

**THE NATURE AND PREVALENCE OF ANXIETY
SYMPTOMS IN COMMUNITY-DWELLING OLDER ADULTS**

BY

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**A Thesis
Submitted to the Faculty of Graduate Studies
in Partial Fulfillment of the Requirements
for the Degree of**

MASTER OF ARTS

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Abstract

Anxiety has received little empirical consideration among non-institutionalized older adults. As a result, the nature and prevalence of anxiety disorders in older adults are not well understood. Consistent with this, the psychometric properties of anxiety scales among older adults are largely unknown. Evidence suggests that anxiety in older individuals may be characterized by a lack of worry and predominantly somatic symptoms. It has also been suggested that anxiety symptoms in older adults are highly inter-related with symptoms of depression. This study examined the validity and reliability of three anxiety self-report scales when administered through a mail survey to community-dwelling older and younger adults. The present study also investigated the extent to which symptoms of anxiety and depression overlap, and whether anxiety presents differently in older individuals. Previous findings that anxiety is less common among older adults were not replicated in this study. Significant gender differences were found within the older age group. All scales demonstrated comparable reliability and validity between younger and older age groups. In addition, no significant age differences were found with respect to response patterns and the inter-relationship between anxiety and depression. Results are discussed within the context of previous findings, and conceptual and practical implications are presented.

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Introduction

Anxiety Research and Older Adults

Interest in the treatment and investigation of anxiety disorders increased dramatically during the 1980s (Norton, Cox, Asmundson, & Maser, 1995), possibly due in part to the refinement of diagnostic criteria in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1980). This escalation of research activity involved examining anxiety disorders across a wide range of people, from children and adolescents to patient and community samples of adults. In contrast, little effort was made to study anxiety disorders in older adults.

For the purposes of this study, the convention of defining "older" as those adults aged 65 and older was adopted. While this is an arbitrary age cutoff, it is used widely in North America to identify older persons. Researchers have used many different age cutoffs to define older adults and it should be noted that, in general, the studies discussed in this thesis refer to individuals aged 60 and older.

Although older individuals have been included in samples of adults in anxiety research, little effort has been made to treat them as a unique group. As a result, anxiety disorders in older individuals are not well understood. Estimates of prevalence rates vary widely (see Shamoian, 1991), but overall the consensus in the literature is that all anxiety disorders occur less frequently in aged individuals (e.g., Flint, 1994). Current prevalence rates may be somewhat inaccurate, however, considering that little research has been done

in the area of anxiety and older persons. It is possible that the nature of anxiety is somewhat different in older adults (e.g., certain symptoms, such as worrying, may be virtually non-existent in older populations) and that methods for measuring anxiety may not reflect potential age differences.

One of the most common methods of determining prevalence rates is the use of self-report symptom scales. Many anxiety self-report instruments have been validated with various age groups, but very little research has been done to determine whether they demonstrate reliability and validity when used with older persons. Scales that fail to maintain their psychometric properties when used with older adults could produce misleading estimates of prevalence rates. Some work has been done in the area of anxiety assessment with institutionalized older adults (Patterson, O'Sullivan, & Spielberger, 1980; Rankin, Gfeller, & Gilner, 1993) but the measurement of anxiety in community-dwelling older adults has been rarely investigated.

There are various reasons why sound self-report measures for assessing anxiety among older persons in the community are important. First, older individuals infrequently seek mental health services for psychological problems and instead consult with physicians (Cheng, 1990; Waxman, Carner, & Klein, 1984; Yates, 1986). This may lead to an underestimation of the prevalence of pathological anxiety among community-dwelling older adults. Second, self-report measures are easier and more cost-effective than employing interviews in large scale community studies. Third, a better understanding of older adults' mental health could enable the development of more effective mental health

services. The current underutilization of mental health services by older persons may be due in part to a weak fit between the services that are offered and their needs. Fourth, although much of the research concerning suicide among older persons has focused on depression as a risk factor, there is evidence that anxiety may also be a contributing factor (Allgulander & Lavori, 1993).

Diagnosing Anxiety Disorders in Older Adults

Diagnostic Criteria

Diagnostic criteria contained in the DSM have formed the basis of defining disorders in many epidemiologic studies (e.g., Myers et al., 1984; Regier et al., 1988). The DSM-III introduced considerable refinements in the definition of disorders and subsequent versions have also reflected improvements in the specificity of criteria. Nathan (1994) noted that the development of the DSM-IV involved consideration of previously neglected factors such as gender and culture. The DSM-IV also makes provisions for applying diagnostic criteria to children and adolescents, but no mention is made of considerations that would apply to older adults.

One might infer from the absence of guidelines that psychopathology as it occurs in older persons is identical to psychopathology in younger adults. This is a debatable assertion, however, given that there are considerable differences between older and younger adults. McEwan, Donnelly, Robertson, and Hertzman (1991) present a list of risk factors that can render older persons especially vulnerable to mental illness, including poor health, low

socioeconomic status, social isolation, and sensory deficits. For example, older individuals also often face a reduction in income. In 1991, the average income for an older adult was \$18,113, compared with \$23,850 for those in the 20-65 age group (Statistics Canada, 1993). These stressors could contribute to the development of anxiety, as is demonstrated by the link between environmental precipitants and generalized anxiety disorder (Hoehn-Saric & McLeod, 1985; Torgersen, 1986).

It could be argued that all adults face unique life conditions and that DSM diagnostic criteria are invalid because they do not take into account each person's distinct situation. One must keep in mind that it is ultimately up to a mental health professional to determine whether or not psychopathology exists. Similarly, it is up to the mental health professional to conduct a thorough interview that can detect any unusual aspects of a client's life. As such, the DSM provides criteria that can be applied in a general sense, but it is up to the mental health professional to assess what impact an individual's life circumstances have upon his/her functioning. In the absence of specific guidelines for determining diagnoses with older persons, the mental health professional must base diagnostic decisions on DSM criteria and personal judgement.

There is a significant problem with this approach, however, besides the fact that current DSM criteria do not take into account aspects of advanced age. Namely, there is little consensus regarding what is normative anxiety in older persons. For example, the Geriatric Mental State Schedule (Copeland et al.,

1976) allows fears that are considered "reasonable" in this age group to be dismissed. In particular, an older adult's reluctance to leave home due to a fear of criminal victimization is often viewed as normal. Lindesay (1995) suggested that, as rates of criminal victimization among older persons are low, such fears may be excessive. It is possible that there are considerable numbers of agoraphobic older individuals within the community that have been overlooked by epidemiologic researchers who apply different standards to different age groups.

Sheikh (1992) astutely notes that it is crucial to have diagnostic criteria that have been empirically validated. For example, it is possible that social phobia criteria do not apply to older adults because social phobia presents differently in older age groups. Studies that identify older adults who likely have social phobia are needed to confirm that the type, intensity, and duration of their symptoms match those in the DSM. This is the only way to determine whether criteria need to be modified and whether anxiety disorders similar to those defined in DSM are rare among older adults. It is possible that, although traditional disorders may be less common among older individuals, slightly different variations of these syndromes may occur. Hinrichsen (1990, p. 130) claims that, "Many mental health professionals believe that current diagnostic categories do not fully capture the range of anxiety-related problems experienced by older individuals." If current DSM criteria do not match the experience of anxiety in older persons, then modifications might be necessary.

Diagnostic Interview Schedules

One common method of determining prevalence rates involves the use of diagnostic schedules. One of the most widely used schedules is the Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1994). There are different versions of the SCID available for clinical and non-clinical populations. This schedule allows an interviewer to determine if a person qualifies for a diagnosis by following a flowchart of questions designed to assess the existence and severity of symptoms. The SCID is composed of sections that parallel the major disorder categories in the DSM and the interviewer may administer only those sections considered relevant for a particular respondent, rather than the entire schedule.

Two studies have investigated the reliability of the SCID-I for the DSM-III-R when used with an older population. Stukenberg, Dura, and Kiecolt-Glaser (1990) used the SCID-I in conjunction with several other screening scales to detect mood disorders in older individuals and obtained an inter-rater concordance rate of 92%. Segal, Hersen, Van Hasselt, Kabacoff, and Roth (1993) found an inter-rater agreement rate of 94% for anxiety disorders and concluded that the SCID-I is an invaluable assessment tool for diagnosing older persons.

The SCID is unique in that it is the only interview schedule with an anxiety section that has been tested with an older population. In contrast, there are three schedules designed to screen specifically for depression and/or dementia in older adults: the Geriatric Mental State Schedule (Copeland et al.,

1976), the Cambridge Mental Disorders of the Elderly Examination (Roth et al., 1986), and the Canberra Interview for the Elderly (Social Psychiatry Research Unit, 1992). Clearly, depression and dementia have received far more attention than anxiety in research concerning interview schedules and older persons.

The Prevalence of Anxiety Disorders and Anxiety Symptoms

The lack of normative standards, combined with interview methods lacking sensitivity to potential age differences, may help explain why the prevalence of anxiety disorders in older adults is thought to be low. Regier et al. (1988) found that the prevalence of all anxiety disorders in individuals aged 65 and older was 5.5%, compared with a rate of 7.3% for subjects of all ages. Although it is generally accepted that anxiety disorders are less frequent among older persons, there is considerable inconsistency among estimates of the prevalence of specific disorders. For example, estimates of the prevalence of phobic disorders range from 0.7% (Copeland, Dewey et al., 1987) to 10% (Lindesay, Briggs, & Murphy, 1989). This variation in estimates may be due in part to methodologies which vary in terms of how suitable they are for older adults.

As mentioned earlier, the use of questionnaires that have not been validated with older persons may contribute to inaccurate prevalence rates for anxiety disorders. Sheikh (1991) reviewed several of the most commonly used anxiety scales and found that many lack geriatric normative data. Until such data are established, prevalence rates obtained with these instruments should not be accepted at face value.

Syndromes and Symptoms

An issue that needs to be addressed when considering the prevalence of anxiety in older adults is the distinction between syndrome and symptom prevalence. A syndrome refers to a collection of symptoms that constitute a defined disorder, such as agoraphobia or panic disorder. Thus, syndromal rates would reflect the occurrence of known disorders. In North America, anxiety disorders are usually those listed in the DSM. A person must meet all the criteria listed in the DSM in order to receive a diagnosis of an anxiety disorder. These criteria delineate the frequency, severity, duration, and type of symptoms that constitute each disorder.

By contrast, researchers can also assess various anxiety symptoms without following the rigorous diagnostic approach based on the DSM. A common method of determining anxiety in individuals is to administer an anxiety self-report scale which allows for differentiating between persons who score high and those who score low. High-scoring individuals may be thought of as anxious, but they do not necessarily suffer from a disorder.

The value of obtaining syndromal rates by clinical interviews is that the phenomenon being studied is a known entity (i.e., a disorder as defined by a set of criteria). However, researchers taking a less rigorous approach may use different criteria and thus cause comparisons between studies to be questionable. For example, one study may require that respondents fulfill all of the DSM diagnostic criteria in order to qualify for agoraphobia whereas another investigation may consider individuals with two symptoms to be agoraphobic.

The prevalence rates of these two hypothetical studies would probably not correspond very well because the latter is not assessing a true disorder.

This problem may be less pronounced among prevalence rates based on various symptoms. If the same self-report instrument is used in multiple studies, it is probable that individuals who scored high in one study met the same cutoff criteria as individuals who scored high in another study. Of course, studies that deviate from the standard scoring methods for a scale would yield results not suited for comparison with other studies. Another caution concerning studies of symptoms is that, while an individual might score high on one measure, it is possible that the same individual might not score high on another measure designed to assess the same construct. For example, two measures could assess trait anxiety but focus on different aspects of trait anxiety. One measure might include many items measuring somatic symptoms, and the other scale might have very few somatic items. A person who tends to somatize anxiety would probably score high on the former scale but not on the latter. Thus, anxiety rates based on self-report measures may vary as a function of the instrument used.

Although the study of syndromal rates may involve a clearer definition of what is being assessed, it is not always the ideal approach. Apart from the considerable effort required to obtain accurate rates of disorders, there are many theoretical reasons why a researcher might be more interested in the prevalence of symptoms. Research goals may involve determining whether symptoms are related to particular variables, or a researcher may wish to

investigate whether current symptom levels predict future psychopathology. For these purposes, self-report symptom scales confer many advantages over interview schedules. In one of the few studies that examined anxiety in a community sample of older people, Himmelfarb and Murrell (1984), outlined several advantages of using self-report symptom scales. They noted that they are objective, require less time, and are more practical than interview schedules for large scale community studies.

Empirical research suggests that symptom rates are an effective method of detecting individuals in the community experiencing clinically significant mental distress. Individuals experiencing high levels of symptoms frequently seek mental health treatment (Link & Dohrenwend, as cited in Himmelfarb & Murrell, 1984). This finding suggests that determining "cases" (i.e., syndromal prevalence) in a population may under-estimate the proportion of people who are experiencing symptoms severe enough to warrant professional attention.

Symptom rates may be especially appropriate for assessing psychological distress among older persons. George (1990) noted that older adults are more likely than younger adults to report high numbers of symptoms but fail to qualify for a diagnosis, with respect to both depression and anxiety. This curious finding has led some researchers to question whether DSM criteria are "age-fair" (see George, 1990).

The discrepancy between rates of symptoms and diagnoses among older people can be understood when one considers the strict criteria that define psychological disorders. In order to qualify for a diagnosis, symptoms

must be severe enough to cause functional impairment and persist for a specified length of time. Also, symptoms must be independent of known physiological causes, such as medical problems. If symptoms fail to meet all the criteria for a given disorder, then a diagnosis is not made. Although George (1990) does not elaborate on why failure to meet diagnostic criteria is particularly common among older persons, it can be inferred that any or all diagnostic criteria specifying severity, cause, and duration may result in older persons not receiving a diagnosis. In particular, the prevalence of medical problems among older adults is a likely cause of lower rates of diagnoses among older adults. It appears that older persons, who may be experiencing considerable anxiety, are at a high risk of being discounted in studies that rely on diagnoses to assess the prevalence of anxiety.

With respect to anxiety, Bliwise, McCall, and Swan (1987) stated that anxiety is manifested in a wide variety of symptoms in older persons and, because of this, symptom checklists may be particularly appropriate for assessing anxiety in this age group. Items on symptom scales may provide a sufficiently broad range of symptoms to capture the possible heterogeneity of anxiety.

Hersen and Van Hasselt (1992) note that studies of anxiety in older persons have frequently failed to differentiate between anxiety as a symptomatic manifestation and anxiety as a true disorder. When participants in a study score very highly on a symptom scale, does this mean that they are suffering from an actual disorder that has not been diagnosed, or are they

suffering from a vague assortment of symptoms that lack meaning when grouped together? Extensive research is necessary to determine whether symptoms occur in unique aggregates in older persons that could be considered indicative of disorders, or if symptoms are so varied among older respondents that there is no common pattern.

The Presentation of Anxiety in Older Adults

Somatization

Mental illness in older persons often manifests as somatic complaints (Gurland, 1976; Lurie, 1987; Waxman, McCreary, Weinrit, & Carner, 1985; Zarit & Zarit, 1984). In younger age groups, which generally have fewer serious medical problems, somatic symptoms can be valid indicators of mental health problems. By contrast, the prevalence of medical problems among older individuals causes difficulties in determining the etiology of somatic complaints. There is considerable controversy regarding whether somatic symptoms are reliable and valid indicators of mental distress or whether they represent the normal physical deterioration that accompanies aging (Berry, Storandt, & Coyne, 1984; Zemore & Eames, 1979).

In a seminal review of literature concerning depression in later life, McNeil and Harsany (1989) present a summary of evidence that supports the view that somatization is common in this age group. The authors conclude that depression in older individuals is characterized by somatization, more so than in younger adults. For example, Zemore and Eames (1979) found that depressed older adults reported an average of 0.91 somatic symptoms

compared with an average of 0.49 somatic symptoms for younger adults [$F(10,1814) = 2.03, p < .05$].

If depression does manifest somatically in older adults, one would expect to find that depressed older persons exhibit more somatization than nondepressed, physically ill older individuals. Consistent with this expectation, Dessonville, Gallagher, Thompson, Finnell, and Lewinsohn (1982) found that somatic symptoms that commonly occur in both depressive and physical disorders are more severe in depressed individuals. It has also been found that the more depressed is an older person, the more somatic symptoms he or she will report (Waxman, McCreary, Weinrit, & Camer, 1985). Thus, it appears that somatic symptoms can be used as valid indicators of depression in this age group.

In anxious older individuals, the interpretation of somatic symptoms has not yet been investigated. However, clinical observations have led some researchers to conclude that somatization is the most significant manifestation of anxiety in older adults (McDonald, 1972). While there is no consensus regarding the presentation of anxiety in older persons, research suggests that forms of anxiety common in younger populations are largely absent in later life. In particular, worry is not a common phenomenon in older individuals (Wisocki, 1994) and obsessive-compulsive disorder is rarely diagnosed in older adults (see Flint, 1994). It is possible that as anxiety changes with age into a primarily somatic manifestation, other typical expressions of anxiety, such as worry or compulsive behaviours, disappear. This would help explain why anxiety

disorders as defined by the DSM are not common in older persons, while from a clinical perspective, symptoms of anxiety are very frequent (Gurian & Miner, 1991).

Physical illness, as distinct from somatization, plays a significant role in the development of depression in later life (McNeil & Harsany, 1989) and it is also linked to anxiety. There is a strong positive correlation between physical illness and anxiety, with poorer health accompanying higher levels of anxiety (Heidrich, 1993; Himmelfarb & Murrell, 1984). It is not known whether anxiety and medical problems represent independent processes or if there is a unidirectional causal relationship, with illness causing anxiety or vice versa. Alternatively, illness and anxiety may influence each other simultaneously. Sallis and Lichstein (1982) have proposed an interactive model in which either anxiety or illness may trigger an exaggerated physical response, which causes further physical impairment and anxiety. In other words, the physical symptoms and anxiety form feedback loops which exacerbate each other. Although the causal relationship (if any) between anxiety and physical illness is not known, it appears that medical conditions are closely linked to anxiety in older adults.

