depression and anxiety), and constructs that are associated with psychological distress (i.e. anger and hopelessness). A brief primer on the selected constructs of psychological distress along with the rationale for their inclusion in a brief scale follows:

Depression

According to the World Health Organization, depressive disorders are one of the leading causes of diseases worldwide with reported prevalence of depressive episodes being 16 per 100,000 people, per year for males, and 25 per 100,000 people, per year for females (Ustun et al., 2004). Research estimates that 6.7 % of the U.S. adult population suffers from major depressive disorder with 30.4 % of these cases being classified as severe (Kessler, Berglund, Demler, Jin, & Walters, 2005). Data from the National Comorbidity Survey-Replication, revealed half of all of lifetime causes of mood disorders begin at 14 years and another three-fourths by the age of 24 years (Kessler et al., 2005). Additionally, data suggests that psychological distress peaks, between the ages of 18 to 29 years and 80 to 89 years old (Schieman, Van Gundy, & Taylor, 2001). Prevalence of

depression among younger age groups, and the high likelihood of recurrence during adulthood, is a consistent finding among research (Gotlib & Hammen, 2002). Based on the aforementioned epidemiologic studies, (Kessler et al, 2003) it is apparent that within the U.S. general population, depression is a prevalent concern, and given the early onset, lifetime prevalence will be higher in the future for younger cohorts (Craighead, Sheets, Brosse, & Ilardi, 2007). Given the high prevalence, depression is a necessary and vital construct to include in a brief assessment screener of psychological distress.

Anxiety

Along with depression, anxiety is another frequent construct from the domain of psychological distress. The prevalence of the different anxiety disorders is commonly comorbid with other mood disorders especially major depressive disorder. Estimates from research suggest that 18.1% of the U.S. adult population suffers from an anxiety disorder with 22.8% classified as severe (Kessler, Berglund, Demler, Jin, & Walters, 2005). Data from the National Comorbidity Survey-Replication, showed that any anxiety disorder showed a lifetime prevalence of 28.8% and an 18.1 % twelve-month prevalence (Kessler & Merikangas, 2004). Anxiety disorders, particular specific phobias, social anxiety disorder, post-traumatic stress disorder, and generalized anxiety disorder have a high prevalence in society and are commonly found to be comorbid with depression (Kasper, 2006). Despite of this high prevalence, anxiety disorders continue to be under-diagnosed, misdiagnosed and inappropriately treated: less than one in five patients receive appropriate medication, or one in three patients with comorbid depression (Kasper, 2006). Anxiety disorders have many negative consequences for both the individual and society, including disability, reduced ability to work leading to loss of

productivity, and a high risk of suicide making anxiety a critical component of a measure of psychological distress.

Anger

Anger, as a construct, is rarely employed in psychometric instruments of psychological distress, however as anger can seriously affect clinical outcomes, this is an oversight. It has been reported that anger from any cause can block effective interaction between the patient and caregiver, therefore the inclusion of construct of anger to a measure of psychological distress is of critical clinical import (Faulkner, Maguire & Regnard, 1994). The reason that many scales of distress may have overlooked anger is that estimating the precise prevalence of anger related problems is very difficult.

Estimates may be drawn; however, when you consider the results of a large epidemiologic study of 21,443 adults aged 25 to 59 years, 15 % reported extremely high hostility scores (Romanov, Hatakka, Keskinen, Laaksonen, Kaprio, Rose, & Koskenvuo, 1994).

Further, anger has deleterious health impacts. Early investigations of health consequences associated with high trait anger, focused on the adverse effects on the cardiovascular system; however, new research shows adverse consequences on almost every organ system (Song, Sun & Lennie, 2009). Additionally, recent studies have shown a high association between anger and risk for stroke (Young, Ignaszewski, Fofonoff, & Kaan, 2007). Furthermore, research has shown that individual suffering from anxiety and depression have an increased prevalence for anger attacks (Gould, Ball, Kaspi, Otto, Pollack, Shekhar, Fava, 1996) which are defined as episodes of anger accompanied by physiological features, similar to panic attacks, in context of depressive

or related psychopathology. It is hypothesized; that anger attacks may exist as a distinct syndrome and untreated may lead to secondary anxiety and depression (Fava, Rosenbaum, Pava, McCarthy, Steingard, Bouffides, 1993). Given, anger impact on health and patient interaction with health providers, anger was included in the development of a brief assessment of psychological distress.

Hopelessness

Hopelessness, a construct closely linked to depression, has been found to be one of the strongest and most consistent predictors of suicide, ideation, suicidal intent, and completed suicide (Beck et al., 1993; Malone, 2000; Beck, Brown, Berchick, Stewardt & Steer, 1990). Consistent with the body of literature linking hopelessness to suicide (e.g., Pompili, Rihmer, Akiskal, Innamorati, Iliceto, Akiskal, *et al.*, 2008), Beck, Steer, Kovacs, and Garrison (1985) found that hopelessness at the time of hospitalization predicted 91% of eventual suicides in a 10-year prospective study of 207 psychiatric inpatients admitted with suicidal ideation.

However, research regarding the prevalence of hopelessness in the general population is limited (Greene, 1981). A 2 year follow-up study, examining hopelessness in a sample of 1,389 adults in the general population, found more than half of those who were considered to be hopeless, (7% of the sample) at baseline remained hopeless at follow-up (Haatainen, Tanskanen, Kylma, Honkalampi, Antikainen & Vinamaki, 2003). Thus hopelessness, as opposed to other psychopathology such as depression, may not alleviate by the passage of time alone. The stability of hopelessness, offers opportunities in preventive and mental health (Haatainen et al., 2003). Thus, hopelessness, as a unique construct, should be included in any comprehensive measure of psychological distress.

Initial Development of a Brief Assessment of Psychological Distress

Item Generation

The initial development of a brief measure of psychological distress began in three phases (Figure 3). The first phase, item generation, involved the generation of a 100 items by three doctoral level psychologists who each selected items to measure “high negative affect,” to create the most theoretically relevant questions per construct. These items were then reduced to 40 by eliminating overlapping items and items that did not appear to have adequate face validity. Forty items were selected, and administered using an 5-point Likert rating scale for each item, with anchors of 1: Strongly disagree, 3: Neutral, and 5: Strongly agree. The first initial validation study was conduct on participants recruited during inpatient admissions to a psychiatric unit in a major medical center in the southwestern United States over an 18-month period (Elkins, Fisher, Johnson, Kendrick, Koep, Bunn, & Perfect, 2012)

