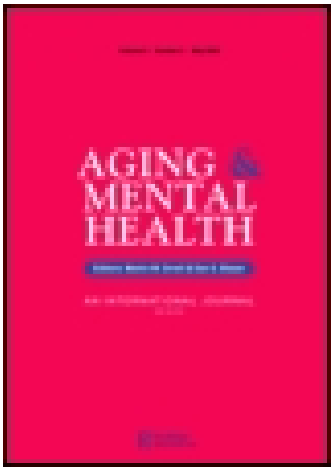

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ORIGINAL ARTICLE

Psychometric properties of the MSPSS in older adults

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Abstract

Enhanced social support is associated with increased physical and psychological health among the elderly. Although measures of social support generally are used as predictors of wellbeing, they also may be useful as outcome assessments to evaluate breadth of treatment effects. Perceived adequacy of the support network may be most relevant in this regard given its relationship to affective symptomatology. One measure of this component that has been used with older adults is the Multidimensional Scale of Perceived Social Support (MSPSS: Zimet *et al.*, 1988). However, no study has examined the psychometric properties of the MSPSS in older individuals with well-diagnosed psychiatric disorders, and no normative data are available from older adults selected carefully to be free of diagnosable pathology. The current study examined the psychometric properties of the MSPSS in two groups of older adults (ages 55–82), one with generalized anxiety disorder (GAD, $N = 50$) and the other without diagnosable psychopathology ($n = 94$). Perceived social support was higher among normal control (NC) participants than patients with GAD. Internal consistency and test-retest reliability were strong, and sub-scale validity and factor analyses demonstrated consistency with findings from younger adults. Overall, the MSPSS appears useful for clinical trials with older anxious adults.

Empirical evidence has demonstrated repeatedly that enhanced social support is associated with increased physical and psychological health (Cohen & Wills, 1985; House *et al.*, 1988). The nature of this relationship, however, is particularly salient among older adults who often experience social loss as a result of retirement and declining health (Wisocki, 1991). In this population, considerable evidence has documented the relationship between social support and various health-related behaviors (Oxman & Berkman, 1990; Rubinstein *et al.*, 1994). For example, reduced social support has correlated significantly with increased heart-rate activity in response to stress (Uchino *et al.*, 1992), increased utilization of health services (Nelson, 1993) and increased mortality (Blazer, 1982; Bryant & Rakowski, 1992; Oxman *et al.*, 1995). Reduced social support also has been associated with emotional problems among community-dwelling elderly, including decreased positive affect, increased depression and lower life satisfaction, and greater impact of disaster stress (Kaniasty & Norris, 1993; Murrell *et al.*, 1992; Newsom & Schulz, 1996). Relatedly, social support variables have been associated with both severity of depression and degree of impairment in daily functioning among older medical patients (Hann *et al.*, 1995; Oxman & Hull, 1997; Oxman *et al.*, 1997). These data suggest a broad and important role of social support in the physical and psychological health of elderly adults.

Essential to understanding the nature of this relationship is the need to differentiate among various components of social support. Oxman and Berkman (1990) have summarized the literature and suggested the utility of distinguishing among the following three components: (1) the quantitative structure and composition of one's social network (i.e. the number and frequency of social contacts, geographic proximity and kinship); (2) the type and amount of support received (including emotional support, tangible aid, and informational support or guidance); and (3) the perceived adequacy of social support. To understand fully the role of social relationships in physical and mental health among older adults, careful attention should be given to identifying reliable and valid measures of each component of social support.

To date, measures of the different components of social support have been used primarily to investigate the potential role of these variables in predicting health-related behaviors. Measures of social support, however, also can be considered as outcome variables in clinical trials investigating the efficacy of treatments for both medical and psychiatric difficulties. In research and clinical settings, it is becoming increasingly important to document the

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effects of pharmacological and psychosocial treatments not only on target symptoms, but also on related domains such as social functioning and quality of life. Since social impairment generally is a defining feature (American Psychiatric Association (APA), 1994), assessment of social support may be particularly important for psychiatric treatment outcome trials. In such studies, perceived adequacy of social support may be a particularly salient outcome measure given that prior research has suggested the relevance of this component for affective symptomatology (Hann *et al.*, 1994). Furthermore, perceived adequacy of social support may be the component of social support most likely altered by psychiatric interventions, particularly those which attempt to modify patients' perceptions of the world around them.

