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Running head: SOCIAL SUPPORT AND VETERAN MENTAL HEALTH

Age Differences in Social Support and Mental Health in Male Veterans

Melissa R. Weiner

A Thesis Presented to

The Faculty of the Yale School of Public Health

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In Candidacy for the Degree of

Masters of Public Health

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Joan K. Monin, PhD, and Robert H. Pietrzak, PhD, MPH

From the Social and Behavioral Sciences Division, Yale School of Public Health (MRW, JKM),

New Haven, CT, Yale University School of Medicine and National Center for Posttraumatic

Stress Disorder, VA Connecticut Healthcare System (RHP), New Haven, CT.

Abstract

Psychological concerns among United States veterans of all ages are considerable, however social support may help improve the mental health of these individuals. The protective effect of social support on mental health has been observed in older and younger samples of veterans, but it is unclear whether social support may be more beneficial at certain life stages. By assessing cross-sectional survey data from a large sample of veterans using an extreme groups approach (EGA), the impact of perceived support, structural support, and community integration on mental health difficulty and screening positive for a mental disorder was assessed. The effect of individual perceived social support items on mental health was also evaluated. Given evidence from the socio-emotional selectivity theory that older individuals place greater importance on close supportive relationships relative to younger individuals, we hypothesized that older veterans would benefit most from social support, especially from emotional-based types of support. There were significant interactions for age and support, with higher perceived support significantly reducing mental health difficulty and likelihood of screening positive for a mental disorder in the younger but not older group, while community integration decreased mental health difficulty in the older but not younger group. The positive social interaction item predicted lower mental health difficulty in the younger group, while the emotional/affectionate support predicted lower mental health difficulty in the older group. Although the results showed mixed support for the socio-emotional selectivity theory, identifying these differences in benefit from social support can help improve care for veteran populations throughout the life course.

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Introduction

Statement of the Problem

Currently in the United States, we are faced with dual public health burdens related to mental health concerns in the veteran population. The intense and ongoing conflicts in Iraq and Afghanistan are placing returning veterans at high risk for mental disorders (Hoge et al., 2004), while aging veterans from past war eras are also in need of mental health support and services (Sorrell & Durham, 2011). Since 2001, over 2.4 million U.S. military personnel have served in Iraq and Afghanistan, and recent reports indicate that about 54 percent of the 900,000 individuals who have accessed VA health care since 2002 have a mental health diagnosis (Department of Veteran Affairs, 2013). One of the most common psychological risks of war exposure is post-traumatic stress disorder (PTSD), which is estimated to occur in about 15 percent or more of returning veterans (Ramchand et al., 2010, Schnurr et al., 2010). The incidence of depression, another debilitating condition among veterans, is estimated to be about 14 percent (Tanielian & Jaycox 2008).

Concurrently, about 39 percent of veterans who make up the total veteran population (23.1 million) are over the age of 65 years, and this percentage is expected to increase in the coming decade (Independent Budget Veterans Service Organization, 2012). While the prevalence of mental health concerns tends to be lower on average compared to younger veterans, these older veterans report mental health difficulties as well, such as symptoms of PTSD, anxiety, and depression, which have developed over the long-term and are complicated with co-existing medical co-morbidities and physiological and cognitive changes that accompany aging (Burnett-Zeigler et al., 2012, Philips et al, 2010, Potter et al., 2012, Whitbourne & Meeks, 2011).

Relationship of Social Support and Mental Health

Given that these mental health concerns can be serious and debilitating, it is important to evaluate the individual and social factors that can positively impact mental health in all ages of veterans. Social support can buffer against psychological stress, and may influence the mental health consequences of stressful life events, such as combat or other traumatic experiences (Cohen & Wills, 1985, Charuvastra & Cloitre, 2008). For instance, the added comfort of others may encourage individuals to disclose their personal issues in a therapeutic manner.

Additionally, social support is believed to increase resilience, encourage effective coping strategies, reduce high-risk behaviors, promote self-efficacy, and limit isolation (Rozanski, Blumenthal, & Kaplan, 1999, Holahan, Moos, Holahan, & Brennan, 1995, Southwick, Vythilingam, & Charney, 2005, Kawachi & Berkman, 2001). Physiologically, social support may lessen the negative impacts of stress by decreasing hypothalamic-pituitary-adrenal (HPA) axis reactivity and stress-related physiological arousal (Heinrichs, Baumgartner, Kirschbaum, & Ehlert, 2003, Pietrzak et al., 2010, Charuvastra & Cloitre, 2008).

