NORMATIVE DATA FOR THE BRIEF SYMPTOM INVENTORY FOR

MATURE AND INDEPENDENT LIVING ADULTS

A DISSERTATION

NORMATIVE DATA FOR THE BRIEF SYMPTOM INVENTORY IN

PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

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COLLEGE OF ARTS AND SCIENCES

BY

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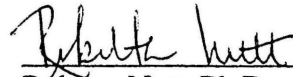

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TEXAS WOMAN'S UNIVERSITY
DENTON, TEXAS

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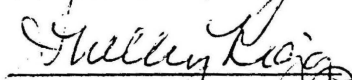To the Dean of Graduate Studies and Research:

I am submitting herewith a dissertation written by Gail A. Chester entitled "Normative Data For The Brief Symptom Inventory For Mature And Independent Living Adults." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Counseling Psychology.

Roberta Nutt, Ph.D.
Major Professor

We have read this dissertation
and recommend its acceptance:

Michael Gottlieb, Ph.D.

Basil Hamilton, Ph.D.

Shelley Riggs, Ph.D.

Dan Miller Ph.D.
Department Chair

Accepted,

Dean of Graduate Studies and Research

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Thank you all.

ABSTRACT

Normative Data for the Brief Symptom Inventory
for Mature and Independent-Living Adults

Gail Ann Chester
May, 2001

The percentage of the population in the United States that is 65 and older is
rapidly increasing. It is important that assessment instruments, when used with older
individuals, have norms available that are applicable to the particular age group of the
individual being assessed. The purpose of this study was to determine raw score means
for mature and independent-living adults who completed the Brief Symptom Inventory.
Relevant norms and symptom dimensions of the BSI that hold confounding items for
individuals 65 and older were determined. Four hundred eighty nine individuals 65 and
older (322 females, 167 males, mean age of 75.91) living independently completed the
Brief Symptom Inventory and the Demographic and Activity Questionnaire. Participants
were recruited from senior citizen centers administered by various cities in the North
Texas area, residential retirement facilities, and churches.

The raw mean scores on the nine primary symptom dimensions were compared
against similar scores from a normative sample of younger adult non-patients and
younger adult psychiatric outpatients. These scores were also compared to two other
groups of older adults who completed the Brief Symptom Inventory and whose raw score

means were published by Hale, Cochran and Hedgeperth (1984) and De Leo, Frisoni, Rozzini, and Trabucchi (1993).

Statistical analysis found that the study sample raw score means were most similar to the raw score means obtained by Hale et al. (1984). The study sample was found to be dissimilar to De Leo et al.'s (1993) sample and was also quite dissimilar to the published Brief Symptom Inventory raw score means for adult psychiatric outpatients. Males in the study sample had statistically significant raw mean scores on the Somatization, Obsessive-Compulsive, Interpersonal-Sensitivity, Depression symptom, and Psychoticism symptom dimensions than the published Brief Symptom Inventory raw score means for male adult non-patients. Females in the study group had statistically significant raw score means on the Somatization, Obsessive-Compulsive, Anxiety, Hostility, and Psychoticism symptom dimensions than the published Brief Symptom Inventory raw score means for adult female non-patients. Factor analysis found that six factors: Obsessive-Compulsive, Depression, Somatization, Paranoid Ideation, Anxiety (combining Panic and Phobic), and a distinct factor incorporating Psychoticism and Phobic Anxiety, more accurately assess this age group than the nine symptom dimensions of the Brief Symptom Inventory. Additional research was suggested to determine the validity and reliability of these new factors. As mature and elderly independent-living adults report higher levels of symptom distress, it is recommended that age appropriate raw score means be used when using the Brief Symptom Inventory with individuals 65 and older.

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CHAPTER ONE

INTRODUCTION

Better access to health care and an ever-increasing array of medications have

assisted the world's population in attaining a gain of nearly 30 years of life expectancy

during this century (Salzman, 1998). The United States Bureau of the Census helps to

give a clear picture of the changing face of the country with regard to age, gender, and

ethnicity. In the United States, the number of individuals who have reached the age of 65

or above has increased from three million in 1990 (about 4% of the population) to over 33

million (about 12% of the population) in 1994. Between 1990 and 2050, it is expected

that the population of individuals who are 65 and older will double in the United States,

topping 80 million. Those who are 85 and older, during that same time period, will

increase by a factor of 5, making them the fastest growing segment of the population

(U.S. Bureau of the Census, 1993).

Women, who live longer than men by an average of seven years, outnumber men

by a third in the population of those who are 65 and older. Among those who are 85 and

older, women outnumber men by a ratio of 5 to 2. Nearly half of all women over the age

of 65 are widows. Almost half (43%) of older women live alone or with individuals who

are not family members. By contrast, only fourteen percent of the male population over

65 are widowers. The majority of older men live with a spouse, or if widowed, tend to remarry. Financially, 19% of older women live in poverty as compared with 9 percent of older men.

The future also holds changes for the racial and ethnic composition of people over the age of 65. The latest figures from the United States Bureau of the Census (1993) reported that the Anglo population makes up 86.7% of the population of those who are over the age of 65, with the remaining 13.3% being persons of color. However, the rapid growth of minority populations in general suggest that by the middle of the twenty-first century, the population of older persons can be expected to be 33% minority and 67% Anglo. These projections suggest that significant cultural changes will be occurring as these individuals age. Similarly the field of psychology and how we work with, and assess individuals, will be changing as well.

With these statistics in mind, the field of psychology has responded to future needs of older adults with increased attention on, and training in, the field of gerontology. In particular, the American Psychological Association (APA) is in the process of developing guidelines for the evaluation of dementia and age-related decline (Abeles, 1998). Geropsychology is now a recognized proficiency in professional psychology and a brochure has been published by APA for practitioners who are working with older adults (Abeles, 1998). Additionally, for the first time since the creation of the American Psychological Association over 100 years ago, a standing committee exists on aging with

a clear agenda regarding APA's role in assisting its members and furthering the field of psychology regarding such topics as education practice issues, policy and legislation, and increased research in the area of aging (Abeles, 1998).

Mental Health and Elderly Adults

Estimates of mental disorders among older individuals range from 12 to 22 percent (Salzman, 1998). Estimates of those who have clinically significant symptoms that do not meet the criteria for clinical diagnosis are thought to be higher still. Dementia, delirium, depression, anxiety, schizophrenia, sleep disturbance, and alcohol dependence and abuse are the major classifications of mental disorders for older adults. For example, risk for dementia increases with age. For those ages 65 and older, the prevalence rates for dementia range from 2 to 12 percent (Evan, Funkenstein & Albert, 1989; Jorm, 1990). For those who are 85 and older, the risk for dementia is 25 percent (Jorm, Korten & Henderson, 1987). Additionally, many healthy older individuals complain of memory problems, which while not requiring clinical diagnosis, nonetheless affect their lives in a significant manner.

With regard to depression, the prevalence rate for major depression in both men and women ages 65 and older has been found to be about one percent (Weissman, Bruce & Leaf, 1991). When the definition of depression is broadened to include all affective disorders, rates of all depression were found to increase with age (Romanoski, Folstein, Nestadt & Chahal 1992). For persons over the age of 75, women had a prevalence rate of

approximately 9%, while men had a rate of 3.5% (Romanoski, Folstein, Nestadt, & Chahal, 1992). Furthermore, depression is diagnosed in approximately half of geriatric patients admitted to inpatient psychiatric settings (Cohen & Van Nostrand, 1995).

Additionally, while women report more depressive symptoms across all age groups (Radloff, 1977), older Anglo males have a suicide rate twice that of adolescent Anglo males and ten times that of older Anglo women (Cohen & Van Nostrand, 1995). Research indicates that most elderly individuals who committed suicide saw a primary care physician within a month of their suicide. Their depression was not recognized or treated at that time (Conwell 1994; Vassilas & Morgan, 1994), and the authors saw the findings as an indication that physicians need additional training with regard to the assessment of depression in their older patients.

It has been found that older women experience some form of anxiety at twice the rate of older men (Blazer, George & Hughes, 1991). Within the population of those 65 and older, 10 to 20 percent experience symptoms of anxiety (Lebowitz & Pearson, 1998). Blazer, George and Hughes (1991) reported that generalized anxiety occurs more often among males in urban settings and females in rural settings. They noted that older males and females regardless of race exhibit a lower rate of anxiety than their younger adult counterparts. However, anxiety and depression often coexist, and anxiety often appears as a common feature in many medical conditions including gastrointestinal difficulties and cardiovascular and pulmonary disease. Life events and social factors that are

experienced by many older individuals such as the death of a spouse, financial

difficulties, and onset of illness, to name a few, can act as a catalyst for or exacerbate

already-existing symptoms of anxiety.

Problems With Existing Assessment Instruments

Assessment needs of the elderly are unique and require that the tools used by

psychologists and other mental health providers be created with these needs in mind, or at

least normed for this population. In this way the data from various instruments used are

able to provide an accurate picture of the individual. A competent assessor would not

extrapolate adult norms for clinical usage with a young adolescent or latency-aged child.

Neither should clinicians nor the field apply norms to mature and elderly adults when

instruments have not been appropriately normed for this population. While clinicians and

others would agree with this philosophy, a primary difficulty has been locating

assessment instruments that have been well researched, are easily available, and have

been normed for use with the mature or elder adult.

In addition, the effects of aging contribute to difficulty completing some

assessment instruments. Trouble with vision, concentration, motor coordination, or

cognitive decline, among other reasons, can lend themselves to decreased reliability and

validity when the final data are scored and profiled. Some assessment instruments may

simply not be applicable to the situations and experiences in which mature and elder

adults find themselves. Finally, it is much more problematic to create treatment planning

and make treatment recommendations for and with individuals who have completed

assessment inventories which are not normed specifically for their age group. Misleading

data, if one is not careful, can easily lead to inaccurate assumptions and incorrect

conclusions.

Ritchie (1997) noted that specific concerns arise related to the development and

use of instruments for psychological assessment with the older individual. According to

her, the most important issue of concern with regard to assessment of the elderly is the

heterogeneity observed within age groupings. She noted that with age, standard errors of

measurement on almost all measures of behavior exhibit wide variations which makes

"normal" performance of the elderly difficult to characterize. When working to create or

norm instruments for the mature or elderly population, individual differences often

interact with varying health conditions, making large subject samples necessary but often

difficult to achieve.

A second issue with regard to the establishment of norms on psychological

instruments with the elderly is the prevalence of sensory impairment and other medical

conditions that affect assessment performance. High rates of institutionalization,

particularly among individuals over the age of 85, make assessment of these individuals

difficult. The structure of an institution often makes it difficult to assess what an

individual is able to do – versus what they actually do – in their daily lives. This factor is

likely to mask the consequences of mental illness, which are often manifested in activities

of daily living. For example, aides may "assist" in the grooming or feeding process as a way of making sure that the particular task has been taken care of for that shift. This does not allow assessment regarding the patient's ability to conduct these and other tasks independently. The ability and willingness to care for oneself is a basic criterion when diagnosing major depression, for example. Social isolation can also result from institutionalization or the stress of having to live in such an environment and may influence affective responses. It has also been shown to affect cognitive measurements (Ritchie & Fuhrer, 1992).

Another common problem with assessment of the elderly is the use of instruments that have been developed for use with younger adults as noted earlier. The content of items can be problematic with respect to the relevance of current life situations that the elderly are experiencing in the here and now. Such item content is likely to skew assessment results and ultimately treatment planning.

Additionally, the way in which information is processed in older and elderly adults is often not given consideration when applying psychometric instruments to the mature and elderly adult population. Research indicates that tests for young children are often based on rote memory, learning lists for example, whereas mature and elderly adults perform better when asked to summarize the contents of material given to them (Ritchie, 1997). In the same way, instruments that take into account change in memory,

concentration, and other factors related to cognitive processing are likely to increase the validity and reliability of the instrument.

There are many assessment instruments that have been created for use with the older adult in the area of cognitive functioning. Some are even computerized. Ritchie (1997) listed 56 instruments that strive to assess some or all of the following: cognitive dysfunction, differential diagnosis of disorders that affect intellectual functioning or the functional consequences of such dysfunction. Numerous instruments have been created to assess behavioral functioning and the ability to carry out successfully the activities of daily living. Likewise, some self-report instruments have been created primarily to assess depression and anxiety in older adults (Brink, Yesavage, Lum, Hersema, Adley & Rose, 1982; Wattis, Davies, Burn, & McKenzie, 1994).

Often the clinician uses other measures such as the Beck Depression Inventory or the State-Trait Anxiety Inventory (Spielberger, 1983) which, while not originally created for use with the mature or elderly adult, have had data published regarding the applicability of these instruments for use with this population (Beck & Beck, 1972; Himmelfarb & Murrell, 1983). Unfortunately, many of the instruments created for use with the older adult, or which were not specifically created for but are commonly used with the older adult, have insufficient published data regarding reliability and validity with this group or appropriate norms.

CHAPTER TWO

LITERATURE REVIEW

History of Self Report Methodologies

Prior to a review of the literature related to self-report instruments that have been either created for the mature or elder adult or are generally used with this population, a short historical survey of the self report methodology may be useful. One of the first difficulties that spurred the development of psychological testing was the identification of the mentally retarded in the late nineteenth century. The development of personnel and personality assessment instruments occurred in the early twentieth century.

Woodworth (1918) created the model of the personality questionnaire or the self-report inventory during World War I with his Personal Data Sheet. This instrument was developed as a screening device for identifying seriously neurotic men who would be unfit for service in the Armed Forces. The use of items having a multiple choice format was also introduced during this time period, as was group testing. This allowed for simplified instructions and administrative procedures so that many individuals could be assessed during one examination period. The instruments had directions designed to be easily understood, many had multiple choice answer formats, and they served to identify various psychological states. These early enhancements contributed to the current self assessment inventories in use today.

During the past eighty years, literally hundreds of self-report instruments have been developed with varying degrees of validity and reliability. The format has allowed an incredible amount of information over the years to be accessed and utilized by researchers and practitioners. While self-report instruments have been used with older adults, semi-structured and structured interview formats and observer rated instruments have also been utilized.

Instruments Available for Geriatric Assessment

Many assessment instruments have been either created specifically for the older adult or have been found to be useful in working with this population. Two better known instruments used with elders are presented in a structured or semi-structured interview format: the Mini-Mental State (Folstein, Folstein & McHugh, 1975) and the Geriatric Mental State Schedule (Copeland et al., 1976). Observer-rated instruments have also been used with the elderly. Two of the most widely used are the Hamilton Rating Scale for Depression (Hamilton, 1960) and the Montgomery-Asburg Depression Rating Scale (Montgomery & Asburg, 1960).

As the assessment instrument of focus for this study is a paper-pencil measure, the focus of this review will be on paper-pencil measures that have been used with mature and elderly adults. Some of these instruments have undergone limited research after their development, such as the Sandoz Clinical Assessment-Geriatric (Shader, Harmatz & Salzman, 1974). This instrument was designed to differentiate between early senile

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deterioration and depressive disorders. Similarly, the Dementia Mood Assessment Scale (Sunderland, Alterman, Yount, Hill, & Tariot, 1988) sought to assess depressive symptoms in seniors who were experiencing varying degrees of cognitive impairment. The Older Adult Health and Mood Questionnaire (Kemp & Adams, 1995) is another more recently designed instrument aimed at assessing varying levels of depressive disorders. While these instruments may provide important information to the clinician who uses them, they are relatively obscure and not in general use.

Other instruments have been developed and scrutinized for assessing a particular difficulty such as dysfunctional use of alcohol, anxiety, or depression. With regard to assessment of alcohol related difficulties, two instruments appear to have more generalized use with elders. The CAGE Questionnaire (Ewing, 1984), a four-item screening instrument for detecting alcoholism, has been used with seniors in a medical and retirement community (Adams, 1996). Some researchers have found the instrument useful in detecting alcohol dependence or abuse (Buchsbaum, Buchanan, Welsh, Centro, & Schnoll, 1992), while others (Adams, Barry, & Fleming, 1996; Fulop et al., 1993; Naik, Jones, & Lilley, 1995) found it helpful only in conjunction with other data. Naik, Jones, and Lilley (1995) explored the CAGE and the Short Version of the Michigan Alcohol Screen Test (Selzer, 1975) and stated that new questionnaires detecting alcohol dependence and abuse in the elderly need to be developed and validated.

Blow et al. (1992) adapted the original Michigan Alcohol Screening Test (Selzer, 1971) for a geriatric population. The instrument is referred to as the Michigan Alcohol

Screening Test – Geriatric (MAST-G). Through factor analysis, 24 items from the 94

items that make up the Michigan Alcohol Screening Test (MAST) were found to

differentiate those who abstain from alcohol from those who drink socially and from

those who met the criteria for either alcohol abuse or dependence. Joseph, Ganzini, and

Atkinson (1995) found that the MAST-G was able to determine alcohol use disorders in a

Veteran Affairs nursing home population over the age of 50. However, Luttrell et al.