One measure of perceived adequacy of social support that has received some attention in the literature is the Multidimensional Scale of Perceived Social Support (MSPSS: Zimet *et al.*, 1988). The MSPSS is a 12-item instrument which assesses the adequacy of perceived social support from family, friends and significant others. Psychometric data for this instrument in younger adults with and without significant psychopathology are strong (Cecil *et al.*, 1995; Dahlem *et al.*, 1991; Zimet *et al.*, 1988, 1990). Preliminary estimates of internal consistency and factor structure among older medical patients also are consistent with data from younger adults (e.g. Hann *et al.*, 1994; Oxman *et al.*, 1994). The MSPSS has the potential to serve as an outcome measure in psychiatric trials with older adults given its relationship to severity of depression among older medical patients (Hann *et al.*, 1995; Oxman & Hull, 1997; Oxman *et al.*, 1994). However, no study has yet examined descriptive data and psychometric properties of the MSPSS in older adults with well-diagnosed psychiatric disorders. Additionally, no normative data are available from older adults selected carefully to be free of diagnosable pathology. Normative and psychometric data from both well-diagnosed patients and normal controls are essential to assess the potential utility of the MSPSS as an outcome measure for clinical trials with older psychiatric patients.

To evaluate the potential utility of the MSPSS for subsequent clinical trials, the current study investigated the psychometric properties of the instrument in two groups of well-diagnosed older adults, one with generalized anxiety disorder (GAD) and the other without any diagnosable psychopathology. GAD was selected as a target disorder given the relatively high prevalence rates of this condition among the elderly. The disorder is, in fact, one of the most prevalent of the anxiety disorders in older adults, with six-month and lifetime rates of 1.9% and 4.6%, respectively (Blazer *et al.*, 1991). Despite these high prevalence rates and the pervasiveness and chronicity of GAD (Rapee & Barlow, 1991), research only recently has begun to address the nature and treatment of this syndrome among the elderly (Beck *et al.*, 1996; Stanley *et al.*, 1996). Thus, the current study examined the reliability and validity of the MSPSS in 50 older adults with well-diagnosed GAD and 94 older adults without diagnosable psychopathology. Descriptive data are presented, along with analyses examining internal consistency, test-retest reliability, sub-scale validity, and factor structure of the measure. According to prior data from younger adults (Zimet *et al.*, 1988), it was expected that women would report increased adequacy of social support relative to men. In addition, higher MSPSS scores were expected for control participants than for patients with GAD given the impairment in social functioning generally associated with this disorder. Internal consistency and test-retest reliability were expected to be strong in both groups, and factor structure was expected to support the utility of three sub-scales assessing adequacy of support from family, friends and significant others. Finally, married participants were expected to report higher perceived social support from significant others than those who are unmarried, although no differences in these groups were expected regarding adequacy of support from family and friends (Zimet *et al.*, 1990).

Method

Participants

Generalized anxiety disorder (GAD) sample. The GAD sample included 50 older adults, ages 55–81, who met DSM-III-R criteria for GAD (APA, 1987). Age distribution was as follows: 55–59 (16%); 60–64 (12%); 65 and older (72%). Prospective participants in this sample were recruited for a treatment study with media announcements and visits to community agencies and church groups. They were screened initially by telephone, and those individuals whose symptoms appeared to fit GAD criteria then were interviewed using the Anxiety Disorder Interview Schedule-Revised (ADIS-R: DiNardo & Barlow, 1988). This semi-structured interview was conducted by advanced-level graduate students who had received extensive training in its administration (DiNardo *et al.*, 1993).

