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**Subthreshold Depression among Older Adults
In Congregate Housing: Characterization and Screening**

A Research Proposal for the Hartford Foundation

Faculty Scholars Program

Research Plan

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Problem Statement

The topic of depression in late life has received considerable attention in the literature, capturing the interest of researchers and health and social service providers. Depression is the most frequently diagnosed mental disorder among older adults (Blazer, 2003). Although major depressive disorder is not as common in late life, subsyndromal or subthreshold depressions are estimated to be more common in late adulthood than earlier in adult life, reportedly affecting up to 5 million older adults (NIMH, 2003) with recent prevalence estimates 18% in the community and 10% -23% among medically ill elders (Judd & Akiskal, 2002). Subthreshold depression has been shown to be associated with significant functional impairments (Blazer, 2003; Seidlitz, Lyness, Conwell, et al., 2001) and risk for future major depressive episode (Chopra, Zubritsky, Knott, et al., 2005). Yet, to date, subthreshold depression in older persons is not uniformly defined, and the means for its identification are not well established (Blazer, 2003; Gallo, Rebok, Tennstedt, et al., 2003). Some authors (e.g., Hybels, Blazer & Pieper, 2001) have defined subthreshold depression as a range of sub-criterion scores on a screening scale such as the modified Center for Epidemiological Studies-Depression scale (CES-D; Radloff, 1977). Judd, Akiskal and colleagues (1997, 1998), and Kumar and colleagues (2004) have defined subthreshold depression using official diagnostic criteria: At least two depressive symptoms from those listed in the DSM-IV-R, but insufficient symptoms to meet official criterion for either minor depression or major depression. This definition of subthreshold depression does not require one of the two “key” depressive symptoms (sad mood or lack of interest), but merely 2-4 symptoms of depression from among the nine listed in the DSM-IV. Other investigators have required one of the two key symptoms in defining subthreshold depression (e.g., Olfson et al., 1996); however, one or both key symptoms with the addition of one or two additional symptoms but short of criterion for a diagnosis of major depressive episode has recently received the provisional diagnosis of Minor Depression in the DSM-IV-TR (APA, 2000; Rapaport, Judd, Schettler, et al., 2002).

While definitions of subthreshold depression vary, many researchers agree that this lower level depression is associated with subjective distress and reduced quality of life in older adults, and an appropriate target for non-

pharmacological intervention approaches (Rabheru, 2004). To date, few studies have examined differential risk factors for subthreshold and criterion depression. One recent exception is Horowitz, Reinhardt and Kennedy's (2005) study of older adults seeking vision rehabilitation services in which they found that a past history of major depression differentiated the risk factors for these two levels of depression. Overall, however, studies suggest that prevalence of subthreshold depressive symptoms increases in old age, and is quite high among residents of senior congregate housing (Lavretsky & Kumar, 2002).

Potential Risk Factors for Subthreshold Depression

Health status, including self-perception of health and functional impairments, are among the known risk factors for depression that may also pose a risk for subthreshold depressive symptoms. In addition, a number of other individual characteristics and social factors that are presumed to influence depression in older adults are not fully researched as yet with regard to subthreshold depression. One of these characteristics is degree of loneliness, which is often a precursor to depression (Blazer, 2002b). Loneliness has been defined as an unpleasant subjective state in which the person senses a discrepancy between the desired amount of companionship or emotional support and that which is available (Blazer, 2002b). A person may be socially lonely—there simply isn't enough companionship available from anyone—or lonely for a specific intimate other. Other common age-related losses and transitions, such as moving to a new residence or a change in health that necessitate a change in routine may also promote loneliness. In a review of 149 studies examining loneliness in older persons, women, those over 80, and those with lower incomes, were more likely to be lonely (Pinquart & Sorenson, 2001). For older adults in congregate living or long-term care facilities, attendance at organized social activities does not appear to inoculate some older persons against loneliness (Adams, Sanders & Auth, 2004). Because loneliness is a known risk factor for depression, it may be even more likely to coexist with subthreshold depression. The social network, a corollary to loneliness that measures more objective social contacts and availability (Lubben, 1988) in contrast to the subjective experience of loneliness, is an important correlate of loneliness, but doesn't fully explain it (Dykstra, van Tilburg & de Jong Gierveld, 2005).