Co-morbidity of Anxiety and Depression

There is a high rate of co-morbidity between depression and anxiety disorders among both older persons and younger adults. Lindesay, Briggs, and Murphy (1989) found that depression occurred in 39% of older adults with phobias. Wetzler and Katz (1989) reviewed several studies and reported that, among younger adults, 21-91% of individuals with an anxiety disorder also

suffered from major depression. One theory that attempts to explain why there is such a large coincidence between depression and chronic anxiety is Clark and Watson's (1991) tripartite model. These authors propose that both anxiety and depression are caused by a single neurotic predisposition. Individuals possessing this vulnerability may develop either anxiety or depression, or a combination, depending on the environmental variables they encounter. Alternatively, anxiety and depression may represent distinct pathologies that are triggered by similar causes, which would explain their co-occurrence.

The co-occurrence of depressive and anxiety symptoms may be greater among older individuals. It has been noted that distinguishing between depression and anxiety in older persons can be a difficult process (Shamoian, 1991; Sheikh, 1991). Older people who present with anxiety may actually be suffering from a major depressive disorder (Hinrichsen, 1990) and highly anxious individuals may also exhibit symptoms of depression (Gurian & Miner, 1991), more so than younger adults (Jacoby & Bergmann, 1995). Simon (1980) has suggested that because older adults often display a range of neurotic traits in various combinations and degrees of severity, current DSM taxonomy is not as suitable as the traditional "neurosis" classifications. The term neurosis allows for flexibility, and individuals who display different symptoms in varying degrees may all be thought of as neurotic. The DSM system entails rigid criteria that may exclude significantly anxious people who do not fit into its categories.

Despite the connection between depression and anxiety in older persons, anxiety is not inevitably linked to depressive symptoms. Prigerson et

al. (1996) found that, among spousally-bereaved older adults, anxiety symptoms could be readily distinguished from depression and grief symptoms. Epidemiologic studies that have employed hierarchical diagnostic strategies (i.e., no co-morbid diagnoses were assigned) have shown that, although anxiety disorders are rare among older adults, they can occur independently (Copeland, Gurland et al., 1987; Copeland, Dewey et al., 1987). These findings indicate that anxiety merits investigation in its own right, and not only in conjunction with depression.

Worry and Older Adults

Worry has been defined as the "cognitive aspect of anxiety" (Borkovec, as cited in Wisocki, 1988, p.1). The Worry Scale (Wisocki, Handen, & Morse, 1986) consists of 35 items that reflect possible topics of worry for older adults. Ratings are made on a five-point scale indicating how frequently each worry occurs. The maximum possible total score is 140 and the minimum possible is zero. Powers, Wisocki, and Whitbourne (1992) found that the mean score on the Worry Scale was 24.3 for older adults and 32.6 for younger participants, a significant difference at the .05 confidence level. Younger adults have consistently produced higher overall scores on the Worry Scale (Wisocki, 1994).

These results are somewhat surprising, considering the potential stressors older adults face. It is possible that participants in these studies were healthy and financially secure, and that worry was not relevant to them. Alternatively, it is possible that the scale items are not ideal indicators of what

causes worry in older adults.

Another possibility is that anxiety does not manifest in a cognitive form in older individuals. A considerable amount of research is based on the view that anxiety is multi-faceted rather than uni-dimensional (e.g., Craske & Craig, 1984; Hodgson & Rachman, 1974; Lehrer & Woolfolk, 1982). Researchers from different theoretical perspectives emphasize different aspects of anxiety, but the most commonly mentioned components include somatic, cognitive, and behavioural dimensions. Anxiety is not always accompanied by observable behaviours, but different types of anxiety are often associated with particular behavioural manifestations. Phobic anxiety is typically characterized by avoidance of a feared stimulus, and one of the hallmarks of obsessive-compulsive anxiety is behavioural rituals. The behavioural correlates of less specific forms of anxiety are not as well defined. For example, there is no particular type of behaviour associated with high levels of trait anxiety.

It is conceivable that anxiety manifests itself differently in older adults, with different dimensions or combinations taking precedence. The lack of worry in older persons shows that cognitive features of anxiety are relatively rare in this age group. However, this finding does not eliminate the possibility that other forms of anxiety are common in older persons.

Reasons why Anxiety Merits More Research Attention

There is a paucity of empirical studies involving anxiety in older individuals, especially when compared to the considerable amount of research in the area of depression. As the coincidence of these two symptoms is high,

this imbalance implies that either depression is clearly the dominant problem among individuals with both anxiety and depression, or that symptoms of anxiety are actually symptoms of depression. There is little evidence to support either of these possibilities.

In order to determine how important anxiety is in the mixed anxiety/depression phenomenon, its impact would have to be assessed objectively and subjectively. Behavioural assessments could shed light on which type of symptoms causes greater functional impairment, but very few studies have applied behavioural assessment to older persons (see Carstensen, 1988). Even if quantitative methods such as self-report scales indicate a stronger presence of depression, qualitative analyses are needed to verify the perceived impact of each problem. It is possible for an individual to score higher on a depression scale than on an anxiety scale, even though anxiety symptoms are of greater concern to the individual. The author is not aware of any studies that have investigated older persons' perceptions of the impact of depression and anxiety.

A common approach among clinicians is to label anxious older people as suffering from an agitated depression, although Verwoerd (1980) has suggested that agitation due to chronic anxiety can, and should, be differentiated from true agitated depression. Older persons experiencing an agitated depression may exhibit normal or greater-than-normal levels of physical activity in conjunction with irritability and negative affect. (This contrasts with more typical manifestations of depression which involve slowed

activity and often do not encompass irritability.) Agitated behaviour due to anxiety may present very similarly, but a thorough clinical evaluation should consider anxiety as a possible cause. Anxiety symptoms are also often considered indicative of a masked depression (Jacoby & Bergmann, 1995). The argument that anxiety symptoms are actually signs of depression raises more questions than it answers. If symptoms are labeled as anxiety, how is it that their occurrence results in depression? Should they perhaps be labeled as depressive symptoms? If this proposition is true, the question arises as to what constitutes depression in older individuals.

One final explanation for why depression has received far more research attention is the link between depression and suicide. The risk of suicide among depressed older adults has been well-documented (Draper, 1994; Lapierre, Pronovost, Dube, & Delisle, 1992; Osgood, 1992). Depression has also been linked to self-injurious behaviours (Nowers, 1993). Anxiety is rarely cited as a risk factor, except in the context of depression (e.g., Achte, 1988). However, Allgulander and Lavori (1993) found that, in a sample of 685 older females with an International Classification of Disorders (ICD) diagnosis of anxiety neurosis, there were four suicidal deaths, a significantly higher number than the expected rate of 1.1 suicides in this sample. Research concerning anxiety disorders could lead to more effective preventive and treatment strategies, thus reducing the risk of suicide among older adults.

Another reason why anxiety disorders should be investigated in older persons is that if anxiety frequently co-exists with depression, then a better

understanding of anxiety may enhance our understanding of depression as it occurs in this age group. This may, in turn, lead to more effective preventive and treatment approaches. For example, it is possible that certain depressive symptoms are more likely to occur in the presence of anxiety symptoms. Also, depression accompanied by symptoms of anxiety may be significantly different than pure depression. Greater specificity in our understanding of both anxiety and depression could lead to improved methods of alleviating both types of symptoms.

Pharmacological Treatment of Anxiety

Despite the general consensus that anxiety is relatively rare among older adults, drugs that counter anxiety, such as benzodiazepines, are frequently prescribed for this age group. One study found that 33% of benzodiazepine users are older adults (Mellinger, Balter, & Uhlenhuth, 1984). Thomson and Smith (1995) found that 23.4% of community-dwelling persons aged 65 and older in British Columbia were prescribed benzodiazepines at least once during 1990. The inconsistency between rates of anxiety disorders and benzodiazepine usage may mean that either these drugs are being prescribed chiefly for conditions other than anxiety, or that current estimates of anxiety are erroneously low. Another possible explanation is that drugs may be prescribed for non-pathological cases of anxiety, cases that would not be detected using typical assessment measures. For example, a person may have only one or two symptoms but subjectively experience enough anxiety to warrant medication. This person would likely not meet the cutoff score on an anxiety

self-report scale or qualify for a DSM-IV diagnosis. However, the fact that this level of anxiety merits professional treatment for some individuals suggests that this is a form of pathological anxiety.

Caution must be exercised when using benzodiazepine consumption as an indicator of anxiety in older adults because they may be prescribed for conditions other than anxiety. In particular, benzodiazepines are often prescribed for older adults who experience sleep disturbances. Also, medication is prescribed sometimes for individuals who do not necessarily need it. Although the possibility that benzodiazepines are over-prescribed is plausible, the rate of consumption among older adults is far greater than the rates of anxiety disorders. Therefore, it is unlikely that this discrepancy can be explained entirely by liberal prescription practices. This suggests that, to some extent, anxiety symptoms occur more frequently among older persons than the level reflected in current estimates.

Self-Report Scales and Older Adults

Weiss, Nagel, and Aronson (1986) reviewed several depression screening scales and concluded that, as these scales had not been validated with older adults, their utility among older populations was limited. They also concluded that these scales were not sensitive to the different expressions of depression that occur in older individuals. By contrast, the Geriatric Depression Scale (Yesavage et al., 1983) is not subject to these concerns because it was developed specifically for older adults and has been tested repeatedly with this age group. Self-report anxiety scales may also be characterized by the same

shortcomings as the depression scales reviewed by Weiss et al. (1986). If this is the case, then perhaps there is a need for an age-specific anxiety scale.

As mentioned earlier, few existing anxiety scales have been tested with older adults. The exception is the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, Edwards, Lushene, Montouri, & Platzek, 1973, as cited in Rankin, Gfeller, & Gilner, 1993). The rationale for using the children's version of the STAI with older adults is that the adult version may be too difficult for cognitively impaired older persons to comprehend and complete. Patterson, O'Sullivan, and Spielberger (1980) found that a sample of institutionalized older adults had considerable difficulties in completing the adult form. However, it is quite likely that the problems encountered by the participants in the Patterson et al. study would not apply to community-dwelling older individuals.

Research Rationale and Hypotheses

Currently, the epidemiology of anxiety disorders among older adults is not well understood. The first issues to be addressed are what is the qualitative nature of anxiety (i.e., what types of symptoms do people experience) and what are the appropriate assessment methods for quantifying anxiety. As symptoms are the essential elements of disorders, anxiety must be examined at the symptomatic level in older persons before anxiety disorders can be defined and identified with certainty.

The more commonly used anxiety self-report scales have been validated with samples of college students, anxiety patients, and other adult groups, but

not with older adults. Current measures may not be adequate for use with this age group due to the possibility that anxiety presents differently among older individuals. The use of inappropriate measures may lead to inaccurate estimates of anxiety because they may not assess anxiety as it occurs in older persons. There is also a need for further investigations of the relationship between anxiety and depression symptoms as measured by self-report instruments.

Hypotheses

There is a considerable lack of knowledge concerning anxiety in older adults. As such, this is an exploratory study designed to produce a preliminary basis for drawing conclusions and making predictions concerning anxiety in this age group. Based on the meagre psychometric research in this area, as well as indications of potential age group differences, the following hypotheses are proposed:

1. As older adults appear to be characterized by different anxiety symptoms than other segments of the population, it is hypothesized that there will be differences in the pattern of responding to the anxiety scales across age groups.
2. All existing anxiety self-report scales have been developed primarily for general adult populations. Therefore, relatively younger participants' results are hypothesized to show better convergent validity than those of relatively older participants.
3. In light of the considerable overlap between depression and

anxiety in older adults, it is hypothesized that there will be a stronger positive relationship between anxiety and depression in the older age group than in younger adults.

4. Because the construct of anxiety may be somewhat different across adult age groups, measures designed to assess anxiety in younger adults may not adequately represent the construct of anxiety among older persons. Thus, it is hypothesized that anxiety scales will demonstrate better internal reliability with younger adults than with older adults.

5. It is hypothesized that older persons will report lower levels of anxiety than younger adults, as the scales used in this study have not been tested and validated with older populations. Thus, the relatively low levels of anxiety found in other studies should be replicated in this study.

6. Based on suggestions in the literature that somatization of anxiety and depression is more common among older persons, it is hypothesized that older adults will report more symptomatic conditions.

Method

Participants

Older Adults. A list of 9,435 individuals 65 years of age and older residing in three postal code areas of Winnipeg was used to select participants. This list was utilized in a study conducted by the Department of Geography, University of Manitoba, that examined urban travel patterns. The three postal codes in question represent the Fort Garry, Charleswood, and St. Boniface areas of Winnipeg. There are no significant differences between them in terms of demographic social characteristics, except that the St. Boniface area has a larger Francophone community. However, there may be some differences between older adults in the areas studied and those in inner-city Winnipeg, which is characterized by a greater proportion of citizens with lower incomes. All individuals on the list are community-dwelling residents (i.e., no individuals residing in nursing homes, partial-care homes, or housing projects are included).

Every fifth individual on the list was selected as a potential participant for the urban travel study. These individuals were not considered for the present study, meaning that the sample was randomly drawn from a total of 7,548 persons. Two individuals were excluded because their phone numbers were not listed in the 1995 Winnipeg telephone directory, making follow-up telephone calls impossible. A summary of the final sample is given in Table 1.

Younger Adults. For comparison purposes, a sample of younger adults (i.e., adults aged 25-55) was also surveyed. A cutoff age of 55 was used

Table 1

Older Adult Sample

	St. Boniface	%	Charleswood	%	Fort Garry	%	Total
Mailed Surveys							
Females	26	33	33	42	20	25	79
Males	17	24	22	31	32	45	71
Total	43	29	55	37	52	35	150
Completed Surveys							
Males	11	24	21	47	13	29	45
Females	9	23	11	28	19	49	39
Total	20	24	32	38	32	38	84

instead of 64 in order to minimize overlapping characteristics between the two age groups. This sample was obtained from the 1996 Winnipeg Area Study (WAS) database. The WAS is an annual study of Winnipeg residents conducted by the Department of Sociology, University of Manitoba, that allows researchers to explore a variety of research questions through telephone interviews with a community sample. The database consists of all working telephone numbers within Winnipeg as listed in the Who Called Me directory. This directory is a numerical listing of all residential and business telephone numbers that are published in the Winnipeg telephone directory; the name(s) associated with each number are also listed. Persons with unlisted telephone numbers are not represented in the WAS database. A total of 100 younger adults was selected for the survey.

A computer program designed for the WAS was used to select a random sample of 599 telephone numbers. A large sample was selected in order to guard against a potential shortage of valid telephone numbers. Telephone numbers no longer in service could not be used in the present study, and telephone numbers that failed to correspond to designated requirements were excluded. Household telephone numbers were randomly designated to determine whether males or females would be asked to participate and, if a person of the designated sex was not available, the telephone number was excluded. Similarly, if a telephone number did not correspond to a person in the younger adult age range, it was excluded. Accurate prediction of how many telephone numbers would be excluded was not possible.

The program used to select the sample requires users to provide a random seed number. In other words, users enter any number they wish (e.g., 23) into the program, which becomes the case number from which the computer program begins. This procedure overcomes the problem that computer programs which select random cases are not truly random in that they follow a logical pattern. As such, it is possible that drawing multiple samples from a population could eventually lead to overlap in the cases chosen. However, using a seed number ensures that the program's starting point will almost always be different, meaning that the pattern should not result in the selection of the same cases.

Procedure

Mailing Surveys. Packages consisting of one copy of each self-report scale were prepared and numbered in order to facilitate identification of individual participants' results. To counterbalance ordering effects, half the packages had one order of scales and the other half had a different order (see Appendix H). The packages were mailed to individuals along with a cover letter providing a general explanation of the study (see Appendixes I, J), a telephone number they could call if they had questions about the study, and a stamped, self-addressed envelope for returning the completed scales. A total of seven surveys (four assigned to older adults, three assigned to younger adults) were returned as undeliverable and were re-assigned to eligible participants. Also, the investigator replaced five older adults with other participants after learning they were deceased or institutionalized after speaking with family members.

Dillman's (1978) recommendations for conducting a mail survey were followed. Some of these recommendations include personalizing the survey package and contacting participants after the packages are mailed. Participants were telephoned five working days after the mailing date to ensure the surveys had been received and were being completed. Numbers that were answered by machines were telephoned up to two more times during the following two days and a message was left if they were still unavailable by the third call. Four weeks after the mailing date the same telephoning procedure was used to reach non-respondents unless they indicated during the previous telephone call that they would not participate.

The telephone protocol was slightly different for older adults, as this group was offered the options of having the researcher assist them in person with the surveys or having the surveys picked up directly from them (see Appendixes K, L). All follow-up protocols were modified slightly to leave messages on answering machines. Specifically, the phrase "Did you have any questions about it" was replaced with "If you have any questions or would like to discuss anything, you can reach me at 474-9222." This phrase was always placed at the end of the message. Three older adults could not be reached because their telephone numbers were no longer in service. One older adult requested that the researcher assist her with completing the survey because an injury left her unable to write. This individual did not ask any questions about the scale items and the researcher kept discussion at a minimum while filling out the survey.

Older Adults. It was not necessary to telephone older participants to determine eligibility prior to mailing their surveys, but the investigator telephoned a sub-sample of 10 older adults to determine if contact prior to mailing would affect the response rate. Four of the individuals who were contacted by telephone indicated they did not want to participate. Three of the remaining six returned their surveys, resulting in a response rate of 30%. A comparison group of 10 older adults were sent surveys without being telephoned beforehand, and two surveys were returned. As there was no significant advantage to contacting older adults prior to mailing the surveys, the remaining 130 persons were not telephoned.