Given that the GAD sample was recruited for a treatment study, those patients who reported current use of psychotropic medication, (with the exception of occasional hypnotics for sleep difficulties, i.e. less than four times per week) were asked to withdraw from these regimes under supervision of the prescribing physician, with at least a two-week clearance prior to administration of the ADIS-R. Exclusion criteria included: primary diagnosis of an alternate Axis I disorder, current involvement in psychotherapy, serious medical conditions (e.g. recent stroke, acute cardiac disease or Parkinson's disease), alcohol or substance abuse within the pre-

vious six months, psychotic symptoms, or evidence of cognitive impairment as indicated by a score of 24 or lower on the Mini-Mental state examination (Folstein *et al.*, 1975).[1]

All ADIS-R interviews were videotaped, with a random 28% ($n = 14$) selected for evaluation by a second clinician to estimate interrater agreement. One hundred per cent diagnostic agreement was noted for GAD, most likely due to extensive prescreening of potential participants and the use of videotaped interviews rather than administration of two separate ADIS-Rs (Borkovec & Costello, 1993). Secondary diagnoses were as follows: social phobia 16% ($n = 8$), simple phobia 12% ($n = 6$), major depression 12% ($n = 6$), panic disorder 10% ($n = 5$), dysthymia 4% ($n = 2$), and post traumatic stress disorder 2% ($n = 1$). Kappa coefficients for secondary diagnoses indicated excellent reliability (1.00) for social phobia, simple phobia and panic disorder, and moderate reliability (0.58) for major depression. Other diagnoses did not occur with sufficient frequency in the reliability sample to allow calculation of kappa coefficients.

Normal control (NC) sample. The NC sample included 94 adults, ages 55–82, without any DSM-III-R Axis I diagnosis. These individuals were recruited from the same sources as the GAD sample, although recruitment procedures for the two samples were independent and the participants in the two groups were not related in any way. Initial telephone screenings were followed by administration of the ADIS-R to confirm the absence of any Axis I disorder. Exclusion criteria for this group were similar to those noted for the GAD group. Age distribution mirrored that of the GAD group, with frequencies as follows: 55–59 (16%); 60–64 (12%); and 65 and older (72%).

Measure

The MSPSS is a 12-item instrument that assesses the adequacy of one's perceived social support from family, friends and significant others. Previous data have indicated adequate internal consistency, test-retest reliability and construct validity for this measure in non-psychiatric samples of younger adults (Dahlem *et al.*, 1991; Zimet *et al.*, 1988, 1990). Other data have supported the psychometric utility of the MSPSS in adolescent psychiatric inpatients (Kazarian & McCabe, 1991) and younger adult psychiatric outpatients (Cecil *et al.*, 1995). Across all of these studies, evidence has supported the utility of the three MSPSS sub-scales (i.e. family, friends and significant others).

Among older adults with medical problems, internal consistency of the MSPSS is strong (Oxman *et al.*, 1994) and data suggest a factor structure consistent with findings from younger adults (Hann *et al.*, 1995). Item scores range from 1 to 7, with responses averaged to create total and sub-scale scores. In all cases, higher scores indicate greater perceived social support (Zimet *et al.*, 1985).

Procedure

Following evaluation of inclusion/exclusion criteria, participants in the GAD sample completed the MSPSS as part of a broader pretreatment evaluation.[2] NC participants completed these same instruments in the context of a briefer evaluation and were paid $50 for their participation. All participants provided informed consent. Demographic data for both groups are presented in Table 1. Data analyses revealed no significant differences between groups on any of these variables. For a sub-set of

TABLE 1. Demographic data for older adults with generalized anxiety disorder (GAD) and a sample of normal controls (NC)

	NC	GAD
	($n = 94$)	($n = 50$)
Age	67.53 years (SD6.77)	67.92 years (SD6.81)
Education	15.20 years (SD2.24)	14.46 years (SD2.79)
Gender		
% Female	69.1% ($n = 65$)	72.0% ($n = 36$)
Ethnicity		
Caucasian	95.7% ($n = 90$)	82.0% ($n = 41$)
African-American	2.1% ($n = 2$)	14.0% ($n = 7$)
Hispanic	2.1% ($n = 2$)	2.0% ($n = 1$)
Native American	0	2.0% ($n = 1$)
Marital status		
Married	62.8% ($n = 59$)	66.0% ($n = 33$)
Divorced	17.0% ($n = 16$)	16.0% ($n = 8$)
Widowed	17.0% ($n = 16$)	14.0% ($n = 7$)
Single	3.2% ($n = 3$)	4.0% ($n = 2$)