Cognitive impairment in older adults is another potential risk factor for psychiatric symptoms, including both depression and anxiety (Chan, Kasper, Black & Rabins, 2003). The diagnosis of MCI, mild cognitive impairment, has become more widely used in the past few years, and researchers are finding it is associated with higher rates of psychiatric symptoms than normal cognitive status (Forsell, Palmer & Fratiglioni, 2003). Moreover, qualitative studies have found that some people with early-stage cognitive impairment experience a sense of inadequacy and low self-esteem (Clare, 2003; Holst & Holberg, 2003). Depression is also known to involve cognitive symptoms, sometimes manifesting as “pseudodementia,” especially in older adults, suggesting that low-level cognitive impairment (or MCI) and subthreshold depression may be interrelated.

Alcohol misuse among older adults is another potentially important area for research on the depressive subtypes. Symptoms of alcoholism can masquerade as depression, dementia, or other problems associated with aging, and alcohol misuse commonly co-occurs with a number of physical or emotional problems, such as anxiety or depression (O’Connell, Chin, Cunningham & Lawlor, 2003). Substance abuse in older adults is likely to increase as baby boomers age, and already in a recent household survey, 9% of older respondents reported binge drinking (5 or more alcoholic beverages in a sitting) and 2% reported binge drinking 5 or more times during the month (SAMHSA, 2001). The amount of alcohol consumption that is associated with problem use is usually less for older people because metabolic changes associated with aging allows alcohol to be absorbed into the bloodstream much more rapidly and alcohol also interacts adversely with a number of prescription medications commonly taken by older persons (Sattar, Petty & Burke, 2003). The role of alcohol use and misuse in subthreshold depression among older adults is not fully understood, but we know clinically that heavy alcohol use may exacerbate depressive symptoms, even as the individual is seeking relief.

And finally, in every aspect of late adulthood, losses occur: death of loved ones, decline in health, loss of youth, losses of customary social roles and perhaps their status and prestige, and, for some loss of aspects of independent functioning. Multiple losses at any one point in time are not uncommon, and the fact that many of these losses were expected may not make them any easier for the person to accept. Successful adaptation to

these losses is an important strength for older adults. The grief inherent in bereavement or loss of independent functioning places older adults at risk for loneliness and depression. Symptoms of grief and depression overlap considerably and there is limited research to suggest that bereavement in older adults poses a substantial risk for subthreshold depression (c.f. Turvey, Carney, Arndt, Wallace & Herzog, 1999).

Characterization of Subthreshold Depression

One unanswered question in the literature is whether subthreshold depression constitutes a qualitatively distinct syndrome in older adults or is simply a set of fewer depressive symptoms. Akiskal and colleagues (1997) reported on clinical validation of the subthreshold category of depression in adults of all ages in primary care, likening it to neurotic or existential depression, and therefore suggesting it to be qualitatively different from major depression. In contrast, Royall (2004) has recently suggested that subthreshold depression may be simply a linearly-related lesser version of a major depression. Other researchers have noted that late life subthreshold depressive symptoms present in various combinations that differ from the usual DSM-IV criteria (Kumar, et al., 2004; Geiselman & Bauer, 2000). In older adults, a specific syndrome variously referred to as “depression without sadness” (Gallo & Rabins, 1999), apathetic depression (Gallo, 2004), or “depletion” (Newman, Klein, Jensen & Essex, 1996; Adams, 2001)—a set of symptoms more common in older than younger adults that resemble and overlap with what we normally think of as depression—may be a likely candidate for a subthreshold depression syndrome. In studies by Gallo and colleagues (1994; 1997; 1999), this non-dysphoric depression was found to be more consistent with minor depression than major depression, and was associated with clinically significant functional impairment that contributes to lower quality of life.