(1997) found that the MAST-G was an insensitive screening instrument when used to

detect alcohol misuse. These opposing findings suggest that further research is needed

with this instrument.

The Geriatric Depression Scale

One instrument that does have a significant amount of published data related to its

use with mature and older adults is the Geriatric Depression Scale (GDS) (Brink et al.,

1982). A review of the literature regarding the GDS is included because the Brief

Symptom Inventory (BSI), which was used in this study, has often been used as a co-

instrument for assessing various aspects of validity and reliability related to the Geriatric

Depression Scale. The BSI has also been used for gathering further information about the

populations being studied with the GDS.

The Geriatric Depression Scale (Brink et al., 1982; Yesavage, et al., 1983) is a

brief 30-item true-false self-report measure of depression created for use with older

adults. Initially, the instrument was normed for elderly psychiatric patients and

community elderly. Since its creation, researchers have developed new norms and

formats based on the original Geriatric Depression Scale.

For example, Lesher (1986) established norms for the instrument for those who

were residents of nursing homes. Sutcliffe et al. (2000) developed a twelve-item short

form of the Geriatric Depression Scale (GDS-12R) specifically for use with older

individuals in nursing homes and residential care. Hoyl et al. (1999) developed a five-

item version of the Geriatric Depression Scale for use in screening for depression with

frail community-dwelling adults (mean age 74.6 years).

The Geriatric Depression Scale is notable for its ability to assess depression

without the use of somatic items, which may provide a skewed or false positive rating of

depression in a mature or elder adult (Hyer & Blunt, 1984). Scogin (1987) conducted

research on the concurrent validity of the Geriatric Depression Scale on mild and

moderately depressed mature (60 years and older) adults. Results indicated concurrent

validity similar to, but not better than, the Beck Depression Inventory (Beck & Beck,

1982) and the SCL-90 Depression symptom dimension (Derogatis, Rickels, & Rock,

1976). The Geriatric Depression Scale was no better than the Beck Depression Inventory

in classifying mature adults as either non-depressed or depressed, and sensitivity to

change in levels of depression generally was also equivalent to the Beck Depression

Inventory. Ward, Wadsworth, and Peterson (1994) also found positive concurrent

validity with the Geriatric Depression Scale when compared to the Depression Scale of

the Short Form of the MMPI (Hathaway & McKinley, 1983). Their subjects were elderly

males in a medical facility who were experiencing dementia.

Scogin (1987) reported that some of his older participants found the Geriatric

Depression Scale's format of answering items either yes or no to be less confusing than

the Beck Depression Inventory's four options to each item format. He suggested that the

examiner consider the cognitive abilities and preferred response style of the individual

when choosing an instrument which assesses depression in the mature adult. Olin,

Schneider, Eaton, Zemansky and Pollock (1992) also found in their research with

community living older adults (56-77) that subjects were more likely to endorse multiple

responses on the Beck Depression Inventory than the Geriatric Depression Scale. They

concluded that this response style may reflect difficulties that older adults who are

depressed have in making decisions on the multiple choice format of the BDI. Olin et al.

did not find the Beck Depression Inventory any more likely to produce a false positive

diagnosis of depression than the Geriatric Depression Scale. They suggested that the

BDI's sensitivity to somatic complaints may only occur in subjects who have substantial

medical or psychiatric illness.

Rapp, Walsh, Parisi, and Wallace (1988) compared physician detection of

depression in hospitalized male elders with several self-report measures, including the

Geriatric Depression Scale. They found that the self-report measures, particularly the

Beck Depression Inventory, the Beck Depression Inventory Psychological sub-scale, and

the Geriatric Depression Scale had the best reliability and validity and were the most

efficient. The authors noted that among the frail elderly, somatic features should not be entirely dismissed when assessing for the presence of depression and that the Beck Depression Inventory seems better suited for this purpose. The Geriatric Depression Scale does not assess somatic complaints, but the researchers stated that the instrument more than adequately assesses the presence of depression in a valid manner.

Sheikh and Yesavage (1986) developed a Geriatric Depression Scale Short Form (GDS-SF) as a way to make the detection of depression more efficient. Fifteen items were selected from the original instrument that had the most discriminate relationship with depressive symptomatology measured. Their findings indicated that the GDS-SF is able to differentiate nondepressed from depressed subjects, as did the findings of Alden, Austin, and Studeon (1989) and Lesher and Berryhill (1994). However, Ingram (1996) found classification disagreement between the short form of the Geriatric Depression Scale and its long form counterpart. His subjects were community dwelling independent adults ranging in age from 55-75. Of those adults who were categorized as depressed as assessed by the Geriatric Depression Scale, 60% were categorized as not depressed using the Short Form of the instrument. Of those individuals categorized as depressed by the Geriatric Depression Scale-Short Form, 14 percent were assessed as nondepressed by the Geriatric Depression Scale. The author concluded that the Short Form of the instrument is not a substitute for the original instrument.

Finding a different result, Hermann, Mittman, Shulman, Busto, Shear, and Naranjo (1996) assessed the validity of the Geriatric Depression Scale-Short Form with

geriatric outpatients who were experiencing affective disorders. They compared the GDS

Short-Form with the Montgomery Asberg Depression Rating Scale (MADRS)

(Montgomery & Asberg, 1979). The researchers found that the GDS Short-Form, as a

screening instrument for depression, demonstrated good sensitivity and specificity (85%

and 74%, respectively) when the cutoff was 5/6 out of a possible 15.

From a cross-cultural perspective, the Geriatric Depression Scale has been used to

discriminate nondepressed versus depressed Chinese elders in Hong Kong (Chiu, Lee,

Wing, Kwong, & Leung 1993) with good results. The researchers established reliability

and validity (alpha=.92) for the original 30-item Geriatric Depression Scale with research

participants who were identified as depressed and nondepressed. The Short-Form of the

instrument was also used with Chinese elders in Hong Kong (Lee, Chiu, Kwok, & Leung,

1993) and was found to be sensitive in discriminating nondepressed versus depressed

individuals. Mui (1996) created a short form of the Geriatric Depression Scale (15 items)

which was found to be culturally sensitive as well as valid for use with this population.

Elderly Chinese-American immigrants who were living independently in the community

were used in this study.

Abas et al. (1998) used the short version of the Geriatric Depression Scale in their

work with African-Caribbean individuals living in south London. The Geriatric

Depression Scale has also been translated into Italian (Gori et al., 1998), Spanish (Giles-

Gordon, Fernandez, Roche, & Garcia, 1992), and Dutch (Van Marwijk, Hoeksema,

Hermans, Kaptein & Adrian, 1994) and has been found to discriminate nondepressed

from depressed elders who speak these particular languages.

<u>The Brief Symptom Inventory</u>

The Brief Symptom Inventory (BSI) is a 53-item self-report symptom inventory

created to more fully characterize the psychological symptom patterns of psychiatric and

medical patients as well as those who can be characterized as community dwelling

nonpatients. The Brief Symptom Inventory is the brief form of the Symptom Checklist-

90-Revised (SCL-90-R) (Derogatis, Rickels & Rock, 1976). It has been normed

separately on both adolescent and adults who were characterized as psychiatric inpatients,

psychiatric outpatients, or nonpatients.

The BSI has been used in the U.S. with three different immigrant groups—Polish,

Filipino and Irish adults (Aroian, Patsdaughter, Levin & Gianan 1995). While internal

consistency estimates were within satisfactory ranges, difficulty with the BSI

Psychoticism symptom dimension surfaced across all three groups. Aroian et al. (1995)

pointed out that two of the BSI Psychoticism items that had the highest reported symptom

frequency could be attributed to the normal human response of coping with immigration

rather than being indicative of psychoticism.

The authors expressed caution when interpreting the Psychoticism symptom

dimension with immigrant groups. Aroian et al. (1995) further stated that the

Psychoticism symptom dimension, from its inception on the SCL-90-R, was problematic

related to its empirical factor structure. The Psychoticism symptom dimension of the

SCL-90-R and BSI was based on Eysenck and Eysenck's (1968) notion of psychoticism existing as a continuum ranging from mild interpersonal alienation to overt evidence of psychosis. When the SCL-90-R Psychoticism symptom dimension was developed, the items were weighted toward the less disturbed end of this construct. The items making up the Psychoticism symptom dimension address unique ways of thinking which could be perceived as odd. They ask about the level of interpersonal isolation which may be indicative of a schizoid lifestyle, as well as inquiring about overt symptoms of schizophrenia, such as thought control.

Derogatis and Cleary (1977) noted difficulties with the empirical factor structure of the Psychotism symptom dimension of the SCL-90-R. They stated that factor loadings were within acceptable limits for items that addressed overt symptoms of schizophrenia but that the remaining items showed wide variance related to this construct. When the BSI Psychoticism symptom dimension was developed, its items were weighted toward the less disturbed end of Eysenck and Eysenck's (1968) continuum. For example, only one of the four items addressing overt psychosis was kept in the item pool. However, research indicated that both the BSI and SCL-90-R failed to differentiate non-psychotic from psychotic patients (Wilson, Taylor & Robertson, 1985; Wood 1982). In Wood's (1982) study, the BSI Psychoticism symptom dimension failed to discriminate between two subject groups, those who were diagnosed as non-schizophrenic and those with a diagnosis of schizophrenia, not in remission, or schizophreniform disorder. Additionally, the mean scores for those subjects who were experiencing adjustment disorders and had

been characterized as neurotic were higher than the mean scores for individuals in the

psychotic group.

The BSI and College Students

Norms for the Brief Symptom Inventory related to college students were

developed by Cochran and Hale (1985). These researchers found that the college students

reported significantly higher levels of distress than did the adult sample and that a

different pattern of distress was demonstrated as compared with a younger adolescent

sample.

In Cochran and Hale's (1985) study, 347 students consisting of both lower and

upper division students completed the BSI in a manner that was considered valid. Mean

age for male participants was 20.0, while the mean age for female participants was 19.6.

Statistical analysis indicated that college males scored significantly higher on all

symptom dimensions than did the males from the original norming study (Derogatis &

Spencer, 1982).

College females scored higher than did the adult female norming sample on all

symptom dimensions with the exception of the Somatization symptom dimension. With

regard to adolescents, college females were statistically different from adolescent females

on six symptom dimensions: Obsessive-Compulsive, Somatization, Phobic Anxiety,

Paranoid Ideation, Hostility, and Psychoticism. College males scored differently from

adolescent males in the norming group on three symptom dimensions: Obsessive-

Compulsive, Phobic Anxiety, and Somatization. Obsessive-Compulsive symptom

dimension scores were higher and Phobic Anxiety and Somatization symptom dimension scores lower for college males and females, relative to the adolescent norm group. The authors noted that the results indicated that college students report a different pattern of distress than do adolescents and that appropriate BSI norms should be used when working with college students.

Broday and Mason (1991) studied the internal consistency of the BSI with regard to college counseling center student clients whose mean age was 24 years. The results of their study indicated that coefficients with this population corresponded closely to those values reported in the BSI manual (Derogatis & Spencer, 1982). They found that college counseling center means were somewhat higher than nonpatient means but lower than psychiatric outpatient mean scores. They concluded that the BSI does have internal consistency for counseling center clients who report similar symptoms to psychiatric outpatients, one of the population groups on which the BSI was originally normed.

Recently, Hayes (1997) studied the reliability and validity of the BSI with a college and university counseling center population. Over 2,000 students completed the BSI at the time of intake. The mean age of the research sample was 23.2 and 20% were graduate students. Forty-three percent reported that they had received "psychological counseling" previously and four percent reported that they were on medications for "mental health concerns." Statistical analysis of the data indicated that internal consistency was high for the nine symptom dimensions, ranging from .67 to .87. However, factor analysis yielded not the expected nine symptom dimensions, but rather

six factors that seemed to measure concerns of counseling center clients most

appropriately. These included Depression, Somatization, Hostility, Social Comfort,

Obsessive-Compulsivity, and Phobic Anxiety. Hayes (1997) noted that the Social

Comfort symptom dimension had not been identified in previous research on the BSI and

that several constructs that the BSI was designed to measure such as Paranoid Ideation,

Psychoticism, Interpersonal Sensitivity, and Anxiety did not emerge as significant with

this population group in terms of factor analysis. As with the Broday and Mason (1991)

study, Hayes (1997) found that symptom dimension means for the sample were higher for

these subjects than for an adult nonclinical sample and lower than the adult outpatient

psychiatric norm group. He concluded that with this population, it is possible the BSI

measures both general distress and the six factors noted above.

The BSI and Spinal Cord Injuries

Normative research has also been conducted with the BSI on individuals who

have experienced spinal cord injury. Heinrich, Tate and Buckelew (1994) analyzed item

response distributions from 225 subjects (ages 17 - 68) with spinal cord injury. Eighty

percent of the subjects in the study were male. They compared these item response

distributions with a nonpatient normative sample of 719 subjects. Normative scores were

also developed based on the amount of time since the individual had experienced the

injury. The groupings included assessment at time of discharge from the hospital, 0-24

months post discharge, and beyond 24 months from injury. Compared to the normative

group, individuals who had experienced spinal cord injury had higher BSI scores across

all symptom dimensions and global measures. There was no statistically significant

difference between male and female subjects with Spinal Cord injury, with the exception

of the Somatization symptom dimension, on which females reported greater distress. It

was found that there was more reported overall distress and total number of symptoms

were most elevated in the group who were immediately discharged from the hospital

through 24 months after discharge, as compared to individuals who were still

hospitalized. It was hypothesized that this was due to the realization of permanent

lifestyle changes and the losses that affect such changes. Eight items from the BSI (33,

37, 15, 38, 49, 42, 51, 30) were found to most differentiate the normative group from

those individuals with Spinal Cord injury. These items were not related to

psychopathology but were felt by the authors to suggest a pattern of expected response to

having a Spinal Cord injury. Suggested cutoff scores were also given to guide

rehabilitation professionals using the BSI as a screening instrument for psychological

distress.

Heinrich and Tate (1996) analyzed the responses of completed BSI's by 215

individuals ranging in age from 18 to 70 with Spinal Cord injuries to determine principle

components and factor estimation. These individuals were primarily male (79%) and

were receiving rehabilitation services at a medical facility. The BSI was completed as

part of the initial inpatient hospitalization. As with Hayes (1997), the researchers found

that there were six factors that seemed to have particular relevance to the rehabilitation

process. These included anxiety, depression, mental blocks, interpersonal sensitivity,

hostile suspiciousness, as well as a new factor, spinal cord injury, that the researchers identified as a result of factor and item analysis. They stated that standard BSI symptom dimensions do not adequately describe the dimensions of an individual's experience in spinal cord injury rehabilitation. They suggested that clinicians take these new factors into consideration in working with individuals who are in rehabilitation and gave cutoff scores for the six factors that were clinically significant.

The BSI and Mature Populations

In addition to studies regarding the above populations, there have been some studies regarding use of the BSI with mature or elderly adults. However, the majority of the literature studying the use of the instrument with this group has focused upon the measurement of depression. The BSI has been used as a concurrent measure with other well or lesser known instruments. Research topics have primarily focused on two subjects: the first being the interaction between health and/or somatic symptomatology and depression, and the second being the psychological and physical effects of grief.

Cochran and Hale (1984) examined the relationship between physical health and psychological distress in 106 elderly subjects aged 63-84. Research subjects completed the BSI as well as a health self-rating. Results indicate that health played a larger role in the psychological distress of the male subjects than the female subjects . Additionally, the data indicated that the correlation between health and anxiety was quite pronounced for elderly males but almost insignificant for the female subjects. The authors suggested that this finding may be due to the distress that elderly males experience when their

activities become limited as their health declines. No theory is posited by the authors regarding the reason for the low correlation between health and anxiety for the female subjects of the study.

Farberow, Gallagher-Thompson, Gilewski and Thompson (1992) used the Beck Depression Inventory (BDI), 16 P-F Questionnaire (Cattell, 1970), and the BSI to compare mature adults (55 years and older) who had not lost a spouse, those who had lost a spouse from a natural death, and a third group who were the survivors of a spouse's suicide. The focus of the study was to understand more fully the changes in grief as it related to the mental health of mature widows and widowers whose spouses had successfully committed suicide. The three groups were followed over a two and one-half year time period and data were collected four times: within 2 months of the loss of a spouse, 6 months after the loss of a spouse, 1 year after the loss of a spouse, and 30 months after the loss of the individual's spouse.

Statistically significant differences were found on three of the nine BSI symptom dimensions for both bereaved groups. The Depression, Hostility and Psychoticism symptom dimensions were all elevated with respect to the original BSI norms for adult non-patients. It was also found that the BSI tended to measure different aspects of depression than the Beck Depression Inventory. The authors stated that they felt the BDI assessed more generalized feelings of depression, while the BSI assessed more severe feelings of depression. Findings also suggested that it is the loss of a spouse through death that makes the most impact, not the particular way in which the death occurred.