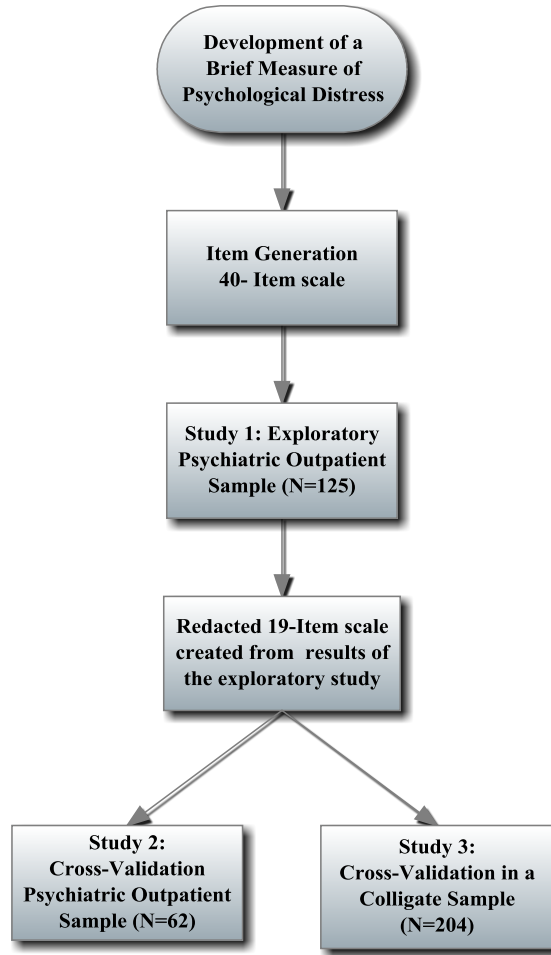


Figure 3. Developmental stages of a brief assessment of psychological distress

Construct Reliability Analyses

Item analysis of the four scales revealed for the depression construct (11 items, $n=125$), a mean of 34.26 and SD of 7.34 with a Cronbach's alpha of 0.85. Evaluation of the anxiety construct (12 items, $n = 125$; $M = 41.46$, $SD = 9.02$) had Cronbach's alpha of .91 construct. Additionally, the anger construct showed (8 items, $n = 125$; $M = 29.49$, $SD = 8.36$), $\alpha=.87$, and for the hopelessness construct (9 items; $M = 33.73$, $SD = 9.62$), $\alpha=.90$. Statistical evaluations of the items suggest that the constructs used in this study are shown to be reliable in the sample.

Principal Components Analysis

A principal components analysis was performed using an oblique (Direct Oblimin) rotation utilizing the Kaiser criterion by extracting eigenvalues greater than one (Kaiser, 1960). This analysis indicated a seven-factor solution in 20 iterations (eigenvalues were 16.11, 3.408, 2.390, 1.732, 1.424, 1.264, 1.232); however, four factors were selected for the final analyses on the basis of the scree test and best theoretical fit (Cattell, 1966). The four extracted factors accounted for 59.1% of the variance. By extracting for a four-factor solution, the items matched their theoretical constructs, though there was a small decline in overall item loadings. It was decided that after removing redundant or very poorly loading items, a second sample would be employed to test a revised scale in a confirmatory factor analysis. On the basis of best theoretical fit and factor loadings, the total scale was redacted to a 19-item scale, (Anxiety=5 items, Anger =5 items, Hopelessness =4 items, Depression =5 items).

CHAPTER TWO

Materials and Methods

Objectives

The objective of this thesis is to evaluate the cross-validation of a brief assessment of psychological distress to attempt to meet the critical need for the development of a brief measure of psychological distress that can be implemented as a psychological screening tool in primary care settings. The present study describes the development, confirmatory factor analyses, and initial estimates of reliability of a brief measure psychological distress which is simple to proctor, score, and interpret.

Specific Aims

This thesis has three specific aims:

Aim 1: Determine the factor structure and model fit of a brief psychometric instrument of psychological distress in a psychiatric and collegiate sample.

Aim 2: Determine the reliability of the brief distress instrument.

Aim 3: Determine the convergent and divergent validity of the instrument in relation to well-validated unidimensional psychometric instruments.

Participants

Psychiatric sample. Participants were recruited during inpatient admissions to a psychiatric unit in a major medical center in the southwestern United States over an 18-month period. Participants were recruited by means of self-selection from a psychiatric residential treatment center upon admission. Exclusion criteria for the clinical sample included: a) active psychosis, b) cognitive impairment that prevented participation (e.g.

dementia, delirium, mental retardation, borderline intellectual functioning), and c) impairment in reading and comprehension that resulted in an inability to read, understand, and complete study instruments, as well as the informed consent documents (e.g. severe learning disorders). The study was reviewed and approved by the institutional review board of the psychiatric facility in which the data were collected.

Collegiate sample. The participants in this study included 300 undergraduate English-speaking college students. The inclusion criteria required participants to be English speaking and age 18 or older (and ability to give own consent for participation in study). Exclusion criteria included inability to give informed consent for any reason and any medical or psychological condition that would significantly impair the ability to complete questionnaires. All participants who were interested and meet the above inclusion/exclusion criteria were offered an opportunity to participate in the study by reading the IRB approved consent form. Participants who consented to participation signed the IRB approved consent form. Participants received, at the discretion of their professor, extra credit for their participation.

Measures

Beck Depression Inventory–II. The BDI (BDI–II: Beck, Steer, & Brown, 1996) is a 21-item self-report rating inventory measuring depressive symptoms. Scores are obtained by summing the 21 item ratings (possible score range=0–63). Moderate associations between the BDI-II and other scales measuring depression such as the Hamilton Psychiatric Rating Scale for Depression (.73) and the Zung Self-Reported Depression Scale (.76) and the MMPI Depression Scale (.76) were reported (Groth-

Marnat, 1990). Test-retest reliability coefficients have varied (.48 to .86) according to the duration between assessment periods and the nature of the participants' presenting problems (Groth-Marnat, 1990).

Beck Anxiety Inventory. Respondents are asked to rate the extent to which they have experienced 21 anxiety-related symptoms over the preceding week on a 4-point Likert scale (BAI: Beck & Steer, 1993). Scores are obtained by summing the 21 item ratings (possible score range = 0–63). Internal consistency reliability in the normative sample ranged from .92 to .94. The test-retest interval correlation coefficient (administrations 1 week apart) on 83 participants was .75. The BAI has been found to be significantly related to clinician ratings of patient anxiety and self-report measures of anxiety, such as the Hamilton Anxiety Rating Scale-Revised ($r = .51$) and the State-Trait Anxiety Inventory-Trait anxiety ($r = .58$) (Beck & Steer, 1993).

Beck Hopelessness Scale. The Beck Hopelessness Scale (BHS: Beck & Steer, 1988.) is a 20-item true-false scale for measuring pessimistic attitudes about the future. Responses are obtained by summing the items; some items are reversed scored. Higher scores reflect greater hopelessness. Internal consistency reliability (KR–20) ranged from .82 to .93 (Beck & Steer, 1988). Scores on BHS obtained one week part (during an intake evaluation and one week later before beginning treatment; $n = 21$) had moderate correlations ($r = .69$; Beck & Steer, 1988).

State Trait Anger Expression Inventory-II. The STAXI-2 is a 57-item instrument that measures the temperament to have angry feelings as well as the intensity of anger as an emotional condition. There are six scales within the STAXI-2 including: Trait Anger,

Anger Expression-Out, Anger Expression-In, Anger Control-Out, Anger Control-In, and State Anger. Internal consistency reliability ranges from $\alpha = .73$ to $.95$ for the total scale and from $\alpha = .73$ to $.93$ for the subscales (Spielberger, 1999).