My earlier work (Adams, 2001; Adams, Matto & Sanders, 2004) examined the factor structure of the Geriatric Depression Scale (GDS; Brink, Yesavage, Lum, et al., 1982), in community-dwelling adults aged 65 or over, using principal components analysis with Varimax (orthogonal) rotation. The presence of a 6-item Withdrawal/Apathy/Vigor (WAV) factor was identified, and correlational analyses were performed with that factor score and other measures of health and well-being. These WAV items obtained the highest endorsement

rates in two samples of older adults surveyed. Because of this high endorsement among both the depressed and non-depressed, WAV by itself was a poor discriminator of depression. Furthermore, high scorers on WAV were found to be older, in poorer health, and with greater functional impairment, suggesting that the WAV items may describe a depletion syndrome, somewhat distinct from depression, and possibly related to the phenomenon of disengagement in late life. It seems likely that there may be distinct subtypes within the group of elders with subthreshold depression, and that high WAV scores may characterize at least some of them.

Screening for Subthreshold Depression

Along with a need to better characterize the phenomenon, ways to accurately screen for subthreshold depression are needed. Screening for geriatric depression in general can be challenging because of the overlap of typical somatic and behavioral symptoms of depression with commonly experienced health symptoms among older adults (Lewinsohn, Rohde & Crozier, 1991; Koenig, Meador, Cohen & Blazer, 1992). In addition, some depressive symptoms such as loss of interest and social withdrawal have also been associated with normal changes of advanced old age, according to specific theories of aging such as the disengagement theory of aging (Cumming & Henry, 1961), and some of its contemporary offshoots.

Although the Geriatric Depression Scale, either the 30 or 15 item version, is one of the best known and most widely used screens for depression in older adults, the literature is not in agreement about score cut-offs on the GDS, raising questions about its adequacy as a screening tool for some presentations of depressive symptoms or for subthreshold depression. Several recent efforts with Receiver Operator Curve (ROC) methods that expanded inquiry to encompass the minor or subthreshold depression categories have reported highly disparate cut points. For example, Schreiner and colleagues (2003) reported a cut-off of 6 or more on the GDS allowing optimal identification of minor depression in Japanese subjects. Blank, Gruman and Robison (2004) found that a GDS cut point of 10 or more was the best for capturing depression not meeting criterion for major depressive disorder, whereas Lavretsky and Kumar (2002) found a cut point of 12 or more on the GDS to be appropriate in identifying *minor* depression. The inconsistencies seen in the literature reporting use of the GDS to detect these

depressions suggest that it may be appropriate to consider minor revisions to the GDS itself. One of its obvious limitations is that the GDS does not differentiate “core” symptoms from other symptoms; rather, it gives equal weight to each item. In addition, the recent literature emphasizes some key indicators of geriatric depression that are not found on the GDS. Specifically, several recent studies have focused on the utility and importance of somatic symptoms as indicators of depression in older adults (e.g., Norris, Arnau, Bramson & Meagher, 2004; Sheehan, Bass, Briggs & Jacoby, 2004; King & Markus, 2000), symptoms that were deliberately omitted from the GDS when it was created in order to avoid confounding by comorbid physical illness. Clinical and research-based writing on geriatric depression (e.g., Blazer, 2003; Gallo & Rabins, 1999) mentions “feeling a burden” and “thinking of death” as very common presentations of depression in late life, two additional items that are not found on the GDS, but may be important depressive symptoms.

Theoretical Perspective

Beginning in the late 1950’s, one of the very first attempts to define normal aging in gerontology was represented by disengagement theory (Cumming & Henry, 1961). This theory proposed that older people change in important ways that go beyond simply replacing one activity or one role with another. With age, the theory stated, individuals become more inwardly-focused and less socially involved. Although the original theory has been widely criticized and is no longer in the mainstream, contemporary theories of aging borrowing liberally from disengagement theory have generated a great deal of interest within gerontology in recent years. These developments have led to new exploration of diverse issues such as emotions in later life, spirituality, wisdom, and defining successful aging in the face of physical frailty and decline. Two of these contemporary theories addressing psychosocial aspects of aging, socio-emotional selectivity theory (SST; Carstensen, 1992; 1995) and gerotranscendence (GT; Tornstam, 1997; 2000), focus on the decreased social contacts and increased interiority that has been observed with advancing age. SST suggests that the older individual chooses reliable social partners with whom to interact in order to maximize positive affect and identity maintenance

(Frederickson & Carstensen, 1990); GT asserts that optimal aging may involve an increase in contemplation, a reduction in materialism, and transcendence of the physical deterioration of aging (Lewin, 2001).