Younger Adults. The investigator was given a list of randomly selected telephone numbers as described above. The researcher began with the first number on the list and proceeded sequentially until 100 valid numbers were obtained by the following procedure. In order to determine if younger adults lived in the households represented by these numbers, the investigator telephoned and inquired if there was a younger adult in the home and if it would be possible to have the adult's first name (see Appendix G). If there was no young adult, the number was excluded from the study. Also, if the young adult was not male or female as designated on the telephone list, the number was rejected. Some potentially eligible persons reported they were not interested in the study, and some individuals refused to indicate if there was a young adult present or to provide the adult's name; these telephone numbers were consequently excluded.

When an answering machine responded to the telephone call, the researcher did not leave a message and made two additional efforts to reach an actual person. Four telephone numbers were answered by a machine on all three occasions and were excluded from the study. Table 2 presents a summary of how many younger adults were telephoned, how many were excluded, and the final return rate within this age group.

Young adults who were contacted successfully were then located in the Who Called Me directory to determine their surnames. The full names were used to locate mailing addresses as listed in the 1995 Winnipeg telephone directory. A postal code directory was then used to determine postal codes. Nine individuals who were not listed in either the Who Called Me or telephone directories were excluded, as their mailing addresses were not readily available.

Measures

1. Fear Questionnaire (FQ; Marks & Mathews, 1979; Appendix A). The FQ was included because phobias are among the most common anxiety disorders in older adults (Myers et al., 1984). Respondents rate the extent to which they avoid each of 15 situations. Possible responses range from "would not avoid it" (0) to "always avoid it" (8). The FQ is divided evenly into three subscales: Blood-Injury Phobia (BI), Social Phobia (SO), and Agoraphobia (AG). Examples of items from each subscale include the following: "injections or minor surgery" (BI); "speaking or acting to an audience" (SO); and "going alone far from home" (AG). Possible scores for the total scale range from 0 to 120; the

Table 2Younger Adult Sample

		Percentage of Total
Total Numbers Called	169	100%
Ineligible	37	22%
Refused to Participate	32	19%
Mailed Surveys	100	59%
Completed Surveys	48	48%

range for each subscale is 0 to 40, with higher scores indicating higher levels of fear.

Mizes and Crawford (1986) found that a normative sample of 172 community-dwelling adults yielded a total mean score of 21.2 ($SD=14.5$) for females and 22.8 ($SD=14.1$) for males. Based on females' results, the means for the subscales were as follows: Blood-Injury Phobia - 7.3 ($SD=6.0$), Social Phobia - 8.8 ($SD=6.1$), Agoraphobia - 5.0 ($SD=6.0$). The following represent males' subscale means: BI - 9.1 ($SD=6.5$), SO - 8.9 ($SD=5.5$), AG - 4.9 ($SD=5.1$). A community sample of 242 adults aged 18 - 65 yielded an overall mean of 28.6 ($SD=18.5$) (Gillis, Haaga, & Ford, 1995).

The subscales are internally consistent, with most items loading on their respective factor in the range of 0.7 and loading on the other factors in the range of 0.2 (Arrindell, Emmelkamp, & Van der Ende, 1984). Osman, Barrios, Osman, and Markway (1993) found that the subscales possess satisfactory internal reliability. The BI, SO, and AG subscales yielded alpha coefficients of .73, .71, and .78, respectively. This study also found that the three subscales correlated significantly with other measures of anxiety, indicating convergent validity. Evidence for the discriminant validity of the FQ comes from findings that show that the FQ discriminates between phobic and non-phobic anxiety patients (Moylan & Oei, 1992), and differentiates between social phobia and agoraphobia (Cox, Swinson, & Shaw, 1991). Michelson and Mavissakalian (1983) obtained a test-retest reliability coefficient of .79 for the whole scale over a 16-week period. Arrindell, Emmelkamp, and Van der Ende (1984) examined

the test-retest reliabilities of each subscale over a 13-month period and obtained values of .79 (BI), .80 (SO), and .87 (AG).

2. The Trait Scale of the State-Trait Anxiety Inventory, Form Y (STAI-T; Spielberger, 1983; Appendix B). The inclusion of the Trait Scale allowed for the measurement of general anxiety symptoms. The State Scale of the STAI was not used, as the purpose of this study is to investigate anxiety symptoms as ongoing problems rather than as situational reactions. The Trait Scale requires respondents to rate twenty items on a four-point scale in terms of how often they are experienced. Possible responses range from "almost never" (1) to "almost always" (4). The range of possible scores is 20 to 80, with higher scores indicating higher levels of trait anxiety. The scale contains nine items that are reverse-scored (e.g., "I am a steady person"). The mean scores for a normative sample of 1,838 adults were 35.7 for males (SD=9.1) and 35.2 for females (SD=9.2) (Spielberger, 1983).

Spielberger (1983) conducted several studies of the psychometric properties of the STAI. When used with a sample of high school students, the STAI produced test-retest reliability coefficients of .71 for males and .75 for females over a 60 day period. In terms of inter-item reliability, an alpha coefficient of .93 was obtained with a sample of working adults. The STAI was found to correlate with other measures of trait anxiety ranging from .52 to .80.

3. Anxiety Sensitivity Index (ASI; Reiss, Peterson, Gursky, & McNally, 1986; Appendix C). The ASI was included in order to help determine how commonly panic symptoms occur in older adults (as opposed to panic disorder, which is

known to be uncommon). The ASI consists of 16 items which measure fear of anxiety symptoms. Respondents indicate on a five-point scale ranging from "very little" (0) to "very much" (4) the extent to which each item applies to them. An example of an item is, "It is important to me not to appear nervous." The possible range of scores is 0 to 64, with higher scores indicating greater anxiety sensitivity. There is no definite cutoff score for what constitutes high AS, but Peterson and Reiss (1987) advocate using a cutoff of one standard deviation above the mean. Because significant gender differences have been found, they further recommend using different cutoff scores for males and females. They state that the expected mean for females is 20.5 and the expected mean for males is 15.4. These figures were obtained by research conducted with college samples; community-based samples may differ somewhat.

The ASI is thought to predict vulnerability to anxiety disorders in general and to panic disorder in particular (Taylor, Koch, & McNally, 1992). Maller and Reiss (1992) found that high anxiety sensitivity scores obtained from college students in 1984 were significantly related to the occurrence of panic attacks in these individuals over the following three years. They also found the test-retest reliability of the ASI to be .71 across the three-year span. Reiss, Peterson, Gursky and McNally (1986) found a two- week test-retest reliability of .75 for the ASI. They also reported that 41.7% of items on the ASI were significantly correlated in an analysis of inter-item reliability.

Taylor, Koch, and Crockett (1991) conducted a series of analyses that demonstrate that the ASI measures a construct that is distinct from trait anxiety

as measured by the STAI-T. Factor analysis demonstrated that anxiety sensitivity and trait anxiety items load on two different factors that have a correlation coefficient of .39. The authors performed an inter-battery analysis and determined that the relationship between the ASI and the STAI-T is due to the broad similarities of the constructs being studied rather than similarities in item content. There is some controversy regarding whether anxiety sensitivity is a unidimensional construct, or if it consists of multiple factors (Taylor, Koch, & Crockett, 1991).

4. Hopkins Symptom Checklist, Somatization Subscale (SCL-SOM; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974; Appendix D). This scale was used to measure the extent of somatization in both age groups. Respondents rate how much they are bothered by physical ailments such as headaches. The physical problems listed in the SCL-SOM are representative of many of the symptoms of somatization disorder as defined in the DSM-IV (American Psychiatric Association, 1994). The SCL-SOM consists of 12 items on a five-point scale ranging from "not at all" (0) to "extremely" (4). Possible scores range from 0 to 48, with higher scores representing greater levels of somatization.

Derogatis, Lipman, Rickels, Uhlenhuth, and Covi (1974) obtained an alpha coefficient of .84 for the SCL-SOM. They also found that the test-retest reliability coefficient over one week was .75, and an inter-rater reliability coefficient of .64 was obtained. Although the SCL-SOM has not been tested with older populations, it has been used successfully with many different

populations, suggesting its utility may also extend to older persons. Cronbach's alpha will be calculated to determine if this measure maintains inter-item reliability when used with older adults.

5. Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Appendix E). This scale was chosen as a measure of depression because it is widely used and has demonstrated adequate validity and reliability with various adult age groups (Gallagher, 1986). The BDI requires respondents to choose statements that best reflect the extent to which indicators of depression are applicable. The statements vary with the individual indicators. For example, one set of statements requires respondents to choose between the following: (0) I do not feel sad; (1) I feel sad; (2) I am sad all the time and I can't snap out of it; (3) I am so sad or unhappy that I can't stand it. The scale consists of 21 indicators and their accompanying statements. The range of possible scores is 0 to 63. Scores of 0 to 9 are considered to be minimal and not indicative of significant depression; scores of 10 to 16 signal mild depression; scores within the 17 to 29 range reflect moderate depression; and scores higher than 29 indicate severe depression.

Gallagher, Nies, and Thompson (1982) investigated the psychometric properties of the BDI when applied to older persons. Using a community sample of 82 older adults, they obtained a test-retest reliability coefficient of .90 when the test was administered 6-21 days apart. They also obtained an alpha coefficient of .91. The two testing sessions produced means of 5.54 ($SD=4.67$) and 4.61 ($SD=4.84$). In an examination of the validity of the BDI when applied

to older age groups, 91% of individuals who scored high on the BDI were independently diagnosed as experiencing a major depressive episode (Gallagher, Breckenridge, Steinmetz, & Thompson, 1983).

Miller and Seligman (1973) obtained a test-retest coefficient of .74 over a three-month interval when the BDI was used with adults of all ages. The BDI yielded a split-half, inter-item reliability estimate of .93 when used with various adult age groups (Beck, 1961). A community sample of 51 adults yielded a mean of 1.57 ($SD=2.16$) (Brandenburg-Hruska, Weinman, & Mathew, 1980). Weinman, Levin, and Mathew (1982) obtained a mean of 1.90 ($SD=2.65$) based on a community sample of 100 adults. For purposes of the present study, the word "old" has been deleted from item 14, as the researcher feels that it would be offensive to use this word as a synonym for "unattractive."

6. A checklist of chronic illnesses (Illness Checklist; IC; see Chappell, 1981; Appendix F) was included to help determine if somatization scores are related to actual illnesses in older adults. Considering that medical problems are more common among older age groups, it is possible that older adults' scores on the somatization scale could be confounded. The author is not aware of any somatization scales that have been validated with older adults.

The Illness Checklist has been used in numerous Canadian studies concerning illness in later life, including several projects conducted at the Centre on Aging at the University of Manitoba (e.g., Strain, 1993; 1996). It consists of 24 illnesses that are common in later life. Respondents indicate whether or not they have experienced each of these problems within the last

year in a "yes or no" format. The 25th item allows people to list any additional problem they may have had during the past year. Psychometric data concerning the Illness Checklist is largely non-existent, but one study produced an alpha value of .55 based on data from 3,433 older adults in Manitoba, Canada (Chappell, 1981). As there is no reason to assume that chronic illnesses are equally related, the low alpha value is not of concern. Test-retest reliability data are not available.

For the purposes of this study, each item answered "yes" was assigned a value of one and each "no" answer was assigned a value of zero. The items were then added for a total score. The 25th item was not included when calculating scores. This scale was given only to older participants, as its utility for younger adults is not clear. Also, the potential problem of somatization scores being confounded by actual illnesses is not as relevant for younger adults.

Results

Data Screening

Because the age range of 65 and older is very large, the data from older adults were divided into two age groups: older-old, consisting of 75 years of age and older, and younger-old, consisting of ages 65-74. The data within each age group were also divided by gender in order to assess potential gender differences.

Missing values were replaced by either the scale mean or the subscale mean (when applicable) on instruments that had up to 25% missing data. Scales that had more than 25% missing data were excluded from analyses; this occurred only within the older age groups. The following is a list of which and how many scales were excluded: Fear Questionnaire (2); Anxiety Sensitivity Index (3); Beck Depression Inventory (1); and the Somatization Subscale (4).

The same procedure applied to the Illness Checklist, with the scale mean used as a replacement value for missing data on scales that had up to 25% missing data. With respect to Illness Checklist results that had more than 25% missing data, some older individuals circled "Yes" for a few items and left the remaining items blank. These blank items were interpreted as "No" responses. In contrast, a few respondents circled both "Yes" and "No" responses to individual items on the Illness Checklist, making it difficult to interpret blank items (i.e., they may have also represented a mixture of "Yes" and "No"). A total of nine respondents' Illness Checklist results were excluded due to missing

responses that could not be coded as "No."

An exception to the 25% guideline discussed above was the STAI-T. Individuals who had three or more missing items on the STAI-T were not included in analyses because more than two missing items on this scale may compromise its validity (Spielberger, 1983). This resulted in the exclusion of eight STAI-T scale results. There were no apparent patterns linking gender with failure to complete any of the scales.

The data were converted to Z scores and screened for univariate outliers. Following the recommendations of Tabachnick and Fidell (1989), outliers were defined as scores exceeding +3 or -3 on the standardized curve. A total of four outlier scores were identified by examining all variables except the Illness Checklist (there is no basis for assuming this checklist should yield a normal distribution). The completed surveys of the outliers were examined for indicators of invalid responding, such as large quantities of missing data or response sets. This inspection revealed no apparent reasons for questioning the validity of their data and the outliers were retained in the data set.

Tests of skewness and kurtosis revealed few violations of assumptions of normality, although the BDI , FQ, and SCL-SOM were characterized by positive skewness and/or kurtosis in some groups. With respect to the BDI and FQ, skewness and kurtosis applied mainly to younger adults' results. Non-normality in the SCL-SOM distributions occurred only within older age groups. Because this is a preliminary study involving community samples, the data were not transformed into normal distributions, as the author felt that this might

compromise the interpretation of the results. In other words, altering the data obtained in this study would run counter to the objective of determining the profiles obtained when anxiety scales are used with older people.

Description of Statistical Analyses

A MANOVA requires that the following conditions be met: (1) multivariate normality; (2) linearity of dependent variables; (3) homogeneity of variance-covariance matrices; and (4) absence of multicollinearity. All of the MANOVAs conducted in the present study satisfied the assumption of linearity, as assessed by bivariate scatterplots. There was no deviation from homogeneity of variance-covariance matrices as indicated by Box's M test. All Box's M tests were tested at the $p < .001$ significance level because Tabachnick and Fidell (1989) note that the Box's M test is sensitive to a variety of influences, and should not be interpreted as significant unless $p < .001$. The determinants of the within-cell correlation matrices did not indicate the presence of multicollinearity.

Multivariate normality was not guaranteed, as the distribution of the FQ results in some groups was positively skewed. However, Mardia (as cited in Tabachnick & Fidell, 1989) demonstrated that modest violations of normality are not problematic for MANOVA as long as the violation stems from skewness rather than outliers. The presence of multivariate outliers was tested by calculating Mahalanobis' distance, which revealed no multivariate outliers within any MANOVA. Pillai's F values were used to evaluate multivariate comparisons and univariate F tests were used to test for independent effects.

An alpha level of .05 was used for all tests of significance in this study.

According to Aron and Aron (1994), the .05 cutoff represents an acceptable compromise between Type I errors (concluding that a hypothesis is true when in fact it is false) and Type II errors (concluding that a hypothesis is false when in fact it is true). Considering that the present study is chiefly exploratory, rather than a confirmation of previous results, the use of a more stringent confidence level (e.g., .01) could have lead to the dismissal of informative results.

Fisher z comparisons were used in some analyses to determine if correlation coefficients were significantly different. This procedure involves converting coefficients to z scores and then finding the difference between z scores. The difference is referred to as the $q(s)$ value. This value is then compared to critical values [denoted as $q(c)$] provided in a published table (see Cohen, 1969). If a $q(s)$ value equals or exceeds the critical value listed for the corresponding sample size, then the two coefficients being compared are significantly different.

Power Analyses

Statistical power is the likelihood that an analysis will yield a significant result if the underlying research hypothesis is correct (Aron & Aron, 1994).

Power analyses were conducted to determine whether the obtained sample sizes were adequate to detect medium effect sizes in comparisons of group means. A medium effect size was defined as $d = .50$. A medium effect size means that the distributions of the two groups being compared will overlap to an extent of about 67%. Power values were found to exceed .80, as determined by

power tables (Cohen, as cited in Aron & Aron, 1994). The same procedure was followed for correlational analyses. In this regard, power values were found to exceed .69 for a medium effect size. Thus, power was within an acceptable range.

Testing Within-Group Age Differences

In order to test for potential differences between older-old and younger-old age groups, data from older-old females were compared with data from younger-old females, and older-old males' results were compared with younger-old males' results. A two-group MANOVA was conducted within each gender group to test for significant differences on the anxiety scales. Only the anxiety scales were used as dependent measures, as they are of primary interest in this study. Initially, MANOVAs were conducted with each subscale of the Fear Questionnaire entered as separate dependent variables, but singularity of matrices precluded the calculation of multivariate F . Univariate F values for the three subscales were obtained from these analyses. Multivariate and univariate F values for the three anxiety scales were obtained from MANOVAs conducted without the FQ subscales.

Older Females. There was no significant multivariate effect between older female groups, $F(3,26) = 1.86$, $p > .05$. No significant univariate effects were obtained for the ASI, $F(1,26) = 0.42$, $p > .05$; the FQ, $F(1,26) = 1.96$, $p > .05$; and the STAI-T, $F(1,26) = 0.06$, $p > .05$. The subscales of the FQ also failed to produce significant univariate effects. According to these results, it appears that there are no significant differences between older-old and younger-old

females with respect to their anxiety scale scores. Because of this, data from older-old and younger-old females were combined for subsequent analyses.