However, the authors noted that the negative effect of a suicide death on the survivors' appraisal of their own emotional functioning takes longer to diminish than the impact of a natural death.

Gilewski, Farberow, Gallagher, and Thompson (1991), in a similar study of elderly adults (aged 55 and older) who had lost spouses either through natural death or through suicide, followed subjects from one month through the thirtieth month after the death of their spouses. Using the BSI and Beck Depression Inventory, they found that elderly persons who were experiencing significant clinical depression at the time of their spouse's death were at significant risk for psychological difficulties during the bereavement process. Survivors of spouses who had committed suicide were at even more psychological risk than those who were in the highest ranked depression group. Both groups who were experiencing bereavement had higher overall BSI scores than did the group that had not lost a spouse. However those survivors of a spouse's suicide who were moderately to severely depressed still showed higher scores on the Hostility, Phobic Anxiety, and Paranoid Ideation symptom dimensions 2.5 years after the death of their spouses than did those survivors whose spouses had died of natural causes.

Gilbar and Dagan (1995) examined gender differences between 43 widows and 24 widowers who had lost their spouses to cancer. The subjects had mean ages of 61.4 and 61.08 respectively. Their adjustment to the loss of their spouse was the focus of the study. The BSI was used, as were the Texas Revised Inventory of Grief (Fachingbauer, Devaul, & Zisook, 1987) and The Psychological Adjustment to Physical Illness Scales

(Derogatis, 1975). The results indicated that widows had a much more difficult adjustment process than did widowers, particularly in the areas of psychological distress and psychosocial adjustment. On the BSI, statistically higher scores were found for widows versus widowers on all symptom dimensions with the exception of Hostility and Paranoid Ideation. The authors suggested that widows may have more difficulty adjusting than their male counterparts for a variety of reasons. First, they noted that very often the wife is the primary caregiver during her husband's illness so there is increased and ongoing stress until her husband's death. Secondly, they noted that there is often a financial loss or increased burden when there is a prolonged illness and finally death of the primary wage earner. The loss of a wife did not seem to impact the widowers' financial situation to the same degree. Finally, the authors posited that the widows were more emotionally and socially dependent upon their spouses, even though they may have had other supportive relationships.

Similarly, Gallagher, Breckenridge, Thompson and Peterson (1983) also used the Beck Depression Inventory and Brief Symptom Inventory with widows and widowers, aged 55-90 years, and individuals in that age range that had not lost a spouse. The authors were examining the effects of bereavement on indicators of mental health for this population. They found that women in both groups had greater psychological distress than their male counterparts in general. However, there were no sex differences that could be attributed directly to the loss of a spouse.

As noted earlier, the BSI has been used in studies examining the relationship between somatic symptoms and level of depression. Magni, Frisoni, Rozzini and De Leo (1996) conducted a study with 462 elders over the age of 75 who were living in a community in Northern Italy. Depressive symptoms were assessed with the Depression symptom dimension of the BSI. It was found that the greater the number of somatic symptoms reported, the greater the mean BSI depression score even when adjusting for age, sex, and activities of daily living. However, the authors noted that these finding were applied only to individuals who are cognitively intact. When subjects were found to be cognitively impaired, there was not a statistically significant correlation between symptoms of depression and somatic complaints.

Harper, Kotik-Harper and Kirby (1990) administered a battery of psychological and neuropsychological tests to 247 geriatric medical patients (ages 60-94 years of age) as part of a diagnostic assessment for unexplained deterioration in their functioning. Depression was assessed through the use of the short form of the MMPI, the BSI, and the Geriatric Depression Scale. The authors found that the majority of patients suffered from either major or minor depression and that some degree of cognitive impairment was seen in 80% of the sample subjects. The BSI exhibited false-negative rates of up to 53% for those diagnosed with major Depression and false-negatives of 83% for those diagnosed with minor depression. This means that the BSI, according to researchers, misdiagnosed a substantial number of individuals who were otherwise found to have the symptoms of major and minor depression.

The researchers used the normative data provided by Hale et al. (1984) and used a cutoff two standard deviations above the mean to define clinical significance for major depression. Minor depression was indicated if the elderly individual scored between one and two standard deviations above the mean. Both the Geriatric Depression Scale and the MMPI short form were insensitive to symptoms of minor depression as well, with a false-negative rate of 58% and 66% respectively. Both the MMPI short form and the Geriatric Depression scale were more accurate than the BSI in their classifications of major depression. The authors noted that the BSI was difficult for many of their elderly subjects due to its five-choice response design. (The short form of the MMPI was given orally and has a true/false orientation, while the Geriatric Depression Scale has a two-choice format.) It is important to keep in mind however, that the BSI was not designed specifically to determine classification levels of depression, major versus minor, only the presence of depression.

It was suggested from the results that there may be a large group of elderly individuals who require medical care but may not be identified as depressed by conventional psychometric assessment techniques. The authors believed that contrary to reports of depression being overestimated in the elderly, the elderly are not being assessed properly or carefully by non-psychiatric physicians. They urged assessment of depression when elders are presenting physical rather than psychiatric concerns to their physicians.

Stukenberg, Dura, and Kiecolt-Glaser (1990) found similar results in their work to validate psychometric instruments that screen for depression. The authors used the

depression symptom dimension from the BSI, the short form of the Beck Depression Inventory, and the Hamilton Depression Rating Scale – an interviewer rated instrument. The results indicated that while all three instruments identified major depression and depressive disorder NOS, none were consistently sensitive to assessing cases of dysthymia. The subjects for the study were 177 community dwelling adults who had a mean age of 67.40 years with an age range of 56-88 years. It was posited that the three instruments used were not sensitive to dysthymia due to their focus on symptomatology during the past seven days prior to completing the inventories. The clinical diagnosis of dysthymia is made based on symptoms that have been primarily present for the past two years. The BSI Depression symptom dimension was able to correctly identify 79% of the cases, while the BDI was able to correctly identify 74% of the cases of depression.

It was found that the Hamilton Depression Rating Scale had similar ability to correctly identify cases of depression when compared to the BSI. The authors used the area under the Receiver Operating Characteristic curve (ROC) to compare the specificity/sensitivity of the HDRS and the BSI, obtaining the comparable numbers of .85 and .83, respectively. Since the Hamilton Depression Rating Scale requires interviewer time, and since its results are similar to the two self-report instruments, the authors concluded that its use in a community setting may not be justified financially.

Norming Studies for the BSI

A review of the literature indicates that only two empirical studies have been published establishing norms for an elderly population using the Brief Symptom

Inventory. Hale, Cochran and Hedgepeth (1984) administered the BSI to 364 females with a mean age of 73.54 and 201 males with a mean age of 73.92. Ninety-five percent of the sample subjects were living independently, while the remaining five percent were residents of nursing homes. No information was given regarding the specifics of marital status or racial composition of the participants.

Statistical results indicated that males in the sample scored significantly higher on seven of nine symptom dimensions than the original BSI normative sample of adults who were non-patients. Both the Interpersonal Sensitivity and Hostility symptom dimensions were not statistically different than adult males (non-patient) in the initial BSI normative sample.

Elderly females scored higher on five of the nine symptom dimensions: Somatization, Obsessive-Compulsive, Anxiety, Phobic-Anxiety, and Psychoticism. The most statistically significant difference between the male and female subjects was on the Obsessive-Compulsive symptom dimension, which includes several memory related items. Elderly women scored higher than males on these symptom dimensions, .83 as compared to .73, respectively. The authors suggested that age-relevant norms be used when administering the BSI to elderly adults.

The second normative study for the BSI was conducted with a group of Italian elders (De Leo, Frisoni, Rozzini, & Trabucchi, 1993). In this study, 462 subjects from Northern Italy completed the BSI. The subjects were stratified into three age groups (75-79,80-84, over 85 years of age) as well as gender groups. The results indicated that the

elderly women subjects scored statistically significantly higher than their male

counterparts on all symptom dimensions. Statistical significance was reached for the

elderly female group on the Global Severity Index and the following five symptom

dimensions: Somatization, Depression, Obsessive-Compulsive, Anxiety and Phobic

Anxiety. Age differences for the women did not affect statistical significance for the

symptom dimension scores and increasing age for the entire sample group was not

associated with lower levels of hostility. This finding was in contrast to Hale, Cochran

and Hedgeperth's (1984) results in which they found increasing psychic distress with

increasing age. De Leo et al. (1993) theorized that this difference may be due to their

subjects' mean age being five years older than Hale et al.'s subject pool. This difference,

combined with the passage of fifteen years since Hale et al.'s study, illustrates the need for

further research.

<u>Purpose of Study</u>

Given the advantages of self-report instruments, and given that the population of

mature and elderly adults is projected to expand at a significant rate, it is necessary for the

mental health field to select and fully explore appropriate instruments for use with this

population. The Brief Symptom Inventory is an ideal candidate because it is one of the

few instruments that provide an assessment of an individual's psychological functioning

in a brief self-report format. It is easily available and has had many studies published

using it with different populations and in conjunction with other well-researched

instruments.

A review of the literature suggests that the Brief Symptom Inventory is a useful instrument with many populations but with the caveat that each population may have responses to the instrument that are based upon their environment, culture or living situation. Certain items are not pertinent to certain populations, either based upon what they are required to do (in a structured nursing home, for example), cultural expectations, or what they are physically able to do.

As such, while the BSI is expected to be a useful instrument with the independently-living mature or elderly person, a study is necessary to determine what the relevant norms are for this group, which of the symptom dimensions of the BSI hold confounding items, and which of the symptom dimensions of the BSI hold significant information. Once these factors have been taken into account, mental health professionals will have more information with which to assess the scoring of the instrument on this growing population.

Hypotheses And Research Questions

The preceding review of the literature suggests that research with the Brief Symptom Inventory has been conducted from many perspectives giving a richer understanding of the instrument. It also indicates that much research is still needed related to its use with older and elderly adults. Much is to be learned regarding the interaction of aging and emotional functioning.

The questions investigated with regard to the subjects of this study – persons aged 65 and above who are living independently – were the following. In each case, Age groups were defined as as 65-69, 70-74, 75-79, 80-84, 85-89, and 90-95 years of age.

1.   What were the raw score means for the study sample? Was the population sufficiently similar to published Brief Symptom Inventory raw score means for adult non-patients and adult psychiatric outpatients to use those data? Was the study sample sufficiently similar to the study population of Hale et al. (1984) or De Leo et al. (1993) to support the use of their raw score means? The formal hypothesis was that the subject group would be distinguishable from the published norm groups - De Leo et al. (1993), Derogatis and Spencer(1982), and Hale et al. (1984) - at the .05 level of significance. The dissimilarity was expected due to the cultural differences between American and Italian individuals and due to the cultural and environmental changes which have occurred since those studies. In general, the raw score means for this study were expected to lie between the Derogatis and Spencer (1982) values for adult non-patients and adult psychiatric outpatients.

2.   How did the study population of mature and elderly individuals differ from the published BSI adult non-patient raw score means? A review of the literature suggested hypotheses that the following differences would be detectable at least to the .05 level of significance-

a) The Somatization symptom dimension for both genders and all age groups would be elevated as compared with published BSI adult non-patient raw score means.

b) The Psychoticism symptom dimension for both genders and across all study age groups would be elevated as compared with published BSI adult non-patient raw score means.

c) The Obsessive-Compulsive and Phobic Anxiety symptom dimensions would be elevated for both males and females across all study age groups.

d) The Phobic Anxiety symptom dimension would be elevated for both males and females and across all study age groups.

3. What did the BSI measure with respect to the study population? Using exploratory factor analysis, internal consistency of the nine symptom dimensions was investigated. It was hypothesized that the full set of nine symptom dimensions would not be applicable for the population being studied, but a smaller number of symptom dimensions would be identified that more accurately capture the psychological symptoms of the participants.

a) The Depression and Anxiety symptom dimensions would be closely correlated for those individuals whose scores are elevated (indicating psychological distress) on either symptom dimension.

4. What external factors of the study sample led to alteration in the loading of the symptom dimensions of the BSI? This analysis was undertaken during factor

analysis above and illuminated the meaning of the differences between the study sample and the adult non-patient population. The following were the formal hypotheses with regard to this topic.

a) Individuals who reported that aches or pains interfered with their daily activities rarely (less than once a week) or occasionally (once or twice a week) - corresponding to choices A or B of item #2 on the Demographic and Activity Questionnaire - would have lower scores on the symptom dimensions overall than those endorsing items C or D (aches or pains often or daily).

b) Individuals who reported an average annual family income during the last five years of adult working life of at least $24,000 would have lower scores on all symptom dimensions than those who do not report this level of income. This income level was chosen to differentiate between those below or slightly above the poverty level, and those relatively unaffected by poverty. The exact income levels on items 3 and 4 of the Demographic and Activity Questionnaire were selected to providing a range of possible income levels in a multiple choice format. It was believed that monthly income would be known more readily for current income (item #3), while annual income would be known more readily for past income (item#4), but the item cutoffs were selected so the questions would be parallel.

c) Those individuals who were currently married would have lower scores on all nine symptom dimensions, indicating less psychological distress as compared with those who were widowed, divorced or never married.

d) Level of daily activity would be negatively correlated to the Depression and Paranoid Ideation symptom dimensions.

e) Amount of work or volunteer activities would be negatively correlated to the Hostility and Phobic Anxiety symptom dimensions.

f) Level of interaction with others would be negatively correlated to the Interpersonal Sensitivity symptom dimension.

CHAPTER THREE

METHODOLOGY

<u>Participants</u>

Five hundred four individuals participated in the study. Of those individuals, 15 did not complete the materials fully. Four hundred and eighty nine participants completed the materials fully and were used to norm the Brief Symptom Inventory for a mature, independent community dwelling population. Individuals who were 65 years of age and older were eligible to participate in the study. This particular population was specifically chosen as a focus of this study rather than individuals who live in a nursing home or who are in assisted living facilities. It was believed that the item content of the Brief Symptom Inventory is most relevant to individuals who are not being cared for by others. That is, they are able to live independently.

In accordance with Ritchie's (1997) statements regarding the need for homogeneity of research participants in studies that focus on mature and elderly adults, it was thought that limiting the study to individuals who are able to live independently, as opposed to those who reside in nursing homes, increases the homogeneity of the study as well as the applicability of the data gathered. Targeting a population of individuals who are living independently also allows a clear comparison to be made between the original non-patient BSI norms for adults and the population identified in this study.

Of those 489 participants, 322 were females (65.8%) and 167 were males

(34.2%). Females in the study sample ranged in age from 65-95 with a mean age of 76.75

(SD = 7.41). Males in the study sample ranged in age from 65-92 with a mean age of

74.41 (SD = 6.24). The mean age for all participants was 75.91 (SD = 7.10). Four

hundred forty-three participants (90.6%) were Anglo, 33 (6.7%) were African-American,

9 (%) were Hispanic, 7 (1.8%) were Asian or Pacific Islander, and one (0.2%) was Native

American. The participants were stratified according to age in increments of 5 years and

every attempt was made to replicate the current United States population of elderly

individuals with respect to race, gender, and age. Extrapolating from statistics provided

from the U.S. Bureau of the Census (1993), Tables 1 and 2 compare study participants on

these three areas with individuals 65 and older in the United States. The investigator

located participants at senior citizen centers administered by various cities, residential

retirement complexes, and churches.

Table 1
Census And Study Sample Analysis By Age And Race, Males

Race	65-69 n	65-69 %	70-74 n	70-74 %	75-79 n	75-79 %	80-84 n	80-84 %	85+ n	85+ %	Total N	Total %
US Male Population per 1990 Census												
White	3999.8	29.6	3416.9	25.3	2416.4	17.9	1420.8	10.5	888	6.6	12141.9	89.9
Black	385.4	2.9	280.1	2.1	189.1	1.4	108.3	0.8	72.2	0.5	1035.1	7.7
Native	21	0.2	16	0.1	10	0.1	6.1	0.0	4.5	0.0	57.6	0.4
Asian	97.1	0.7	78.1	0.6	46.6	0.3	27.3	0.2	17	0.1	266.1	2.0
Hisp*	233.2	1.7	168.6	1.2	99.6	0.7	62.3	0.5	45.7	0.3	609.4	4.5
Total	4503.3	33.4	3791.1	28.1	2662.1	19.7	1562.5	11.6	981.7	7.3	13500.7	100.0
Actual Male Sample Achieved												
White	36	21.6	40	24.0	43	25.7	23	13.8	12	7.2	154	92.2
Black	4	2.4	2	1.2	0	0.0	0	0.0	0	0.0	6	3.6
Native	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Asian	1	0.6	0	0.0	0	0.0	1	0.6	0	0.0	2	1.2
Hisp*	1	0.6	0	0.0	1	0.6	0	0.0	0	0.0	2	1.2
Other/ Decline	2	1.2	1	0.6	0	0.0	0	0.0	0	0.0	3	1.8
Total	44	26.3	43	25.7	44	26.3	24	14.4	12	7.2	167	100.0

Note. US Census figures are in thousands. The US Census treats Hispanic origin separately from race. This study treated Hispanic origin as a race.