Both of these theories suggest that normal aging may involve changes in preferences regarding socializing and activity participation and both have implications for geriatric social work practice, such as avoiding the wholesale prescription of activity or busy-ness for successful aging (Katz, 2000). Furthermore, particularly relevant to residential care and programming for older adults, both theories suggest the importance of choice and of having *meaningful* activities and relationships. In our prior study of older adults in independent living facilities, we found that visits from friends were associated with less loneliness than visits from adult children or from neighbors at the facility (Adams, Sanders & Auth, 2004), suggesting a pattern of SST that was similar to that found by Potts (1997), who reported that old friends provided a better buffer against depression than new acquaintances. In addition, both these theories are potentially important in interpreting the Withdrawal/Apathy/Vigor items and patterns of response on the Geriatric Depression Scale. The Change in Activities and Interests Index (CAII; Adams, 2004), a 30-item retrospective measure of self-perceived changes in social and leisure activity investment designed for older adults, was developed to attempt to capture the sorts of changes likely to occur if these theories have merit. An interesting question behind development of this measure is whether the age-related changes anticipated by these three related theories of aging may be associated with well-being, at least in a certain segment of older adults, even though losing interest in activities or material possessions would often be associated with depression in younger and mid-life adults.

Specific Aims and Hypotheses

The proposed study will employ a self-administered survey, followed by a brief phone interview in which a cognitive screen, the TICS-m (Welsh, Breiter & Magruder-Habib, 1993), and modules from a diagnostic interview, the MINI (Mini International Neuropsychiatric Interview; Sheehan, Lecrubier, et al., 1998) will be used to classify respondents with depression and subthreshold depression. The TICS-m was designed as a phone measure. The MINI has been administered by phone in at least two published studies with adult

participants (Olfson, et al., 1996; Shvartzman, Weiner, Vardy, Frider, Sherf & Biderman, 2005). The first aim will be to identify a model of health and psychosocial risk factors for the levels of depression. A second focus for the proposed study will be on respondents' depressive symptoms endorsed on the Geriatric Depression Scale as a way to evaluate theoretical and empirical questions and to validate the scoring of the GDS with subthreshold depression. The study has four specific aims, which can be briefly stated as follows:

1. **Classify respondents into depression categories and identify optimal GDS score ranges.**

Respondents will be classified using modules from the MINI and MINI-Plus diagnostic interview (Sheehan et al., 1998) as either *Depressed* (either major depressive disorder or dysthymia), *Subthreshold Depression*, or *Depression-free*. These classifications will serve as the “gold standard” against which to compare scores on the GDS, in order to determine how well the GDS total scale score captures major depression, dysthymia and the “subthreshold” depressions. An optimal cut-off on the GDS will be obtained for individuals who have subthreshold depression and for those who are depressed (either dysthymia, or major depressive disorder). In a prior study using data from Independent Living facilities, approximately 21% of participants scored above 11 points, at risk for depression, on the GDS. It is unknown how the MINI will categorize respondents or compare with the GDS.

2. **Conduct an exploratory factor analysis (EFA) of Geriatric Depression Scale (GDS; Brink et al., 1982)**

and the GDS-15 (Shiek, Yesavage & Mitchell, 1986) items, along with additional items describing other possible indicators of geriatric depression identified in the literature, such as unexplained somatic concerns, thoughts of death, and concern about being a burden to others. Hypotheses for Aim #2: Selected additional items will load on existing GDS subscales/factors, and improve the measurement capabilities of the GDS.