TABLE 2. Mean scores on the MSPSS in two groups of older adults, one with generalized anxiety disorder (GAD; $n = 50$) and a normal control (NC) group ($n = 94$) (standard deviations are in parentheses)

Measure	NC		GAD		t	df	p
MSPSS							
Friends	6.4	(0.91)	4.9	(1.68)	−5.35	57	0.001
Family	6.3	(1.09)	5.2	(1.69)	−4.02	61	0.001
Significant other	6.6	(0.92)	5.7	(1.51)	−3.69	59	0.001
Total	6.4	(0.75)	5.2	(1.37)	−5.27	56	0.001

Note: Degrees of freedom represent t-tests conducted using separate variance estimates.

NC participants ($n = 46$), questionnaires were re-administered two to four weeks later ($X = 19.0$ days, SD = 7.1) to allow evaluation of test-retest reliability. Although this test-retest interval was somewhat variable due to scheduling difficulties, the majority of participants (76%) were re-evaluated within three weeks of the initial testing.

Results

Data analytic strategies

All analyses were conducted separately for the GAD and NC samples. Within each group, gender differences were examined with a series of t-tests utilizing either pooled or separate variance estimates, based upon whether significant differences existed in between-group comparisons of variances. Another set of t-tests was conducted to examine group differences on the measure. Internal consistency was estimated with coefficient alpha, calculated separately for sub-scale and total scores. For the sub-set of NC subjects who completed the questionnaires a second time, test-retest reliability was estimated with Pearson r correlation coefficients. Again, correlations were calculated separately for sub-scale and total scores. To examine sub-scale validity, MSPSS sub-scale scores were compared for married and unmarried participants with a series of t-tests, again utilizing either pooled or separate variance estimates as appropriate. Factor structure was examined using exploratory principal component analysis (PCA) with varimax rotation. This procedure was selected for ease of interpretation and to replicate prior studies. Items with factor loadings of 0.40 or greater were considered salient.

Descriptive data

Mean scores and standard deviations for the MSPSS in the GAD and NC groups are reported in Table 2. Analyses of gender differences revealed no significant effects in either group ($t = -1.16$ to 1.99). Thus, further analyses were collapsed across gender. Comparison of the sub-scale and total scores between GAD and NC groups revealed significant differences on all measures (Table 2). In each case, scores were higher in the NC group, indicating greater adequacy of perceived social support among normal control participants than patients with GAD. Also, z-score comparison of means indicated that these older NC participants scored significantly higher on all MSPSS scales than younger control participants (Zimet *et al.* (1990), $z = 3.39$–5.63, $p < 0.01$) and significantly higher than older adult cancer patients (Hann *et al.* (1994), $z = 2.06$–6.07, $p < 0.02$).

Internal consistency and intercorrelation of sub-scales

Alpha coefficients indicated strong internal consistency for the sub-scale and total scores of the MSPSS in both samples (alphas = 0.87–0.94: Nunally & Bernstein, 1994; Robinson *et al.*, 1991). Intercorrelations among the sub-scales ranged from 0.46–0.75 in the GAD group and 0.30–0.53 in the NC group. These correlations suggest the measurement of related but separate aspects of perceived social support assessed by the friends, family and significant other sub-scales. In both groups, correlations between the significant other and family sub-scales (GAD: $r = 0.75$, *NC*: $r = 0.53$) were higher than all other sub-scale intercorrelations (GAD: $r = 0.46$–0.52, *NC*: $r = 0.30$–0.31) according to tests of differences between dependent rs ($p < 0.025$: Cohen & Cohen, 1983).

Test-retest reliability

Correlation coefficients indicated adequate to strong test-retest reliability for the friends ($r = 0.73$), family ($r = 0.74$) and total ($r = 0.73$) scores of the MSPSS in a sub-set of the NC group. The significant other sub-scale, however, demonstrated a weaker relationship over time ($r = 0.54$). On this sub-scale, *post hoc* paired comparisons revealed no significant difference in scores at test and retest ($t(45) = 1.17$, ns), suggesting no consistent pattern of change over time.