Perceived support is the person's subjective impression of his or her available support, and can be impacted by various factors (Kawachi & Berkman, 2001). There are four common functions of social support, including emotional, instrumental, informational, and positive social interaction. Emotional support involves the provision of nurturing support and making an individual feel loved and cared for (Langford, Bowsher, Maloney, & Lillis 1997), while instrumental support includes the tangible and direct methods of assistance offered to the individual, such as financial aid, other material needs, or help with daily activities (Jacobson, 1986). Informational support is defined as having help solving one's problems, such as advice on emotional or other personal issues. Finally, positive social interaction entails having companions

with which to engage in social activities and can contribute to one's sense of belonging (Cohen & Wills, 1985). Social support can also be measured in terms of structural support, which is defined as the size and complexity of an individual's social network. Structural support not only refers to the number of close friend or family relationships that one may have, but also one's involvement in broader social networks, such as one's integration into the community (Koenen, Stellman, Stellman, & Sommer, 2003, Charuvastra & Cloitre, 2008). Community integration does not necessarily lead to close person-to-person social ties, however, it may contribute to one's sense of belongingness and also social identify, which can improve psychological well-being (Kawachi & Berkman).

The protective effect of social support, however, may be influenced by the individual's perception of or ability to benefit from available social support (Friedman, 2006). It is important to consider that personal well-being and psychological distress may affect social support. For instance, those experiencing psychological issues may be more likely to withdraw from social networks. Acceptance of social support can be especially difficult for individuals with PTSD, which can lead to symptoms of avoidance, isolation, and detachment from others (Friedman, 2006). Additionally, chronic PTSD may be associated with a lack of social support because constant distress and pre-occupation with one's symptoms may wear down beneficial social networks over time (Litz, 2007).

Impact of Social Support on Mental Health in Veteran Populations

Research on veterans across ages and wars has especially focused on how social support protects against the development of PTSD and may also prevent chronic PTSD. In retrospective studies of Vietnam veterans from the National Vietnam Veterans Readjustment Study (NVVRS),

researchers found that the most important post-war mediator of PTSD risk was perceived social support, and that social support was negatively correlated with PTSD (King, King, Fairbank, Keane, & Adams, 1998). Specifically, one's degree of social connectedness, which impacts a person's ability to form social bonds, may help resolve PTSD symptoms. A 14-year prospective study of Vietnam veterans with PTSD found that those who were more involved in their community were more likely to go into remission of their symptoms over the course of the study. Those with a lack of social support, as operationalized by negative community attitudes upon homecoming, however, were more likely to have chronic PTSD (Koenen et al., 2003). Higher perceived social support has also been associated with increased resilience in a sample of Vietnam veterans (Bonanno, Galea, Bucciarelli, & Vlahov, 2007). Similar positive relationships between social support and PTSD have been observed among returning veterans. Several studies demonstrate that social support is one of the most protective factors against developing PTSD, and also acts as a significant buffer to prevent chronic PTSD (Nayback, 2009, Litz, 2007, Pietrzak et al., 2010). For example, in a study of returning (Operation Enduring Freedom/Operation Iraqi Freedom) veterans, unit support was demonstrated to increase resilience to better cope with stressful situations. In this same sample, post-deployment social support helped preserve functioning in individuals with PTSD and reduced the prevalence of PTSD symptoms and comorbid conditions (Pietrzak et al., 2010).

Socio-emotional Selectivity Theory: Suggestion for Age as a Moderator of Social Support and Mental Health

While studies have demonstrated the protective effect of social support on mental health in older and younger samples of veterans across various wars, research has not evaluated

whether social support may be more beneficial in certain stages of life among veterans. The socio-emotional selectivity theory explains that as individuals age they become more aware of time limitations in life, and thus concern themselves with maintaining emotionally close relationships and decreasing the experience of negative emotions (Carstensen & Charles, 1998, Birditt & Fingerman, 2003). Furthermore, research demonstrates that although the size of social networks tends to decrease as people age, satisfaction and perception of social support is higher in older individuals, which may benefit mental health (Lansford, Sherman, & Antonucci, 1998, Luong, Charles, & Fingerman, 2011).