3. **Characterize respondents in three groups, i.e., Depressed, Subthreshold Depression and**

Depression-free, here operationalized by their scores on the MINI diagnostic interview, in terms of their health, social and functioning measures, including loneliness, alcohol abuse, health status, Instrumental

Activities of Daily Living impairments, cognitive status and subscales of the revised Change in Activities and Interests, (CAII). In addition, characterize respondents in three depression groups in terms of subscale scores on the GDS to determine if there are different symptom patterns on the GDS-30 and GDS-15 (i.e., differences in mean subscale scores) for respondents in these diagnostic depression categories. Determine if there are different symptom patterns on the GDS (i.e., differences in mean subscale scores) for respondents in these diagnostic depression categories. Hypotheses for Aim #3: It is anticipated that most of these measures will be significantly associated with level of depression, but it is hypothesized that some, particularly loneliness and cognitive impairment, will have a disproportionately strong relationship to subthreshold depression versus criterion depression. Further, it is my hypothesis that non-depressed older adults, according to the MINI diagnostic interview, will have endorsement in the depressed direction on WAV items at a higher rate than any other subscale's items.

4. **Test a model of direct and mediating effects on depression level** (here operationalized by scores on the MINI diagnostic interview). Age, gender, race, facility, cognitive impairment, alcohol use and smoking, health status and functional impairment, loneliness, and change in activities and interests (Active Instrumental and Social Intellectual subscales of the CAII) will be in this model. Hypotheses for Aim #4: The cross-sectional model will identify paths of effects from health status and behaviors, functional impairment, low-level cognitive impairment and loneliness, while controlling for demographic characteristics. Figure 1 shows a diagram of the proposed model, where lines and arrows illustrate hypothesized significant paths of relationships between variables to the outcomes of subthreshold and criterion depression.

Methods

The proposed study will be based on self-administered surveys, followed where possible by brief phone interviews of older adults residing in congregate housing, whether independent living or assisted living. Generally, arrangements will be made with congregate housing facilities serving older adults in the greater

Cleveland area to invite participation among residents. Ways of introducing the study to residents will include attending resident meetings or events and describing the study, and distribution of flyers announcing the study, referred to as the “Mood, Health and Activity” project. Some of the facilities will allow us to place survey packets directly into residents’ mailboxes or “cubbies;” otherwise, residents will be contacted by placing a flyer explaining the study and inviting participation in their mailboxes or “cubbies,” inviting them to pick up a survey packet at a central location, where surveys will be made available in a marked box. With the packet, there will be a cover letter and consent form. The survey questionnaire will include a place for respondents to write their name, phone number(s) and best time to call, and the consent and survey itself will indicate that we wish to