TABLE 3. Comparison of MSPSS sub-scale scores in married and non-married sub-groups of NC and GAD participants (standard deviations are in parentheses)

	NC		GAD	
MSPSS sub-scale	Married ($n = 59$)	Non-married ($n = 35$)	Married ($n = 29$)	Non-married ($n = 15$)
Friends	6.6 (0.82)	6.2 (1.05)	4.4 (1.65)[a]	5.8 (1.34)[b]
Family	6.5 (0.83)[a]	6.0 (1.37)[b]	5.1 (1.75)	5.4 (1.58)
Significant other	6.7 (0.86)[a]	6.3 (0.98)[b]	5.8 (1.26)	5.5 (1.94)

Note: Different superscripts identify mean scores that differ significantly ($p < 0.05$) between married and non-married participants within GAD and NC groups.

TABLE 4. Factors with eigenvalues greater than one for the MSPSS in the NC and GAD sub-samples

	NC		GAD	
Factor	Eigenvalue	Variance	Eigenvalue	Variance
I	5.62	46.8	7.22	60.1
II	2.29	19.1	2.07	17.2
III	1.55	12.9	—	—

Subscale validity

Mean MSPSS sub-scale scores for married and non-married participants in the GAD and NC groups are provided in Table 3. In the NC sample, significant differences were observed on the family ($t(49) = 2.04$, $p < 0.05$) and significant other ($t(92) = 2.13$, $p < 0.04$) scores.[3] These results indicated that married participants perceived greater social support from a significant other and from family compared to unmarried participants. In the GAD sample, unmarried participants reported greater perceived social support from friends relative to married participants ($t(43) = 2.98$, $p < 0.005$). No other differences were noted in the GAD group.

Factor analyses

In the initial factor analysis of the MSPSS in the NC group, three factors had eigenvalues greater than one and accounted for 78.8% of the variance (see Table 4). Given that prior data have documented consistently the existence of three factors, and because the scree plot corroborated a three-factor model, the three-factor solution was interpreted. The rotated factor matrix for this model is included in Table 5. These data provided strong support for factors equivalent to the family, friends and significant other sub-scales as has been documented in prior research (Zimet *et al.*, 1988; 1990).

An initial factor analysis of the MSPSS in the GAD group identified two factors with eigenvalues greater than one, accounting for 77.3% of the variance (see Table 4). Since the scree plot corroborated a two-factor model, a two-factor solution was interpreted. The rotated factor matrix for this model is included in Table 5. Patterns of factor loadings suggested that the first factor comprised items from both the significant other and family sub-scales, while factor II was equivalent to the friends sub-scale.

Discussion

The purpose of the present investigation was to extend the available psychometric information regarding the MSPSS to a well-diagnosed sample of older adults with GAD and a control group (NC) without diagnosable psychopathology. In general, psychometric data provided support for the utility of this measure in both participant groups. More specifically, internal consistency was strong, as was test-retest reliability (estimated in a sub-set of NC participants), with the exception of the significant other sub-scale. The coefficient in this case suggested some instability of perceived social support from significant others over time. Whether this pattern reflects poor measurement properties of this sub-scale or real differences across time in perceived day-to-day support from significant others is unclear at present.

Examination of MSPSS sub-scale validity in the NC group demonstrated some consistency with previous findings from younger adult non-psychiatric samples documenting increased perceived social support from significant others for married versus unmarried participants (Zimet *et al.*, 1990). Married participants in the NC group also reported increased social support from family as compared to unmarried participants. For older adults whose immediate family often is defined primarily by a significant other, it is possible that patterns of per-