Table 2
Census And Study Sample Analysis By Age And Race, Females

Race	65-69		70-74		75-79		80-84		85+		Total	
	n	%	n	%	n	%	n	%	n	%	N	%
US Female Population per 1990 Census												
White	4791.5	24.3	4431.2	22.5	3557.1	18.1	2565.2	13.0	2285.2	11.6	17630.2	89.5
Black	519.2	2.6	419.8	2.1	316.7	1.6	211.9	1.1	175.2	0.9	1642.8	8.3
Native	25.1	0.1	20.2	0.1	14.2	0.1	9.9	0.1	9.5	0.0	78.9	0.4
Asian	134.1	0.7	97.7	0.5	60.6	0.3	33	0.2	23.8	0.1	349.2	1.8
Hisp*	290.4	1.5	216.6	1.1	148.4	0.8	105.5	0.5	86.7	0.4	847.6	4.3
Total	5469.9	27.8	4968.9	25.2	3948.6	20.0	2820	14.3	2493.7	12.7	19701.1	100.0
Actual Female Sample Achieved												
White	53	16.5	58	18.0	63	19.6	52	16.1	53	16.5	279	86.6
Black	8	2.5	6	1.9	7	2.2	4	1.2	1	0.3	26	8.1
Native	0	0.0	0	0.0	1	0.3	0	0.0	0	0.0	1	0.3
Asian	3	0.9	1	0.3	1	0.3	0	0.0	0	0.0	5	1.6
Hisp*	1	0.3	1	0.3	3	0.9	1	0.3	1	0.3	7	2.2
Other/ Decline	1	0.3	2	0.6	1	0.3	0	0.0	0	0.0	4	1.2
Total	66	20.5	68	21.1	76	23.6	57	17.7	55	17.1	322	100.0

Note. US Census figures are in thousands. The US Census treats Hispanic origin separately from race. This study treated Hispanic origin as a race.

Instrumentation

The Brief Symptom Inventory (BSI) is a 53-item self-report symptom inventory designed to assess the psychological symptom patterns of community non-patients as well as psychiatric and medical patients both in the adult and adolescent age ranges. It is the brief form of the Symptom Checklist-90-R, a self-report inventory that was developed for use in a wide variety of settings (Derogatis, 1977). The BSI is a measure of current psychological symptoms and is not intended, nor is it constructed, to be a measure of personality traits. The BSI, according to its authors, is composed of the items that best reflect the nine primary symptom dimensions of the SCL-90-R in a brief measurement form. There are also three global indices of distress: Global Severity Index (GSI), Positive Symptom Total (PST), and Positive Symptom Distress Index (PSDI) that are also scored from the items. The wording used on the items corresponds to a sixth grade reading level and is appropriate for individuals as young as 13 without a sacrifice in validity. Each item of the BSI is rated on a 5-point Likert scale from "not at all" (0) to "extremely" (4). Both the BSI and SCL-90-R are designed to be interpreted on three levels that are separate but related. The first level focuses on the global scores to gain an understanding of the overall distress an individual may be experiencing. The nine-symptom dimensions are then reviewed, and specific items can be examined to gain further information regarding the individual. As correlations between similar symptom dimensions range from .92 to .99 on the BSI and SCL-90, the BSI can be used in place of the SCL-90 R instrument.

The BSI Manual (Derogatis, 1993) states that the "Three global indices have been developed to provide more flexibility in overall assessment of the patient's psychological status and to provide psychometric appraisal at a third, more general level of psychological well-being" (p.3). A definition of each of the nine symptom dimensions as well as the global indices of distress can be found in Appendix D.

While the BSI is a brief self-report measure, the administrator of the instrument is encouraged to review the instructions with the subject and provide a short introduction to the instrument. It is expected that such administrative instructions should be completed within 2-5 minutes, but the administrator should remain with the subject in case of questions to be answered. Normal time to complete the BSI is between 8-10 minutes. As would be expected, the BSI is particularly appropriate in settings where assessment time is limited or where limitations exist with the subject's concentration and endurance.

The BSI was originally normed on 425 adult males and 577 adult females who were psychiatric outpatients in the Northeastern and Midwestern sections of the United States. Their average age was 31.2 with a standard deviation of 12.1 years. Nine hundred seventy-four adult non-patient adult subjects also completed the BSI as part of the normative process. Their average age was 46.0 with a standard deviation of 14.7 years. Four hundred twenty-three psychiatric inpatients completed the BSI with an average age of 33.1 and a standard deviation of 14.85 years. Adolescent norms are also available for the BSI. Two thousand four hundred-eight adolescents with an average age of 15.8 (SD = 1.1) completed the BSI for norming purposes. A breakdown of religious

preferences is given for adult psychiatric outpatient and inpatient subjects only. Racial composition is given on all four subject samples (Derogatis, 1993).

Reliability of the BSI was evaluated through the use of test-retest and internal consistency. Test-retest reliability is an indicator of the stability of measurement over time, whereas internal consistency serves to measure the homogeneity or consistency of the items in measuring the constructs that they have been selected to represent. Internal consistency coefficients were established using Cronbach's coefficient alpha. Alpha coefficients for all nine symptom dimensions range from a low of .71 on the Psychoticism symptom dimension to a high of .85 on the Depression symptom dimension. These coefficients were established on the sample of psychiatric outpatients noted earlier (Derogatis & Melisaratos, 1983). Test-retest reliability coefficients were derived from the data on a sample of 60 non-patient subjects who completed the BSI at a two-week interval. Coefficients ranged from a low of .68 for the Somatization symptom dimension to a high of .91 for the Phobic Anxiety symptom dimension. The test-retest coefficient for the Global Severity Index was .90, suggesting that the BSI is a reliable measure over time.

In discussing the validity of the BSI, Derogatis and Melisaratos (1983) cited a previous study (Derogatis, Rickels, & Rock, 1976) in which the SCL-90-R, which is the basis for the BSI, demonstrated convergent validity with 30 MMPI scales against which it was evaluated. These included the clinical scales of the MMPI (Dahlstrom, 1969), the Wiggins Content Scales of the MMPI (Wiggins, 1966), and the Tyron Cluster Scores

(Tyron, 1966). They found that "8 of the dimensions of the SCL-90-R demonstrated directly convergent counterparts among the MMPI scales evaluated, and all 8 dimensions showed excellent convergence" (p.601). Upon reanalyzing the data using items that make up the BSI, they found coefficients greater than .30 between the nine symptom dimensions of the BSI and the clinical scales of the MMPI (Dahlstrom, 1969) as well as the Wiggins Content Scales of the MMPI (Wiggins, 1966) and the Tyron Cluster Scores (Tyron, 1966).

Derogatis and Melisaratos (1983) used the scores of the psychiatric outpatients from the original normative group to analyze the internal structure and construct validity of the BSI. In using factor analysis, the authors found nine interpretable factors derived from a normal varimax rotation of the principle components. They noted that seven of the nine hypothesized symptom constructs were reproduced with little to no "disjuncture" of the items. These constructs include the Psychoticism, Somatization, Obsessive-Compulsive, Paranoid Ideation, Phobic Anxiety, Depression, and Hostility factors. An eighth dimension, Anxiety, was split into "two well-defined clinical component dimensions" (p. 603). The ninth dimension, Interpersonal Sensitivity, did not form as a linear combination, but the authors posited that "the dimension may be too small to ensure invariance" (p. 604). These symptom dimensions make up the BSI in its current state and are defined in Appendix D.

Demographic and Activity Questionnaire

      Horgas, Wilms and Baltes (1998) researched everyday activities of 516

individuals in the age range of 70-105. They stated that knowledge of daily activities was

important as it provided insight into elders' goals and motivations. Daily activities are

affected by external opportunities as well as by external constraints. As such, they

influence how individuals structure the days, months, and years of their lives. The

authors found that older adults' daily activities are spent in one of three ways: resting,

leisure (reading, viewing television, or other activities), and necessary activities such as

personal self-care or other individual activities of daily living. It was found that gender

and marital status had little significant impact on how elders spent their day. Residential

status did affect activity level "in terms of frequency, duration, and variety of

activities."(p.566). Much of the day (64.4%) for the individuals studied was spent alone

and in the individual's primary living environment. Finally, it was also noted that as

individuals aged, they spent more time resting and less time in overall activities.

      Hays et al. (1998) examined the relationship between selected social, clinical, and

demographic variables with four dimensions (depressed affect, low positive affect,

somatic complaints and interpersonal problems) from the Center for Epidemiological

Studies-Depression scale (CES-D; Radloff, 1977). Over three thousand community

dwelling elders were interviewed and responded to the questions from the four

dimensions of the CES-D. The researchers found that satisfaction with the amount of

social interaction that one experienced protected against somatic complaints and

depressed affect. Availability of a confidante appeared to protect the elders from the four dimensions of depression noted above. Size of the elder's social network exerted a protective effect against both interpersonal problems and depressed affect.

The Hays et al. (1998) study showed the positive effects that a social network can have in protecting elders from various aspects of depression. The Horgas et al. (1998) study demonstrated that the activities of elders differ from younger adults in large part because they are retired or not working outside the home. Their levels of activity and the types of activity in which they participate can therefore affect the results of the BSI. The effects of age affect the raw score means of the BSI (De Leo, 1993; Hale, 1984) in that there are statistical differences between raw score means for those who are considered elderly and the study samples the BSI was normed on. Similarly, general levels of health have been shown to affect scores on the BSI. For example, Cochran and Hale (1984) reported a strong correlation between health problems and anxiety in elderly men.

Recognizing that there is an interaction between activity levels and psychological factors such as depression and recognizing that there is a potential for interaction with cultural factors, socioeconomic status and health factors, the investigator developed the Demographic and Activity Questionnaire (Appendix D). This Questionnaire contains items pertaining to marital status, past and current income levels, educational levels, interpersonal interaction, and health related items.

The participants completed the ten-item Demographic and Activity Questionnaire. The information from the instrument was used to compare particular homogenous

subgroups, for example, gender based subgroups or those of a particular marital status, with various symptom dimensions. This questionnaire and the information it provided enabled a more complete understanding of the aggregate data.

Procedure

Each participant was given a packet comprised of a Consent form, the Demographic and Activity Questionnaire and a copy of the large print Brief Symptom Inventory. The investigator explained to the potential participants the instructions to correctly complete the Consent form and the two instruments. A numbered prefix had been written on each Demographic and Activity Questionnaire and Brief Symptom Inventory, to link the two instruments, but not on the Consent form, to ensure confidentiality and protect the anonymity of the individual subject. No names were to be written on any instrument but the Consent form.

All participants signed the Consent form (Appendix B) stating that they understood the purpose of the study, were not coerced in any way to complete the study, and understood the confidential nature of the study. This form gave the individual subjects information on how to contact the investigator so that information regarding the results of the study could be made available to them after its completion, if they so desired. A clear understanding of the confidentiality of their responses was included in the release form as well.

When the individuals had signed consent forms, they were considered participants in the study. They then completed the two instruments, which had been placed into the

packets in a specific order. The order of the Brief Symptom Inventory and the Demographic and Activity Questionnaire was reversed in the make-up of every other packet. This was done to assure that one instrument and its items would not affect the responses of the second instrument and therefore skew the final data.

When each participant had completed the instruments, the researcher checked the instruments for omissions. Where possible, the answers to missing questions were requested of the participant. Individuals not answering the age question were not included in the study. If other questions were not answered, it will appear in the following tables as 'N/A.'

Once collected, the data from the questionnaires was entered into a specially designed database. To guard against data entry errors, each instrument was entered twice, and the results compared. If the two copies of the same instrument had any differences, the program flagged the errors for resolution. In this way, the possibility of data entry error was minimized, and the highest possible level of data integrity was maintained in the results of the study.

A total of 38 BSI forms and 27 Demographic and Activity questionnaires were found to have one or more data entry errors. Exact statistics were not kept as to the number of items entered in error per instrument, that information being outside the scope of this study. However, it is estimated that this design prevented approximately 1/2% to 1% individual item data entry error, and the resulting alteration of the study results.

CHAPTER FOUR

RESULTS

The Brief Symptom Inventory is an assessment instrument that has been used with many different populations. The instrument was originally normed on individuals whose average age was 31.2 (SD 12.1). The purpose of this study was to determine raw score means for mature adults who are living independently. With these raw score means, it can be decided if the original Brief Symptom Inventory means are appropriate for use or if raw score means specifically for older adults should be used when assessing individuals 65 and older. A thorough description of the study sample with regard to race, gender, marital status, education level, as well as other psychosocial and demographic information can be found in Tables 3 through 5. The reliability of the Brief Symptom Inventory's nine symptom dimensions with the study sample was determined and is found in Table 6. Reliability of the Brief Symptom Inventory with the study sample was assessed using Cronbach's Alpha. Reliability coefficients ranged from .61 on the Psychoticism symptom dimension to .86 on the Obsessive–Compulsive symptom dimension.

Table 3

Demographic Analysis of Study Participants

Reported Characteristic	n	%
Marital status		
Married	224	45.8
Never Married	16	3.3
Divorced	60	12.3
Widowed	188	38.4
N/A	1	0.2
Current Monthly Income		
<$1000	81	16.6
$1000-$1999	108	22.1
$2000-$2999	78	16.0
$3000-$3999	60	12.3
$4000+	124	25.4
N/A	38	7.8
Final Annual Income		
<$12000	51	10.4
$12000-$23999	57	11.7
$24000-$35999	91	18.6
$36000-$47999	52	10.6
$48000+	178	36.4
N/A	60	12.3
Level of Education		
Doctoral	25	5.6
Masters	176	39.2
Bachelors	59	13.1
Some College	26	5.8
Trade School	16	3.6
High School	113	25.2
Less than High School	30	6.7
N/A	4	0.9

Note. N/A indicates that the demographic question was not answered by the participant.

Table 4

Activity Analysis of Study Participants

Reported Characteristic or Activity	n	%
Aches and Pains Interfere		
Rarely	297	60.7
Occasionally	100	20.4
Often	35	7.2
Daily	54	11.0
N/A	3	0.6
Work or Volunteer		
Yes	257	52.6
No	228	46.6
N/A	4	0.8
Get Out of House		
Every Day	235	48.1
Generally Every Day	176	36.0
Every Other Day	38	7.8
At Least 1 Time Per Week	27	5.5
Every Other Week	6	1.2
1x/Month	1	0.2
N/A	6	1.2
Talk to Friends and Family		
Several Times Per Day	276	56.4
Once a Day	92	18.8
Every Other Day	39	8.0
At Least Once a Week	66	13.5
Less Than Weekly	11	2.2
N/A	5	1.0

Table 4 (cont.)
<u>Activity Analysis of Study Participants</u>

Reported Characteristic or Activity	n	%
Frequency of Exercise		
Every Day	299	61.1
Every Other Day	98	20.0
At Least Once Per Week	59	12.1
Less Than Once Per Week	26	5.3
N/A	7	1.4

<u>Note.</u> N/A indicates that the activity question was not answered by the participant.

Table 5
<u>Demographic Analysis by Age Categories</u>

Reported Age	Males (<u>n</u> =167)			Females (<u>n</u> =322)		
	<u>n</u>	%	Cum %	<u>n</u>	%	Cum %
65-69	44	26.3	26.3	66	20.5	20.5
70-74	43	25.7	52.0	68	21.1	41.6
75-79	44	26.3	78.3	76	23.6	65.2
80-84	24	14.4	92.7	57	17.7	82.9
85-89	9	5.4	98.1	39	12.1	95.0
90-95	3	1.8	99.9	16	5.0	100.0

<u>Note.</u> Percentages may not add to 100 due to rounding errors. Participants were not included in the study sample unless they completed the age item. Cumulative percentages are percentages of participants in that age category or younger.

Table 6

Reliability of BSI on Study Population

	BSI Dimension	No. Items	Cronbach's α
SOM	Somatization	7	.76
O-C	Obsessive-Compulsive	6	.86
I-S	Interpersonal Sensitivity	4	.78
DEP	Depression	6	.84
ANX	Anxiety	6	.79
HOS	Hostility	5	.66
PHOB	Phobic Anxiety	5	.73
PAR	Paranoid Ideation	5	.76
PSY	Psychoticism	5	.61
ADD	Additional Items	4	-
	Total	53	.95

Note. BSI additional items are not treated as a coherent symptom dimension and thus have no Cronbach's alpha score.