There is also some evidence that age may moderate the buffering effects of social support on mental health in civilian populations. For instance, a 22-month longitudinal study of young-old (50-70 years) and old-old (71+ years) individuals, found that low friend support in the old-old group was associated with higher psychological distress, however this relationship was not present in the young-old group. This study suggests that the oldest individuals may be especially vulnerable to psychological distress and/or are susceptible to losing friend support when experiencing this distress (Matt & Dean, 1993). Furthermore, a study of non-institutionalized adults (18-91 years, mean age of 42.7) with physical impairment, found that there was a lack of overall buffering effect of perceived social support on depression, except in the oldest age group, in which those who reported more perceived social support were less depressed (Turner & Wood, 1985). Furthermore, other researchers found that perceived satisfaction with social support was more strongly positively associated with well-being in the older adult (35-66) compared to younger adult (18-34) sample (Kafetsios & Sideridis, 2006).

Although there has been substantial evidence on the beneficial impact of social support on mental health, some gaps in the research remain. The current data suggest that social support

may positively impact mental health overall, and that age may moderate this relationship, in which older individuals receive greater benefit. It is not yet clear, however, whether this relationship applies to the male veteran population and what types of support are most beneficial. Past veteran studies have evaluated social support across various populations of veterans using different measures of social support and mental health, so it is difficult to compare these studies directly in order to deduce the moderating effect of age. It is possible that veterans, especially those in combat, may experience more intense and chronic trauma relative to the general population, and have unique social support needs as they age. In addition, further exploration into the specific aspects of social support that most benefit mental health in older compared to younger age groups is also needed.

Specific Aims and Hypotheses of Present Study

The aim of the current study was to evaluate whether social support affects mental health differently in older versus younger samples of male veterans. Specifically, we assessed whether social support was more protective for mental health in older compared to younger veterans by assessing main and interaction effects of age with social support and mental health. We also evaluated the effect of social support on mental health in the younger and older groups separately to measure the magnitude of these effects. Various aspects of social support, including perceived support, the size of one's close social network, and community integration, and their impacts on current mental health difficulty and screening positive for a mental disorder were evaluated.

We predicted that overall, higher social support would reduce mental health issues for both younger and older age groups of veterans. Given theoretical support from the socio-emotional selectivity theory that older individuals tend to place greater importance on close

supportive relationships relative to younger individuals, we hypothesized that older veterans would receive greater benefit from higher social support on mental health than younger veterans. Specifically, perceived support would have the greatest impact on the older veteran group's mental health, followed by structural support from close family and friends, and finally community integration, which represents one's broader social network. Secondly, we evaluated, which types of perceived social support would have the greatest impact on mental health. We hypothesized that while the older group would benefit more from emotional-based perceived support, the younger group would benefit most from instrumental support, which has been shown to be the preferred type of support in males (Fiori & Denckla, 2012). By evaluating cross-sectional survey data from a national sample of veterans across the lifespan, we determined whether a tendency to focus on personal relationships in older age, as suggested by this theory, was related to social support and current mental health in the veteran population.

Methods

Data for this study were drawn from the National Health and Resilience in Veterans Survey (NHRVS), a nationally representative study of U.S. veterans. The main focus of the NHRVS is to characterize the prevalence and correlates of major psychiatric disorders in a contemporary, nationally representative sample of U.S. veterans. To evaluate the primary research questions of the present study, we utilized cross-sectional data from Wave 1 of the NHRVS, which was conducted in October to December 2011.