Procedure

Psychiatric sample. All participants were provided with informed consent documents for signature and were reassured that nonparticipation would in no way affect their treatment in the facility. Confidentiality was established by means of coding the data immediately after collection and the removal of any personally identifying information from questionnaires. All participants reviewed and were provided with appropriate informed consent documents. As the data were collected in a single session, there was no attrition during the study and no participant withdrew consent nor reported adverse events. Participants were provided with the Beck Depression Inventory–II (BDI–II), Beck Anxiety Inventory (BAI), Beck Hopelessness Scale (BHS), State-Trait Anger Expression Inventory (STAXI), and the 19-item measure of psychological distress; they completed them in a randomized order. Completion time was approximately 60 min.

Collegiate sample. Participants were recruited by means of an advert in psychology course offering extra credit for participation. Persons that expressed interest in the study signed-up for a single session timeslot via an online study-registration system (SONA systems). Eligibility of the participant was determined at the time of the study and written informed consent was obtained. After informed consent, participants were tasked with the completion all the psychometric instruments and questionnaires in a single 45 minute session, all of which were administered in a paper and pencil format.

All participants were administered a demographic questionnaire, the brief assessment of psychological distress, Beck Depression Inventory, Beck Hopelessness Scale, Beck Anxiety Inventory, and the State Trait Anger Expression Inventory. Participant demographic information is displayed in Table 5.

Hypotheses

Aim 1: Determine the factor structure and model fit of the brief assessment of psychological distress in a psychiatric and collegiate sample.

- H 1.1* The comparative fit index of the confirmatory analysis will demonstrate a good fit which will be greater than the recommended .95 cutoff for the psychiatric sample.
- H 1.2* The standardized root mean residual of the confirmatory factor analysis will be less than .05 in the psychiatric sample.
- H 1.3* The comparative fit index of the confirmatory analysis will demonstrate a good fit which will be greater than the recommended .95 cutoff for the collegiate sample.
- H 1.4* The standardized root mean residual of the confirmatory factor analysis will be less than .05 in the collegiate sample.

Aim 2: Determine the reliability of a brief assessment of psychological distress in psychiatric and collegiate samples.

- H 2.1* The total brief assessment of psychological distress will demonstrate a Cronbach's alpha above .80 in the psychiatric sample.
- H 2.2* The anxiety subtotal of a brief assessment of psychological distress will demonstrate a Cronbach's alpha above .80 in the psychiatric sample.
- H 2.3* The anger subtotal of a brief assessment of psychological distress will demonstrate a Cronbach's alpha above .80 in the psychiatric sample.
- H 2.4* The hopelessness subtotal of a brief assessment of psychological distress will demonstrate a Cronbach's alpha above .80 in the psychiatric sample.

- H 2.5* The depression subtotal of a brief assessment of psychological distress will demonstrate a Cronbach's alpha above .80 in the psychiatric sample.
- H 2.5* The total brief assessment of psychological distress will demonstrate a Cronbach's alpha above .80 in the collegiate sample.
- H. 2.6* The anxiety subtotal of a brief assessment of psychological distress will demonstrate a Cronbach's alpha above .80 in the collegiate sample.
- H 2.7* The anger subtotal of a brief assessment of psychological distress will demonstrate a Cronbach's alpha above .80 in the collegiate sample.
- H 2.8* The hopelessness subtotal of a brief assessment of psychological distress will demonstrate a Cronbach's alpha above .80 in the collegiate sample.
- H 2.9* The depression subtotal of a brief assessment of psychological distress will demonstrate a Cronbach's alpha above .80 in the collegiate sample.

Aim 3: Determine the convergent and divergent validity of the measure in relation to well-validated unidimensional psychometric instruments.

- H 3.1* The anxiety construct and the Beck Anxiety Inventory (BAI) will demonstrate positive correlations in the sample of psychiatric outpatients.
- H 3.2* The construct of anger and the State- Trait Anger Expression Inventory-II (STAXI) will demonstrate positive correlations in the sample of psychiatric outpatients.
- H 3.3* The hopelessness construct and the Beck Hopelessness Scale (BHS) will demonstrate positive correlations in the sample of psychiatric outpatients.
- H 3.4* The construct of depression and the Beck Depression Inventory-II (BDI-II) will demonstrate significant positive correlations in the sample of psychiatric outpatients.
- H 3.5* The construct of anxiety and the BAI will demonstrate positive correlations in the collegiate sample.
- H 3.6* The construct of anger and the STAXI-II will demonstrate positive correlations in the collegiate sample.
- H. 3.7* The hopelessness construct and the BHS will demonstrate significant positive correlations in the collegiate sample.
- H 3.8* The construct of depression and the BDI-II will demonstrate significant positive correlations in the collegiate sample.

CHAPTER THREE

Results

Demographic Variables: Descriptive Statistics

Psychiatric Sample. The demographic characteristics taken from a sample of 62 psychiatric inpatients is shown in Table 1. Review of participant medical records revealed the following DSM–IV primary Axis I diagnoses: major depression (42, 66.9%), anxiety disorder (11, 17%), and bipolar disorder (10, 16%).

Table 1

Demographic factors of psychiatric study participants

<i>Characteristics</i>	<i>Frequency (%)</i>
<i>Gender, No. (%)</i>	
Female	41 (66.1)
Male	21 (33.9)
<i>Age in years, mean (range)</i>	44.29 (21-71)
<i>Race, No. (%)</i>	
Caucasian	49 (78.7)
Hispanic	4 (6.6)
African American	2 (3.3)
Asian	2 (3.3)
Other	5 (8.2)
<i>Marital status, No.(%)</i>	
Married	32 (51.6)
Divorced/Separated	19 (30.2)
Single	10 (16.1)
Widowed	1 (1.6)
<i>Education</i>	
Less than high school diploma	2 (3.2)
High school graduate	5 (8.1)
Associates degree or 2 year technical training	28 (46.8)
Bachelor's degree	18 (29.0)
Master's degree	5 (8.1)
Doctoral degree	3 (4.8)

Collegiate Sample. The demographic characteristics taken from a sample of 204 college students is shown in Table 2.

Table 2

Demographic factors of collegiate study participants.