Older Males. Older male groups also failed to demonstrate a significant multivariate effect, $F(3,34) = 1.38$, $p > .05$. The ASI did not reveal a significant univariate effect, $F(1,34) = 0.07$, $p > .05$; and the STAI-T also did not demonstrate group differences, $F(1,34) = 0.35$, $p > .05$. However, the comparison of FQ results revealed a marginally significant difference, with older-old males scoring higher, $F(1,34) = 4.09$, $p = .05$ (M younger-old = 13.2, $SD=10.2$, vs. M older-old = 23.1, $SD=14.5$). Univariate F tests based on the FQ subscales did not produce significant results for the Blood-Injury and Agoraphobia subscales, but males in the older-old group scored significantly higher than younger-old males on the Social Phobia subscale, $F(1,34) = 5.26$, $p < .05$ (M younger-old = 5.48, $SD=4.52$, vs. M older-old = 10.1, $SD=6.02$). Because the majority of the univariate tests (as well as the multivariate comparison) failed to demonstrate significant differences between older-old and younger-old males, data from these two groups were collapsed.

Testing Gender Differences

After the data from the four older age groups were combined into two groups (i.e., 39 older females, mean age of 76.1; 45 older males, mean age of 74.5), a two-group MANOVA was used to test for gender differences on anxiety scale scores. This analysis revealed a significant multivariate effect, $F(3,72) = 2.79$, $p < .05$. A series of univariate F tests revealed that older females scored higher than older males on the ASI, $F(1,72) = 6.33$, $p < .05$ (M older females =

18.8, $SD=12.9$ vs. M older males = 13.9, $SD=8.3$). Older females also scored higher than older males on the STAI-T, $F(1,72) = 4.00$, $p < .05$ (M older females = 39.3, $SD=9.9$ vs. M older males = 33.8, $SD=10.0$). Although not statistically significant, there was a similar pattern of higher scores for older females than older males in the FQ results, $F(1,72) = 3.31$, $p < .10$ (M older females = 23.7, $SD=17.6$ vs. M older males = 17.5, $SD=13.3$). Finally, there was a significant difference on the Social Phobia subscale of the FQ, $F(1,72) = 5.75$, $p < .05$ (M older females = 10.2, $SD=6.70$ vs. M older males = 6.93, $SD=5.44$). As a result of these gender differences, data were analyzed separately for older males and females in subsequent analyses.

Younger adults' data were also analyzed for gender differences using a MANOVA. No significant multivariate effect was obtained, $F(3, 46) = 0.54$, $p > .05$. Univariate analyses also failed to demonstrate gender differences on the ASI, $F(1,46) = 0.69$, $p > .05$; the FQ, $F(1,46) = 1.35$, $p > .05$; and the STAI-T, $F(1,46) = 0.00$, $p > .05$. Similarly, univariate analyses of the FQ subscales did not produce significant results. Descriptive data for each gender are reported in Appendix M. Based on the apparent lack of gender differences, data from younger males and females were combined. The resulting group consisted of 22 males (mean age of 40.7) and 26 females (mean age of 39.8).

Descriptive Results

Table 3 presents the means and standard deviations for each combined group on all scales. These data provide a basis for identifying overall similarities and differences between groups. With respect to gender group

Table 3
Mean Scores On All Scales

Scale	Older Females				Older Males				Younger Adults			
	n	M	SD	n	M	SD	n	M	SD	n	M	SD
ASI	38	18.8	12.9	43	13.9	8.3	48	17.4	9.3			
FQ	38	23.7	17.6	44	17.5	13.3	48	19.8	11.9			
Agoraphobia	38	8.6	8.8	44	4.9	7.4	48	4.2	5.2			
Blood-Injury	38	5.0	5.0	44	5.7	6.2	48	6.7	5.8			
Social	38	10.2	6.7	44	6.9	5.4	48	8.9	5.6			
STAI-T	34	39.3	9.9	42	33.8	10.0	48	38.9	10.9			
BDI	39	9.3	6.6	44	6.6	4.4	48	7.8	8.1			

table continues

Anxiety in Older Adults 48

Scale	Older Females			Older Males			Younger Adults		
	n	M	SD	n	M	SD	n	M	SD
SCL-SOM	36	6.2	6.1	44	4.8	5.1	48	7.1	5.1
Illness Checklist ^a	34	4.9	3.9	41	3.5	2.4			

^aThe Illness Checklist was not administered to younger adults.

differences, older females produced higher means than older males on all three anxiety scales, as well as two of the three FQ subscales (Agoraphobia and Social Phobia). This pattern also held true for the BDI and the SCL-SOM. Regarding age group differences, older females produced higher means than younger adults on the anxiety scales and the BDI. Older females' mean scores on the Agoraphobia and Social Phobia subscales of the FQ were also higher than younger adults'. However, older males' mean scores on the anxiety scales and the BDI were lower than those of younger adults. Older males demonstrated a marginally higher mean on the Agoraphobia than younger adults. The SCL-SOM scores demonstrated a slight variation of this pattern, with the largest mean associated with younger adults, followed by older females.

Analyses of Hypotheses

Hypothesis 1. Hypothesis 1 stated that there would be differences in the pattern of responding to the anxiety scales across age groups. Scale item scores, relative to each other, were expected to be more similar within each participant group than when groups were compared. To test this hypothesis, item means for each scale were rank-ordered within each group. Spearman's rho coefficients were calculated between groups for each anxiety scale and tested with two-tailed t-tests. It was expected that the correlations would not exceed 0.3, which is generally considered a moderate correlation (Cohen, as cited in Aron & Aron, 1994). In order to provide a measure of internal consistency within the younger adult group, this group was randomly divided

into two equal subgroups and Spearman correlations were calculated between the two younger adult subgroups.

As can be seen in Table 4, all coefficients are larger than 0.3 and statistically significant. Apparently, there are no age differences in terms of patterns of responses. In fact, older males' responses were more similar to those of younger adults' than to those of older females on the STAI-T and FQ. Older females' responses were more similar to those of younger adults' than to those of older males on the STAI-T. Younger adults demonstrated greater internal consistency on the STAI-T and the FQ than older adults. Results based on the ASI were consistent between groups, indicating no significant differences in terms of patterns of responses. In summary, the results do not support Hypothesis 1.

Table 5 presents the three items on each anxiety scale that yielded the highest mean scores for each age group. Results are consistent across groups, indicating few age group differences. Item means for each group on all dependent measures are presented in Appendixes N-S. Table 6 presents the anxiety scale items that produced the largest mean differences between- and within-groups. There is considerable overlap in terms of which items produced the greatest differences between older females and older males, and those that produced the greatest differences between older adults and younger adults. Two patterns are evident in the results presented in Table 6. First, older females consistently scored higher than older males on those items that produced the greatest differences. Second, with only one exception, younger

Table 4

Spearman Correlations Testing Patterns of Responses

Measure and Groups	n	r
ASI		
Older females - older males	81	.93*
Older females - younger adults	86	.92*
Older males - younger adults	91	.86*
Younger subgroup 1 - younger subgroup 2	48	.94*
FQ		
Older females - older males	82	.64*
Older females - younger adults	86	.52*
Older males - younger adults	92	.77*
Younger subgroup 1 - younger subgroup 2	48	.92*

*p < .05, two-tailed.

Measure and

Groups

D**r**

STAI-T

Older females - older males	76	.60*
Older females - younger adults	82	.65*
Older males - younger adults	90	.76*
Younger subgroup 1 - younger subgroup 2	48	.85*

* $p < .05$, two-tailed.

Table 5Anxiety Scale Items Exhibiting Largest Mean Scores

Measure and Groups	<u>Items</u>		
	Largest Mean	Second-largest Mean	Third-largest Mean
ASI			
Older females	5	10	6
Older males	5	10	6
Younger adults	5	1	6
FQ			
Older females	13	11	6
Older males	13	12	10
Younger adults	13	6	10
STAI-T			
Older females	14	7	6
Older males	6	14	7
Younger adults	6	7	14

Note. See appendixes A, B, C for actual items.

Table 6**Anxiety Scale Items Exhibiting Largest Mean Differences**

Measure and Groups	<u>Items</u>		
	Largest Difference	Second-largest Difference	Third-largest Difference
ASI			
Older females - younger adults	1 ^a	5 ^a	11 ^b
Older males - younger adults	1 ^a	5 ^a	9 ^b
Older females - older males	16 ^c	7 ^c	12 ^c
FQ			
Older females - younger adults	5 ^b	11 ^b	13 ^b
Older males - younger adults	6 ^a	8 ^a	1 ^a
Older females - older males	5 ^c	6 ^c	13 ^c

^aHigher scores belong to younger group.

^bHigher scores belong to older group.

^cHigher scores belong to older females.

table continues

Measure and Groups	<u>Items</u>		
	Largest Difference	Second-largest Difference	Third-largest Difference
STAI-T			
Older females - younger adults	15 ^b	6 ^a	18 ^b
Older males - younger adults	8 ^a	16 ^a	12 ^a
Older females - older males	12 ^c	9 ^c	17,20 ^c

^aHigher scores belong to younger group.

^bHigher scores belong to older group.

^cHigher scores belong to older females.

adults scored higher than older males. These findings suggest that, while patterns of responding are fairly consistent across groups, older males have consistently lower mean item scores.

Hypothesis 2. Hypothesis 2 predicted that the anxiety scales would demonstrate better convergent validity within the younger adult age group. This prediction was tested by calculating Pearson correlations between each pair of anxiety scales in each age group. Because the scales do not measure precisely the same construct, correlations were expected to be moderate (i.e., approximately 0.3 - 0.4) and positive within the younger age group.

The correlations in the older age group were expected to be positive but less than 0.3. The significance of all correlations was tested by one-tailed t-tests. As can be seen in Table 7, the correlations were somewhat larger than expected for both younger adults and older females. Older females yielded a mean inter-scale correlation coefficient of $r(33) = .48$. For older males, the mean inter-scale correlation coefficient was $r(42) = .16$. Finally, a mean inter-scale correlation coefficient of $r(48) = .49$ was obtained from the younger adult group. All mean inter-scale correlation coefficients were calculated without including data from the FQ subscales, as their inclusion would have inflated the mean values.

For the purposes of this analysis, a significant difference between two correlation coefficients would suggest that the larger coefficient reflects greater convergent validity. For example, the ASI and STAI-T yielded a correlation of .35 in the older female group and .50 in the younger adult group. The resulting

Table 7

Inter-Scale Pearson Correlations Between All Scales

Scale/Subscale	ASI	FQ	Agoraphobia	Blood-Injury	Social	STAI-T	BDI	SCL-SOM	IC
Older females									
1. ASI	...								
2. FQ	.59*** (37)	...							
3. Agoraphobia	.47** (37)	.92*** (38)	...						
4. Blood-Injury	.49*** (37)	.73*** (38)	.53** (38)	...					
5. Social	.58*** (37)	.87*** (38)	.70*** (38)	.49** (38)	...				
6. STAI-T	.35* (33)	.51** (33)	.55** (38)	.26 (33)	.42* (33)	...			

Note. Parenthetical values denote \bar{t} . All tests of significance are one-tailed.

* $p < .05$. ** $p < .01$. *** $p < .001$.

table continues

Scale/Subscale	ASI	FQ	Agoraphobia	Blood-Injury	Social	STAI-T	BDI	SCL-SOM	IC
7. BDI	.58*** (38)	.66*** (38)	.61*** (38)	.43*** (38)	.61*** (38)	.83*** (34)	--		
8. SCL-SOM	.32 (35)	.45** (36)	.48** (36)	.17 (36)	.43** (36)	.70*** (33)	.61*** (36)	--	
9. IC	.56** (33)	.50*** (33)	.45** (33)	.45** (33)	.42* (33)	.74*** (32)	.63*** (34)	.53** (33)	--

Note. Parenthetical values denote η^2 . All tests of significance are one-tailed.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Scale/Subscale	ASI	FQ	Agoraphobia	Blood-Injury	Social	STAI-T	BDI	SCL-SOM	IC
Older Males									
1. ASI	--								
2. FQ	.08 (43)	--							
3. Agoraphobia	-.14 (43)	.74*** (44)	--						
4. Blood-Injury	.11 (43)	.64*** (44)	.12 (44)	--					
5. Social	.28 (43)	.71*** (44)	.31* (44)	.27 (44)	--				
6. STAI-T	.14 (42)	.25 (42)	.09 (42)	.10 (42)	.38* (42)	--			

Note. Parenthetical values denote η. All tests of significance are one-tailed.

*p < .05. **p < .01. ***p < .001.

Scale/Subscale	ASI	FQ	Agoraphobia	Blood-Injury	Social	STAI-T	BDI	SCL-SOM	IC
7. BDI	.26 (42)	.39*** (43)	.26 (43)	.10 (43)	.50** (43)	.44*** (41)	--	--	--
8. SCL-SOM	.25 (43)	.30 (44)	.10 (44)	.21 (44)	.35* (44)	.42** (42)	.58*** (43)	--	--
9. IC	.10 (40)	.25 (41)	.20 (41)	-.02 (41)	.33* (41)	.38* (39)	.49** (40)	.64*** (41)	--

Note. Parenthetical values denote η . All tests of significance are one-tailed.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Scale/Subscale ^b	ASI	FQ	Agoraphobia	Blood-Injury	Social	STAI-T	BDI	SCL-SOM
1. ASI	--							Younger Adults (n=48)
2. FQ	.58***	--						
3. Agoraphobia	.53***	.81***	--					
4. Blood-Injury	.18	.58***	.16	--				
5. Social	.57***	.81***	.63***	.13	--			
6. STAI-T	.50***	.39**	.28	.11	.47**	--		

Note. Parenthetical values denote η . All tests of significance are one-tailed.

Health Checklist not administered to younger adults.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Scale/Subscale	ASI	FQ	Agoraphobia	Blood-Injury	Social	STAI-T	BDI	SCL-SOM
7. BDI	.45**	.38**	.41**	-.11	.54***	.73***	--	
8. SCL-SOM	.37*	.19	.27	-.16	.30*	.46**	.41**	--

Note. Parenthetical values denote 1. All tests of significance are one-tailed.

Health Checklist not administered to younger adults.

* $p < .05$. ** $p < .01$. *** $p < .001$.

q(s) value, .18, does not exceed the corresponding critical value of .44. Thus, the ASI and STAI-T demonstrate better convergent validity in the younger adult group, as is evidenced by the larger correlation coefficient, but the convergent validity is not significantly greater than that found within the older adult female group.

Table 8 presents the results of Fisher χ^2 comparisons. Comparisons between older males and females revealed significant differences with respect to the ASI/FQ correlations. The ASI/FQ correlation coefficient was significantly lower for older males, suggesting that this pair of anxiety scales demonstrates better convergent validity among older females.

When older males and younger adults were compared, only the ASI/FQ correlations were significantly different, with younger adults demonstrating greater convergent validity. Despite the fact that only the ASI/FQ correlations were significantly different between younger adults and older males, it should be noted that all inter-scale correlations were significant within the younger group, whereas none were significant within the older male group. No inter-scale correlations were significantly different between older females and younger adults. In summary, Hypothesis 2 was partially supported, with younger adults demonstrating better convergent validity on anxiety scales than older males; no differences were found between younger adults and older females.

Hypothesis 3. Hypothesis 3 predicted that there would be a stronger positive relationship between anxiety and depression in the older age group

Table 8

Fisher z Comparisons Of Anxiety and Depression Scales

Measures	Older Females - Younger Adults		Older Adults		Older Males - Younger Adults	
	n	q(s)	n	q(s)	n	q(s)
ASI / FQ	42	.02	40	.60*	44	.58*
ASI / STAI-T	39	.18	37	.22	45	.41
FQ / STAI-T	39	.15	37	.31	44	.16
ASI / BDI	43	.18	40	.40	45	.22
FQ / BDI	43	.39	40	.38	44	.01
STAI-T / BDI	39	.26	37	.57*	44	.31

*p < .05, one-tailed.

table continues

Measures	Older Females - Younger Adults		Older Adults		Older Males - Younger Adults	
	n	q(s)	n	q(s)	n	q(s)
ASI / SCL-SOM	40	.06	39	.08	45	.13
FQ / SCL-SOM	41	.30	40	.18	46	.13
STAI-T / SCL-SOM	39	.34	37	.42	45	.08
ASI / IC ^a			36	.53*		
FQ / IC			37	.29		
STAI-T / IC			35	.55*		

illness Checklist was not administered to younger adults.

*p < .05, one-tailed.

than in the younger group. Pearson correlation coefficients for the BDI and the anxiety scales are presented in Table 7, as well as the results of one-tailed t-tests of significance. Fisher \geq comparisons revealed no significant differences between combined older and younger adults with respect to correlations between the BDI and the anxiety scales, as can be seen in Table 8. A within-group analysis for the older adults indicated minor gender differences, with the correlation between the STAI-T and the BDI being significantly greater for older females, $r(34) = .83$, than for older males, $r(41) = .55$.

All correlations between the anxiety scales and the BDI were not significantly different across age groups. However, all anxiety scale/BDI correlations were consistently larger for older females than for younger adults. Thus, there was partial support for Hypothesis 3, but only with respect to older females. Older males produced smaller correlations than younger adults for every combination of anxiety scales and the BDI, except the BDI and FQ, which yielded a coefficient of $r(43) = .39$ among older males and a coefficient of $r(48) = .38$ among younger adults. Two-tailed t-tests revealed no significant differences between combined age groups on total BDI scores, but older females scored significantly higher than older males, $t(81) = 2.17$, $p < .05$.

As additional tests of the extent to which anxiety is related to other symptoms across age groups, Pearson correlations were calculated for the anxiety scales and both the Somatization Subscale (SCL-SOM) and the Illness Checklist. As can be seen in Table 7, there are no obvious age group differences, with some SCL-SOM-anxiety scale correlations being higher for

younger adults and some being lower. A pattern of gender differences emerges within the older age group, with older females demonstrating larger correlations than older males. The relative strength of the correlations across anxiety scales was the same for both gender groups (i.e., the SCL-SOM and the STAI-T produced the largest correlation in both gender groups, followed by the SCL-SOM and the FQ, and then the SCL-SOM and the ASI). Fisher z comparisons revealed no significant age or gender differences for the SCL-SOM. Within the older age group, illness was significantly more strongly related to anxiety scores among females than males. Fisher z comparisons showed that, with the exception of the Illness Checklist/FQ correlations, the illness-anxiety correlations were significantly larger for females.