<u>Analysis Of Hypotheses</u>

<u>Hypothesis I</u>

Hypothesis I asked three questions. First, what are the raw score means for the

study population? Secondly, is the population sufficiently similar to published Brief

Symptom Inventory raw score means for adult non-patients and adult psychiatric

outpatients to use those data? Third, is the study sample sufficiently similar to the study

population of Hale et al. (1984) or the De Leo et al. (1993) to support the use of their raw

score means? A one-sample $\underline{t}$ test was conducted comparing the study sample's raw

mean scores with the published raw score means of four groups: BSI non-patients, BSI

psychiatric outpatients, Hale et al. (1984) and De Leo et al. (1993).

<u>Brief Symptom Inventory.</u>

Both males and females in the study sample scored significantly higher on the

Somatization, Obsessive-Compulsive, and Psychoticism symptom dimensions than those

in the Brief Symptom Inventory adult non-patient study sample (See Table 7). Males also

scored significantly higher on the Interpersonal-Sensitivity symptom dimension. Females

scored significantly lower on the Hostility and Anxiety symptom dimensions.

<u>Hale et al. (1984).</u>

A review of Table 8 indicates that the study sample's raw score means were not

statistically different from Hale et al.'s (1984) published means, except on the Depression

Table 7

Comparison of Study Sample to BSI Norm Groups

Scale		Study sample		BSI non-patient			BSI outpatient		
		M	SD	M	t	p	M	t	p
SOM									
	Males	0.41	0.50	0.23	4.75	**	0.67	-6.60	**
	Females	0.48	0.53	0.35	4.47	**	0.94	-15.55	**
O-C									
	Males	0.73	0.58	0.37	8.19	**	1.53	-17.86	**
	Females	0.86	0.73	0.48	9.44	**	1.60	-18.03	**
I-S									
	Males	0.37	0.54	0.24	3.07	**	1.48	-26.87	**
	Females	0.45	0.61	0.40	1.53	.13	1.66	-35.57	**
DEP									
	Males	0.30	0.46	0.21	2.57	.01	1.65	-37.70	**
	Females	0.40	0.59	0.36	1.35	.18	1.90	-45.43	**
ANX									
	Males	0.28	0.43	0.26	0.65	.52	1.51	-36.63	**
	Females	0.36	0.49	0.44	-2.79	**	1.82	-52.96	**
HOS									
	Males	0.35	0.43	0.34	0.30	.77	1.07	-21.57	**
	Females	0.27	0.36	0.36	-4.69	**	1.23	-47.87	**
PHOB									
	Males	0.15	0.35	0.11	1.43	.15	0.79	-23.84	**
	Females	0.24	0.45	0.22	0.89	.38	0.91	-26.66	**

Table 7 (cont.)
Comparison of Study Sample to BSI Norm Groups

Scale		Study Sample		BSI non-patient			BSI outpatient		
		M	SD	M	t	p	M	t	p
PAR									
	Males	0.37	0.53	0.33	1.08	.28	1.06	-16.68	**
	Females	0.35	0.52	0.35	-0.12	.90	1.21	-29.84	**
PSY									
	Males	0.29	0.42	0.15	4.39	**	1.12	-25.56	**
	Females	0.35	0.50	0.17	6.68	**	1.24	-32.00	**

Note. BSI Adult Non-Patient means and Adult Psychiatric Outpatient means are from Derogatis (1993) BSI manual.
**p<.01

Table 8
Comparison of Study Sample to Hale and De Leo groups

Scale		Study Sample		Hale et al. (1984)			De Leo et al. (1993)		
		M	SD	M	t	p	M	t	p
SOM									
	Males	0.41	0.50	0.45	-0.92	.36	0.28	3.46	**
	Females	0.48	0.53	0.50	-0.62	.54	0.50	-0.62	.54
O-C									
	Males	0.73	0.58	0.73	0.10	.92	0.50	5.27	**
	Females	0.86	0.73	0.83	0.85	.39	0.68	4.53	**
I-S									
	Males	0.37	0.54	0.32	1.14	.26	0.26	2.59	.01
	Females	0.45	0.61	0.40	1.53	.13	0.34	3.29	**

Table 8 (cont.)

<u>Comparison of Study Sample to Hale and De Leo groups</u>

Scale		Study Sample		Hale et al. (1984)			De Leo et al. (1993)		
		<u>M</u>	<u>SD</u>	<u>M</u>	t	p	<u>M</u>	t	p
DEP									
	Males	0.30	0.46	0.43	-3.59	**	0.41	-3.03	**
	Females	0.40	0.59	0.53	-3.81	**	0.70	-8.98	**
ANX									
	Males	0.28	0.43	0.30	-0.54	.59	0.36	-2.33	.02
	Females	0.36	0.49	0.48	-4.25	**	0.58	-7.88	**
HOS									
	Males	0.35	0.43	0.34	0.30	.77	0.37	-0.60	.55
	Females	0.27	0.36	0.29	-1.21	.23	0.37	-5.19	**
PHOB									
	Males	0.15	0.35	0.17	-0.80	.43	0.26	-4.14	**
	Females	0.24	0.45	0.25	-0.31	.76	0.41	-6.70	**
PAR									
	Males	0.37	0.53	0.44	-1.59	.11	0.31	1.57	.19
	Females	0.35	0.52	0.37	-0.81	.42	0.35	-0.12	.90
PSY									
	Males	0.29	0.42	0.25	1.30	.19	0.26	0.99	.32
	Females	0.35	0.50	0.26	3.43	**	0.28	2.70	**

<u>Note.</u> **p<.01

symptom dimension for both males and females and the Psychoticism and Anxiety symptom dimensions for females. The females in the current study scored significantly lower than Hale et al.'s (1984) published means for the Depression and Anxiety symptom dimensions, while they scored significantly higher than Hale et al.'s (1984) group on the Psychoticism symptom dimension. The one symptom dimension that males in the study group scored differently from Hale et al.'s (1984) study sample was on the Depression Symptom dimension. On this dimension, the study sample scored significantly lower than Hale et al. (1984) study group.

De Leo et al. (1993).

One sample t-tests indicate that males in the current study population are statistically dissimilar to De Leo and colleagues' (1993) male respondents on all but three of the nine symptom dimensions (See Table 8). These three dimensions were Hostility, Paranoid Ideation and Psychoticism. A statistical comparison of female participants indicates that the two groups are significantly dissimilar in their responses on all symptom dimensions with the exception of Paranoid Ideation and Somatization symptom dimensions.

Hypothesis II

Hypothesis II asked how the study population would differ from the BSI published adult non-patient raw score means with specific emphasis on four symptom dimensions: Somatization, Psychoticism, Obsessive-Compulsive, and Phobic Anxiety. These symptom dimensions were selected for more detailed analysis due to the

researcher's belief that items from these symptom dimensions would be more applicable to the study sample. It was hypothesized that older individuals would have more concerns about their memory performance and physical health and perhaps be more isolated due to health or other constraints such as lack of transportation. This hypothesis also focused on the ways the four symptom dimensions differed among the various age groups of the study sample. Age groups for the study sample are defined as 65-69, 70-74, 75-79, 80-84, 85-89, and 90-95.

Hypothesis II-a.

More specifically, Hypothesis II-a suggested that the Somatization symptom dimension for both genders and all age groups would be higher as compared with published BSI adult non-patient raw score means. This hypothesis was only partially supported. The Somatization symptom dimension was indeed significantly different for females and males overall as compared with the published adult non-patient raw score means for the BSI (See Table 7). However, with regard to the individual gender and age groups, only sample males in the age categories of 70-74 and 75-79, and females in the age categories of 65-69 and 90-95 were significantly higher in this symptom dimension as compared with published BSI adult non-patient norms.

Hypothesis II-b.

Hypothesis II-b stated that the Psychoticism symptom dimension for both genders and across all study age groups would be higher as compared with published BSI adult non-patient raw score means. The Psychoticism symptom dimension for both males and

females in the study population overall was significantly higher as compared with

published BSI adult non-patient raw score means (See Table 7). Males in the study

sample from the age categories of 65-69, 75-79, and 80-84, and females in the study

sample from the age categories spanning 65 to 84 scored significantly higher on the

Psychoticism symptom dimension than those individuals who made up the adult non-

patient published sample. Therefore, Hypotheses II-b was only partially supported.

<u>Hypothesis II-c.</u>

The hypothesis that the Obsessive-Compulsive symptom dimension would be

higher for both genders and all age groups was partially supported. The Obsessive-

Compulsive symptom dimension was again significantly higher overall for both genders

(see Table 7). With regard to age categories, females in the study sample across all age

categories and males in the study sample who were in the age categories spanning 65 to

84 scored higher on the Obsessive-Compulsive symptom dimension. Raw score means

for each gender and age category in the study sample were significantly elevated with

published BSI adult non-patients (See Table 9), with the exception of the older males in

the study sample who were in the 85-89 and 90-95 age categories.

<u>Hypothesis II-d.</u>

Hypothesis II-d stated that the Phobic Anxiety symptom dimension would be

higher for both genders and across all age groups. This hypothesis was not supported.

The symptom dimension for the study sample was not statistically different from the BSI

published raw score means for either gender. It was however, statistically higher for

those participants who were in the 85-89 age category. Table 9 provides statistical information regarding the Phobic Anxiety symptom dimension with regard to gender and age groups as compared with the BSI published adult non-patients raw score means. Individuals in the study group were not statistically different on this symptom dimension from the total adult non-patient population with the exception of those male participants in the 85-89 age category.

Hypothesis III

A varimax factor analysis found items from the Brief Symptom Inventory loaded on to six distinct factors. The factor loadings of the six distinct factors are reported in Table 10, along with the item number and wording of each item involved in the factor. These factors together were comprised of 41 BSI items and accounted for 50% of the variance. Table 11 contains the 12 items that did not load on any of these six factors.

The first factor generated reflects most closely the Obsessive-Compulsive symptom dimension of the Brief Symptom Inventory. It is composed of all six items from the Obsessive-Compulsive symptom dimension as well as items 6, 38, and 53. For purposes of discussion related to the current study, this new factor has been labeled Obsessive-Compulsive-Revised (OC-R).

Table 9

BSI Symptom Dimension Significance by Age Group

		BSI			
Group	$\underline{n}$	$\underline{M}$	$\underline{M}$	$\underline{t}$	$\underline{p}$
SOM symptom dimension					
Males					
65-69	44	0.23	0.33	1.98	.06
70-74	43	0.23	0.36	2.19	.03
75-79	44	0.23	0.50	2.94	**
80-84	24	0.23	0.50	1.93	.07
85-89	9	0.23	0.46	1.39	.20
90-95	3	0.23	0.29	0.39	.73
Females					
65-69	66	0.35	0.50	1.97	.05
70-74	68	0.35	0.44	1.67	.10
75-79	76	0.35	0.44	1.56	.12
80-84	57	0.35	0.57	2.92	.07
85-89	39	0.35	0.40	0.64	.52
90-95	16	0.35	0.66	2.42	.03
O-C symptom dimension					
Males					
65-69	44	0.37	0.66	3.94	**
70-74	43	0.37	0.59	2.88	**
75-79	44	0.37	0.94	5.85	**
80-84	24	0.37	0.78	2.95	**
85-89	9	0.37	0.69	1.66	.13
90-95	3	0.37	0.78	1.39	.30
Females					
65-69	66	0.48	0.79	3.65	**
70-74	68	0.48	0.78	4.08	**
75-79	76	0.48	0.86	4.13	**
80-84	57	0.48	1.04	4.85	**
85-89	39	0.48	0.84	3.32	**
90-95	16	0.48	0.96	3.64	**

Table 9 (cont.)
BSI Symptom Dimension Significance by Age Group

Group	n	BSI M	M	t	p
		PHOB symptom dimension			
Males					
65-69	44	0.11	0.09	-0.68	.50
70-74	43	0.11	0.10	-0.22	.83
75-79	44	0.11	0.20	1.67	.10
80-84	24	0.11	0.28	1.41	.17
85-89	9	0.11	0.02	-3.95	**
90-95	3	0.11	0.20	0.45	.70
Females					
65-69	66	0.22	0.24	0.40	.70
70-74	68	0.22	0.30	1.23	.22
75-79	76	0.22	0.19	-0.81	.42
80-84	57	0.22	0.25	0.44	.67
85-89	39	0.22	0.20	-0.39	.70
90-95	16	0.22	0.34	1.09	.30
		PSY symptom dimension			
Males					
65-69	44	0.15	0.31	2.54	.05
70-74	43	0.15	0.18	0.66	.51
75-79	44	0.15	0.38	3.18	**
80-84	24	0.15	0.34	2.05	.05
85-89	9	0.15	0.16	0.06	.95
90-95	3	0.15	0.27	0.87	.47
Females					
65-69	66	0.17	0.32	2.50	.02
70-74	68	0.17	0.33	2.68	.01
75-79	76	0.17	0.36	3.73	**
80-84	57	0.17	0.44	3.61	**
85-89	39	0.17	0.30	1.85	.07
90-95	16	0.17	0.38	1.37	.19

Note. **$p<.01$

Table 10

Revised BSI Symptom Dimensions For Study Group

Item no.	Item Description	BSI Sym. Dim.	Factor Load
	O-C-R symptom dimension (9 items)		
5	Trouble remembering things	O-C	.721
32	Your mind going blank	O-C	.721
36	Trouble concentrating	O-C	.714
26	Having to check and double-check what you do	O-C	.641
53	The idea that something is wrong with your mind	PSY	.626
27	Difficulty making decisions	O-C	.588
15	Feeling blocked in getting things done	O-C	.466
38	Feeling tense or keyed up	ANX	.459
6	Feeling easily annoyed or irritated	HOS	.457
	DEP-R symptom dimension (7 items)		
16	Feeling lonely	DEP	.763
17	Feeling blue	DEP	.709
14	Feeling lonely even when you are with people	PSY	.690
35	Feeling hopeless about the future	DEP	.521
18	Feeling no interest in things	DEP	.446
21	Feeling that people are unfriendly or dislike you	I-S	.433
42	Feeling very self-conscious with others	I-S	.400
	PAR-R symptom dimension (8 items)		
46	Getting into frequent arguments	HOS	.735
48	Others not giving you proper credit for your achievements	PAR	.649
10	Feeling that most people cannot be trusted	PAR	.580
13	Temper outbursts that you could not control	HOS	.548
4	Feeling others are to blame for most of your troubles	PAR	.512
20	Your feelings being easily hurt	I-S	.491
51	Feeling that people will take advantage of you if you let them	PAR	.472
24	Feeling that you are watched or talked about by others	PAR	.433

Table 10 (cont.)

Revised BSI Symptom Dimensions For Study Group

Item no.	Item Description	BSI Sym. Dim.	Factor Load
	ANX-R symptom dimension (6 items)		
8	Feeling afraid in open spaces or on the streets	PHOB	.702
12	Suddenly scared for no reason	ANX	.666
45	Spells of terror or panic	ANX	.657
31	Having to avoid certain things places or activities because they frighten you	PHOB	.649
28	Feeling afraid to travel on busses, subways or trains	PHOB	.568
19	Feeling fearful	ANX	.500
	SOM-R symptom dimension (7 items)		
29	Trouble getting your breath	SOM	.667
7	Pains in heart or chest	SOM	.652
23	Nausea or upset stomach	SOM	.567
37	Feeling weak in parts of your body	SOM	.542
1	Nervousness or shakiness inside	ANX	.514
2	Faintness or dizziness	SOM	.451
33	Numbness or tingling in parts of your body	SOM	.433
	ADD-R symptom dimension (4 items)		
34	The idea that you should be punished for your sins	PSY	.719
43	Feeling uneasy in crowds such as shopping or at a movie	PHOB	.611
52	Feelings of guilt	ADD	.546
50	Feelings of worthlessness	DEP	.419

The three additional items which are from other symptom dimensions seem to suggest a broader continuum of the Obsessive-Compulsive symptom dimension in that feeling states as well as tangible behaviors (checking and double-checking) are reflected in this dimension. Item 6 is from the Hostility symptom dimension ("Feeling easily annoyed or irritated"), while item 38 is from the Anxiety symptom dimension ("Feeling tense or keyed up"). Item 53 is from the Psychoticism symptom dimension ("The idea that something is wrong you're your mind").

Table 11
BSI Items not included in Revised Symptom Dimensions

Item no.	Item Description	BSI Sym. Dim.
3	The idea that someone else can control your thoughts	PSY
9	Thoughts of ending your life	DEP
11	Poor appetite	ADD
22	Feeling inferior to others	I-S
25	Trouble Falling asleep	ADD
30	Hot or cold spells	SOM
39	Thoughts of death or dying	ADD
40	Having urges to beat, injure or harm someone	HOS
41	Having urges to break or smash things	HOS
44	Never feeling close to another person	PSY
47	Feeling nervous when you are left alone	PHOB
49	Feeling so restless you couldn't sit still	ANX

The second factor incorporates four of the seven items from the Depression symptom dimension while adding item 14 from the Psychoticism symptom dimension and item 21 from the Paranoid symptom dimension. It has been labeled Depression-Revised (DEP-R). Item 14 ("Feeling lonely even when you are with other people") and item 21 ("Feeling that people are unfriendly or dislike you") add an interpersonal component to the BSI's construct of Depression (See Appendix C) which is otherwise not present.