<i>Characteristics</i>	<i>Frequency (%)</i>
<i>Gender, No. (%)</i>	
Female	133 (65.2)
Male	71 (34.8)
<i>Age in years, mean (range)</i>	20.91 (18-54)
<i>Race, No. (%)</i>	
Caucasian	137 (66.7)
African American	25 (12.3)
Hispanic	20 (9.8)
American Indian or Alaskan Native	16 (7.8)
Other	6 (2.9)
<i>Marital status, No.(%)</i>	
Single	199 (97.5)
Married	4 (2.0)
Divorced or Separated	1 (0.5)
<i>Highest Degree Obtained</i>	
High school graduate or GED equivalent	173
Associates degree or 2 year technical training	25 (12.3)
Bachelor's degree	6 (2.9)

Item and Reliability Analysis: Psychiatric Sample

Analysis of the four constructs, showed for the depression construct, a mean of 15.08 and SD of 6.84. Evaluation of the anxiety construct resulted in a $M = 14.02$ and a $SD = 4.43$. Additionally, the anger construct showed ($M = 15.27$, $SD = 5.35$), and for the hopelessness construct (4 items; $M = 9.87$, $SD = 2.96$). Statistical evaluations of the items suggest that the constructs used in this study are shown to be reliable in the sample (Table 3). To investigate convergent and divergent validity of the four-factor 19-item

distress scale, multiple measures were employed in a multi-trait matrix to evaluate convergent and discriminate validity. The results suggest that the four constructs showed the strongest correlations with corresponding measures from other well-validated instruments, with the construct of anger showing the weakest associations. These associations, however, were reflected in the validated anger instrument, the STAXI-S, as well (see Table 3).

Table 3

Multi-trait matrix for convergent and divergent validity of the 19-item psychological distress scale in a psychiatric outpatient sample

Construct	ANX	AGR	HLP	DEP	BAI	STAXI-S	BHS	BDI
ANXIETY	(.900)							
ANGER	.665**	(.885)						
HOPELESSNESS	.629**	.543**	(.887)					
DEPRESSION	.770**	.615**	.754**	(0.949)				
BAI	.822**	.626**	.626**	.686**	(.950)			
STAXI-S	.623**	.639**	.439**	.429**	.634**	(.846)		
BHS	.581**	.481**	0.839**	.650**	.645**	.444**	(.875)	
BDI	.805**	.606**	.707**	.794**	.831**	.635**	.701**	(.938)

Coefficient alpha appears on the diagonal.

**Correlation is significant at the 0.05 level (2-tailed), ** Correlation is significant at the 0.01 level (2-tailed).*

Confirmatory Factor Analysis: Psychiatric Sample

Confirmatory factor analyses were performed utilizing LISREL 8.80 on the items of the brief assessment of psychological distress measure (Jöreskog & Sörbom, 2005).

The first confirmatory analysis was performed to investigate comparative fit between a

three-factor and four-factor model to investigate findings from the exploratory factor analysis described previously. Analyses were performed identically with the four-factor model demonstrating superior fit [Comparative Fit Index (CFI) = 0.99, root mean square error of approximation (RMSEA) = 0.07] The four-factor model is presented below (Figure 4).

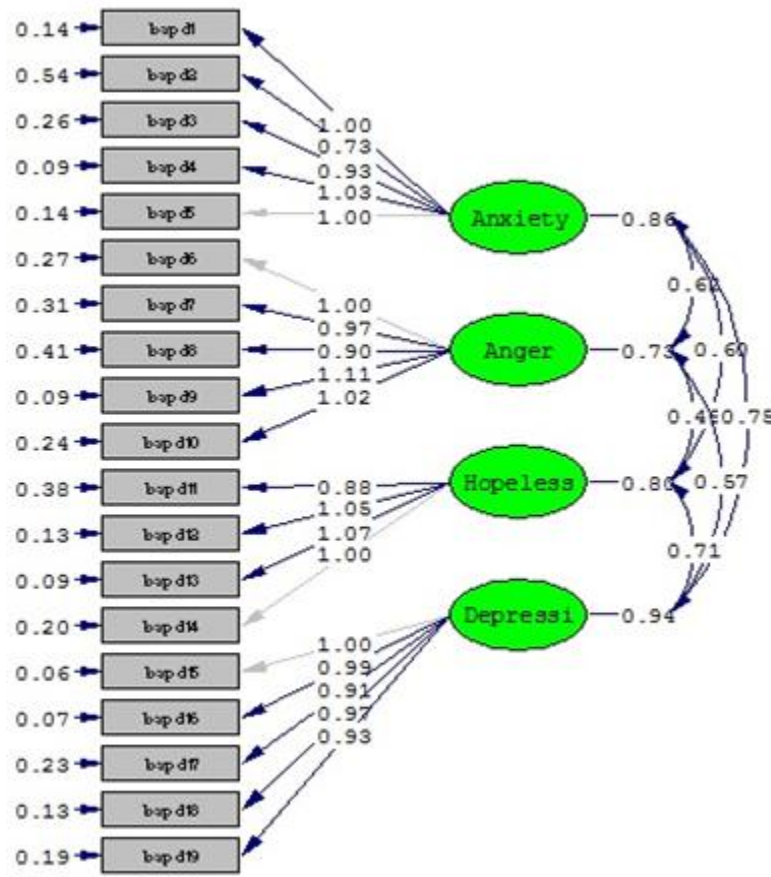


Figure 4. Confirmatory factor analyses, path diagram for psychiatric sample

The four-factor model consists of Anxiety, Anger, Hopelessness, and Depression. All factors had five indicators, except Hopelessness, which has four. The four factors were allowed to correlate with one another and all correlations between error variances

were fixed at zero. Indices of fit matched or exceeded recommended cutoffs for good fit (Hu & Bentler, 1999). It should be noted that the constructs of Hopelessness and Depression were strongly correlated (0.71), but this was a theoretically expected outcome. Path analyses are demonstrated in Figure 4. The model was adjusted *post hoc*, eliminating three items with the weakest factor loadings (Items 1,2, and 19). The results of the *post hoc* analysis suggested a substantially reduced model fit (CFI = 0.95, RMSEA = 0.16), thus the items remain in the final model (Figure 4).

Item and Reliability Analyses: Collegiate Sample

Analysis of the four constructs, showed for the depression construct (5 items, $n=204$), a mean of 10.84 and SD of 4.92 with a Cronbach's alpha of 0.898. Evaluation of the anxiety construct (5 items, $n = 204$; $M = 12.97$, $SD = 4.66$) had Cronbach's alpha of .871 construct. Additionally, the anger construct showed (5 items, $n = 204$; $M = 12.03$, $SD = 4.129$), $\alpha=.767$, and for the hopelessness construct (4 items; $M = 7.51$, $SD = 3.320$), $\alpha= 0.795$. Statistical evaluations of the items suggest that the constructs used in this study are shown to be reliable in the sample (Table 3). An item analysis was conducted to assess each item for normality and skewed distributions. Out of the 19 items, four items were positively skewed due to the limited range of responses: "I have been having thoughts of lashing out at or hurting someone", "I have felt very nervous and jittery inside myself", "I feel my heart racing all of the time," and "I believe people have seen me as being angry". Deletion of such items had no pronounced effect on alpha save "I believe people have seen me as being angry" which if deleted increased Cronbach's alpha from .767 to .784. Statistical evaluations of the items suggest that the scales used in this study are generally reliable.