Hypothesis 4. Hypothesis 4 predicted that anxiety scales would possess better internal reliabilities among younger adults. Cronbach's alpha was calculated as a measure of the scales' internal reliabilities; Table 9 presents the results of these analyses. Contrary to Hypothesis 4, internal reliabilities were consistently high across age groups. Alpha values ranged from a low of .76 (FQ; younger adults) to a high of .94 (STAI-T; younger adults). Mean alpha values for the anxiety scales are as follows: older females, .88; older males, .84; younger adults, .86. Older females produced slightly higher alpha values than older males on the anxiety scales, except on the STAI-T, which yielded an alpha value of .87 in both groups. The results do not support Hypothesis 4.

A factor analysis was conducted in order to determine if the ASI produced a factor structure among older adults similar to what has been

Table 9

Cronbach's Alpha Values for Anxiety Scales and BDI

Groups	Measures								
	ASI		FQ		STAI-T		BDI		
	n	Alpha		n	Alpha	n	Alpha	n	Alpha
Older Females	38	.92	38	.84	34	.87	39	.82	
Older Males	43	.87	44	.77	42	.87	44	.77	
Younger Adults	48	.87	48	.76	48	.94	48	.91	

obtained from younger adults. Principal components extraction with varimax rotation was performed separately for older and younger adults. The correlation matrix for each group was factorable, as determined by the presence of several coefficients larger than .30. An eigenvalue of one or greater was used as the criterion for initial factor extraction.

Within the older age group, initial factor extraction yielded four factors. The factor loadings and communality values from this analysis are presented in Table 10. Communality values were moderate, suggesting that the ASI items were fairly well-defined by the four-factor solution. However, examination of the scree plot revealed that additional factors beyond the first one did not contribute substantially to the solution. In other words, the ASI emerges as a unifactorial instrument among older adults. This is also evident when the amount of variance each factor accounts for is examined; the first factor accounts for 44.2%, whereas each successive factor accounts for less than 10%. Using a cutoff value of .45 for inclusion of a variable in interpretation of factors, three items loaded on more than one factor. All variables loaded on at least one factor.

Initial factor extraction within the younger group yielded a five-factor solution. Based on the scree plot, the analysis was re-run with a specified two-factor solution. Two items (9 and 5) failed to meet the .45 criterion for loading on a factor, and two items (12 and 8) emerged as complex items that loaded on both factors. Communality values were moderate to high, indicating that the two-factor solution adequately accounted for variance in the items. The first

Table 10

Initial Factor Loadings, Percents of Variance, and Communalities for Older Adults on ASI Items

Item	F_1	F_2	F_3	F_4	h^2
10. Short of breath	.83	.00	.00	.00	.79
9. Heart attack	.82	.00	.00	.00	.79
6. Heart beats rapidly	.81	.00	.00	.00	.80
4. Faint	.63	.00	.46	.00	.71
14. Body sensations	.60	.00	.00	.00	.64
8. Nauseous	.49	.00	.00	.00	.49
15. Mentally ill	.00	.80	.00	.00	.74
2. Mind on task	.00	.79	.00	.00	.79
16. Nervous	.00	.77	.00	.00	.79
12. Keeping mind on task	.00	.68	.00	.00	.70
13. Noticeably shaky	.00	.64	.00	.00	.55
3. Shaky	.00	.47	.56	.00	.68
1. Not appear nervous	.00	.00	.78	.00	.67

Note. Factor loadings less than .45 replaced with .00.table continues

Item	F_1	F_2	F_3	F_4	h^2
5. Control of emotions	.00	.00	.62	.00	.57
11. Stomach upset	.00	.00	.00	.82	.71
7. Stomach growls	.00	.00	.00	.60	.50
Percent of variance	44.2	8.7	8.0	7.2	

Note. Factor loadings less than .45 replaced with .00.

factor, which is characterized primarily by fear of cardiovascular symptoms, accounted for 36.4% of the variance in the ASI items. The second factor, which consists of fear of non-specific symptoms of physical and mental distress, accounted for 13.3% of the variance. Factor loadings and communality values for the two-factor solution are presented in Table 11.

Oblique rotations were attempted within each age group to confirm the varimax solutions. The older group yielded varimax and oblique solutions that were very similar, but an oblique rotation could not be performed within the younger group. It should also be noted that the ASI item distributions were positively skewed within both groups. A logarithmic transformation was conducted prior to factor analysis, but no solutions could be extracted from the logarithmic data.

Hypothesis 5. Hypothesis 5 predicted that older adults would report lower levels of anxiety than younger adults. First, a two-group MANOVA was conducted between older females and younger adults to test this hypothesis. Older females' and younger adults' combined anxiety scale results did not demonstrate significant differences, as measured by Pillai's $F(3,78) = 0.85$, $p > .05$. A series of univariate F tests did not reveal any significant group differences on any individual scale, as can be seen in Table 12. Table 12 also presents the results of univariate F tests based on the FQ subscales, which show that older females scored significantly higher on the Agoraphobia subscale, $F(1,78) = 7.77$, $p < .05$ (M older females = 8.6, $SD=8.8$ vs. M younger adults = 4.21, $SD=5.2$). Thus, older females reported approximately the same

Table 11

Final Factor Loadings, Percents of Variance, and Communalities for Younger Adults on ASI Items

Item	F_1^a	F_2	h^2
4. Faint	.76	.00	.58
10. Short of breath	.74	.00	.59
3. Shaky	.73	.00	.58
6. Heart beats rapidly	.71	.00	.57
14. Body sensations	.63	.00	.43
1. Not appear nervous	.60	.00	.38
7. Stomach growls	.56	.00	.38
8. Nauseous	.55	.45	.51
13. Noticeably shaky	.53	.00	.32
12. Keeping mind on task	.47	.65	.64
11. Stomach upset	.00	.83	.69

Note. Factor loadings less than .45 replaced with .00.

^aFactor labels: F_1 = Cardiovascular; F_2 = General distress.

table continues

Item	E_1^a	E_2	h^2
15. Mentally ill	.00	.79	.63
2. Mind on task	.00	.78	.62
16. Nervous	.00	.74	.74
5. Control of emotions	.00	.00	.07
9. Heart attack	.00	.00	.22
Percent of variance	36.4	13.3	

Note. Factor loadings less than .45 replaced with .00.

^aFactor labels: E_1 = Cardiovascular; E_2 = General distress.

Table 12

Analyses of Variance Between Age Groups on Anxiety Scales

Scales	Analyses of Variance	
	Older Females -	Older Males -
	Younger Adults	Younger Adults
	F(1,78)	E(1,88)
ASI	1.17	3.59
FQ	1.46	0.95
Agoraphobia	7.77*	.46
Blood-Injury	2.29	1.60
Social	.96	3.04
STAI-T	0.06	5.44*

* $p < .05$.

amount of anxiety as younger adults.

Next, a two-group MANOVA was conducted comparing older males' anxiety scale results with those of younger adults (Table 12). The two groups did not differ significantly in their combined anxiety scores, although a trend toward older males reporting less anxiety was present [$F(3,88) = 2.21, p < .10$]. Similarly, univariate ASI results also showed a trend toward significance, $F(1,88) = 3.59, p < .10$ (M younger adults = 17.4, $SD=9.3$ vs. M older males = 13.9, $SD=8.3$). Table 12 shows that there was a significant univariate effect for the STAI-T, with older males reporting less anxiety than younger adults (M younger adults = 38.9, $SD=10.9$ vs. M older males = 33.8, $SD=10.0$). The FQ did not reveal significant group differences. The subscales of the FQ did not produce significant differences. In summary, there was partial support for Hypothesis 5, with older males demonstrating somewhat less anxiety than younger adults. There were no significant differences between older females and younger adults.

Hypothesis 6. Hypothesis 6 stated that older adults would report more symptomatic conditions. In order to test this prediction, a three-group ANCOVA was performed on SCL-SOM scores, with Illness Checklist scores used as the covariate. Because data for the Illness Checklist were not available from the younger group, Illness Checklist scores were set at zero for all younger adults. This procedure does not allow for entirely accurate data, but it reflects the fact that, on average, younger adults experience fewer health problems than older adults. A test of homogeneity of regression was satisfactory, indicating no

interaction between illness and group membership. Table 13 presents the ANCOVA results. Somatization scores varied significantly with group membership, $F(2, 118) = 13.6, p < .001$, and illness scores were also significantly associated with somatization, $F(1, 118) = 27.9, p < .001$.

In order to determine which groups were significantly different in terms of reported somatization, post-hoc analyses using a Bonferroni correction were conducted. Adjusted and unadjusted marginal means are presented in Table 14. Older females reported significantly less somatization than younger adults, $F(1, 118) = 20.4, p < .001$. Similarly, older males also reported significantly less somatization than younger adults, $F(1, 118) = 23.5, p < .001$. No significant differences were found when older females' somatization scores were compared with older males' scores.

Further analyses were conducted to investigate the relationship between health problems and somatization scores among older adults. One-tailed t-tests were used to test the significance of Pearson correlations between the SCL-SOM and the Illness Checklist. The coefficients were significant for older females, $r(33) = .53, p < .05$; and older males, $r(41) = .64, p < .05$. Correlation coefficients could not be calculated for younger adults, as they were not administered the Illness Checklist.

Pearson correlations were also used to assess the relationship between age and somatization within the older age groups. Within the older female group, the coefficient was not significant, $r(32) = -.13$. The older male group demonstrated a significant relationship between age and somatization, $r(38) =$

Table 13

Analysis of Covariance for Somatization

Source of variance	<u>df</u>	E
Group membership	2	13.6***
Covariate		
Illness	1	27.9***
Error	118	(20.9)

^aParenthetical value represents mean square error.

*** $p < .001$.

Table 14

Somatization Means, Unadjusted and Adjusted for Illness Scores

Group	Adjusted mean	Unadjusted mean
Older females	3.38	6.17
Older males	3.80	4.82
Younger adults	9.36	7.10

.39, $p < .05$. When a partial correlation was conducted, with illness scores partialled out, the relationship between age and somatization remained non-significant in the older female group, $r(27) = .17$. A partial correlation between age and somatization yielded non-significant results in the older male group, $r(32) = .10$. Contrary to Hypothesis 6, the results showed that somatization is more common among younger adults when compared to older males and older females. Health status is significantly related to somatization among older adults, and illness partially mediates the relationship between age and somatization.

Discussion

The primary purpose of this study was to investigate the measurement of anxiety by self-report scales in older adults, with consideration of possible implications for diagnosis and treatment. Older and younger adults were compared for possible differences with respect to which anxiety symptoms were predominant in each age group. Also, mean levels of anxiety were compared between the two age groups, as well as the extent to which anxiety was related to depression.

Overall, the results are not consistent with previous literature in terms of the prevalence of anxiety in older adults. Both older and younger adults had similar mean scores on the anxiety scales, although there was a trend toward lower scores in the older adult male group. Individual item responses were also similar across younger and older adults, suggesting minimal age differences with respect to which symptoms are most salient. The essential similarity of the two groups was further supported by the finding that somatization was not more common among older adults. These results contradict suggestions in the literature that anxiety may present differently in older adults. In the same vein, the finding that anxiety and depression are not more strongly related among older adults than among younger adults also runs counter to previous research.

The prediction that the psychometric properties of anxiety scales would be weaker among older adults was based on literature proposing that anxiety presents differently in older people and that it is highly inter-related with depression. Considering that these propositions failed to generate consistent

support, it is not surprising that the anxiety scales in the present study maintained their psychometric properties when used with older adults.

Gender Differences

There were significant gender differences within the older adult group, with older females demonstrating higher levels of anxiety. Females typically report more anxiety than males across all adult age groups (e.g., Myers et al., 1984). What is of interest in this study is that, although gender differences were minimal within younger adults, the discrepancy between reported anxiety among older males and older females was markedly greater. Keeping in mind that there were no differences between the levels of anxiety reported by older females and younger adults, it does not appear that anxiety increases with age for females. Instead, it seems that the large differences between older males' and females' levels of anxiety may be due to a decrease in anxiety among males over the lifespan.

As the present study is cross-sectional rather than longitudinal, it is impossible to rule out the alternative explanation that there are factors unique to currently older males that will not result in a decrease in anxiety for future groups of older males. For example, some older males worked in stable occupations when they were younger and are now receiving pensions, thus providing them with financial security. Today's younger males often face occupational instability and no guarantee of income in their later years, suggesting that future cohorts of older males will face greater financial challenges and, thus, possibly experience more anxiety than the current cohort

of older males.

Also, highly anxious males face an increased mortality risk, meaning that males who survive longer are less likely to demonstrate significant anxiety. Coryell, Noyes, and Clancy (1982) examined mortality rates within a sample of 71 males diagnosed with panic disorder and found that observed deaths across several years significantly exceeded the expected mortality rate. When analyzed by type of death, mortality rates based on unnatural and circulatory system disease causes were significantly greater than expected rates. The older males who participated in the present study may represent a biased sample because their more anxious counterparts may have died while relatively young.

It is worth noting that older females demonstrated significantly more symptoms of depression than older males. The findings that older females experience more depression, in conjunction with more anxiety, than older males suggest that gender differences within this age group are of an expansive nature. In other words, older females appear to experience more negative affect in general than older males.

In addition to reporting greater depression than older males, the relationship between anxiety and depression is somewhat stronger among older females than among older males. Given this, it is possible that mixed anxiety-depression disorder (MAD), as proposed in the DSM-IV as a possible addition to the next DSM, would be more applicable to older females than older males. A field trial conducted with adults of all ages (Zinbarg et al., 1994)

demonstrated that MAD is distinct from anxiety and depression disorders, lending support to its validity. Although no research concerning MAD and older adults specifically has been conducted, it appears that MAD may be more effective than current anxiety and depression disorders in accounting for the symptoms that afflict some older females.

Illness was more strongly related to anxiety in older females than in older males in this study. It is difficult to infer why this gender difference exists, but one possibility is that older females cope less effectively than males with illness and experience more anxiety as a result. It is not likely that anxiety produces more physical problems in older females, as somatization was not significantly greater for females. There may also be mediating variables that account for the strong relationship between illness and anxiety among older females. For example, in 1991, older females reported a mean income of \$13,732, a figure that is considerably lower than the mean income of \$22,496 reported by older males (Statistics Canada, 1993). Low incomes are often related to problems with physical health (e.g., Angel & Angel, 1995) and financial stress could certainly be considered an anxiety-provoking situation.

It was surprising that no gender differences emerged within the younger group, as females tend to report more anxiety than males in studies of anxiety rates. The sampling procedure used in the present study may help explain why no gender differences were found. Specifically, the majority of anxiety studies have focused on college populations or clinical groups rather than community-based samples. It is possible that the gender differences found within domain-

specific samples are attenuated within a more representative sample.

Also, the younger adults who participated in the present study did so voluntarily, which may have resulted in a self-selection bias related to the lack of gender differences. High-anxiety females may have elected not to participate, and/or low-anxiety males may not have responded. Studies based on college samples also rely on voluntary participation, but many institutions require students to participate in experiments, thus precluding self-selection biases. Finally, studies based on clinical samples involve higher baseline rates of anxiety than what would be found in the community, and the magnitude of gender differences may vary somewhat with the severity of anxiety.

Psychometric Findings. One goal of this study was to provide a better understanding of whether or not existing self-report instruments can be used to assess anxiety among older persons. Analyses of convergent and discriminant validity revealed some interesting gender differences among older adults. Within the older female group, the correlations between the anxiety scales indicated strong, positive relationships that exceeded the expected moderate relationships. Within the older male group, the anxiety scale correlations confirmed the prediction that they would be positive but small. In general, the anxiety scales used in this study appear to be valid and reliable when used with both older females and males.

At first glance, it appears that the scales possess greater convergent validity when used with older females than with older males. However, it may be that different aspects of anxiety, such as anxiety sensitivity and phobic fears,

are not related to a great extent among older males. If this is the case, correlations between scales measuring these kinds of anxiety should not be large. While research on anxiety disorders such as social phobia suggests no gender differences in terms of frequency of comorbidity with other anxiety disorders (e.g., Turner & Beidel, 1989), it is possible that there are gender differences in terms of comorbidity of anxiety symptoms. For example, symptoms of anxiety sensitivity may be less likely to co-occur with other anxiety symptoms in older males than in older females.

The correlations between the depression scale (BDI) and the anxiety scales (ASI, FQ, STAI-T) yielded a somewhat different pattern of results, with those pertaining to older males suggesting better discriminant validity. Specifically, the correlations between the BDI and anxiety scales were lower for older males than for older females, suggesting that the two types of scales differentiate between anxiety and depression to a greater extent among older males.

All three of the correlations between the BDI and the anxiety scales are significant in the older female group, indicating that there is a significant connection between anxiety and depression symptoms. The correlation between the BDI and the STAI-T was particularly high for older females [$r(34) = .83, p < .05$], raising the question of whether or not the STAI-T is an appropriate measure of general anxiety for older females. In other words, the strength of the relationship between BDI and STAI-T results among older women may be due to poor discriminant validity. The BDI may contain items that measure anxiety.

Similarly, the STAI-T may be contaminated with items that assess depression.

However, the fact that the STAI-T, in conjunction with the other anxiety scales, demonstrated good convergent validity supports the idea that the STAI-T is an adequate (although not ideal) measure of anxiety. Further, all three anxiety scales correlated significantly with the BDI in the older female group, indicating that the large STAI-T/BDI correlation reflects the inter-relationship of depression and anxiety rather than poor discriminant validity of the STAI-T. If, for example, the STAI-T alone correlated significantly with the BDI, it would seem more plausible to infer that the STAI-T is contaminated with items of depression. Thus, the results of the present study may be interpreted as showing that anxiety and depression are more closely related among older females than older males.