TABLE 5. Rotated factor matrix for the MSPSS in NC and GAD sub-samples

	NC			GAD	
	Factor I (Family)	Factor II (Sign. others)	Factor III (Friends)	Factor I (Fam/Sign. others)	Factor II (Friends)
Family					
I get the emotional help and support I need from my family	*0.92*	0.23	0.02	*0.86*	0.35
My family really tries to help me	*0.91*	0.27	0.09	*0.77*	0.19
I can talk about my problems with my family	*0.81*	0.31	0.20	*0.84*	0.27
My family is willing to help me make decisions	*0.81*	0.15	0.21	*0.72*	0.37
Significant other					
There is a special person with whom I can share my joys and sorrows	0.15	*0.86*	0.16	*0.86*	0.17
There is a special person in my life who cares about my feelings	0.21	*0.85*	0.02	*0.87*	0.15
I have a special person who is a real source of comfort to me	0.29	*0.85*	0.16	*0.90*	0.12
There is a special person who is around when I am in need	0.28	*0.83*	0.15	*0.65*	0.35
Friends					
I can talk about my problems with my friends	0.15	0.14	*0.89*	0.17	*0.91*
I have friends with whom I can share my joys and sorrows	0.10	0.12	*0.86*	0.20	*0.90*
My friends really try to help me	0.25	0.19	*0.78*	0.34	*0.81*
I can count on my friends when things go wrong	0.00	0.02	*0.81*	0.25	*0.93*

ceived social support will be similar on the family and significant other sub-scales. This hypothesis is supported by the pattern of sub-scale intercorrelations which show higher correlation between perceived support from family and significant others than between other sources of support. In the GAD group, a slightly different pattern emerged, with unmarried participants reporting greater perceived social support from friends than married participants. Given the high level of social anxiety that often accompanies GAD (Sanderson & Wetzler, 1991), it is possible that anxious individuals who are married and receive some support from a spouse are less likely to pursue other relationships from which they also could receive support. Results of this analysis require replication, however, given the relatively small sample sizes of married and unmarried participants in the GAD group.

Exploratory factor analysis of the MSPSS in the NC group was consistent with findings in younger adults (Cecil *et al.*, 1995; Dahlem *et al.*, 1991; Kazarian & McCable, 1991; Zimet *et al.*, 1988; 1990), supporting the utility of three sub-scales assessing perceived social support from family, friends and significant others. In the GAD group, however, items from both the family and significant other sub-scales loaded on a single factor. These data are consistent with the notion that for anxious older adults, perceived support from family and a significant other are closely related, perhaps reflecting a restriction in social networks among patients with GAD. This pattern of results requires replication, however, given the small sample size in the patient group and the consequent potential for unreliability in the correlation coefficients.

Results of the present investigation revealed no gender effects on the MSPSS in either participant group, a finding that is somewhat inconsistent with data from a college sample which documented greater perceived social support from friends and significant others in women relative to men (Zimet *et al.*, 1988). It is possible that gender differences in this regard are limited to younger samples, although it also may be that sample sizes here (in particular, the male sub-samples in the two groups) were insufficient to detect differences. This finding will require replication with larger samples of both anxious and non-anxious older adults.

Finally, perceived adequacy of social support was greater in the NC group than the GAD group. This pattern might be expected given the social anxiety that frequently accompanies GAD and therefore may impact the availability of social resources and the individual's willingness to use these (Sanderson & Wetzler, 1991). Effective treatment for GAD, then, should be expected to reduce social anxiety and improve the use and consequent perceived adequacy of social networks. As such, the MSPSS may

be particularly useful as an outcome measure in clinical trials for older anxious adults. The consistent group differences on the MSPSS also suggest the need to consider differential normative data when interpreting group or individual scores on the MSPSS. Additionally, it is of interest that scores on this measure in the NC group were higher than those obtained from younger control groups (Zimet *et al.*, 1990), suggesting that differential norms also are needed for interpretation of scores across the lifespan. These data are consistent with prior reports documenting differential normative data on a range of self-report measures of anxiety in younger and older adults (Stanley *et al.*, 1996) and they further substantiate previous recommendations that all psychological assessment tools require careful psychometric evaluation before they are adopted for use with older adults (Kasniak, 1990).