The third factor, with eight items, is most similar to the Paranoid Ideation symptom dimension. It incorporates all five items from the Paranoid Ideation symptom dimension and has been labeled Paranoid Ideation-Revised (PAR-R). Two items of the remaining three are from the Hostility symptom dimension. They are item 46 ("Getting into frequent arguments") and item 13 ("Temper outbursts you could not control"). The final item is from the Interpersonal Sensitivity symptom dimension and is item 20 ("Your feelings being easily hurt"). Again, the inclusion of these three items adds a fullness to the original symptom dimension which focuses on feelings of hostility, projective thought, and suspiciousness.

Factor four consists of items associated with the Phobic Anxiety and Anxiety (Panic Anxiety) symptom dimensions. Of the six items that load on this factor, there are three items from each symptom dimension. This new factor has been labeled Anxiety-Revised (ANX-R). The operative concept in each of these six items is fear rather than

restlessness or feeling nervous, tense, or uneasy which is the focal point of the remaining six items that did not load on this factor.

Factor five aligns with the Somatization symptom dimension with six of this symptom dimension's seven items loading on this factor. It has been labeled Somatization-Revised (SOM-R). One additional item that loaded on Factor 5 is from the Anxiety symptom dimension. It is item 1 ("Nervousness or shakiness inside"). The only item from the Somatization symptom dimension that did not load on this factor was item 30 ("Hot or cold spells").

Factor six with its four items is distinct from the published symptom dimensions of the Brief Symptom Inventory and has one item each from the Psychoticism, Depression and Phobic Anxiety symptom dimensions as well as one item from the Additional Items category. This new factor has been labeled as Additional-Revised (ADD-R). This factor has a religious component (item 34) combined with items that center around guilt, feelings of worthlessness, and uneasiness in crowds.

The twelve items that did not load significantly on any of these six factors are listed in Table 11. The table contains three of the "Additional" BSI items which were not expected to load on any factor, plus individual items from all BSI dimensions except Obsessive-Compulsive and Paranoid Ideation.

Hypothesis III-a.

Hypothesis III-a stated that the Depression and Anxiety symptom dimensions would be positively correlated for those individuals whose scores were elevated on these dimensions. Elevation on these symptom dimensions was defined as having a score that was one standard deviation above the raw score mean for the entire study sample. With regard to the Depression symptom dimension, 62 participants in the study sample had a score that was one standard deviation over the raw score mean for all participants. On the Anxiety symptom dimension, 68 had a score that was one standard deviation above the raw score mean for the study sample. All together, 94 participants had elevated scores on either or both the Depression and Anxiety symptom dimensions. The Pearson Product Moment Correlation Coefficient was $r = .27$ ($p < .01$). A significant but low correlation is indicated between these two symptom dimensions.

Hypothesis IV

Hypothesis IV dealt with the external factors which might lead to loading on the various symptom dimensions. Each subsection of Hypothesis IV was tested through the use of an independent sample t test.

Hypothesis IV-a.

Hypothesis IV-a posited that individuals who state that aches and pains interfere with daily activities either rarely or occasionally would have lower raw score means on all nine symptom dimensions than those who stated aches and pains interfered with their

daily activities either often or daily (See Table 12). This hypothesis was partially

supported. Item two from the Demographic and Activity Questionnaire was used to

measure the construct. Those who stated that aches and pains interfered either often or

daily had significantly higher scores on seven symptom dimensions than the other group.

However, respondents were statistically similar (not significantly different at the .05

level) on the remaining two of the nine symptom dimensions: Hostility, and Phobic

Anxiety.

Table 12
BSI Symptom Dimension Significance By Reported Aches and Pains

BSI dimension	Rarely or occasionally (n=397)		Often or daily (n=89)			
	M	SD	M	SD	t	p
SOM	0.37	0.43	0.86	0.67	-6.60	**
O-C	0.76	0.64	1.09	0.81	-3.61	**
I-S	0.39	0.54	0.58	0.74	-2.28	.03
DEP	0.32	0.49	0.60	0.73	-3.42	**
ANX	0.30	0.43	0.52	0.61	-3.29	**
HOS	0.28	0.35	0.38	0.51	-1.89	.06
PHOB	0.20	0.42	0.26	0.43	-1.10	.27
PAR	0.31	0.44	0.57	0.76	-3.05	**
PSY	0.29	0.43	0.52	0.59	-3.38	**

Note. ** $p < .01$

Hypothesis IV-b.

Hypothesis IV-b posited that individuals who reported an average family income

during the last five years of their adult working life of $24,000 or more would have lower

scores on all symptom dimensions than those who had less than $24,000 income level.

This hypothesis was partially supported. Three hundred and twenty one participants

stated that they had an average family income of $24,000 or more during the past five

years of their adult working lives, and 108 noted that their income for that time period

was less than that amount.

Table 13 demonstrates that respondents of different income levels were

Table 13
BSI Symptom Dimension Significance By Income Level

BSI dimension	< $24,000 (n=108)		$24,000+ (n=321)		t	p
	M	SD	M	SD		
SOM	0.59	0.62	0.42	0.46	2.73	**
O-C	0.94	0.79	0.78	0.63	1.82	.07
I-S	0.54	0.63	0.38	0.53	2.46	.02
DEP	0.46	0.62	0.33	0.50	2.03	.04
ANX	0.43	0.57	0.30	0.42	2.05	.04
HOS	0.30	0.44	0.30	0.37	0.30	.95
PHOB	0.25	0.42	0.18	0.39	1.72	.09
PAR	0.53	0.67	0.28	0.42	3.51	**
PSY	0.46	0.59	0.29	0.41	2.81	**

Note. ** $p < .01$

statistically different on all symptom dimensions with the exception of the Obsessive-Compulsive, Hostility, and Phobic Anxiety symptom dimensions. Individuals who averaged $24,000 or more during the last five years of their adult working lives scored significantly lower on the remaining six dimensions than those whose income was lower than $24, 000 the last five years of their adult working lives.

Hypothesis IV-c.

Hypothesis IV-c stated that those study participants who were currently married would have lower scores on all symptom dimensions. This hypothesis was partially supported (See Table 14). Marital status did discriminate among respondents on eight of

Table 14
BSI Symptom Dimension Significance By Marriage Status

BSI dimension	Married (n=224)		Unmarried (n=264)		t	p
	M	SD	M	SD		
SOM	0.40	0.47	0.51	0.56	-2.54	.01
O-C	0.71	0.54	0.91	0.78	-3.31	**
I-S	0.35	0.49	0.49	0.66	-2.60	.01
DEP	0.24	0.39	0.48	0.64	-5.20	**
ANX	0.28	0.40	0.38	0.52	-2.43	.02
HOS	0.34	0.42	0.25	0.35	2.47	.01
PHOB	0.13	0.29	0.28	0.49	-4.08	**
PAR	0.32	0.49	0.39	0.55	-1.56	.12
PSY	0.24	0.38	0.41	0.52	-4.19	**

Note. ** p < .01

the nine symptom dimensions. Marital status did not affect scores on the Paranoid

Ideation symptom dimension.

Hypothesis IV-d.

Hypothesis IV-d pertained to the correlation between level of daily activity and

the Depression and Paranoid Ideation symptom dimensions. It was hypothesized that

there would be a negative correlation between these two symptom dimensions and daily

activity levels. Items seven (How often do you get out of the house?) and nine (How

often do you participate in some type of physical exercise?) from the Demographic and

Activity Questionnaire were summed to determine level of daily activity. There are 6

possible responses in item seven. Response "A" (Every day, no matter what),was scored

5 points with response "F" (About once a month) scored 0 points.

Item nine asked respondents how often they participated in some type of physical

exercise. There were four possible responses. Response "A", "every day", was scored 5

points while response "D", "less than once per week", was scored 1 point. The highest

score for each participant was 10 points, indicating the highest level of daily activity. The

lowest possible was one point, indicating a very low level of daily activity. Any

individual who did not complete either one or both of these items did not receive a score

and was not included in the statistical analysis for this hypothesis. The Pearson Product

Moment Correlation between activity level and the Depression symptom dimension was r

= -.13 (p <.01). The correlation of daily activity level and the Paranoid Ideation

symptom dimension was r = -.10 (p = .03). This hypothesis was supported.

Hypothesis IV-e.

Hypothesis IV-e stated that the amount of work or volunteer activities of the

participants would be negatively correlated to the Hostility and Phobic Anxiety symptom

dimensions. Item 6 from the Demographic and Activity Questionnaire asked respondents

how many hours per week they worked or volunteered outside the home. The Pearson

Product Moment Correlation was used to test for the correlation between work or

volunteer hours and the Hostility symptom dimension. The correlation coefficient is r = -

.01 (p = .90). The coefficient between work or volunteer activity and the Phobic Anxiety

symptom dimension is r = .05 (p = .30). This hypothesis was not supported.

Hypotheses IV-f.

Hypothesis IV-f stated that level of interaction with others would be negatively

correlated to the Interpersonal Sensitivity symptom dimension. This hypothesis was

confirmed. Level of interaction with others was assessed through the use of item 8 from

the Demographic and Activity Questionnaire. This item asked how often respondents

spoke to friends or family members. Response choices ranged from several times a day

to less than once per week. Response choices were coded as a "5" if the individual spoke

several times a day to friends and family and a "1" if they spoke to friends or family

members less than once per week. Level of interaction with others was negatively

correlated with the Interpersonal Sensitivity symptom dimension ($\underline{r}$ = -.12, $\underline{p}$ = .01).

CHAPTER FIVE

DISCUSSION

The purpose of this study was to determine if the raw score means on the nine

symptom dimensions of the Brief Symptom Inventory are appropriate for use with a

mature adult population living independently. Currently the symptom dimension raw

score means of the Brief Symptom Inventory are based on an adult population who are at

a minimum 20 years younger than the study sample. If the original BSI raw score means

are not appropriate with this age group, then age appropriate raw score means should be

determined and used with this population.

Hypothesis I

Hypothesis I sought to establish the raw score means for the study sample. After

these raw score means had been determined, these obtained values were compared against

Brief Symptom Inventory published raw score means for adult non-patients and

psychiatric outpatients, as well as other published raw score means for similar age groups.

In this way, it could be determined if the study sample raw score means are statistically

similar or different from previously published raw score means. If the study

sample raw score means are similar to previously published values, then this adds to the significance of those findings. It also reiterates the importance of using raw score means that are shown to be statistically valid for the population being assessed. If the study sample raw score means are statistically different from previously published findings, it suggests that more research on the Brief Symptom Inventory with older adults may be needed.

The raw score means for the study population were more closely similar to the published Brief Symptom Inventory raw score means for adult non-patients and to the Hale et al. (1984) published raw score means. This would suggest that these published values would be of more assistance in accurately assessing a mature individual than using De Leo et al.'s (1993) raw score means or the BSI adult psychiatric outpatient raw score means, for example. As would be expected, given the inevitable differences between study samples, there are differences between various symptom dimensions for the published raw score means noted above as well as statistically significant differences between study sample raw score means and raw score means published by De Leo (1993).

With regard to the study sample and the published raw score means for adult non-patients, there were significant differences on the Obsessive-Compulsive and Psychoticism symptom dimensions for both males and females. The Obsessive-Compulsive dimension is comprised of six items which focus on general cognition performance and deficits, as well as actions that are experienced as impulsive or

unrelenting. Hale et al.'s (1984) published raw score mean for the Obsessive-Compulsive

dimension were similar to the study sample for both males and females, suggesting that

for those 65 and older, memory and its associated frustrations are a concern. Indeed

memory complaints have become such a common concern among older adults that

researchers and clinicians who work with such individuals have recommended the

development of a new diagnostic category, "Age Related Cognitive Decline" (ARCD) to

be included in the Diagnostic and Statistical Manual of Mental Disorders (Caine, 1993).

The proposed criteria for ARCD include both memory dysfunction and subjective

complaints (Crook, Bartus & Ferris, 1986). Prevalence rates of 34.9% and 55.8% have

been reported in random samples of elderly adults (Lane & Snowdon, 1989; Reinikanen

et al., 1990). This research suggests that it may be "normal" for older individuals to

experience a decline in their memory performance and to express their frustrations

regarding this decline.

The Psychoticism dimension was also elevated for males and females in the study

sample as compared to the published raw score means for adult non-patients. This

dimension was developed to provide for a graduated continuum from mild interpersonal

alienation to dramatic psychosis. There was a significant difference between the adult

non-patient raw score means for both males and females and the raw score means for both

males and females who make up the study sample. Review of the demographic

information regarding the study sample (See Tables 3 through 5) suggests that for the

most part these individuals are active, speaking with others, exercising, and getting out of their homes at least weekly. It appears that these individuals have contact with others on an interpersonal level because they wish to do so, whether this is at a dance, luncheon or bingo game. Hale et al.'s (1984) published raw score means for this dimension are more similar to the study sample. What these results suggest is that mature and elderly adults, in spite of their level of activity, may be feeling less connected emotionally with others, perhaps due to the death of friends or family or a change in relationships due to proximity or health. They may also be feeling the effects of the aging process with regard to their cognitive functioning.

Hypothesis II

The Somatization symptom dimension for males in the study sample was elevated as compared with adult male and female non-patients. This dimension reflects distress arising from perceptions of bodily dysfunction. The raw score mean for both males and females in the study sample was statistically similar to Hale et al.'s (1984) raw score mean for both genders. This finding may be a result of both genders not only being more aware of the aging process and its effects on their physical functioning but actually experiencing bodily dysfunction in more significant ways than their younger adult counterparts. Therefore respondents would endorse a larger number of items on this symptom dimension.

The Psychoticism symptom dimension was elevated for both males and females in the study sample who were in the age categories spanning 65 to 84. This symptom dimension appears to measure feelings of isolation or emotional separateness from others in this particular study sample. It is hypothesized that as mature individuals age, they are losing friendships and relationships due to death or impaired health (either self or others) for example, and this contributes to the responses noted above. It is believed that those individuals 85 and over, both male and female, constituted too small of a sample size to achieve statistical significance.

While the hypothesis that the Obsessive-Compulsive symptom dimension would be higher for both genders and across all age groups was not fully supported, it should be noted with regard to age categories, that females in all age categories and men ages 65-84 had higher scores on this symptom dimension. The Obsessive-Compulsive symptom dimension for this study sample appears to measure memory performance. It appears that females across all age categories have concerns regarding their memory performance, as do men aged 65-84. It is felt that the small sample size of men who are in the 85-89 and 90-95 age categories, affected the statistical significance of the data.

The current study sample and Hale et al.'s (1984) study participants were statistically similar on the majority of symptom dimensions. One symptom dimension on which the two sample populations differed, however, was the Depression symptom dimension. Hale et al. (1984) state that 71% of their respondents were found in

retirement centers with the remaining 29% found at medical offices, nursing homes and lunch programs for the elderly. The current study population was recruited in churches and retirement and senior centers because it was felt that locating respondents at medical facilities and nursing homes would confound the overall results of the study, as the participants would be less homogenous. It may be that the current study population is more active physically than Hale et al.'s(1984) respondents and this could account for the differences in raw score means for this symptom dimension. However, a difference in health or activity like exercise should also have had a statistically significant effect on the Somatization dimension, which was not detected by this study.

There are significant differences between the study sample raw score means and those values published by De Leo et al. (1993). Males in the two groups differed statistically on seven of the symptom dimensions. Only two symptom dimensions, Hostility and Paranoid Ideation, did not demonstrate statistical differences between the two groups of males. With regard to females, women in the study group were similar to their Italian counterparts on only the Somatization and Paranoid Ideation symptom dimensions.

Some of these differences may be due to the way in which the subjects were recruited to participate in the individual studies. De Leo et al. (1993) interviewed individuals aged 75 and older in their homes while the present study involved individuals 65 and older who were recruited to participate in settings outside of their homes.

Additionally there may be cultural differences between Italians and Texans that affect the data.

With regard to the similarity of raw score means for the two groups of women on the Somatization symptom dimension, it is hypothesized that this may be due to the universal process of aging and its effects. Culturally, women of the generation being discussed have a greater likelihood of having been taken advantage of and not being recognized for what they have achieved, in or out of the home. This cultural experience may manifest itself on the Paranoid Ideation scale, which contains items bearing on these feelings and perceptions. Italian women expressed higher levels of these items than American women. This may represent either a higher actual level of exploitation in the Italian culture, a higher perception of such exploitation, or some other cultural factor at work. Therefore, it would appear that using normative data from Hale et al. (1984) would be recommended if one were working with American mature and elderly individuals.