Study Participants

The NHRVS sample was drawn from a research panel of more than 80,000 households that is developed and maintained by Knowledge Networks, Inc. (Menlo Park, CA). This survey firm manages a probability-based, online non-volunteer access survey panel called KnowledgePanel®, which is a nationally representative sample of U.S. adults that represents approximately 98% of U.S. households. The total NHRVS sample includes 3,157 participants, 64.1% of whom are over the age of 60 years old, 89.8% who are male, and 83.6% who are white/Non-Hispanic. As the majority of the sample is male, the impact of social support on health may vary by sex (Kawachi & Berkman, 2001, Schwarzer & Leppin, 1989), and there will not enough power to evaluate gender differences, we restricted our study sample male veterans, which totaled 2,836 individuals (mean age=63.3, SD=12.4, range 21-93). We further limited our study sample to the lower ($\leq 10^{\text{th}}$ percentile) and upper ($\geq 90^{\text{th}}$ percentile) ranges of ages using an extreme groups approach (EGA) (Preacher, Rucker, MacCallum, & Nicewander, 2005). Using this method, the younger group comprised of 290 men with a weighted mean age of 37.0 (SD=6.9) years and the older group included 326 men with a weighted mean age of 81.7 (SD=3.2). Other demographic, health, and psychosocial characteristics of these age groups are described in Table 1.

Procedures

KnowledgePanel® members are recruited through national random samples by telephone or postal mail. Using this dual method of recruitment, Knowledge Networks is able to include households with listed or unlisted numbers, those with or without telephones, cell phone-only

households, as well as those with and without Internet access. If households did not have Internet or computer access, Knowledge Networks provided it to them.

To be included in the NHRVS study, participants had to self-identify themselves as veterans during their initial entry to the panel, where they were asked about previous or current service in the U.S Armed forces, Military Reserves, or National Guard. Of the total 3,188 individuals in the complete Knowledge Networks panel who identified as a veteran, 99.9% of these individuals completed the full NHRVS survey. This computerized survey collected comprehensive information regarding demographics and military history, medical and psychiatric status, and psychosocial functioning. In order for study results to be generalizable to the whole of population of U.S. veterans, poststratification weights were applied to inferential statistics, based on demographic distributions (e.g. age, gender, race/ethnicity, education, census region, metropolitan area) of the most recent Current Population Survey (U.S. Census Bureau, 2010) from October 2010. This study was approved by the Human Subjects Subcommittee of VA Connecticut Healthcare System. All participants provided informed consent prior to completing the survey.

Measures

Primary Dependent Variables

Mental Health Difficulty. In order to limit the number of variables in the study, especially those that were highly correlated, principal components analyses were utilized for several of these measures to reduce variables into composite scores. In order to perform data reduction, raw scores for related measures in the specified sample were entered into the analyses, and those factors with eigenvalues greater than 1.00 were extracted into factor scores. This procedure was

conducted for the mental and physical health difficulties factors, which were analyzed as an outcome and covariate, respectively. The mental health difficulties factor (eigenvalue: 2.49; 83.1% variance explained), which was one of the primary outcome variables, was comprised of scores on 1) depression (factor loading: 0.942) and anxiety (factor loading: 0.918) symptom scores from the Patient Health Questionnaire-4 (Kroenke et al., 2009) and scores on the Posttraumatic Stress Disorder Checklist (PCL-C) (factor loading: 0.873; Weathers et al., 1993). Both of these measures assess the presence of current mental distress (PHQ-4: past two weeks, PCL: past month). A log transformation was applied the composite score ($\ln(1 + \text{mental health difficulties factor})$) to correct for nonnormality. Higher scores of the resultant factor, which represent standardized factor scores, are indicative of greater mental health difficulties.

Positive Screen for a Mental Disorder. Any probable mental health diagnosis of anxiety, depression, or PTSD was determined using threshold scores from the PHQ-4 and PCL (Kroenke et al., 2009). Specifically, individuals who had a total score ≥ 3 on the two PHQ-4 anxiety items; ≥ 3 on the two PHQ-4 depression items, and ≥ 44 on the PCL were categorized as screening positive for one of these disorders.

Primary Independent Variables

Social support. The independent variable of perceived social support was operationalized using a 5-item version of the Medical Outcomes Study (MOS) social support scale (Sherbourne & Stewart, 1991, Amstader et al., 2010). This measure had excellent internal consistency for the younger ($\alpha=0.92$) and older ($\alpha=0.88$) subsamples, as well as the full study sample ($\alpha=0.91$). This scale includes questions related to emotional/informational, tangible, affectionate support and positive social interactions (Sherbourne & Stewart).

Structural support was assessed using the following question, “About how many close friends and relatives do you have (people you feel at ease with and can talk to about what is on your mind)? Responses that had a z-score higher than 3 on this question were considered outliers and excluded.