In summary, the psychometric properties of the MSPSS suggest the potential utility of this measure for further evaluation of perceived adequacy of social support in older adults. The instrument appears to function well in samples of older adults with GAD and those free of any diagnosable pathology. As such, the measure should be useful for examining further the role of social support in both psychological and physical wellbeing. Of particular importance, however, the MSPSS may be useful as an outcome measure in clinical trials to document the breadth of treatment effects for older anxious adults.

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Notes

[1] A cut-off score of 17 was used for individuals with an eighth grade or less education (Murden *et al.*, 1991).
[2] It should be noted that questionnaire data were unavailable for two of the 50 subjects in the GAD group.
[3] Degrees of freedom for the family sub-scale represent a *t*-test conducted using a separate variance estimate.

References

AMERICAN PSYCHIATRIC ASSOCIATION (1987). *Diagnostic and statistical manual of mental disorders*, 3rd edition, revised. Washington, DC: APA.

AMERICAN PSYCHIATRIC ASSOCIATION (1994). *Diagnostic and statistical manual of mental disorders*, 4th edition. Washington, DC: APA.

BECK, J.G., STANLEY, M.A. & ZEBB, B.J. (1996). Characteristics of generalized anxiety disorder in older adults: a descriptive study. *Behaviour Research and Therapy*, *34*, 225–234.

BLAZER, D. (1982). Social support and mortality in an elderly community population. *American Journal of Epidemiology*, *115*, 684–694.

BLAZER, D., GEORGE, L.K. & HUGHES, D. (1991). The epidemiology of anxiety disorders: an age comparison. In: C. SALZMAN and B.D. LEBOWITZ (Eds), *Anxiety in the elderly* (pp. 17-28). New York: Spring Publishing Company.

BRYANT, S. & RAKOWSKI, W. (1992). Predictors of mortality among elderly African-Americans. *Research on Aging*, *34*, 50–67.

CECIL, H., STANLEY, M.A., CARRION, P.G. & SWANN, A. (1995). Psychometric properties of the MSPSS and NOS in psychiatric outpatients. *Journal of Clinical Psychology*, *51*, 593–602.

COHEN, J. & COHEN, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences*, 2nd edition. Hillsdale, NJ: Erlbaum.

COHEN, S. & WILLS, T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*, 310–357.

DAHLEM, N.W., ZIMET, G.D. & WALKER, R.R. (1991). The Multidimensional Scale of Perceived Social Support: a confirmation study. *Journal of Clinical Psychology*, *47*, 756–761.

DINARDO, P.A. & BARLOW, D.H. (1988). *Anxiety Disorders Interview Schedule—Revised (ADIS-R)*. Albany, NY: Phobia and Anxiety Disorders Clinic, State University of New York.

DINARDO, P.A., MORAS, K., BARLOW, D.H., RAPEE, R.M. & BROWN, T.A. (1993). Reliability of DSM-III-R Anxiety Disorder category. *Archives of General Psychiatry*, *50*, 251–256.

FLOYD, F.J. & WIDAMAN, K.F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*, *7*, 286–299.

FOLSTEIN, M.F., FOLSTEIN, S.E. & MCHUGH, P.R. (1975). Mini-Mental State: a practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research*, *12*, 189–198.

HANN, D.M., OXMAN, T.E., AHLES, T.A., FURSTENBERG, C.T. & STUKEL, T.A. (1995). Social support adequacy and depression in older patients with metastatic cancer. *Psycho-oncology*, *4*, 213–221.

HOUSE, J.S., LANDIS, K.R. & UMBERSON, D. (1988). Social relationships and health. *Science*, *241*, 540–545.

KANIASTY, K. & NORRIS, F.H. (1993). A test of the social support deterioration model in the context of natural disaster. *Journal of Personality and Social Psychology*, *64*, 395–408.

KASNIAK, A.W. (1990). Psychological assessment of the aging individual. In: J.E. BIRREN & K.W. SCHAIE (Eds), *Handbook of the psychology of aging*, 3rd edition, (pp. 427–445). New York: Academic Press.

KAZARIAN, S.S. & MCCABE, S.B. (1991). Dimensions of social support in the MSPSS. Factorial structure, reliability, and theoretical implications. *Journal of Community Psychology*, *19*, 150–160.