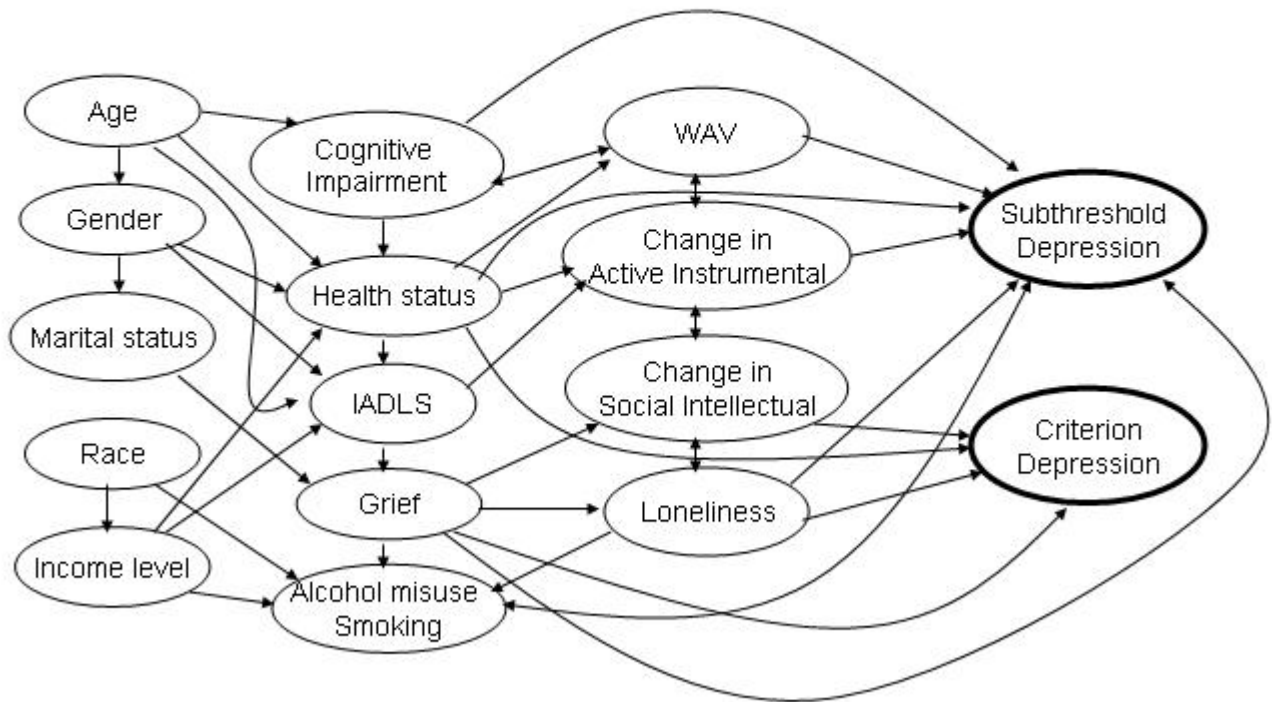


Figure 1. Theoretical path model of effects from demographic, health and psychosocial variables on depression

contact them by phone for a brief follow-up interview. Participants will be paid \$10 for completing the survey and interview. If these methods do not recruit sufficient participants, I will make contacts at more facilities, and also return to the facilities with a follow-up visit (e.g., to a community meeting of residents), or letter. If some participants do not agree to be phoned, or are not reached, but complete the survey, their data will be used for those portions of the study which do not require the MINI and TICS-m data.

An attempt will be made to achieve racial and ethnic heterogeneity in the sample of older adults. Among the facilities I will be working with are Judson Retirement Community, a Continuing Care retirement community in Cleveland near Case Western Reserve University; Menorah Park Center for Senior Living, a long-term care and housing complex for Jewish older adults in Beachwood, OH, and Eliza Bryant Village, a historically African American facility that includes independent living apartments, in urban Cleveland. Most of the participants will be age 65 or over, by virtue of their residence; 60 will be the minimum age accepted into the study. The desired N for completed surveys with interviews will be approximately 200 (see sample size comments in the Analysis sections below). If the response from these three facilities is not sufficient, other known facilities in the Cleveland Metro Area will be contacted for recruitment.

Some project management duties, such as delivery of survey packets, as well as the majority of the follow-up telephone interviews, will be a part-time contractual worker with at least B.A. degree (in social work or psychology), or an MSW student or professional social worker with demonstrated interest and clinical experience in working with older adults. The Principal Investigator and a social work doctoral student Research Fellow will also conduct some of the phone interviews. The interviewers will be trained in how to ask questions of older adults who may be frail, hearing-impaired, or mildly cognitively impaired, how to avoid bias when asking the questions, and how to handle various unforeseen questions and events while on the phone. Supervised pilot testing of the phone interview protocol will be done with the interviewers. A dedicated laptop for the study will be used for recording qualitative data at the time of the interviews, and will be used for some data analysis purposes, as well.

Measures in the Questionnaire	Construct or Quality being Measured
Demographic questions	Age, gender, estimate of income level, date of spousal loss or divorce, children, and living arrangement
Geriatric Depression Scale (GDS-30 item; can be converted to GDS-15)	Depressive symptoms and subscales
Five indicators of depression not found on the GDS	Depressive symptoms
SF-12 health questions (Ware et al., 1996)	Health status, including self-rated health
OARS ADL & IADL (Duke University, 1978)	Personal and Instrumental Activities of Daily Living (functional impairment)
Change in Activities and Interests Index-Revised (CAII-R)	Self-reported changes in Active Instrumental and Social Intellectual Interests and Activities
Loneliness Scale (deJong-Gierveld & Van Tilburg, 1999) (13 items)	Perceived loneliness
Short Michigan Alcoholism Screening Test – Geriatric Version (SMAST-G) (10 items)	Problematic drinking
Quantity/frequency of alcohol use, cigarette smoking, and prescription medication use	Alcohol, tobacco and medication use
Questionnaires to be Administered over the Phone	
TICS-m (Telephone Interview for Cognitive Screening—modified)	Cognitive screening and cognitive functioning
MINI diagnostic modules: Depression, Dysthymia and Generalized Anxiety Disorder	Depression and anxiety diagnoses.
Open-ended questions	Coping, quality of life in congregate housing. Any feedback on survey...