Convergent and divergent validity analyses of the four constructs of psychological distress scale are indicated in a multi-trait matrix for convergent and discriminate validity (Table 6). The results suggest that the four constructs showed the strongest correlations with corresponding measures from other well-validated instruments, with the construct of anger and hopelessness showing the weakest associations. These associations, however, were reflected in the validated anger instrument, the STAXI-S and the BHS as well (see Table 4). Further investigation is warranted to improve the assessment of anger and hopelessness in a collegiate sample.

Table 4.

Multi-trait matrix for convergent and divergent validity of the 19-item psychological distress scale in a collegiate sample

Construct	ANX	ANG	HLP	DEP	BAI	STAXI-S	BHS	BDI
ANXIETY	(.871)							
ANGER	.507**	(.767)						
HOPELESSNESS	.520**	.472**	(.795)					
DEPRESSION	.628**	.570**	.750**	(0.898)				
BAI	.625**	.320**	.429**	.326**	(.920)			
STAXI-S	.351**	.404**	.322**	.297**	.429**	(.965)		
BHS	.329**	.247**	.471**	.560**	.416**	.167*	(.746)	
BDI	.585**	.422**	.640**	.604**	.717**	.358**	.647**	(.883)

Coefficient alpha appears on the diagonal.

**Correlation is significant at the 0.05 level (2-tailed), ** Correlation is significant at the 0.01 level (2-tailed).*

Confirmatory Factor Analysis: Collegiate Sample

A confirmatory factor analysis was performed utilizing LISREL 8.80 (Jöreskog & Sörbom, 2005). This model included four constructs of anxiety, anger, hopelessness, and depression. The constructs of anxiety, anger, and depression each had 5 indicators, while hopelessness had 4 indicators. The four constructs were allowed to correlate with one another and all correlations between error variances were fixed at zero. Standardized loadings are shown in Table 5

Table 5.

Standardized factor loadings of the collegiate confirmatory factor analysis

<i>Item</i>	<i>Anxiety</i>	<i>Anger</i>	<i>Hopelessness</i>	<i>Depression</i>
bapd1	0.78			
bapd2	0.76			
bapd3	0.78			
bapd4	0.83			
bapd5	0.86			
bapd6		0.68		
bapd7		0.72		
bapd8		0.77		
bapd9		0.78		
bapd10		0.58		
bapd11			0.57	
bapd12			0.77	
bapd13			0.85	
bapd14			0.91	
bapd15				0.89
bapd16				0.86
bapd17				0.89
bapd18				0.89
bapd19				0.77

Goodness of Fit statistics suggested that the chi-square corrected for non-normality was significant ($\chi^2 = 678.94, p < .01$). The Comparative Fit Index suggested that the model had good fit at 0.99, and a Standardized Root-Mean Residual of .053 which meets the recommended under .09 cutoff for good fit (Hu & Bentler, 1999). The constructs of hopelessness and depression resulted in a high correlation of .88, meeting theoretical expectations (Figure 5).

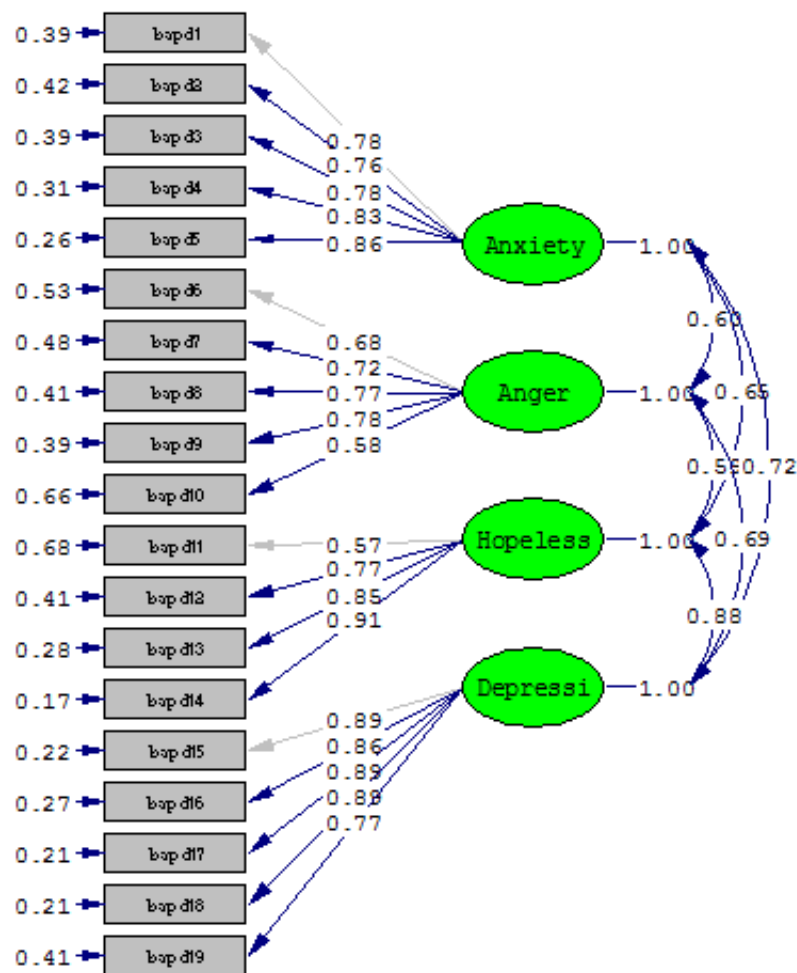


Figure 5. Confirmatory factor analyses, path diagram for collegiate sample

CHAPTER FOUR

Discussion and Conclusions

Psychological distress is the primary indicator of current mental state in clinical and primary care patients, however psychological distress frequently goes unnoticed in medical settings. It has been suggested that approximately 50% of cases of clinical depression remain undetected by medical clinicians (Levinson, Gorawara-Bhat, & Lamb, 2000). Data from the National Survey on Drug Use and Health indicated that in 2008, 58.7 percent of adults in the United States received treatment for a mental illness totaling in \$57.5 billion with outpatient services and prescription medication being the most commonly utilized treatment.

Given this scope, undetected psychological pathology is a serious dilemma in the current medical model. In order to improve screening and assessment for psychological distress, a multitude of models and measures have been developed to assess various domains of psychological distress; the most common domains being depression, anxiety, hopelessness, and anger. Each domain possesses a common well validated scale to assess each domain of distress: the Beck Depression Inventory–II, the Beck Anxiety Inventory, the Beck Hopelessness Scale, and the State-Trait Anger Expression Inventory. However, in primary care, collective use of such measures is not feasible given the time constraints and cost of the measures may impose unnecessary burden upon the physician and patient. There is a critical need for the development of a brief measure of psychological distress that can be implemented as a psychological screening tool in primary care settings.

Thus, the objective of the present study was to describe the development, confirmatory factor analyses, and initial estimates of reliability of a brief measure psychological distress which is simple to proctor, score, and interpret. The study consisted of three primary aims: 1) to determine the factor structure and model fit of a brief assessment of psychological distress in a psychiatric and collegiate sample; 2) Determine the reliability of a brief assessment of psychological distress in psychiatric and collegiate samples; 3) Determine the convergent and divergent validity of the brief assessment of psychological distress in relation to well-validated unidimensional psychometric measures.