MURDEN, R.A., MCRAE, T.D., KANER, S. & BUCKNAM, M.E. (1991). Mini-mental state exam scores vary with education in blacks and whites. *Journal of the American Geriatric Society*, *39*, 149–155.

MURRELL, S.A., NORRIS, F.H. & CHIPLEY, Q.T. (1992). Functional versus structural social support, desirable events, and positive affect in older adults. *Psychology and Aging*, *7*, 562–570.

NELSON, M.A. (1993). Race, gender, and the effect of social supports on the use of health services by elderly individuals. *International Journal of Aging and Human Development*, *37*, 227–246.

NEWSOM, J.T. & SCHULZ, R. (1996). Social support as a mediator in the relation between functional status and

quality of life in older adults. *Psychology and Aging*, *11*, 34–44.

NUNALLY, J.C. & BERNSTEIN, I.A. (1994). *Psychometric theory*, 3rd edition. New York: McGraw-Hill.

OXMAN, T.E. & BERKMAN, L.F. (1990). Assessment of social relationships in elderly patients. *International Journal of Psychiatry in Medicine*, *20*, 65–84.

OXMAN, T.E. & HULL, J.G. (1997). Social support, depression, and activities of daily living in older heart surgery patients. *Journal of Gerontology*, *52B*, 1–114.

OXMAN, T.E., FREEMAN, D.H. & MANHEIMER, E.D. (1995). Lack of social participation or religious strength and comfort as risk factors for death after cardiac surgery in the elderly. *Psychosomatic Medicine*, *57*, 5–15.

OXMAN, T.E., FREEMAN, D.H., MANHEIMER, E.D. & STUKEL, T. (1994). Social support and depression after cardiac surgery in elderly patients. *American Journal of Geriatric Psychiatry*, *4*, 309–323.

RAPEE, R.M. & BARLOW, D.H. (1991). *Chronic anxiety: generalized anxiety disorder and mixed anxiety-depression*. New York: Guilford Press.

ROBINSON, J.P., SHAVER, P.R. & WRIGHTMAN, L.S. (1991). Criteria for scale selection and evaluation. In: J.P. ROBINSON, P.R. SHAVER & L.S. WRIGHTMAN (Eds), *Measures of personality and social psychological attitudes* (pp. 1–16). New York: Academic Press.

RUBEINSTEIN, R.L., LUBBEN, J.E. & MINTZER, J.E. (1994). Social isolation and social support: an applied perspective. *The Journal of Applied Gerontology*, *13*, 58–72.

SANDERSON, W.C. & WETZLER, S. (1991). Chronic anxiety and generalized anxiety disorder: issues in comorbidity. In: R.M. RAPEE & D.H. BARLOW (Eds), *Chronic anxiety: generalized anxiety disorder and mixed anxiety-depression* (pp. 119–135). New York: Guilford Press.

STANLEY, M.A., BECK, J.G. & GLASSCO, J. (1996). Treatment of generalized anxiety in older adults: a preliminary comparison of cognitive-behavioral and supportive approaches. *Behavior Therapy*, *27*, 565–581.

STANLEY, M.A., BECK, J.G. & ZEBB, B.J. (1996). Psychometric properties of four anxiety measures in older adults. *Behavior Research and Therapy*, *34*, 827–838.

UCHINO, B.N., KIECOLT-GLASER, J.K. & CACIOPPO, J.T. (1992). Age-related changes in cardiovascular response as a function of a chronic stressor and social support. *Journal of Personality and Social Psychology*, *63*, 839–846.

WISOCKI, P.A. (1991). Behavioral gerontology. In: P.A. WISOCKI (Ed.), *Handbook of clinical behavior therapy with the elderly client* (pp. 3–51). New York: Plenum Press.

ZIMET, G.D., DAHLEM, N.W., ZIMET, S.G. & FARLEY, G.K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *52*, 30–41.

ZIMET, G.D., POWELL, S.S., FARLEY, G.K., WERKMAN, S. & BERKOFF, K.A. (1990). Psychometric characteristics of the Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, *55*, 610–617.