Hypothesis III

It appears that there are six distinct factors that capture symptom dimensions that have validity with regard to individuals 65 and older living independently. Five of those factors share at least half or more of the original items that make up five symptom dimensions after which they are named. These five factors are: Obsessive-Compulsive, Depression, Somatization, Paranoid Ideation, Anxiety (Panic and Phobic). The sixth is a distinct factor incorporating one item each from four separate symptom dimensions.

The Hostility symptom dimension does not appear to be particularly appropriate for this population, although three items from the Hostility symptom dimension did load onto two new factors. It is suggested that a test-retest reliability study be conducted with a similar population sample and compared against the Brief Symptom Inventory to determine if the 42 items that make up these six new factors are in fact accurately assessing a mature population.

Eleven items from the Brief Symptom Inventory did not load on the component matrix. With regard to category, three items are from the Psychoticism symptom dimension, three from the Additional Items category, two from Hostility, and one each from the Depression, Somatization, Anxiety, and Phobic Anxiety symptom dimensions. For this population, for example, thoughts of ending one's life (Item 9) does not appear to provide additional clinical information when assessing for the presence of depression. Assessing for frank delusional symptoms (Item 3) also does not seem as pertinent to this population as do items addressing loneliness and emotional distance or disconnectedness from others. Two of the five items from the Hostility symptom dimension do not seem to have relevance for this population. These items focus on the physical expression of anger, directed either at objects or toward others. Given the age of the population sample, it is thought that the participants may have learned to cope with aggressive urges in a different manner, therefore these two items may not be as relevant to them.

Derogatis (1993) noted in the Brief Symptom Inventory Manual that the four

additional items that are part of the inventory did not load on any particular symptom

dimension but were included because they provided additional clinical information. Only

one item, "Feelings of Guilt" (Item 52) is relevant statistically to the population sample

because it loaded on to factor six (ADD-R). The other three items "Poor Appetite" (Item

11), "Trouble falling asleep" (Item 25), and "Thoughts of death and dying" (Item 39) do

not have statistical relevance to the six new factors.

Hypothesis III-a addressed correlations between the Depression and Anxiety

symptom dimensions of the Brief Symptom Inventory. Researchers have found that

significant correlations between these two constructs do exist. For example, Smith,

Colenda, and Espeland (1994) found significant correlations between anxiety and

depression in community dwelling adults aged 60-97. They found that even with

individuals who reported low levels of anxiety and depression there was still a significant

correlation between these two factors. Smith et al. (1994) also found there was an inverse

association between anxiety, age and general health measures, but that the anxiety state

had a direct relationship with depression, life stress events and medical comorbidity. The

significant although low correlation between the Depression and Anxiety symptom

dimensions for those of the study sample adds weight to these previous findings. The

correlation between these two symptom dimensions would indicate that those individuals

who are experiencing elevated levels of depression also feel a generalized state of

anxiety. These feelings of anxiety may include cognitive components such as feeling apprehensive but also somatic complaints such as restlessness. The data suggest that the combination of depression and anxiety would seem to be mutually reinforcing. Depression begets anxiety, and vice versa.

Hypothesis IV

Hypothesis IV-a.

It was found that there were considerable differences between those whose aches and pains rarely or occasionally interfere with daily activities, and those whose aches and pains interfere with daily activities either often or daily. Scores on the Hostility and Phobic Anxiety symptom dimensions were similar for both groups while those individuals who were experiencing aches and pains on a frequent or daily basis had higher scores on the remaining seven symptom dimensions. It appears that those who are coping with physical illness or the effects of aging also struggle with symptoms of depression, anxiety, interpersonal sensitivity, memory difficulties, and feelings of suspiciousness. Thus, it would be helpful for mental health and medical practitioners to assess for the frequency of aches and pains as a diagnostic indicator for the presence of other psychological symptoms. Interestingly, those who experience pain on a frequent basis do not have higher scores on the Hostility symptom dimension. Perhaps the recognition of (or resignation to) the fact that frequent pain is inevitable accounts for this result.

Hypothesis IV-b.

It was found that individuals who reported an average family income of $24,000 or more during their last five years of their adult working life had lower raw score means on six symptom dimensions of the BSI. The two groups were not significantly different on three symptom dimensions, Obsessive-Compulsive, Hostility, and Phobic Anxiety.

However, the data indicate that those individuals who had an income less than $24,000 per year during the last five years of their adult working life experienced more physical symptoms, more symptoms of depression and generalized anxiety, loneliness, discomfort with social interactions, and suspiciousness than did their higher income counterparts. It may be that those in the lower income group did not have consistent access to medical care, perhaps due to transportation, or financial constraints, including the lack of medical insurance, prior to retirement. If this were the case, then they may be experiencing greater levels of medical or physically related difficulties which could lead to an increase in psychological symptoms.

Similar to the finding in Hypothesis IV-a, there appears to be no statistically significant difference between individuals of the two income levels with regard to scores on the Hostility and Phobic Anxiety symptom dimensions. If the lower income group is experiencing increased medical or physical symptoms, it is not manifested in feelings of anger. Additionally, income level does not appear to interact with avoidance of places, people, or certain activities. Finally, memory performance does not appear to be related

to income level. This is an interesting finding in that the status of one's health appears to affect memory performance to some degree and those in the lower income group scored higher on the Somatization symptom dimension than did those who had a higher income level prior to retirement. Further collection of data would be indicated to determine what demographic factors, if any, have an effect on memory performance and related concerns.

Hypothesis IV-c.

The researcher hypothesized that those individuals who were married would have lower scores on the symptom dimensions overall due to the support that a spouse can provide, emotionally as well as financially. Those that were never married, widowed or divorced were hypothesized to have less daily interpersonal support, thus resulting in more symptom endorsement overall. The hypothesis was born out with the exception of the Paranoid Ideation symptom dimension. It would seem that marital status does not affect the presence or absence of suspiciousness.

The Hostility symptom dimension was higher for married individuals than for those who are not currently married. The Hostility symptom dimension is fairly straightforward in its focus on the internal and external feelings of anger and the discharge of this emotional through external means. Feeling easily irritated, having uncontrollable temper outbursts, or getting into frequent arguments also make up the item content of this symptom dimension. While this study did not ask individuals if they were happily married, and there are certainly other factors that would fuel anger in older

individuals, it would seem from the response pattern that living with a spouse may be more frustrating than either living alone or than being unmarried.

Hypothesis IV-d.

The correlation between daily activity level and the Depression and Paranoid Ideation symptom dimensions were found to be small but statistically significant. In general, the study sample was quite active with over half of participants exercising and getting out of their home daily or generally every day. Therefore, it appears that daily activity may ward off depression and paranoid ideation to some degree but not to the extent theorized. It may be that the aging process and the social and physical changes that it brings mitigate some of the positive effects of daily activity levels.

Hypothesis IV-e.

Amount of work or volunteer activity was not correlated to the Hostility or Phobic Anxiety symptom dimensions of the Brief Symptom Inventory. It was hypothesized that there would be a negative correlation and that these outside activities would decrease the presence of these emotions. While work or volunteer activities may provide a sense of satisfaction, it does not appear to be related to feelings of frustration regarding others or the fear of locations or unknown individuals.

Hypothesis IV-f.

The Interpersonal Sensitivity symptom dimension centers on feelings of personal inadequacy and inferiority. It was postulated that the greater level of interaction

participants had with others, the lower they would score on this dimension. This hypothesis was confirmed. Thus, it would seem that in general being with other people is a positive experience, perhaps helping to maintain self-esteem and feelings of competency.

<div align="center">Limitations of the Study</div>

Recruitment Challenges

Every attempt was made to achieve a random sample of those individuals who qualified for inclusion in the study population. Every attempt was also made duplicate the population of the United States with regard to age, gender and race for individuals who are 65 and older. Sampling difficulties affected the overall results. Numerous agencies, organizations, retirement facilities, and churches throughout the state of Texas as well as other states in the United States with a proportionally larger population of individuals 65 and older were contacted to determine their willingness to have their members/residents or clients participate in the study. On average for every 7 to 10 organizations contacted, only 4 or 5 were willing to receive materials explaining the study, and of those, on average only 1 or 2 were willing to consider allowing their members/residents or clients to participate. Reasons given most often for declining to review the materials or allowing their seniors to participate was confidentiality or liability for the organization if in some way confidentiality was violated. Many times agencies, organizations and other retirement facilities had a firm policy that researchers were not

allowed to have contact with their members/residents or clients.   Individuals that were

inclined to allow the researcher access to their members/clients or residents often had to

advocate for the researcher with their superiors or board members regarding the study.

This was frequently a time and energy consuming process. Therefore, attempting to

randomly sample organizations, agencies, and other places where individuals 65 and

older would more easily be found was not possible.

Once the researcher was allowed contact with the organizations' individuals, an

announcement was made of the time when she would be present. Flyers were posted in

advance of the researcher's visit to the location and members/clients or residents self-

selected their participation in the study. Therefore, a random sample of the individuals in

the location did not occur. Hence, the individuals who chose to participate may not be

representative of individuals 65 and older living independently. It was not feasible for the

author to locate individuals who met the study criteria for inclusion but who spend a

majority of their time at home or do not attend church functions or senior citizen groups,

for example. In order to collect data in a relatively time-efficient manner, locating places

where larger groups of individuals 65 and older living independently could be found was

critical. Therefore, individuals who do not participate in group activities may or may not

be as physically or emotionally healthy as those individuals who do participate in such

activities.

Consent Form

The consent form as sanctioned by Texas Woman's University's Human Subject Committee also contributed to the lack of a random population for this study. Individuals of this age range are often quite cautious regarding the gathering of any personal information and the ways in which that information will be used. For those individuals who were willing to participate in the study and felt comfortable with the anonymity of their responses, having to sign their names on the consent form was often a stumbling block to completion of the instruments. More troublesome for those participating was the language of the consent form with regard to possible discomfort as a result of completing the instruments. Individuals were concerned about why they would need to pay a professional if they incurred discomfort as a result of participating in the study and why their facility/organization would allow research to take place if discomfort could occur. Approximately 20 % of the individuals who originally agreed to participate, declined to do so after reading the consent form.

Recruitment of Males and Minorities

In addition to the factors noted above, it was difficult to locate males 65 and older of all races, as well as Hispanic individuals who were fluent in both spoken and written English. While there are fewer males than females among individuals 65 years and older in the United States (See Table 1), the ratio of males to females present in all organizations to which this researcher achieved access was much smaller. While the

approximate percentage (30%) of individuals who declined to participate was about the same for both males and females, access to fewer males overall made it difficult to have a normative age sample for males across all age categories.

While the Brief Symptom Inventory is published in the Spanish language, it was decided not to translate the Demographic and Activity Questionnaire and Consent Form into the Spanish language. This decision was made in order to avoid confounding the validity of the results. Auer, Hampel, Moeller and Reisberg (2000) suggested that no instrument should be applied to another culture without repeating the process of translation, ensuring cultural adaptation, and developing normative values for the population to be served. The time constraints of this study did not allow for this process to be completed with the Demographic and Activity Questionnaire.

As with males, the researcher did not encounter large percentages of Hispanic males or females, either English or Spanish speaking. Attempting to locate Hispanic individuals through the Catholic church or other organizations that primarily serve this population was not successful as the organizations themselves declined to allow the researcher access to their member/clients or residents.

<u>U.S. Census</u>

This study was proposed in May, 1999, with data collection beginning immediately. During a portion of the time that data collection was ongoing, the 2000 U.S. Census was being conducted. At the time that data collection was completed, new

data regarding individuals 65 and older had not been disseminated. Without this information, it is difficult to determine if the racial, gender, and age compositions for this population have changed or if they are substantially similar to figures from the 1990 census.

Sample Bias

The various recruitment challenges discussed above appear to have skewed the study sample toward higher income levels and higher education levels. It is difficult to be certain what the level of skew might be, given that the U.S. Census figures available do not catalog education level among these age groups. Nonetheless, the results cited in Table 3 appear to be well above the expected education level of a general sample, with 44.8 percent of the individuals in the sample having at least a Master's degree, while belonging to a generation in which advanced degrees were not especially common. It is suggested that the complex wording of the required consent form was more threatening to those seniors who did not have advanced education. In addition, perhaps those seniors who did have advanced education had some additional motivation to participate, both due to familiarity with the process and due to willingness to help the researcher achieve her own terminal degree.

Conclusion

The results of this study are particularly relevant for those individuals who are in the age range of the study sample. There is an important difference between various age

groups and how they score on the Brief Symptom Inventory, thus the significant value of published norms for adolescents, college students and younger adults, and now older adults. Earlier attempts to norm the Brief Symptom Inventory for the mature and elderly population have indicated that this population's response patterns are quite different than those of younger adults. This study suggests the same.

If appropriate raw score means are not used for the older adults, the individuals are subject to misdiagnosis. Medically, a misdiagnosis based on inappropriate norms for the individual could result in overmedication or prescribing the incorrect medication. Therapeutically, the mental health professional could create a treatment plan based on inaccurate data resulting in inappropriate interventions.

Secondly, it is important that the Brief Symptom Inventory be used with individuals where it has statistical relevance. For example, the BSI is currently being used in nursing homes and assisted living facilities to assist in determining an elder's level of psychological functioning. It is believed that some items in the BSI are not appropriate for individuals living in nursing homes or assisted living facilities. The directions of the Brief Symptom Inventory instruct that individuals should respond to the items, keeping in mind how they have been feeling during the past seven days, including the day they are completing the inventory. Individuals who are in nursing homes or in assisted living facilities are not likely to be in crowds, shopping, or attending movies as

Item 43 inquires about. Nor are they likely to be traveling by bus, subways, or trains as Item 29 asks.

Individuals in nursing homes or assisted living facilities are watched closely by staff as it has been determined either by that individual, their physician, or in many cases, family members that they need assistance with the daily activities of living. Item 24, one of the items on the Paranoid Ideation symptom dimension, asks if the respondent feels as if they are being watched or talked about by others. This would certainly be the case in such facilities and the respondent would be accurate. These three items demonstrate how an individual's residential environment can affect the outcome of an assessment. When assessing individuals in an assisted living or nursing home setting, it would seem that using assessment instruments which have been normed for that population would be in the best interests of all concerned. Generalizing or interpolating an individual's responses using data normed on younger adults would not provide an accurate picture of the individual's functioning as measured by the Brief Symptom Inventory.

The results of this study also indicate that there are items that have increased relevancy for the older adult versus the younger population. Care should be taken to attend to these items when scoring the BSI or reviewing items for interviewing or other diagnostic purposes. These items were found to load onto six distinct factors that are pertinent to the mature and elderly population. While these factors measure constructs that are represented on the BSI such as the Depression and Somatization symptom

dimensions, other factors measure constructs labeled differently on the BSI. For example, the Obsessive-Compulsive-R factor loading, one of the six new factors, appears to measure memory concerns for mature respondents rather than aspects of the clinical syndrome. The BSI has two anxiety symptom dimensions, Phobic and a generalized Anxiety dimension. Factor analysis indicates that for the mature adult, aspects of each of these symptom dimensions are important, but that neither is statistically representative of older individuals. This would suggest that older individuals have psychological concerns that are similar to their younger counterparts, but that the measurement of those concerns requires researchers to take into account their distinctive perspective. It would be important to conduct further studies to determine the reliability of these factors with respect to a similar population sample.

For those that would like to use the Brief Symptom Inventory with an older adult population, the following points may help to maximize the validity of the data. First, it is important to use the large print version of the BSI. Many older adults are concerned with the print of a document that they are going to read and feel more comfortable with an instrument that uses large print. Secondly, it is helpful to review the instructions with the individual before they begin completing the Brief Symptom Inventory. There are often questions about the completion of items or generalizing of symptoms over a time period greater than the seven days that is mentioned in the instructions. Responding to the items as if they have been present for several months, but not necessarily present during the past

seven days can skew the findings of the instrument. This difficulty can be avoided if one takes the time to make sure the directions are understood before the BSI is begun. Individuals who did not have a reading level that would allow them to complete the BSI independently, or did not have sufficient vision to read the BSI independently were not included in this study. While important information can be gained from reading the items to a respondent, care should be taken with regard to the validity of the data received, particularly if one is scoring the instrument.

One should also be aware that the symptom dimensions, as noted above, may not measure for the mature adult what they were created to measure. Care should be taken to review the item make up of scales that appear to be elevated. As an example, older adults think about death perhaps more often than those who are younger, but that is not always an indicator that they are feeling suicidal. They may be thinking of the friend or spouse they lost recently, or of the time when in the natural course of aging they will die of natural causes. Such a review has significant implications for the individual completing the BSI as well as the clinician entrusted with the information from the BSI.