Community integration was also assessed using a scale, in which participants rated their agreement with the following statement: “I feel well integrated in my community (e.g., regularly participate in community activities)” from 1 (strongly disagree) to 7 (strongly agree).

Furthermore, *satisfaction with sources of social support*, including social and family relationships were evaluated through participant responses to the question, which was drawn from the Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form (Endicott, Nee, Harrison, & Blumenthal, 1993), “Taking everything into consideration, please indicate how satisfied you have been with each of the following areas of your life in the past month.” (1(very poor) to 5(very good)).

Participant Characteristics and Covariates

Sociodemographic characteristics and military history. Participants provided sociodemographic information including race/ethnicity, education, marital status, employment, residence, and income. Participants also answered questions about military characteristics, such as whether or not they had been drafted; what branch they had served in; and whether the VA was their main source of healthcare. Combat exposure was evaluated by asking participants, “Did you ever serve in a combat or war zone?”

Health Characteristics. Several physical, cognitive, and mental health measures were also assessed in the survey. *The physical health difficulties factor* (eigenvalue: 1.34, 67.0%

variance explained) included 1) the sum of medical conditions from a list of 20 conditions (e.g. asthma, arthritis, heart disease, etc); factor loading: 0.818, and 2) scores on the Somatization subscale of the Brief Symptom Inventory-18 (Derogatis, 2000); factor loading: 0.818. Higher factor scores represent greater levels of physical health difficulties.

Cognitive functioning was evaluated using the Medical Outcomes Study Cognitive Functioning Scale-Revised (Stewart, Ware, & Sherbourne, 1992). Higher scores indicated better cognitive functioning.

Mental Health Treatment. Participants were also asked about past and current mental health treatment. Individuals responded first to the question, “Have you ever received mental health treatment (e.g. prescription medication or psychotherapy for a psychiatric or emotional problem)? Individuals who endorsed this question were asked whether they were currently taking prescription medication and/or receiving psychotherapy or counseling for a psychiatric or emotional problem.

Trauma characteristics. Sum of total lifetime traumas was also assessed using a 15-item version (1-item regarding life-threatening illness or injury added to original 14-item) of the Trauma History Screen (Carlson et al., 2012), which asked whether certain traumatic events (e.g. physical or sexual abuse, seeing someone die suddenly or get badly hurt or injured, witnessing something horrible or was badly scared during military service, etc) had occurred during their lifetime.

Data Analytic Strategy

Descriptive statistics were computed to summarize independent, outcome, and covariates in the younger and older groups. To compare the younger and older groups, chi-squared analyses

were conducted for categorical outcomes and independent t-tests for continuous outcomes. Correlations were conducted to evaluate bivariate associations among all variables. These analyses were carried out in the combined group and in the younger and older groups separately. Variables that significantly correlated with both the independent variables and the outcome were included as covariates in subsequent analyses.

To examine main effects and the primary hypothesis regarding whether age is a moderator in the relationship between social support (perceived, structural, community integration) and mental health difficulties, multivariable linear and binary logistic analyses were conducted in the combined sample (N=619; N=810, weighted). For each of the models, covariates along with the independent variables and age group terms were added simultaneously in the first step, and the interaction term in the second step.

In order to examine the magnitude of effects for perceived support, structural support, and community integration on mental health difficulty and probable anxiety, or depression diagnosis, we conducted multivariable linear and binary logistic regression models in the younger (N=290; N=463, weighted) and older (N=326; N=347, weighted) groups separately. For all multivariable models, each set of covariates for that particular analysis was entered simultaneously with the independent variables of interest.

Secondary analyses. To evaluate which types of social support within the perceived support scale (MOS-5) were most related to mental health difficulty in younger and older individuals, stepwise linear regression analyses were conducted in each group separately. For adjusted analyses, the covariates were entered in step 1 using the enter method and then the MOS support items were added in step 2 using the stepwise regression method.