This scale can be completed in 5 min. and easily scored to yield a summed rating of total distress as well as insight from the 4- or 5-item constructs of anxiety, depression, hopelessness, and anger. In this initial development, the sample data suggest acceptable indices of fit in both a clinical and collegiate samples.

Limitations of the Current Study

There are, however, several limitations with the current study. One of the primary limitations of the study is in the small sample size of the psychiatric sample. However, given this limitation, the sample did support the primary aim of this psychiatric sample which was to provide initial investigation into the model fit. Additionally, data on current medications were not available, thus it was not possible to control for this potential confound. Generalizability is another limitation to the present study. The collegiate sample consisted entirely of undergraduate college students at a private university limiting the generalizability of the results. Furthermore, the psychiatric and collegiate samples were not matched on demographic characteristics which does not

allow for comparisons between samples. The current study did provide the initial estimates for good model fit making cross-validation using a substantially larger sample warranted as a next step in research on the scale.

Directions for Future Research

This study provides further investigation towards the development of a brief assessment of psychological distress. Although the present study yielded promising indices of model fit, it is necessary for future research to include methodological refinements. Future directions for the brief assessment of psychological distress include the replication with a substantially larger sample size to meet the conservative assumptions for a confirmatory factor analysis. Cross-validation with an age matched clinical and normative samples would provide the possibility of establishing profiles scores to aid in effective screening of psychological distress. Further, additional item reduction may be possible – subsequent studies should attempt for good model fit with fewer indicators from each construct to see if model fit could be achieved in abbreviated format. Should the subsequent validation studies of the brief assessment of psychological distress be successful, the next step would be implementing the scale into primary care clinics to determine the feasibility of screening for psychological distress. From there, the specificity and the positive predictive value can be determined to provide data towards the scales utility to efficiently and effectively screen for psychological distress. In sum, the brief assessment of psychological distress appears to be a potentially viable, reliable and valid measure, with subsequent study only serving to improve.

WORKS CITED

- Ansseau, M., Fischler, B., Dierick, M., Albert, A., Leyman, S. & Mignon, A. (2007). Socioeconomic correlates of generalized anxiety and major depression in primary care: the GADIS II study (Generalized anxiety and depression impact survey II). *Depression and Anxiety*, 0, 1-8.
- Aragones, E., Cabellero, A., Pinol, J., Lopez-Cortacans, Badia, W., Hernandez, J., Casaus, P., Folch, S., Basora, J., Labad, A. (2007). Assessment of an enhanced program for depression in primary care: a cluster randomized controlled trial. *BMC Public Health*, 7:233 doi:10.1186/147-2458-7-253
- Barbui, C. & Tansella, M. (2006). Identification and management of depression in primary care settings: A meta-review of evidence. *Epidemiol Psychiatr Soc*, 15(4), 276-283.
- Barney, L.J., Griffiths, K.M., Jorm, A.F., Christensen, H. Stigma about depression and its impact on help-seeking intentions. *Aust N Z J Psychiatry*, 40 (1), 51-54.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996) *Manual for the Beck Depression Inventory*. (2nd ed.) San Antonio, TX: The Psychological Corporation.
- Beck, A.T., Steer, R.A., Beck, J.S., Newman, C.F. (1993). Hopelessness, depression, suicidal ideation and clinical diagnosis of depression. *Suicide & Life-Threatening Behavior*, 23 (2), 139-145.
- Beck, A.T., Brown, G., Berchick, R.J., & Steer, R.A. (1990). Relationship between hopelessness and ultimate suicide: a replication with psychiatric outpatients. *American Journal of Psychiatry*, 147, 190-195.
- Beck, A. T., & Steer, R. A. (1988) *Manual for the Beck Hopelessness Scale*. San Antonio, TX: The Psychological Corporation.
- Beck A.T., Epstein N., Brown, G., Steer, R.A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, 56: 893-897.
- Beck, A.T., Steer, R.A., Kovac, M., & Garrison, B. (1985). Hopelessness and eventual suicide: a 10 year prospective study of patient's hospitalized with suicidal ideation. *American Journal of Psychiatry*, 142, 559-563.

- Beck, A. T., Steer, R. A., Kovacs, M., & Garrison, B. (1985) Hopelessness and eventual suicide: a 10-year prospective study of patients hospitalized with suicidal ideation. *American Journal of Psychiatry*, *142*, 559-563.
- Benzeval, M & Judge, K. (2001). Income and health: the time dimension. *Social Science and Medicine*, *52*, 337-1390.
- Bohus, M., Limberger, M., Ebner, U., Glocker, FX., Schwarz, B., Wernz, M., & Leib, K. (2000). Pain perception during self-reported distress and calmness in patients with borderline personality disorder and self-mutilating behavior. *Psychiatry Research*, *11*, 95(3), 251-260.
- Carr, A. (2008). Depression in young people: Description, assessment, and evidence – based treatment. *Developmental Neurorehabilitation*, *11* (1), 3-15.
- Cattell, R.B. (1966). The scree test for the number of factors. *Multivariate Behav. Res.* *1*, 245-76.
- Chittleborough, C.R., Winefield, H., Gill, T.K., Koster, C., & Taylor, A.W. (2011). Age differences in associations between psychological distress and chronic conditions. *International Journal of Public Health*, *56* (1), 71-80.
- Craighead, W.E., Sheets, E.S., Brosse, A.L., & Ilardi, S.S. (2007). Psychosocial treatments for major depressive disorder. In P.E. Nathan, & Gorman, J.M. (Ed.). *A guide to treatments that work* (3 ed.) New York: Oxford University Press.
- Cwikel J, Zilber N, Feinson M, Lerner Y. (2008). Prevalence and risk factors of threshold and sub-threshold psychiatric disorders in primary care. *Social Psychiatry and Psychiatric Epidemiology* *43*(3):184-191.
- Derogatis, L. R. (1977) *SCL-90-R: administration, scoring, and procedures manual*. Minneapolis, MN: National Computer Systems
- Derogatis, L. R. (1992) *BSI: administration, scoring, and procedures manual-II*. Towson, MD: Clinical Psychometric Research.
- Derogatis, L. R. (2000) *BSI-18: administration, scoring, and procedures manual*. Minneapolis, MN: National Computer Systems.
- Drapeau, A., Marchand, A., & Beaulieu-Prévost, D. (2012). Epidemiology of psychological distress. In Luciano L'Abate (Ed.) *Mental Illnesses - Understanding, Prediction and Control*. Rijeka: Intech.