Older males and older females demonstrated the same pattern with respect to which anxiety scales produced the strongest and weakest correlations with the BDI. The correlations between the STAI-T and the BDI were the strongest for both genders, whereas the correlations between the FQ and the BDI were the weakest. This suggests that, although anxiety and depression symptoms may be more strongly related among older females than older males, the types of anxiety symptoms that are most strongly related to depression symptoms are the same across genders. Symptoms of depression are most closely related to symptoms of trait anxiety, followed by phobia symptoms, and then anxiety sensitivity symptoms. Thus, the types of anxiety symptoms that are most likely to occur with depression symptoms are the same

in both older males and females. It is only the levels of anxiety symptoms that differ across genders, with older females reporting more anxiety symptoms.

Illness

Illness and somatization were the only constructs that failed to produce gender differences with respect to the strength of their relationship with each other. Illness and somatization were strongly related across both genders (as will be discussed in detail in a following section). It is not clear whether this would hold true for younger adults as well, because they were not administered the Illness Checklist.

Age Group Differences

Levels of Anxiety. The literature on anxiety and older persons contains contradictory estimates of the prevalence of anxiety, but the overall consensus is that anxiety decreases with age. Contrary to this position, the results of this study suggest that anxiety neither increases nor dissipates significantly with age, although older males appear to experience a moderate decrease in anxiety symptoms.

A probable cause of the discrepancy between this study's results and previous findings is the methodologies used. The assessment of anxiety in older adults has typically been based on non-structured interviews (see Smith, Sherrill, & Colenda, 1995), which are not as robust to interviewer biases as structured interviews. Also, the flexibility of open-ended interviews raises the possibility that the operational definition of anxiety changes according to the interviewer.

The majority of epidemiological studies have used diagnostic interviews to determine the prevalence of anxiety disorders (syndromes) (e.g., Regier et al., 1988). The present study focused on the prevalence of anxiety symptoms instead of DSM-defined anxiety disorders. Because it did not assess anxiety disorders, it is not known whether the similarities between younger and older adults' anxiety symptoms would be reflected in the prevalence of disorders.

It is possible that, if disorders had been diagnosed in the present study, the rates within the older and younger age groups would have been as similar as the levels of symptoms reported on the anxiety scales. Alternatively, actual anxiety disorders may be less common among the older adults than the younger ones who participated in this study. Regardless of the prevalence of anxiety disorders, the findings of this project show that anxiety symptoms are, overall, just as common in older as in younger adults.

The implications of the above finding are twofold: first, statements regarding the prevalence of anxiety among older adults should clearly state whether DSM anxiety disorders or anxiety symptoms are being discussed. Blanket conclusions that anxiety is less common among older persons ignore the fact that symptoms can be as frequent in older as in younger adults. Second, the fact that anxiety scale scores were largely similar between older and younger adults suggests strongly that anxiety merits as much attention in older age groups as in younger ones. Given the few differences observed in this study between older and younger adults, there does not seem to be a firm basis for regarding anxiety as inconsequential or limited in its scope in later life.

The fact that a fair amount of what has been written concerning anxiety and older adults is anecdotal, and/or speculative (e.g., Koenig & Meador, 1988; Markovitz, 1993), may help explain why the results from the present study do not match previous conclusions. As discussed earlier, there have been few empirical investigations of anxiety in older adults. Articles written from a clinical/applied perspective are more common than psychometric or epidemiologic studies. Articles based on clinical experience may contain somewhat biased estimates of whether or not anxiety is common among older persons, even if empirical studies are cited to support the author's position. Such articles may reflect the author's professional opinions concerning the topic, as well as the fact that his/her clinical experience is based on a select group of individuals rather than a representative, community-based sample.

Although not statistically significant overall, there was a trend (multivariate $F = 2.21$, $p < .10$) toward older males reporting less anxiety than younger adults. This may be partly due to a reduction of stress as males age, with responsibilities related to employment and family decreasing. While taking into account the possibility that cohort effects may make this sample of older males uniquely anxiety-free, it seems that males may experience some reduction of anxiety with age. Alternatively, highly anxious males may face premature mortality, resulting in consistently low levels of anxiety among surviving older males (see above).

Patterns of Responses. In addition to reporting similar levels of anxiety, there was considerable similarity between age groups with respect to patterns

of responding on the anxiety scales. The results showed that older and younger adults tend to respond similarly, as determined by which scale items demonstrate the largest mean scores. Gender differences were not apparent in these analyses. These results suggest, contrary to what has been posited in the literature, that the nature of anxiety does not vary across the adult lifespan.

In particular, older adults are no more likely than younger adults to report somatic symptoms of anxiety, challenging the proposition that anxiety is a predominantly somatic phenomenon among older persons. This is consistent with the current finding that somatization and anxiety are not more strongly related among older adults than younger adults. Whereas depression is thought to be characterized by true age differences, with predominantly somatic symptoms in older persons, anxiety appears to manifest itself in a consistent fashion across age groups. With respect to the somatic items on the anxiety scales, older adults did not consistently demonstrate higher mean item scores. For example, older females scored much higher than younger adults on the ASI item concerning worry over stomach problems, whereas younger adults scored considerably higher than older males on two somatic-related items on the FQ.

- Thus, when there was a significant discrepancy between age groups with respect to anxiety scale somatic items, the difference did not always indicate greater somatization among older adults.

Anxiety and Depression. As indicated above, the finding that anxiety symptoms do not differ across age groups contrasts sharply with research on depression and aging, which has shown qualitative age differences (e.g.,

McNeil & Harsany, 1989). The finding that the nature of anxiety does not change with age supports the idea that anxiety should be considered separately from depression in older adults, rather than as a largely co-morbid problem. If both the degree and manifestation of anxiety remain constant across the adult lifespan, there is no reason to believe that anxiety becomes a product of depression past a certain age. In other words, the present study provides no evidence for assuming that anxiety changes with age and becomes a problem secondary to depression.

Contrary to what was hypothesized, anxiety and depression were not more strongly related in older adults than in younger adults. There are several possible reasons why the expected relationship between depression and anxiety was not observed. As mentioned earlier, the assessment of anxiety in older adults has often been based on non-structured interviews. If some researchers were already biased toward believing that anxiety is a result of depression in older adults, they may have inadvertently over-estimated the relationship. The self-report scales used in this study provide a more objective means of estimating how inter-related anxiety and depression are in older persons.

Researchers have traditionally focused primarily on depression in older adults, not anxiety. As a result, anxiety has usually been studied only in the context of depression. In other words, researchers have only assessed anxiety in older adults when it co-occurred with depression. Therefore, it is not surprising that earlier findings indicate that anxiety and depression are highly

inter-related among older persons.

Finally, anxiety and depression may be more highly inter-related among ill or institutionalized older people. Again, few studies concerning anxiety and depression have included random samples of community-dwelling older adults, so it is possible that previous findings do not apply to this segment of the population. Considering that illness is highly related to depression in older adults (Blanchard, Waterreus, & Mann, 1994) and that anxiety is strongly linked to illness, medical problems may play an important mediating role in the relationship between anxiety and depression in older persons.

Illness may act as a mediating variable between anxiety and depression primarily at higher levels of severity, when functioning is impaired. For example, a common cold would probably not be strongly related to either symptoms of depression or anxiety, but a chronic, debilitating lung disease would likely have an impact on a person's psychological well-being. Although the severity of illnesses experienced by older adults in the present study is unknown, the data show that illnesses ranged from skin rashes to cardiac disease. It appears likely that, on average, older participants' illnesses did not impede functioning to the extent that anxiety and depression would co-exist.

Somatization. The hypothesis that older adults would report higher levels of somatization was also refuted by the results of this study. This finding is of particular interest, considering that the current study was based on community-dwelling persons, not patients or clients of any particular services. The assumption that somatization is more common among older adults is often

presented in the context of discussing older persons with particular problems, such as depression or medical concerns (e.g., Blanchard, Waterreus, & Mann, 1994). The present results indicate that, although somatization may be a common phenomenon among older adults experiencing certain problems, it is not necessarily a serious problem for the average older person.

Overall, the results suggest that somatization is more closely related to health status rather than age. This finding may be partly a function of the instruments used. It is quite likely that health problems were measured in this study instead of somatization. Specifically, the SCL-SOM has not been tested with older adults and may be measuring symptoms of physiological disorders. For example, persons with heart problems may have indicated that they suffered from chest pain or dizziness on the SCL-SOM because of the underlying heart condition. Because the SCL-SOM and the Illness Checklist were highly correlated, it cannot be concluded with certainty that the SCL-SOM measures somatization independently of medical problems. Overall, the results are indicative of confounding of somatization scores by health problems among older adults.

The overlap in somatization and illness in older adults helps explain the curious finding that younger adults reported more somatization than older adults. Because illness and somatization are closely related among the older adults in this study, their somatization scores partly reflect their health status. Both older groups reported few health problems on average, and, not surprisingly, reported somatization was also fairly low. Somatization would

have likely been considerable if the older adults in this study had reported numerous health problems.

There are two major implications of the findings based on Hypothesis 6. First, somatization among older persons should not be assessed without taking health status into account. Failure to do so would lead to incomplete conclusions concerning somatization as it occurs in older age groups. Second, somatization may be less of a concern for healthy older adults than it is for younger adults. This could be due to a lower frequency of somatization symptoms among older persons, keeping in mind that this frequency would be related to health status among older adults. Alternatively, older adults may experience the same type and frequency of somatization symptoms as younger persons, but their interpretations may differ. For example, the older person who ascribes various ailments to normal aging may not report being bothered by such problems, whereas a younger adult may report being bothered by non-normative difficulties. The interpretation of somatization symptoms could play a key role in whether they are reported as such.

Psychometric Findings. In terms of convergent validity, the anxiety scales possess better convergent validity among younger adults than among older males. In contrast, there were no differences between younger adults and older females with respect to convergent validity. Analyses of discriminant validity did not reveal any significant age group differences, although the correlations between the Beck Depression Inventory and the anxiety scales were consistently larger for older females. Reliability analyses support the

soundness of the anxiety scales in both age groups. Based on the above findings, the ASI, FQ, and STAI-T appear to be suitable for use with older adults. From a psychometric viewpoint, there does not appear to be a need for age-specific anxiety scales within the domains assessed by the ASI, FQ, and STAI-T.

However, the consistent gender differences found within the older age group showed that anxiety manifests more diffusely among older females. In other words, different types of anxiety, such as trait anxiety and anxiety sensitivity, were likely to co-occur among older females. An implication of this gender difference is that it may be more difficult to obtain non-confounded results with older females than with younger females. Anxiety measures that are not highly domain-specific will produce a global estimate of anxiety that is probably a composite of different types of anxiety symptoms. As such, specificity is an issue of particular concern in the measurement of anxiety among older females.

The two-factor solution obtained using ASI results from the younger adults is not consistent with previous findings. Most previous research has found that the ASI is unifactorial (e.g., Taylor, Koch, & Crockett, 1991), although a few studies have yielded a four-factor solution (e.g., Peterson & Heilbronner, 1987). However, it is important to remember that factor analysis results are subject to interpretation, and an argument could be made that the ASI is a unifactorial scale among the younger adults in this study.

In contrast to the non-definitive factor structure obtained from the younger

adults' results, the older adults' results clearly indicate that the ASI is a unidimensional instrument. As discussed above, this finding is consistent with what has been found in younger samples. This finding is also consistent with the lack of age-group differences that emerged in the present study. In summary, the ASI maintained construct validity when administered to older adults. It appears, then, that the ASI may be used for the same purposes within older populations as within younger groups.

Normative Findings

In terms of normative data, most of the anxiety scale means obtained in this study are similar to those reported by other researchers. For example, the expected mean for the ASI is 20.5 for females and the expected mean for males is 15.4. In this study, the mean score on the ASI for older females was 18.8; the mean score for older males was 13.9; and the younger adult group produced a mean score of 17.4. With respect to the FQ, overall and subscale mean scores reflect previous community-based findings. As an example, Mizes and Crawford (1986) obtained a mean of 8.8 ($SD=6.1$) on the Social Phobia Subscale using adult female data; older females in the present study yielded a mean of 10.2 ($SD=6.7$). The pattern of gender differences found within the older adult sample (i.e., higher mean scores for females) mirrors results from many previous studies (e.g., Spielberger, 1983).

Thus, it appears that existing norms for the ASI and STAI-T are applicable for use with older adults. However, the significant group difference between older males' and younger adults' mean STAI-T scores suggests the current

STAI-T norms may be somewhat high for use with older males. The considerable gender differences within the older age group necessitate separate norms for each gender, which is consistent with what has been found with younger adults. The FQ does not possess well-established norms for community samples, as it has traditionally been used as a clinical instrument and has only recently started to gain popularity as a measure for non-clinical populations. However, the fact that older adults' results reflect previous findings suggests that there is no need for separate norms for older adults. Further, the FQ revealed no significant age group differences within the present study.

The Beck Depression Inventory also yielded results similar to those obtained in earlier studies. Both older and younger adult groups yielded means that were somewhat higher than those based on earlier studies, but the differences do not appear to be significant. For example, older females in the present study demonstrated a mean score of 9.27 ($SD=6.6$), compared with previously reported means of 5.54 ($SD=4.67$) and 4.61 ($SD=4.84$) (Gallagher, Nies, & Thompson, 1982). All of these means would be classified as minimal scores and not indicative of significant depression, as would the means obtained from older males and younger adults. This concurs with previously reported means based on community samples. Thus, the present study supports previous findings that current norms for the BDI are applicable to older adults.

Methodological Limitations

Sample sizes and demographics. While dividing the older age group into

male and female sub-groups allowed for some interesting gender differences to emerge in the results, the drawback to this approach was the reduction of sample sizes. It is possible that some findings are the spurious results of reduced sample sizes. However, power analyses demonstrated that the sample sizes resulted in adequate power. Thus, Type II error (i.e., failing to find significant results when in fact there is a significant difference or relationship) was not a major concern in the present study.

The reader should also keep in mind that, although the participants were selected randomly, there may have been self-selection biases that influenced the final sample.

Another factor that must be acknowledged in any cross-sectional, age-related study is the influence of cohort effects. Any differences (or similarities) reported by age groups may be due to environmental factors rather than age per se. Each generation experiences a unique set of life events, and future generations of older adults may not report the same levels or symptoms of anxiety as the sample in this project. Because the study of anxiety in older persons is a relatively new undertaking, it is not possible to examine results over the years to determine whether they remain fairly constant or fluctuate with time. Without a background for making comparisons, it is difficult to judge to what extent the results obtained in this study are a result of age vs. cohort effects.

Incomplete Scales. It should be noted that some older participants did not complete all of the scales. This did not occur with younger respondents; all

returned surveys in this age group were complete. The most frequently omitted scale was the STAI-T, with eight older respondents either choosing not to answer or answering an insufficient number of items. However, it does not appear that the missing STAI-T data biased the results in any way. The distributions of the STAI-T results within the older male and female groups were normal, suggesting that no particular group (e.g., high scorers) was unrepresented in the distributions.

It is not clear why any scales were left blank. It is possible that the scale formats were troublesome for some individuals, or that some of the scale items may have been confusing. One older respondent placed question marks next to some of the STAI-T items, indicating that they were unclear. Some older adults who chose not to complete the STAI-T may have experienced some of the cognitive difficulties encountered by the participants in the Patterson, O'Sullivan, and Spielberger (1980) study. Patterson et al. concluded that the STAI-T is not appropriate for use with institutionalized older adults suffering from dementias due to their inability to complete it independently. Symptoms of various forms of dementias (e.g., impaired language comprehension due to the early stages of Alzheimer's disease) may have prevented some older persons from completing the STAI-T.

Practical Implications

Assessing Anxiety in Older Adults

It appears that the three anxiety scales used in this study are valid and reliable for use with older adults, although much more confirmation in this area

is needed. This has potential significance for professionals who work with older adults. In particular, physicians need to be aware of the importance of using adequate methods for assessing anxiety and other psychological problems. In general, people experiencing minor symptoms of psychological distress tend to consult with a primary care physician (Madianos et al., 1993). This tendency may be even stronger for older adults. Koenig and Meador (1988) have proposed that, because most older adults visit their physicians more frequently than younger adults, they may be less likely than younger adults to trust non-familiar health care professionals. This suggests that a primary care physician is likely to be the professional of choice of older adults experiencing anxiety.

With respect to depression, physicians appear capable of accurately detecting its occurrence in older adults. Macdonald (1986) found that physicians failed to diagnose depression in only 11% of a sample of depressed older persons. Physicians may also be quite accurate in diagnosing anxiety in older persons, although given the comparative lack of knowledge in this area, it seems unlikely. Anxiety symptoms may be diagnosed as depression, according to the traditional hierarchical approach, or they may be dismissed as normative consequences of aging, depending on the physician's knowledge of aging issues.

In addition to providing an efficient means for assessing anxiety, self-report scales could serve as educational tools to familiarize medical professionals with anxiety symptoms that apply to all adult age groups. Physicians are less inclined to refer older adults to psychiatric services (Shapiro, 1986) and,

although this tendency may be due to biasing factors such as ageism, it may also be partly due to an under-estimation of problems. Anxiety scales could also be used as screening instruments in geriatric clinics to provide health care professionals with an idea of how much distress a person is experiencing. Comprehensive interviews that assess mental functioning in older adults could be complemented by self-report scales tailored for measuring anxiety.

Treating Anxiety in Older Adults

Perhaps the most notable finding in the present study is the fact that anxiety was not found to be less common among older persons than younger adults. Although anxiety disorders may be less common, it appears that anxiety symptoms are equally pervasive in both age groups. As discussed earlier, many individuals experience anxiety symptoms that warrant therapeutic interventions, even if an actual disorder is not present. Considering that no differences were found between older and younger adults in terms of the extent and nature of anxiety symptoms, it appears that there may be as much of a need among older persons for anxiety therapies as among younger persons.