Analysis Plan

All survey data will be entered into SPSS, and cleaned by the doctoral student research assistant, under the direction of the Principal Investigator. Quality control will be in the form of checking and randomly conducting second entries of data. Data analysis will be conducted by the Principal Investigator and the doctoral student. A statistics consultant will assist with the ROC analyses and structural equation modeling. The doctoral student assistant to the study will also serve as a second person to code the qualitative responses and assist with that analysis.

Analysis for Specific Aim #1: In scoring the MINI, the “subthreshold” category for major depression and dysthymia will be determined by two or more concurrent symptoms of the category during the past two weeks, without meeting criterion for that category, a method used by depression researchers Judd, Akiskal and

colleagues. A code will also be kept for participants who have one of the two *key* symptoms of depression (low mood or loss of interest) yet do not meet criterion for Major Depressive Disorder. According to the DSM-IV, these would be classified as having Minor Depression. Depending on the final proportions of the sample in these categories, subthreshold and minor depressive subjects may be combined into one group. Receiver Operator Curve (ROC) methods in SPSS will be used to obtain the optimal cut-off scores for levels of depression on the GDS, then score ranges will be available to create a new categorical Depression Category variable for the GDS. An appropriate sample size for ROC methods will depend in part on the numbers in each of the depression categories, and the area under the ROC curve...thus it is difficult to predict with certainty, but an N of 200 is found in the literature as a sample size in other similar studies using ROC.

Analysis for Specific Aim #2: All GDS items plus the responses to 5 additional indicators of geriatric depression (scored in the proper direction) will be used together for an exploratory factor analysis with varimax rotation. If loadings of the new items meet criteria for inclusion in a subscale, then patterns of symptom endorsement by depression category will be re-run with the revised subscale scores. Third, examine the endorsement rates and classification efficiency of the 5 new items as discriminators of the subthreshold and criterion depression categories by calculating the items' positive and negative hit rates (c.f. Norris, & Woehr, 1998). These item hit rates (the probability of being in a depression category given the presence—positive hit rate—or absence—negative hit rate—of a particular symptom) will be combined into a total hit rate and compared to the base rate, the proportion of respondents who scored above the cut-off for that depression category. If the total hit rate is higher than the base rate, that item improves the scale's discriminatory ability for that category. For EFA calculations, an N of approximately 160 or more would be desirable so that factor loadings of .4 or greater will be significant (Stevens, 1996), although more is certainly better.

Analysis for Specific Aim #3: Mean scores for health and psychosocial variables will be compared for the three depression groups determined by the MINI scoring, as appropriate with the data. A 3-group MANOVA will be used to determine significant differences among these groups of respondents on the known correlates of

depression in older adults that are continuous variables, including health conditions, limitations in activities of daily living and loneliness. MANCOVA may be appropriate to control for age in the three groups, in the event there are non-equivalent mean ages across groups. Chi square or other non-parametric tests will be used to compare the three groups on dependent variables that are categorical, such as the following: Having suffered a recent loss, more than moderate alcohol use, and taking anti-depressant prescription medications. Mean subscale scores (using GDS subscales obtained from the confirmatory factor analysis published in Adams, Matto & Sanders, 2004) for respondents within the *subthreshold depression* and *depressed* categories will also be obtained and compared to determine symptom patterns at the two levels of depression. (The *non-depressed* group can also be examined; although there will be very few symptoms to deal with, it will be interesting to see which items are endorsed.) Within each depression category, mean subscale scores will be compared to determine whether any are significantly different from the others using MANOVA analyses.