- Duvdevany, I., Cohen, M., Minsker-Valtzer, A., & Lorber, M. (2011) Psychological correlates of adherence to self-care, disease activity and functioning in persons with systemic lupus erythematosus. *Lupus*, 20, 14-22.
- Elkins, G., Fisher, W., & Johnson, A. (2012) Initial development of a brief measure of psychological distress. *Psychological Reports*, 110, 1-9.
- Epstein, R. M., Hadee, T., Carroll, J., Meldrum, S. C., Lardner, J., & Shields, C. G. (2007). "Could this be something serious?" Reassurance, uncertainty and empathy in response to patients' expressions of worry. *Journal of General Internal Medicine*, 22, 1731-1739.
- Faulkner, A., Maguire, P. & Regnard, C. (1994). Breaking bad news: A flow diagram. *Palliative Medicine* 8, 145-151.
- Fava, M., Rosenbaum, J.F., Pava, J.A., McCarthy, M.K., Steingard, R.J., Bouffides, E. (1993). Anger attacks in unipolar depression, Part 1: Clinical correlates and response to fluoxetine treatment. *American Journal of Psychiatry*, 150(8), 1158-1163.
- First, Michael B., Spitzer, Robert L, Gibbon Miriam, and Williams, Janet B.W.(1996) *Structured Clinical Interview for DSM-IV Axis I Disorders, Clinician Version (SCID-CV)*. Washington, D.C.: American Psychiatric Press, Inc.
- Gill, D. & Sharpe, M. (1999). Frequent consulters in general practice: a systematic review of studies of relevance, associations, and outcome. *Journal of Psychosomatics Research*, 47, 115-130.
- Gispert, R., Rajmil, L., Schiaffino, A. & Herdman, M. (2003). Sociodemographic and health related correlated of psychiatric distress in a general population. *Social Psychiatry and Psychiatric Epidemiology*, 38, 677-683.
- Gotlib, I.H., & Hammen, C.L. (1992). *Psychological aspects of depression: Toward a cognitive-interpersonal integration*. Wiley, London.
- Gould R.A., Ball, S., Kaspi, S.P., Otto, M.V., Pollack, M. H., Shekhar,A., Fava, M. (1996). Prevalence and correlated of anger attacks: a two site study. *Journal of Affective Disorders*, 39, 31-38
- Greene, S.M. (1981). Levels of hopelessness in the general population. *British Journal Clinic Psychology*, 20, 11-14

- Grabe, H. J., Baumeister, S. E., John, U., Freyberger, H. J., & Voelzke, H. (2009) Association of mental distress with health care utilization and costs: a 5-year observation in a general population. *Social Psychiatry and Psychiatric Epidemiology*, 44, 835-844.
- Haatainen, K., Tanskanen, A., Kylma, J., Honkalampi, K., Koivumaa-Honkanen, H., Hintikka, J., & Vinamaki, H. (2004) Factors associated with hopelessness: A population study. *International Journal of Social Psychiatry*, 50 (2), 142-152.
- Hall, J. H., & Fincham, F. D. (2009) Psychological distress: precursor or consequence of dating infidelity. *Personality and Social Psychology Bulletin*, 35, 143-159.
- Hamera, E., Schneider, J. K., & Deviney, S. (1995) Alcohol, cannabis, nicotine, and caffeine use and symptom distress in schizophrenia. *Journal of Nervous and Mental Disease*, 183, 559-565.
- Hansen, M.S., Fink, P., Frydenberg, M., & Oxhøj, M. L., (2002). Use of health services, mental illness, and self-rated disability and health in medical patients. *Psychosomatic Medicine*, 64, 688-675.
- Hasler, W. L., Parkman, H. P., Wilson, L. A., Pasricha, P. J., Koch, K. L., Abell, T. L., Snape, W. ... Hamilton, F. (2010) Psychological dysfunction is associated with symptom severity but not disease etiology or degree of gastric retention in patients with gastroparesis. *American Journal of Gastroenterology*, 105, 2357-2367.
- Henrichs, J., Schenk, J. J., Roza, S. J., van den Berg, M. P., Schmidt, H. G., Steegers, E. A. P., Hofman, A. ... Tiemeier, H. (2009) Maternal psychological distress and fetal growth trajectories: the Generation R study. *Psychological Medicine*, 40, 633-643.
- Hilari, K., Northcott, S., Roy, P., Marshall, J., Wiggins, R. D., Chataway, J., & Ames, D. (2010) Psychological distress after stroke and aphasia: the first six months. *Clinical Rehabilitation*, 24, 181-190.
- Hilton, M. F., Scuffham, P. A., Vecchio, N., & Whiteford, H. A. (2010) Using the interaction of mental health symptoms and treatment status to estimate lost employee productivity. *Australian and New Zealand Journal of Psychiatry*, 44, 151-161.
- Holm, E. L., & Severinsson, E. (2008) The emotional pain and distress of borderline personality disorder: a review of the literature. *International Journal of Mental Health Nursing*, 17, 27-35.

- Hu, L., & Bentler, P. M. (1999) Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- Iyer, S., Rothmann, T. L., Vogler, J. E., & Spaulding, W. D. (2005). Evaluating Outcomes of Rehabilitation for Severe Mental Illness. *Rehabilitation Psychology, 50*(1), 43-55.
- Kaiser H. (1960). The application of electronic computers to factor analysis. *Educ Psychol Meas. 20*, 141–151.
- Kasper, S. (2006). Anxiety disorders: under-diagnosed and insufficiently treated. *International Journal of Psychiatry in Clinical Practice, 10*, 3-9.
- Keller, M.B., Lavori, P.W., Friedman, B., Nielsen, E., Endicott, J. McDonald-Scott, Andreasen, N.C. (1987). The longitudinal interval follow-up evaluation: a comprehensive method for assessing outcome in prospective longitudinal studies. *Archive General Psychiatry, 44*(6), 540- 548.
- Kern, S., Schrepf, W., Schneider, H., Schultheiß, Reichmann, H., & Ziemssen, T. (2009) Neurological disability, psychological distress, and health-related quality of life in MS patients within the first three years after diagnosis. *Multiple Sclerosis, 15*, 752-758.
- Kessler, R.C., Chiu, W.T., Demler, O., Merikangas, K.R., Walters E.E. (2005). Prevalence, severity, and comorbidity of 12 month DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62* (7), 617-627.
- Kessler, R.C., Berglund, P.A., Demler, O., Jin, R., Walters, E.E. (2005). Lifetime prevalence and age –of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication (NCS-R). *Archives of General Psychiatry. 62*(6), 593-602.
- Kessler, R.C., & Merikangas, K.R. (2004). The National Comorbidity Survey Replication (NCS-R): Background and aims. *The International Journal of Methods in Psychiatric Research, 13* (2) 60-68.
- Kessler R.C. Berglund, P.A., Demler, O., Jin, R., Koretz, D., Merikangas, K.R., Rush, A.J. & Walters, E.E. (2003). The epidemiology of major depressive disorders: results from the National Comorbidity Survey Replication (NCS-R). *Journal of the American Medical Association, 289* (23), 3095-3105.