There are three principal modalities in the treatment of anxiety in older persons: medication, psychotherapy, and environmental change (Turnbull, 1989). Environmental change refers to altering a person's environment or life circumstances in order to reduce anxiety-provoking problems. For example, helping a senior citizen move closer to a family member might alleviate isolation-related anxiety. Of the three approaches, pharmacological treatments may be the easiest to employ but also have a significant potential for negative

consequences.

The results of the present study suggest that anxiety symptoms are as much of a concern for older persons as for younger adults. However, the disproportionate number of older adults who are prescribed benzodiazepines indicates that alternatives for dealing with anxiety, such as psychotherapy and environmental change, are not given adequate consideration by those who work with older adults. Benzodiazepines have been found to be a safe and effective way of treating anxiety in older persons (Weiss, 1994), but their effects must be monitored carefully. Older individuals are more sensitive to the side effects of benzodiazepines and long-term use may result in memory impairment, slowed psychomotor responses, and impaired cognitive functioning (Wengel, Burke, & Ranno, 1993). Other medications, such as buspirone and beta-blockers, may produce fewer side effects but are not widely used (Markovitz, 1993).

The use of benzodiazepines to treat sleep difficulties, a common complaint among older adults, deserves further consideration. Frisoni et al. (1993) found that sleep disturbances in older women were related to anxiety as well as various psychosocial stressors. If sleep disturbances among older women are indicative of anxiety, then non-pharmacological treatments for sleep problems should yield positive results. As Frisoni et al. (1993) point out, the connections between sleep disturbances and anxiety, somatization, and depression represent complex and potentially rich sources of information concerning psychological problems among older people. Prescribing medications as the

sole treatment approach for all sleep complaints does not allow for a full understanding of the patient's problems.

Another consideration that is relevant for older adults receiving pharmacological treatment of anxiety is the issue of multiple drug use. Older adults use an average of 2-6 prescribed medications and 1-3.4 over-the-counter drugs on a regular basis (Stewart & Cooper, 1994). Older persons who use multiple drugs are often not aware of possible side effects and drug interactions (R. Grymonpre, personal communication, Aug. 24, 1995). Obviously, medications should be prescribed carefully and only when necessary. Self-report anxiety scales, if used within the context of a comprehensive assessment, could provide a more accurate indication of whether an older person's anxiety problems merit drug therapy.

Given the possible negative effects of adding an anti-anxiety medication to an older person's drug regimen, pharmacological therapy may not be the optimal treatment for many older adults. Making environmental changes may offer efficient and effective solutions for individuals with specific external causes of anxiety. For those persons experiencing more diffuse anxiety, psychotherapy appears to be an effective means of treating anxiety in older persons. King and Barrowclough (1991) found that cognitive-behavioural therapy reduced the intensity of symptoms among older persons with various anxiety disorders. DeBerry, Davis, and Reinhard (1989) used meditation and relaxation to significantly reduce state anxiety among anxious older adults. Another study found that reminiscence treatment (i.e., encouraging persons to review their

lives) tended to be effective for alleviating state anxiety, although this finding was not statistically significant (Scates, Randolph, Gutsch, & Knight, 1986).

Directions for Future Research

The present study was a preliminary investigation of the extent and nature of anxiety symptoms among older persons, as well as the psychometric properties of some of the more commonly used anxiety self-report scales. Much work remains to be done with these scales and others as well. It does not appear that there is a need for an age-specific anxiety scale, although gender differences suggest that anxiety and depression are more highly inter-related among older females than older males. If this is the case, it would be advisable for future investigations to focus upon determining which anxiety scales are least confounded by depression when used with older females. In particular, measures of general trait anxiety should be examined to determine if there are scales that are less confounded than the STAI-T.

More studies that involve different segments of older populations are needed. There may be important differences between the sample of older adults used in this study and older persons living in other areas. Also, cultural differences may play a role in influencing results.

In addition to including diverse groups of older adults, future projects should examine diverse methods of anxiety assessment in these groups. Based on the fact that the self-report scales used in the current study seem appropriate for use with older adults, it is likely that existing structured interviews such as the Structured Clinical Interview for DSM-IV can also be used with confidence to

assess anxiety in older persons. More research on both interview schedules and comprehensive scales (e.g., Hopkins Symptom Checklist) is needed.

The results of the present study have shed light on anxiety symptoms as they occur in older persons. A logical next step would be to examine why anxiety disorders are less common among older adults. For example, are older adults less likely than younger adults to be diagnosed with an anxiety disorder because their symptoms occur for a shorter length of time, or are the symptoms of a particular disorder truly absent? Also, the finding that different types of anxiety symptoms are more likely to co-occur among older females than older males may have implications for the definitions of anxiety disorders among older persons. The different types of anxiety symptoms that older females experience may cause significant distress but fail to qualify for an anxiety disorder diagnosis because of their heterogeneity. Anxiety disorders may be more multi-dimensional among older females than those currently outlined in the DSM.

In addition to more analyses of reliability and validity of anxiety self-report scales, future studies should also examine whether the scales employed in this study evoke response biases. Cappeliez (1989) found that a social desirability response set may lead to under-reporting by older adults on self-report depression inventories. Anxiety scales may also lead to an underestimation of anxiety due to a bias toward social desirability. For example, the low levels of anxiety reported by older males in this study may be partly due to a reluctance among older males to admit to experiencing anxiety symptoms.

The relationship between illness and somatization symptoms in older adults is a complex connection that merits further study. Whereas younger adults' responses to somatic items (both on the anxiety scales and the somatization scale) probably reflect true somatization, older adults' responses to somatic items may have been influenced by actual medical conditions. For example, the item on the Anxiety Sensitivity Index concerning fear of shortness of breath was one of the highest-ranked items for older adults. Considering the prevalence of medical problems in this age group, fearing shortness of breath may reflect a justified health concern rather than anxiety sensitivity.

Future studies would be enhanced by including specific measures of health problems and assessing whether somatization in general, and somatic anxiety in particular, are related to them. The distinction between assessing the occurrence and the meaning of somatization symptoms also needs clarification, as older adults may interpret somatization symptoms from very different perspectives than younger persons, leading to age-related differences in the reporting of somatization. Finally, the relationship between illness and somatization should be investigated among younger adults in order to determine whether illness plays as significant of a role in that age group as it does among older persons.

The gender differences observed within the older age group deserve further investigation, as they suggest that anxiety is not a uniform phenomenon across older males and females. Ideally, longitudinal studies should be conducted to determine whether the lower levels of anxiety reported by older males in the

present study are due to aging or whether they are unique to the current cohort. It would also be of interest to examine more specific variables that might better define the strong relationship between illness and anxiety in older females, such as whether or not particular types of illnesses are more strongly related to anxiety. Older females also demonstrated a stronger relationship between anxiety and depression symptoms than did older males, indicating that, on a construct level, anxiety is a more unidimensional phenomenon among older males. Related to this, the finding that different types of anxiety symptoms (e.g., phobic fears and anxiety sensitivity) did not co-occur as often among older males merits further exploration. Both the assessment and treatment of anxiety in older adults could benefit from a better understanding of gender differences.

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Appendix A

Fear Questionnaire

Choose a number from the scale below to show how much you would avoid each of the situations listed below because of fear or other unpleasant feelings. Then write the number you chose in the blank opposite each situation.

0	1	2	3	4	5	6	7	8
Would not avoid it	Slightly avoid it		Definitely avoid it		Markedly avoid it		Always avoid it	

- 1. Injections or minor surgery
- 2. Eating or drinking with other people
- 3. Hospitals
- 4. Traveling alone by bus or coach
- 5. Walking alone in busy streets
- 6. Being watched or stared at
- 7. Going into crowded shops
- 8. Talking to people in authority
- 9. Sight of blood
- 10. Being criticized
- 11. Going alone far from home
- 12. Thoughts of injury or illness
- 13. Speaking or acting to an audience
- 14. Large open spaces
- 15. Going to the dentist

Appendix B**State-Trait Anxiety Inventory (Trait Scale)**

	1 Almost Never	2 Sometimes	3 Often	4 Almost Always
1. I feel pleasant			1	2
2. I feel nervous and restless			1	2
3. I feel satisfied with myself			1	2
4. I wish I could be as happy as others seem to be		1	2	3
5. I feel like a failure			1	2
6. I feel rested			1	2
7. I am "calm, cool, and collected"			1	2
8. I feel that difficulties are piling up so that I cannot overcome them			1	2
9. I worry too much over something that really doesn't matter			1	2
10. I am happy			1	2
11. I have disturbing thoughts			1	2
12. I lack self-confidence			1	2
13. I feel secure			1	2
14. I make decisions easily			1	2
15. I feel inadequate			1	2
16. I am content			1	2

17. Some unimportant thought runs through my mind and bothers me 1 2 3 4
18. I take disappointments so keenly that I can't put them out of my mind 1 2 3 4
19. I am a steady person 1 2 3 4
20. I get in a state of tension or turmoil as I think over my recent concerns and interests 1 2 3 4

Appendix C

Anxiety Sensitivity Index

Respond to each item by circling one of the five corresponding phrases. Circle the phrase which best represents the extent to which you agree with the item. If any of the items concern something that is not part of your experience, (for example, "It scares me when I feel shaky" for someone who has never trembled or had the "shakes") answer on the basis of how you expect you think you might feel if you had such an experience. Otherwise, answer all items on the basis of your own experience. Be careful to make only one choice for each item and please answer all items.

1. It is important to me not to appear nervous.

Very Little	A Little	Some	Much	Very Much
-------------	----------	------	------	-----------

2. When I cannot keep my mind on a task, I worry that I might be going crazy.

Very Little	A Little	Some	Much	Very Much
-------------	----------	------	------	-----------

3. It scares me when I feel "shaky" (trembling).

Very Little	A Little	Some	Much	Very Much
-------------	----------	------	------	-----------

4. It scares me when I feel faint.

Very Little	A Little	Some	Much	Very Much
-------------	----------	------	------	-----------

5. It is important to me to stay in control of my emotions.

Very Little	A Little	Some	Much	Very Much
-------------	----------	------	------	-----------

6. It scares me when my heart beats rapidly.

Very Little	A Little	Some	Much	Very Much
-------------	----------	------	------	-----------

7. It embarrasses me when my stomach growls.

Very Little	A Little	Some	Much	Very Much
-------------	----------	------	------	-----------

8. It scares me when I am nauseous.

Very Little	A Little	Some	Much	Very Much
-------------	----------	------	------	-----------

9. When I notice that my heart is beating rapidly, I worry that I might have a heart attack.

Very Little A Little Some Much Very Much

10. It scares me when I become short of breath.

Very Little A Little Some Much Very Much

11. When my stomach is upset, I worry that I might be seriously ill.

Very Little A Little Some Much Very Much

12. It scares me when I am unable to keep my mind on a task.

Very Little A Little Some Much Very Much

13. Other people notice when I feel shaky.

Very Little A Little Some Much Very Much

14. Unusual body sensations scare me.

Very Little A Little Some Much Very Much

15. When I am nervous I worry that I might be mentally ill.

Very Little A Little Some Much Very Much

16. It scares me when I am nervous.

Very Little A Little Some Much Very Much

Appendix D

Hopkins Symptom Checklist, Somatization Subscale

INSTRUCTIONS: Below is a list of problems and complaints that people sometimes have. Choose a number from the scale that best describes how much that problem bothers or distressed you during the past week including today.

0-Not at all	1-A little bit	2-Moderately	3-Quite a bit	4-
Extremely				

HOW MUCH WERE YOU BOTHERED BY:

- | | | | | | |
|--|---|---|---|---|---|
| 1. Headaches..... | 0 | 1 | 2 | 3 | 4 |
| 2. Faintness or Dizziness..... | 0 | 1 | 2 | 3 | 4 |
| 3. Pains in Heart or Chest..... | 0 | 1 | 2 | 3 | 4 |
| 4. Pains in Lower Back..... | 0 | 1 | 2 | 3 | 4 |
| 5. Nausea or Upset Stomach..... | 0 | 1 | 2 | 3 | 4 |
| 6. Soreness of Muscles..... | 0 | 1 | 2 | 3 | 4 |
| 7. Trouble Getting Your Breath..... | 0 | 1 | 2 | 3 | 4 |
| 8. Hot or Cold Spells..... | 0 | 1 | 2 | 3 | 4 |
| 9. Numbness or Tingling in Parts of Your Body..... | 0 | 1 | 2 | 3 | 4 |
| 10. A Lump in Your Throat..... | 0 | 1 | 2 | 3 | 4 |
| 11. Feeling Weak in Parts of Your Body..... | 0 | 1 | 2 | 3 | 4 |
| 12. Heavy Feelings in Your Arms or Legs..... | 0 | 1 | 2 | 3 | 4 |

Appendix E

Beck Depression Inventory

On this questionnaire there are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the past week, including today. Circle the letter beside the statement you picked. If several statements in the group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

1. a. I do not feel sad.
 b. I feel sad.
 c. I am sad all the time and I can't snap out of it.
 d. I am so sad or unhappy that I can't stand it.

2. a. I am not particularly discouraged about the future.
 b. I feel discouraged about the future.
 c. I feel I have nothing to look forward to.
 d. I feel that the future is hopeless and that things cannot improve.

3. a. I do not feel like a failure.
 b. I feel I have failed more than the average person.
 c. As I look back on my life, all I can see is a lot of failures.
 d. I feel I am a complete failure as a person.

4. a. I get as much satisfaction out of things as I used to.
 b. I don't enjoy things the way I used to.
 c. I don't get real satisfaction out of anything anymore.
 d. I am dissatisfied or bored with everything.

5. a. I don't feel particularly guilty.
 b. I feel guilty a good part of the time.
 c. I feel quite guilty most of the time.
 d. I feel guilty all of the time.

6. a. I don't feel I am being punished.
 b. I feel I may be punished.
 c. I expect to be punished.
 d. I feel I am being punished.

7.
 - a. I don't feel disappointed in myself.
 - b. I am disappointed in myself.
 - c. I am disgusted with myself.
 - d. I hate myself.

8.
 - a. I don't feel I am any worse than anybody else.
 - b. I am critical of myself for my weaknesses or mistakes.
 - c. I blame myself all the time for my faults.
 - d. I blame myself for everything bad that happens.

9.
 - a. I don't have any thoughts of killing myself.
 - b. I have thoughts of killing myself, but I would not carry them out.
 - c. I would like to kill myself.
 - d. I would kill myself if I had the chance.

10.
 - a. I don't cry anymore than usual.
 - b. I cry more now than I used to.
 - c. I cry all the time now.
 - d. I used to be able to cry, but now I can't cry even though I want to.

11.
 - a. I am no more irritated now than I ever am.
 - b. I get annoyed or irritated more easily than I used to.
 - c. I feel irritated all the time now.
 - d. I don't get irritated at all by the things that used to irritate me.

12.
 - a. I have not lost interest in other people.
 - b. I am less interested in other people than I used to be.
 - c. I have lost most of my interest in other people.
 - d. I have lost all of my interest in other people.

13.
 - a. I make decisions about as well as I ever could.
 - b. I put off making decisions more than I used to.
 - c. I have greater difficulty in making decisions than before.
 - d. I can't make decisions at all anymore.

14.
 - a. I don't feel I look any worse than I used to.
 - b. I am worried that I am looking unattractive.
 - c. I feel that there are permanent changes in my appearance that make me look unattractive.
 - d. I believe that I look ugly.

15. a. I can work about as well as before.
b. It takes an extra effort to get started at doing something.
c. I have to push myself very hard to do anything.
d. I can't do any work at all.

16. a. I can sleep as well as usual.
b. I don't sleep as well as I used to.
c. I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
d. I wake up several hours earlier than I used to and cannot get back to sleep.

17. a. I don't get more tired than usual.
b. I get tired more easily than I used to.
c. I get tired from doing almost anything.
d. I am too tired to do anything.

18. a. My appetite is no worse than usual.
b. My appetite is not as good as it used to be.
c. My appetite is much worse now.
d. I have no appetite at all anymore.

19. a. I haven't lost much weight, if any, lately.
b. I have lost more than 5 pounds.
c. I have lost more than 10 pounds.
d. I have lost more than 15 pounds.

20. a. I am no more worried about my health than usual.
b. I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
c. I am very worried about physical problems and it's hard to think of much else.
d. I am so worried about my physical problems, that I cannot think about anything else.

21. a. I have not noticed any recent change in my interest in sex.
b. I am less interested in sex than I used to be.
c. I am much less interested in sex now.
d. I have lost interest in sex completely.

Appendix F**Illness Checklist**

Please circle "Yes" if you have had any of the following health problems within the last year, or if you are still having effects from having had them earlier in your life. Please circle "No" if the problem does not apply to you.

1. Heart problems	Yes	No
2. Stroke	Yes	No
3. High blood pressure	Yes	No
4. Other circulation problems (hardening of the arteries)	Yes	No
5. Kidney trouble	Yes	No
6. Cancer	Yes	No
7. Diabetes	Yes	No
8. Breathing problems (Asthma, emphysema)	Yes	No
9. Palsy/Parkinson's	Yes	No
10. Thyroid trouble	Yes	No
11. Stomach trouble	Yes	No
12. Dental problems	Yes	No
13. Emotional or mental health problems	Yes	No
14. Foot or limb problems	Yes	No
15. Depression	Yes	No
16. Skin trouble	Yes	No
17. Arthritis/Rheumatism	Yes	No
18. Eye trouble not relieved by glasses (cataracts, glaucoma)	Yes	No
19. Ear trouble (hearing loss)	Yes	No
20. Incontinence	Yes	No
21. Any other bladder problems	Yes	No
22. Nervousness/Anxiety	Yes	No
23. Osteoporosis	Yes	No
24. Fractures (broken bones)	Yes	No
25. Any other (please specify)	Yes	No

Appendix G

Younger Adults' Telephone Protocol

Hello, my name is Karina and I am calling from the University of Manitoba.