In the researcher's opinion, one of the most practically significant findings of this study is the importance of asking about the frequency of aches and pains, as a diagnostic indicator for the presence of other psychological symptoms. The data indicated that elevations were present on symptom dimensions that assess for depression, anxiety, memory performance deficits and interpersonal sensitivity. It is believed that the older

individual may not be aware of the presence or the intensity of these psychological symptoms, or that aches and pains may be a way to express psychological distress in a manner acceptable to this generation. In reviewing health concerns with the older adult, the clinician may assist the individual in understanding more completely various aspects of their emotional functioning.

It is hoped that the results of this study will assist those who work with the mature and elderly adult. As the population of mature adults increases, it is extremely important that instruments used to measure emotional states be both valid and reliable. Applying or even interpolating scores from one population sample to another is not adequate and does a disservice to the individual being assessed and to the field of psychology as a whole.

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APPENDIX A

COVER LETTER

Dear Ms./Sir:

Hello. My name is Gail Chester and I am a Doctoral Degree Candidate in the Department of Psychology at Texas Women's University in Denton, Texas. I am asking for your participation in an important research project which has potential significance for both the field of psychology and older adults.

The Brief Symptom Inventory is a short self-report questionnaire that gives information about the presence of physical and emotional symptoms that might be affecting functioning. Currently the instrument is used with individuals over the age of 65, however the norms that are used are for adults who are generally in their 30's and 40's. I believe that individuals over the age of 65 may be assessed improperly by this instrument when norms are applied that are consistent with the experiences of younger adults rather than older adults.

As you are aware, the population of the United States is becoming older overall. It is important that that the field of psychology keep up with these changes so that we can assess individuals accurately, no matter what their age. Completion of the following information will allow you the opportunity to provide important information about the adjustment of people who are over the age of 65.

The two questionnaires and the release form attached to this letter should take about 10-15 minutes to complete. Should you decide to participate, your responses and

identity will be completely anonymous. You will notice that the packets are identified by a code number. Please do NOT put your name on either questionnaire. Again, all information will be held in strictest confidence. The purpose of the study is not to identify individual scores, but get an idea of what is typical for individuals in particular age ranges.

All participation is voluntary and there are no foreseeable risks if you decide to participate. You may withdraw from participation at any time. The results of this study may be published, but all individual information will remain confidential. If you decide that you would like to learn about the results of the study after completion of the project, please complete the form labeled "Request for Study Results." Completion of the study is expected by late summer, 1999.

Thank-you in advance for considering participation in this study.

Gail A. Chester, M.A., L.P.C., L.M.F.T.
Doctoral Student
Psychology Department
Texas Woman's University
(817) 329-4136

Roberta Nutt, Ph.D.
Professor of Psychology
Psychology Department
Texas Woman' University
(940) 898-2313

APPENDIX B

CONSENT TO PARTICIPATE IN RESEARCH

Texas Woman's University
Subject Consent to Participate in Research

Title: Normative Data for the Brief Symptom Inventory for Mature and Independent Living Adults

Investigator :	Ms. Gail Chester	817-329-4136
Advisor:	Roberta Nutt, Ph.D	940-898-2313

I understand that I am being asked to participate in a research study for Ms. Chester's dissertation at Texas Woman's University, Denton, Texas. The purpose of this research is twofold. First, to establish normative data for the Brief Symptom Inventory with individuals 65 and older who are living independently, and secondly, to better understand emotional adjustment to aging in individuals who are 65 and older. The researcher will administer two paper/pencil instruments which I will complete. I understand that it will take me about 15 minutes to complete both instruments and that all information will be kept confidential.

The importance of this study is to establish normative data on the Brief Symptom Inventory with individuals 65 and older to better understand how people in particular age groups adjust to the aging process. Because the principle investigator is analyzing results from age groups, rather than individual responses, I understand that there will not be any individual results available from this study. No personal identification data will be retained by the investigators except as required by release and notification forms. All data will be stored in a locked file cabinet to which only the principle investigator has access. Consent forms will be stored separately from the study instruments and will in no way be connected to them. Documents will be shredded and data files will be deleted on December 31, 2006.

I understand that the investigation may involve possible discomfort as a result of the items being completed. If I experience discomfort during the completion of the two instruments, I understand that I can stop completing the items at any time. If I feel as though I need to discuss my discomfort with a professional, the researcher will provide me with a list of names and telephone numbers that I may use. I understand that any costs incurred as a result of my participation in this study will be my responsibility. I understand that I may discontinue my participation in the study at any time without penalty.

The benefits of this study to me as an individual are limited. The benefit from the study is gathering normative data on the Brief Symptom Inventory and understanding the aging process in people 65 and older. If I choose to receive a summary of the results of the study, they will be mailed to me after the study has been completed. It is possible that this study will be published or presented in a professional format. Again, I understand that no individual data will be identified.

If I have questions about the research or about my rights as a subject, I should ask the researchers: their telephone numbers are at the top of this form. If I have questions later, or wish to report a problem, I may call the researchers or the Office of Research and Grants Administration at 940-898-3377. I also understand that Ms. Chester is available to answer any questions that I might have before I sign this consent, before I complete the two instruments, or as I am completing the study instruments.

The researchers will try to prevent any problems that could happen because of this research. I should let the researchers know at once if there is a problem and they will help me. I understand however, that TWU does not provide medical services or financial assistance for any injuries that might happen because I am taking part in this research.

I understand that my participation in this study is completely voluntary and that I may withdraw at any time without penalty. I have been given a copy of the dated and signed consent form to keep.

_____   _____
            Signature of Participant   Date

The above consent form was read, discussed, and signed in my presence. In my opinion, the person signing said consent form did so freely and with full knowledge and understanding of its contents.

_____   _____
            Signature of Investigator   Date

Yes, I would like to receive a summary of the results of this study and am listing the address to which I would like these results to be sent.

_____

_____

_____

No, I do not wish to receive a summary of the results of the study.

APPENDIX C

DEFINITION OF THE BSI SYMPTOM DIMENSIONS

DEFINITION OF THE BSI SYMPTOM DIMENSIONS

1.   Somatization (SOM). The Somatization dimension reflects distress

arising from perceptions of bodily dysfunction. Items focus on cardiovascular,

gastro-intestinal, and respiratory complaints; other systems with strong

autonomic mediation are included as well. Pain and discomfort of the gross

musculature and additional somatic equivalents of anxiety are also

components of Somatization. The item numbers that make up this dimension

are 2, 7, 23, 29, 30, 33 and 37.

2.   Obsessive-Compulsive (O-C). The Obsessive-Compulsive dimension

includes symptoms that are often identified with the standard clinical

syndrome of the same name. This measure focuses on thoughts, impulses, and

actions that are experienced as unremitting and irresistible by the individual,

but are of an ego-alien or unwanted nature. Behavior and experiences of a

more general cognitive performance deficit are also included in this measure.

The item numbers that make up this dimension are 5, 15, 26, 27, 32 and 36.

3.   Interpersonal Sensitivity (I-S). The Interpersonal Sensitivity

dimension centers on feelings of personal inadequacy and inferiority,

particularly in comparison with others. Self-deprecation, self-doubt, and

marked discomfort during interpersonal interactions are characteristic

manifestations of this syndrome. The item numbers that make up this dimension are 20, 21, 22 and 42.

4.   Depression (DEP). The symptoms of the Depression dimension reflect a representative range of the indications of clinical depression. Symptoms of dysphoric mood and affect are represented as are lack of motivation and loss of interest in life. The item numbers that make up this dimension are 9, 16, 17, 18, 35 and 50.

5.   Anxiety (ANX). General signs such as nervousness and tension are included in the Anxiety dimension, as are panic attacks and feelings of terror. Cognitive components involving feelings of apprehension and some somatic correlates of anxiety are also included as dimensional components. The item numbers that make up this dimension are 1, 12, 19, 38, 45 and 49.

6.   Hostility (HOS). The Hostility dimension includes thoughts, feelings, or actions that are characteristic of the negative affect state of anger. The item numbers that make up this dimension are 6, 13, 40, 41 and 46.

7.   Phobic Anxiety (PHOB). Phobic anxiety is defined as a persistent fear response- to a specific person, place, object, or situation- that is irrational and disproportionate to the stimulus and leads to avoidance or escape behavior. The items of this dimension focus on the more pathognomonic and disruptive manifestations of phobic behavior. Phobic anxiety is very similar to "agora-

phobia" (Marks, 1969), also termed "phobic anxiety depersonalization syndrome" by Roth (1959). The item numbers that make up this dimension are 8, 28, 31, 43 and 47.

8.   Paranoid Ideation (PAR). The Paranoid Ideation dimension represents paranoid behavior fundamentally as a disordered mode of thinking. The cardinal characteristics of projective thought, hostility, suspiciousness, grandiosity, centrality, fear of loss of autonomy, and delusions are viewed as primary aspects of this disorder. Item selection was oriented toward representing this conceptualization (Swanson, Bohnert, & Smith, 1970). The item numbers that make up this dimension are 4, 10, 24, 48 and 51.

9.   Psychoticism (PSY). The Psychoticism symptom dimension was developed to represent the construct as a continuous dimension of human experience. Items indicative of a withdrawn, isolated schizoid lifestyle were included, as were first-rank symptoms of schizophrenia, such as thought control. This symptom dimension provides a graduated continuum from mild interpersonal alienation to dramatic psychosis. In this respect, the definition owes much to the work of Eysenck and Eysenck (1968). The item numbers included on this dimension are 1, 14, 34, 44 and 53.

10.   Additional Items (ADD). There are four items on the BSI that are not subsumed under any of the primary symptom dimensions. These symptoms

actually "load" on several dimensions but are not univocal to any of them. While in this sense they violate one of the statistical criteria for inclusion in the test, they are included in the item set because they possess clinical significance. These items contribute to the global scores on the BSI and are intended to be used configurally. For example, the presence of conscious "feelings of guilt" is an important clinical indicator that communicates useful information to the clinician. These additional items are not scored collectively and do not form a dimension. These item numbers are 11, 25, 39 and 52.

BSI: Brief Symptom Inventory: Administration, Scoring, and Procedures Manual (1993) pp.7-10.

APPENDIX D

DEMOGRAPHIC AND ACTIVITY QUESTIONNAIRE

DEMOGRAPHIC AND ACTIVITY QUESTIONNAIRE

Thank you for completing this questionnaire. Please answer each item as your situation is currently. Circle the letter of the item that is true for you. Please do not hesitate to ask for assistance if you have a question about any item.

1. What is your current marital status?

    A.   Married
    B.   Never Married
    C.   Divorced
    D.   Widowed

2. How often to aches or pains interfere with your daily activities?

    A.   Rarely – less than once a week
    B.   Occasionally – once or twice a week
    C.   Often – three to five times per week
    D.   Daily

3. What is your current family MONTHLY income?

    A.   Up to $999 per month
    B. $1,000 - $1,999 per month
    C. $2,000 - $2,999 per month
    D. $3,000 - $3,999 per month
    E.   over $4,000 per month

4. During the last 5 years of adult working life, what was your family annual income?

    A.   Up to $11,999 per year
    B. $12,000 - $23,999 per year
    C. $24,000 - $35,999 per year
    D. $36,000 - $47,999 per year
    E.   Over $48,000 per year

5   What kind of work (trade, manager, homemaker, etc) have you done most of your adult life?

_____

6   Do you work or volunteer outside the home?
    A.   No
    B.   Yes

    If yes, how many hours per week? ____

7. How often do you get out of the house?

    A.   Every day, no matter what
    B.   Generally every day
    C.   Every other day
    D.   At least once a week
    E.   About once every other week
    F.   About once a month

8. How often do you talk to your friends and/or family members?

    A.   Several times a day
    B.   Once a day
    C.   Every other day
    D.   At least once a week
    E.   Less than once per week

9. How often do you participate in some kind of physical exercise (walking, cleaning house, yard-work, swimming, aerobics, etc.)?

    A.   Every day
    B.   Every other day
    C.   At least once a week
    D.   Less than once per week

10. What is your highest level of education?

       A.   Doctoral degree
       B.   Masters degree
       C.   Bachelor's Degree
       D.   Some college or Associate Degree
       E.   Trade School graduate
       F.   High School graduate
       G.   Last grade completed was _____ (for example, 8th grade)

11. Please circle your race:

       A.   Black
       B.   White, non-Hispanic
       C.   Asian or Pacific Islander
       D.   American Indian or Alaska Native
       E.   Hispanic
       F.   Other _____
       G.   Decline to State

APPENDIX E

BRIEF SYMPTOM INVENTORY

BSI®
Brief Symptom Inventory

Leonard R. Derogatis, PhD

Last Name   First   MI

ID Number

Age   Gender   Test Date

DIRECTIONS:

1. Print your name, identification number, age, gender, and test date in the area on the left side of this page.

2. Use a lead pencil. If you want to change an answer, erase it carefully and then circle your new choice.

DO NOT SEND TO NATIONAL COMPUTER SYSTEMS
USE ONLY FOR HAND SCORING

NCS®

Product Number
05657

INSTRUCTIONS:

Below is a list of problems people sometimes have. Please read each one carefully, and circle the number that best describes HOW MUCH THAT PROBLEM HAS DISTRESSED OR BOTHERED YOU DURING THE PAST 7 DAYS INCLUDING TODAY. Circle only one number for each problem and do not skip any items. If you change your mind, erase your first mark carefully. Read the example before beginning, and if you have any questions please ask them now.

EXAMPLE

HOW MUCH WERE YOU DISTRESSED BY:

	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY	
1	0	1	2	(3)	4	Bodyaches

HOW MUCH WERE YOU DISTRESSED BY:

	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY	
1	0	1	2	3	4	Nervousness or shakiness inside
2	0	1	2	3	4	Faintness or dizziness
3	0	1	2	3	4	The idea that someone else can control your thoughts
4	0	1	2	3	4	Feeling others are to blame for most of your troubles
5	0	1	2	3	4	Trouble remembering things
6	0	1	2	3	4	Feeling easily annoyed or irritated
7	0	1	2	3	4	Pains in heart or chest
8	0	1	2	3	4	Feeling afraid in open spaces or on the streets
9	0	1	2	3	4	Thoughts of ending your life
10	0	1	2	3	4	Feeling that most people cannot be trusted
11	0	1	2	3	4	Poor appetite
12	0	1	2	3	4	Suddenly scared for no reason
13	0	1	2	3	4	Temper outbursts that you could not control
14	0	1	2	3	4	Feeling lonely even when you are with people
15	0	1	2	3	4	Feeling blocked in getting things done
16	0	1	2	3	4	Feeling lonely
17	0	1	2	3	4	Feeling blue
18	0	1	2	3	4	Feeling no interest in things
19	0	1	2	3	4	Feeling fearful
20	0	1	2	3	4	Your feelings being easily hurt

	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY	HOW MUCH WERE YOU DISTRESSED BY:
21	0	1	2	3	4	Feeling that people are unfriendly or dislike you
22	0	1	2	3	4	Feeling inferior to others
23	0	1	2	3	4	Nausea or upset stomach
24	0	1	2	3	4	Feeling that you are watched or talked about by others
25	0	1	2	3	4	Trouble falling asleep
26	0	1	2	3	4	Having to check and double-check what you do
27	0	1	2	3	4	Difficulty making decisions
28	0	1	2	3	4	Feeling afraid to travel on buses, subways, or trains
29	0	1	2	3	4	Trouble getting your breath
30	0	1	2	3	4	Hot or cold spells
31	0	1	2	3	4	Having to avoid certain things, places, or activities because they frighten you
32	0	1	2	3	4	Your mind going blank
33	0	1	2	3	4	Numbness or tingling in parts of your body
34	0	1	2	3	4	The idea that you should be punished for your sins
35	0	1	2	3	4	Feeling hopeless about the future
36	0	1	2	3	4	Trouble concentrating
37	0	1	2	3	4	Feeling weak in parts of your body
38	0	1	2	3	4	Feeling tense or keyed up
39	0	1	2	3	4	Thoughts of death or dying
40	0	1	2	3	4	Having urges to beat, injure, or harm someone
41	0	1	2	3	4	Having urges to break or smash things
42	0	1	2	3	4	Feeling very self-conscious with others
43	0	1	2	3	4	Feeling uneasy in crowds, such as shopping or at a movie
44	0	1	2	3	4	Never feeling close to another person
45	0	1	2	3	4	Spells of terror or panic
46	0	1	2	3	4	Getting into frequent arguments
47	0	1	2	3	4	Feeling nervous when you are left alone
48	0	1	2	3	4	Others not giving you proper credit for your achievements
49	0	1	2	3	4	Feeling so restless you couldn't sit still
50	0	1	2	3	4	Feelings of worthlessness
51	0	1	2	3	4	Feeling that people will take advantage of you if you let them
52	0	1	2	3	4	Feelings of guilt
53	0	1	2	3	4	The idea that something is wrong with your mind