- Kessler, R. C., Andrews, G., Colpe, L. J., Colpe, E., Hiripi, D. K., Morczek, S., Normand, L.T. ... Zaslavsky, A.M. (2002) Short screening scales to monitor population prevalence's and trends in non-specific psychological distress. *Psychological Medicine*, 32, 959-976.
- Kravitz RL, Paterniti DA, Epstein R.M., Rochlen, A, Bell, R., Cipri, C...Duberstein, P. (2009) Relational barriers to depression help-seeking in primary care. *Patient Education and Counseling*, 82(2), 207-213.
- Kronenke, K., Spitzer, R., Williams, J., Monahan, P., Lowe, B. (2007). Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. *Annals of Internal Medicine*, 6, 317-325.
- Kuriyama, S., Nakaya, N., Okmori-Matsuda, K., Shimazu, T., Kikuchi, N., Kakizaki, M... Tsuji, I. (2009). Factors associated with psychological in community-dwelling Japanese population: the Ohasaki Cohort 2006 study. *Journal of Epidemiology*, 19(6), 294-302.
- Lanyon, R. I. (1970) Development and validation of a psychological screening inventory. *Journal of Consulting and Clinical Psychology*, 35, 1-24.
- Lanyon, R. I. (2007) Utility of the psychological screening inventory: a review. *Journal of Clinical Psychology*, 63, 283-307.
- Lazarus, R. S. (1966) *Psychological Stress and the coping process*. New York: McGraw-Hill.
- Leiner, A. S., Compton, M. T., Houry, D., & Kaslow, N. J. (2008) Intimate partner violence, psychological distress, and suicidality: a path model using data from African American women seeking care in an urban emergency department. *Journal of Family Violence*, 23, 478-481.
- Levinson, W. Goroawara-Bhat, R. Lamb, J. (2000). A study of patient clues and physician responses in primary care and surgical settings. *Journal of American Medical Association*, 284 (8), 1021-1027.
- Maggio, D., Ercolani, S., Andreani, S., Ruggiero, C., Mariani, E., Mangialasche, F., Palmari, N.... Mecocci, P. (2010) Emotional and psychological distress of persons involved in the care of patients with Alzheimer disease predicts falls and fractures in their care recipients. *Dementia and Geriatric Cognitive Disorders*, 30, 33-38.

- Mannucci, E., Petroni, M. L., Villanova, N., Rotella, C. M., Apolone, G., & Marchesini, G.. (2010) Clinical and psychological correlates of health-related quality of life in obese patients. *Health and Quality of Life Outcomes*, 8, 90-99.
- Masse R. (2000). Qualitative and quantitative analyses of psychological distress: methodological complementarity and ontological incommensurability. *Qualitative Health Research*, 10,411-423.
- Means-Christensen, A.J., Roy-Bryne, P.P, Sherbourne, C.D., Craske, M.G., Stein, M.B. (2007). Relationships among pain, anxiety and depression in primary care. *Depression and Anxiety*, 0, 1-8.
- Mirowsky, J. & Ross, C.E. (2002). Selecting outcomes for the sociology of mental health: Issues of measurement and dimensionality. *Journal of Health and Social Behavior*, 43, 152-170.
- Mohr, D.C., Hart, S.L. Howard, I., Julian, L., Vella, L., Catledge, C., Feldman, M.D. (2006). Barriers to psychotherapy among depressed and nondepressed primary care patients. *Ann Behav Med*, 32(3), 245-258.
- National Comprehensive Cancer Network (NCCN). (2005) *Distress treatment guidelines for patients*. Fort Washington, PA: Author.
- Pompili, M., Rihmer, Z., Akiskal, H. S., Innamorati, M., Iliceto, P. Akiskal, K. K., Lester, D..Girardi, P. (2008) Temperament and personality dimensions in suicidal and nonsuicidal psychiatric inpatients. *Psychopathology*, 41, 313-321.
- Ridner, S. H. (2004) Nursing theory and concept development or analysis. Psychological distress: concept analysis. *Journal of Advanced Nursing*, 45, 536-545.
- Romanov, K., Hatakka, M., Keskinen, E., Laaksonen, H., Rose, R.J., Koskenvuom M. (1994). Self-reported hostility and suicidal acts, accidents, and accidental deaths: a prospective study of 21,443 adults aged 25 to 59. *Psychosomatic Medicine*,56, 328-336.
- Rosenthal, B. S, & Wilson, W. C. (2003) Impact of exposure to community violence and psychological symptoms on college performance among students of color. *Adolescence*, 38, 239-249.
- Selye H. (1976). Further thoughts on “stress without distress”. *Medical Times*, 104, 124-132.

- Serrano-Blanco, A., Palao, D.J., Luciano, J.V., Pinto-Meza, A., Lujan, L., Fernandez, A. (2010). Prevalence of mental disorders in primary care: results from the diagnosis and treatment of mental disorders in primary care case study (DASMAP). *Social Psychiatry and Psychiatry Epidemiology*, 45(2), 201-210.
- Sheehan, D., Lecrubier, Y., Sheehan, K., Amorim, P., Janvas, J., Weiller, E., Herqueta, T., Baker, R., Dunbar, G. (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry*, 59, 22-33.
- Song, E. K., Son, Y-J., & Lennie, T. A. (2009) Trait anger, hostility, serum homocysteine, and recurrent cardiac events after percutaneous coronary interventions. *American Journal of Critical Care*, 18, 554-561.
- Spielberger, C. D., Gorsuch, R. L., & Lushene, R. D. (1970) *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Terluin, B. (1996) De Vierdimensionale Klachtenlijst (4DKL): Een vragenlijst voor het meten van distress, depressie, angst en somatisatie [The Four-Dimensional Symptom Questionnaire (4DSQ): a questionnaire to measure distress, depression, anxiety, and somatization]. *Huisarts en Wetenschap*, 39, 538-547.
- Utsun, T., Ayuso-Mateos, J.L., Chatterji, S., Mathers, C., & Murray, C.J.L. (2004). Global burden of depressive disorders in the year 2000. *British Journal of Psychiatry*, 184, 386-392.
- Wang, P.S., Lane, M., Olfson, M., Pincus, H.A, Wells, K.B., & Kessler, R.C. Twelve-month use of mental health services in the United States: results from the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62 (6), 629-640.
- Wang, P.S., Berglund, P.A., Kessler, R.C. (2000). Recent care of common mental disorders in the U.S. population: prevalence and conformance with evidence-based recommendations. *Journal of Internal Medicine: Official Journal of the Society for Research and Education in Primary Care Internal Medicine*, 15 (5), 284-292.
- Wheaton, B. (2007). The twain meets: distress, disorder and the continuing conundrum of categories. *Health*, 11, 303-319.
- Young, Q., Ignaszewski, A., Fofonoff, D., & Kann, A. (2007) Brief screen to identify five of the most common forms of psychosocial distress in cardiac patients: validation of the screening tool for psychological distress. *Journal of Cardiovascular Nursing*, 22, 525-534.

Young, A.S., Klap, R., Sherbourne, C.D., & Wells, K.B. (2001). The quality of care for depressive and anxiety disorders in the United States, *58(1)*, 55-61.

Zalaquett, C., & Wood, R. (Eds.) (1998) *Evaluating stress: a book of resources*. Blue Ridge Summit, PA: Scarecrow Press.