The reason I am calling is your household has been selected for a mail-out survey - this is not a telephone survey - and I am just calling to see if there is a (male/female) living there between the ages of 25-55. May I have (his/her) first name so I may address a letter directly to (him/her)? I will be mailing this within about a week and a half.

Appendix H

Order of Packages

Older Adults

Order A: Illness Checklist, SCL-SOM, STAI-T, FQ, ASI, BDI.

Order B: Illness Checklist, SCL-SOM, STAI-T, BDI, ASI, FQ.

Younger Adults

Order A: SCL-SOM, STAI-T, FQ, ASI, BDI.

Order B: SCL-SOM, STAI-T, BDI, ASI, FQ.

Breakdown of Completed Packages

Older adults:

Order A: 44%

Order B: 56%

Younger adults:

Order A: 48%

Order B: 52%

Appendix I

Younger Adults' Cover Letter

The University of Manitoba would like to hear from YOU!

Dear _____,

Emotional well-being is an important part of everyone's lives. However, little is understood about changes in emotional health across the lifespan. In order to gain a better understanding of important differences between senior citizens and younger adults, this study is asking people from both age groups in Winnipeg to answer some questions. This will allow us to start developing better services for today's older adults and future generations of senior citizens.

Your input is necessary for the development of a better understanding of younger adults. Your name was drawn randomly from a telephone directory. In order for the results of this study to truly represent adults in Winnipeg, it is very important that you complete and return the questionnaire package. We will be calling you within the next two weeks to make sure you have received your package and to see if we can be of any assistance to you in completing it.

All responses will be kept strictly confidential and will be seen only by the researchers. The responses from all participants will be pooled together and no individual responses will be reported. If you would like to be a part of this project, please answer the questions contained in this package and return the forms in the envelope provided.

The findings of this project will be available next year. If you would like a copy of the results, write "copy of results requested" on the back of your return envelope. If you have any questions about any of the forms included in this package, or if you would like more information about the study, please leave a message for me at
474-9222 and I will return your call as soon as possible.

Thank you for your valuable assistance.

Sincerely,

Karina Fuentes

Appendix J

Older Adults' Cover Letter

The University of Manitoba would like to hear from YOU!

Dear _____,

The number of seniors in Canada is growing rapidly, yet little is understood about the emotional well-being of adults over the age of 65. Unfortunately, what this means is that some seniors may not be getting the services they need. In order to make sure that Canada's seniors are getting the best services possible, we need to find out more about seniors' needs. We need to hear from you in order to gain a better understanding of what services should be provided.

Your input is very important to us. Your name was drawn randomly from a list of names provided by Manitoba Health. In order for the results of this study to truly represent seniors in Winnipeg, it is very important that you complete and return the questionnaire package. We will be calling you within the next two weeks to make sure you have received your package and to see if we can be of any assistance to you in completing it.

All responses will be kept strictly confidential and will be seen only by the researchers. The responses from all participants will be pooled together and no individual responses will be reported. If you would like to be a part of this project, please answer the questions contained in this package and return the forms in the envelope provided.

The findings of this project will be available next year. If you would like a copy of the results, write "copy of results requested" on the back of your return envelope. If you have any questions about any of the forms included in this package, or if you would like more information about the study, please leave a message for me at
474-9222 and I will return your call as soon as possible.

Thank you for your valuable assistance.

Sincerely,

Karina Fuentes

Appendix K

Older Adults' Follow-Up Protocol

First Follow-Up. Hello, my name is Karina and I am calling from the University of Manitoba. I sent you a survey a few days ago and I am calling to see if you received it and to see if I can be of any assistance to you in completing it. Did you have any questions about it? I would also like to let you know that if it is more convenient for you, I can arrange to have someone help you fill it out or pick it up from you.

Second Follow-Up. Hello, my name is Karina and I am calling from the University of Manitoba. I sent you a survey a while ago and I am calling to see if I can be of any assistance to you in completing it. Did you have any questions about it?

Appendix L

Younger Adults' Follow-Up Protocol

First Follow-Up. Hello, my name is Karina and I am calling from the University of Manitoba. I sent you a survey a few days ago and I am calling to see if you received it and to see if I can be of any assistance to you in completing it. Did you have any questions about it?

Second Follow-Up. Hello, my name is Karina and I am calling from the University of Manitoba. I sent you a survey a while ago and I am calling to see if I can be of any assistance to you in completing it. Did you have any questions about it?

Appendix M

Younger Adults' Descriptive Data

<u>Scale</u>	<u>Younger Females</u>		<u>Younger Males</u>	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
ASI	18.5	7.73	16.2	11.0
FQ	21.6	10.0	17.6	13.7
Agoraphobia	5.04	4.57	3.23	5.84
Blood-Injury	6.72	4.77	6.68	5.94
Social	9.85	3.96	7.73	7.05
STAI-T	39.0	10.3	38.8	11.7
BDI	8.28	7.47	7.27	9.02
SCL-SOM	8.18	5.11	5.81	4.83

Appendix N

ASI Item Means for All Groups

<u>Item</u>	<u>Older Females</u>	<u>Older Males</u>	<u>Younger Females</u>	<u>Younger Males</u>	<u>Younger Adults (Combined)</u>
1.	1.34 (1.07)	1.14 (1.01)	2.19 (1.10)	2.09 (1.57)	2.15 (1.32)
2.	0.59 (1.10)	0.23 (0.53)	0.46 (0.81)	0.36 (0.85)	0.42 (0.82)
3.	1.24 (1.22)	0.91 (0.81)	1.23 (1.07)	0.86 (0.94)	1.06 (1.02)
4.	1.32 (1.23)	1.16 (1.00)	1.81 (1.23)	1.09 (0.87)	1.48 (1.13)
5.	2.45 (1.31)	2.21 (1.19)	2.96 (0.72)	3.00 (0.98)	2.98 (0.84)
6.	1.58 (1.35)	1.30 (1.08)	1.62 (1.20)	1.50 (1.22)	1.56 (1.20)
7.	1.24 (1.30)	0.60 (0.76)	1.15 (1.01)	1.00 (1.11)	1.08 (1.05)
8.	0.92 (1.12)	0.67 (0.84)	0.73 (0.92)	0.77 (0.87)	0.75 (0.89)
9.	1.26 (1.25)	1.19 (1.20)	0.73 (1.00)	1.00 (1.20)	0.85 (1.09)
10.	1.58 (1.43)	1.47 (1.14)	1.38 (1.20)	1.05 (1.17)	1.23 (1.19)
11.	0.88 (1.09)	0.44 (0.67)	0.42 (0.81)	0.41 (0.96)	0.42 (0.87)
12.	1.18 (1.06)	0.63 (0.79)	0.85 (0.92)	0.73 (0.98)	0.79 (0.94)
13.	0.74 (1.11)	0.49 (0.70)	1.09 (1.08)	0.50 (0.86)	0.82 (1.02)
14.	1.05 (1.11)	0.84 (0.97)	0.81 (0.80)	0.82 (1.01)	0.81 (0.89)
15.	0.42 (0.92)	0.21 (0.51)	0.31 (0.47)	0.27 (0.77)	0.29 (0.62)
16.	1.00 (1.27)	0.44 (0.59)	0.73 (0.67)	0.77 (1.11)	0.75 (0.89)

Note. Parenthetical values denote standard deviations.

Appendix O

FQ Item Means for All Groups

<u>Item</u>	<u>Older Females</u>	<u>Older Males</u>	<u>Younger Females</u>	<u>Younger Males</u>	<u>Younger Adults (Combined)</u>
1.	0.61 (1.22)	0.66 (1.45)	1.27 (1.56)	0.91 (1.51)	1.10 (1.53)
2.	0.68 (1.30)	0.59 (1.39)	0.31 (0.62)	0.36 (0.79)	0.33 (0.69)
3.	0.75 (1.24)	1.23 (1.80)	0.99 (1.12)	2.23 (2.29)	1.56 (1.84)
4.	1.82 (2.73)	1.23 (2.33)	1.38 (1.90)	1.09 (2.35)	1.25 (2.10)
5.	2.37 (2.95)	0.91 (1.89)	0.65 (1.32)	0.50 (1.71)	0.58 (1.50)
6.	2.42 (2.30)	1.07 (1.62)	3.12 (1.51)	1.45 (1.79)	2.35 (1.83)
7.	1.11 (1.84)	1.27 (1.99)	1.38 (1.53)	0.77 (1.23)	1.10 (1.42)
8.	0.64 (0.94)	0.52 (1.00)	1.15 (1.54)	1.05 (1.50)	1.10 (1.51)
9.	1.21 (1.91)	1.07 (1.78)	1.42 (1.63)	0.95 (1.50)	1.21 (1.57)
10.	2.32 (2.18)	1.91 (1.85)	2.15 (1.12)	2.00 (1.83)	2.08 (1.47)
11.	2.45 (2.88)	1.23 (2.21)	1.38 (1.98)	0.77 (1.77)	1.10 (1.89)
12.	1.66 (2.16)	1.85 (1.58)	1.96 (1.51)	1.59 (2.11)	1.79 (1.80)
13.	4.11 (3.06)	2.84 (3.00)	3.12 (2.42)	2.86 (2.73)	3.00 (2.54)
14.	0.87 (1.38)	0.25 (0.72)	0.23 (0.59)	0.09 (0.29)	0.17 (0.48)
15.	0.74 (1.46)	0.91 (1.76)	1.08 (1.70)	1.00 (1.35)	1.04 (1.53)

Note. Parenthetical values denote standard deviations.

Appendix P

STAI-T Item Means for All Groups

<u>Item</u>	<u>Older Females</u>	<u>Older Males</u>	<u>Younger Females</u>	<u>Younger Males</u>	<u>Younger Adults (Combined)</u>
1.	1.91 (0.90)	1.88 (0.92)	1.88 (1.86)	1.91 (0.75)	1.90 (0.81)
2.	1.91 (1.06)	1.60 (0.86)	1.85 (0.73)	1.91 (0.68)	1.88 (0.70)
3.	2.12 (1.01)	1.90 (1.02)	2.19 (0.85)	2.09 (0.81)	2.15 (0.82)
4.	1.85 (0.88)	1.64 (0.93)	2.04 (0.87)	1.91 (0.92)	1.98 (0.89)
5.	1.44 (0.69)	1.24 (0.62)	1.46 (0.58)	1.50 (0.74)	1.48 (0.65)
6.	2.21 (0.88)	2.38 (1.08)	3.04 (0.87)	2.45 (0.91)	2.77 (0.93)
7.	2.24 (1.07)	2.07 (1.05)	2.46 (0.71)	2.18 (0.73)	2.33 (0.72)
8.	1.62 (0.78)	1.31 (0.60)	1.81 (0.63)	1.77 (0.74)	1.79 (0.68)
9.	2.15 (1.05)	1.57 (0.86)	2.04 (0.87)	1.86 (0.94)	1.96 (0.90)
10.	1.91 (0.83)	1.83 (0.93)	2.00 (0.85)	2.06 (0.76)	2.03 (0.80)
11.	1.59 (0.70)	1.33 (0.61)	1.46 (0.71)	1.59 (0.67)	1.52 (0.68)
12.	2.15 (0.93)	1.49 (0.82)	1.92 (0.74)	1.95 (0.84)	1.94 (0.78)
13.	1.84 (0.95)	1.83 (1.09)	1.92 (0.69)	2.14 (0.83)	2.02 (0.76)
14.	2.44 (0.89)	2.07 (1.05)	2.42 (0.81)	2.11 (0.90)	2.28 (0.86)
15.	2.09 (0.90)	1.75 (1.09)	1.62 (0.57)	1.59 (0.73)	1.61 (0.65)
16.	1.95 (0.79)	1.64 (0.88)	2.04 (0.82)	2.23 (0.87)	2.13 (0.84)
17.	1.88 (0.95)	1.40 (0.63)	1.50 (0.59)	1.82 (0.85)	1.65 (0.73)
18.	2.09 (1.03)	1.64 (0.93)	1.77 (0.76)	2.00 (1.02)	1.88 (0.89)
19.	1.88 (0.91)	1.64 (1.08)	1.69 (0.62)	1.82 (0.80)	1.75 (0.70)
20.	2.00 (0.92)	1.52 (0.80)	1.88 (0.77)	1.91 (0.81)	1.90 (0.78)

Note. Parenthetical values denote standard deviations.

Appendix Q

BDI Item Means for All Groups

<u>Item</u>	<u>Older Females</u>	<u>Older Males</u>	<u>Younger Females</u>	<u>Younger Males</u>	<u>Younger Adults (Combined)</u>
1.	0.31 (.61)	0.09 (.29)	0.42 (.76)	.27 (.55)	.35 (.67)
2.	0.33 (.53)	0.18 (.45)	0.27 (.45)	.32 (.72)	.29 (.58)
3.	0.08 (.27)	0.05 (.30)	0.19 (.49)	.23 (.61)	.21 (.54)
4.	0.44 (.50)	0.42 (.62)	0.46 (.71)	.50 (.74)	.48 (.71)
5.	0.15 (.49)	0.09 (.29)	0.27 (.45)	.27 (.63)	.27 (.54)
6.	0.14 (.52)	0.10 (.48)	0.23 (.82)	.27 (.77)	.25 (.79)
7.	0.23 (.54)	0.03 (.17)	0.23 (.51)	.23 (.43)	.23 (.47)
8.	0.26 (.55)	0.18 (.45)	0.50 (.65)	.64 (.79)	.56 (.71)
9.	0.03 (.16)	0.00 (.00)	0.12 (.43)	.05 (.21)	.08 (.35)
10.	0.21 (.70)	0.13 (.50)	0.15 (.37)	.27 (.88)	.21 (.65)
11.	0.67 (.93)	0.45 (.66)	0.81 (.85)	.55 (.80)	.69 (.83)
12.	0.23 (.48)	0.23 (.42)	0.27 (.45)	.50 (.60)	.37 (.53)
13.	0.54 (.72)	0.27 (.50)	0.35 (.63)	.23 (.43)	.29 (.54)
14.	0.52 (.82)	0.14 (.46)	0.70 (.88)	.36 (.85)	.55 (.87)
15.	0.74 (.64)	0.86 (.80)	0.46 (.58)	.23 (.43)	.35 (.53)
16.	0.82 (.88)	0.94 (.68)	0.50 (.58)	.50 (.91)	.50 (.74)
17.	0.97 (.58)	0.89 (.57)	1.00 (.57)	.64 (.58)	.83 (.60)
18.	0.38 (.49)	0.23 (.42)	0.27 (.72)	.18 (.66)	.23 (.69)
19.	0.36 (.78)	0.00 (.00)	0.27 (.72)	.27 (.88)	.27 (.79)
20.	0.37 (.62)	0.27 (.45)	0.35 (.49)	.27 (.55)	.31 (.51)
21.	1.49 (1.26)	1.06 (.95)	0.46 (.71)	.50 (.86)	.48 (.77)

Note. Parenthetical values denote standard deviations.

Appendix R

SCL-SOM Item Means for All Groups

<u>Item</u>	<u>Older Females</u>	<u>Older Males</u>	<u>Younger Females</u>	<u>Younger Males</u>	<u>Younger Adults (Co-mbined)</u>
1.	0.56 (0.97)	.14 (0.35)	1.38 (1.13)	0.86 (1.12)	1.14 (1.15)
2.	0.38 (0.58)	.33 (0.71)	0.12 (0.43)	0.45 (0.67)	0.27 (0.57)
3.	0.19 (0.71)	.27 (0.73)	0.22 (0.50)	0.41 (0.67)	0.30 (0.58)
4.	1.06 (1.31)	.91 (1.25)	1.54 (1.30)	1.18 (1.05)	1.38 (1.20)
5.	0.19 (0.52)	.19 (0.45)	0.92 (1.06)	0.55 (0.80)	0.75 (0.96)
6.	1.03 (1.16)	.93 (1.07)	1.22 (1.00)	0.64 (0.66)	0.95 (0.90)
7.	0.64 (1.10)	.46 (1.02)	0.54 (0.76)	0.32 (0.57)	0.44 (0.68)
8.	0.33 (0.63)	.14 (0.41)	0.65 (1.06)	0.14 (0.35)	0.42 (0.85)
9.	0.62 (1.06)	.50 (0.90)	0.46 (0.71)	0.32 (0.65)	0.40 (0.68)
10.	0.03 (0.17)	.09 (0.36)	0.35 (0.85)	0.09 (0.29)	0.23 (0.66)
11.	0.56 (0.91)	.52 (1.00)	0.48 (0.94)	0.55 (0.80)	0.51 (0.87)
12.	0.58 (1.05)	.27 (0.82)	0.31 (0.55)	0.32 (0.72)	0.31 (0.62)

Note. Parenthetical values denote standard deviations.

Appendix S

Illness Item Means for Older Groups

<u>Item</u>	<u>Older Females</u>	<u>Older Males</u>
1.	.15 (.36)	.18 (.38)
2.	.08 (.25)	.03 (.16)
3.	.32 (.47)	.24 (.43)
4.	.15 (.34)	.11 (.30)
5.	.06 (.24)	.05 (.22)
6.	.15 (.36)	.29 (.46)
7.	.06 (.24)	.12 (.33)
8.	.24 (.43)	.10 (.30)
9.	.00 (.00)	.00 (.00)
10.	.21 (.41)	.07 (.26)
11.	.14 (.34)	.10 (.30)
12.	.28 (.45)	.15 (.36)
13.	.16 (.37)	.00 (.00)
14.	.25 (.43)	.27 (.45)
15.	.18 (.39)	.02 (.16)
16.	.18 (.39)	.20 (.40)
17.	.62 (.49)	.40 (.49)
18.	.24 (.43)	.20 (.40)
19.	.32 (.47)	.37 (.49)
20.	.05 (.20)	.09 (.27)
21.	.15 (.36)	.12 (.33)
22.	.35 (.49)	.15 (.36)
23.	.24 (.43)	.01 (.05)
24.	.21 (.41)	.10 (.30)
25.	.13 (.30)	.10 (.30)

Note. Parenthetical values denote standard deviations.