Analysis for Specific Aim #4: Correlations and regression analyses will be used to look at relationships among the variables and to test preliminary models of predictors of the different levels of depression. Stepwise logistical regression equations will be used for categorical outcome of depression level. (Two analyses will be done: Subthreshold depression vs. non-depressed status and subthreshold depression vs. criterion depression.) However, I also plan to use structural equation modeling (SEM), providing a more sophisticated tool for modeling direct and mediating effects. The exact form of the dependent variable will be determined in part by the data. It may be appropriate to combine certain scores on the GDS with diagnostic scores on the MINI to create a composite variable representing the latent construct of depression levels (depression, subthreshold depression, and non-depressed.) For multiple or logistic regression analyses, the general rule of thumb is to keep the number of variables within a range of one variable for 10-15 cases, in order to develop a prediction equation that will be generalizable (Stevens, 1996). The desired sample size for SEM may be a bit larger than 200, but this will depend on the number of variables in the model and their distributions.

Proposed Research Timetable:

Sept 1, 2006—Feb. 1, 2007

Complete Case Western Reserve University IRB process. Finalize procedures and IRB processes at three facilities which have already offered support. Recruit contractual worker as part-time research assistant for minor project management duties, phone interviewing/data collection and data entry work. Train phone interviewers. Pilot test interviewing process. Finalize survey questionnaire forms and consent forms. Get copies printed. Attend resident meetings or events at three facilities to publicize and recruit participants. Distribute flyers about study, determine particular procedures at each facility for distributing and retrieving survey packets.

Feb. 1, 2007—September 1, 2007

Distribute survey packets and pick up completed surveys. Conduct follow-up phone interviews. If insufficient response from 3 facilities, approach other facilities. Attend summer statistics workshop(s) and on-campus research and statistics events. Begin data entry, cleaning and checking.

September 1, 2007—January 1, 2008

Complete data entry, cleaning and checking. Begin data analysis. Consult with statistics expert. Begin to write up results—Package findings into presentations and articles.

January 1, 2008—August 31, 2008

Complete data analyses, including qualitative data. Write up final executive summary for participating facilities. Continue to prepare presentations and manuscripts for publication.

Potential significance to health and aging and social issues

With a one-time survey with follow-up phone interview administered to older adults in congregate housing, this study will offer a better understanding of the phenomenon of subthreshold depression, its predictors and similarity or dissimilarity to criterion depression and to normal aging, as well as its risk and resilience profiles. Furthermore, a well known screening scale, the GDS, will be validated with these respondents, particularly focusing on its ability to screen for subthreshold depression. And finally, comparisons of subscale scores on the

GDS at the levels of depression being measured, and use of person-centered analytic techniques may produce evidence of the clustering of certain symptoms suggesting different subtypes of elders with subthreshold depression.

In health and residential settings for older persons, social workers are often on the front lines of assessment for mental health and emotional issues about which other health professionals may be less aware. With the coming increase in the population of the United States over age 65, and an even more rapid rise in those over age 85, social workers in many diverse settings will be called upon to assess, treat, or refer older adults presenting with a variety of concerns and life situations. Social workers in residential settings will be increasingly called upon to determine suitability for admission or residency, and to recommend appropriate types of services to be offered within their settings. Social workers in managed care and other primary medical care settings may be in a unique position to bridge the gap between medical practitioners and the unmet psychosocial needs of elders through case-finding, assessment, education and training (Dorfman, Lubben, Mayer-Oakes, et al., 1995). Subthreshold depression is a widespread problem for older adults that can be a challenge to identify, but that may respond well to the kinds of non-pharmacologic treatments regularly performed by geriatric social workers in a number of settings, interventions such as supportive counseling, psychotherapy, group supports, life review and reminiscence, family therapy and consultation, and environmental approaches. Identification of older adults in congregate housing who may be at risk for subthreshold depression and better means to screen them are crucial to this process of referral and treatment. For all of these reasons, it is more important than ever for geriatric social workers to understand normal aging as well as differential mental health diagnoses, to have accurate assessment tools at their disposal, and to understand the limitations of those tools that are available.

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