Results

Participant Characteristics: Younger Versus Older Group

Demographic characteristics

As illustrated in Table 1., there were several significant demographic and military differences between the younger and older group. The younger group was less likely to be Caucasian, and more likely to be working and have an annual household income greater than \$60,000; however, the groups did not differ with respect to education, marital status, or metropolitan residence. As a whole, the majority of the sample had a college or higher education, were married or living with a partner, and living in a metropolitan residence. In addition, younger individuals were significantly more likely to have enlisted in the Army and use the VA as their main source of healthcare, however, the groups did not differ with respect to combat exposure. Overall, less than half of the sample were combat veterans.

Health Characteristics and Mental Health Treatment

Younger individuals had significantly lower scores on the physical health difficulties factor; however, they had lower cognitive functioning compared to the older group. Those in the younger group also reported higher mental health difficulty, and were significantly more likely to screen positive for a current mental disorder. Furthermore, the younger group was more likely to have any past or current mental health treatment (Table 1).

Psychosocial Characteristics.

The younger group had a significantly higher mean of total lifetime traumas than the older group. The younger group had lower average ratings of perceived social support, structural

support, community integration, and satisfaction with family and social relationships compared to the older group (Table 1).

Main and Interactive Effects of Social Support on Mental Health Difficulty and Screening Positive for a Mental Disorder

Main effects

All social support variables (Perceived support, structural support, and community integration) along with age group, covariates, and interaction terms (step 2) were entered into the multiple linear regression model predicting mental health difficulty and binary logistic regression model predicting a positive screen for a mental disorder. In the combined younger and older group linear and binary logistic regression analyses, there were significant main effects for age group, perceived support, and community integration on mental health difficulty and likelihood of screening positive for a current mental disorder. Compared to the younger group, the older group had lower mental health difficulty on average as well as a lower likelihood of a positive screen. Furthermore, higher perceived support and higher community integration predicted lower mental health difficulty and lower likelihood of a positive mental disorder screen. There was not a significant main effect for perceived support on either of the mental health variables (Tables 2 & 3).

Interaction effects

There was also a significant interaction of age and perceived support for mental health difficulty, but the direction was contrary to the hypothesis (Table 2). At lower levels of perceived social support, mental health difficulty was significantly higher in the younger compared to the

older group, but decreased to similar levels as the older group in the presence of higher perceived support (Figure 1). The interaction of age with perceived support and likelihood of a positive mental disorder screen was also significant (Table 3). Higher perceived support reduced the likelihood of diagnosis in the younger group, but did not appear to have an effect on the likelihood of a positive screen for the older group, which had about equal likelihood of screening positive for a mental disorders at low and high levels of perceived support (Figure 2). There were not any significant interactions for age and structural support on mental health difficulty or screening positive for a mental disorder.

There was also a significant interaction for age and community integration on mental health difficulty (Table 2). Unlike perceived support, higher community integration had a greater benefit on mental health difficulty in the older group compared to the younger group. While higher community integration decreased mental health difficulty in both the older and younger groups, there was a greater decrease in mental health difficulty in the older group (Figure 3). The interaction for age and community integration with the likelihood of a positive mental disorder screen was not statistically significant. In addition, there were no significant interactions for structural support predicting either of the mental health variables (Table 2 & 3).

Predictors of Mental Health Difficulty and Screening Positive for a Mental Disorder:

Younger versus Older Group

In order to assess the magnitude of effects on mental health for each of the social support variables, multiple linear and binary logistic analyses were conducted on the younger and older groups separately. Similar to the combined analysis, all social support variables (perceived support, structural support, and community integration) along with covariates were entered into

the models predicting mental health difficulty or screening positive for a mental disorder for each age group. In the younger group, higher perceived social support significantly predicted lower mental health difficulty (Table 4) and also reduced the likelihood of a positive mental disorder screen (Table 5), however no other social support variables were statistically significant. Higher community integration significantly predicted lower mental health difficulty and likelihood of screening positive for a mental disorder in the older group, but structural and perceived support did not have a statistically significant effect on mental health (Tables 4 & 5).

Secondary Analyses: Components of Perceived Social Support (MOS-5) and Mental Health Difficulty: Younger versus Older Group

Stepwise multiple regression analyses were conducted to evaluate which items of the MOS-5 perceived social support scale best predicted mental health difficulty in both the younger and older groups separately (Table 6).

Younger Group. In both the unadjusted and adjusted models with the younger group, only the item “Someone to get together with for relaxation” along with its covariates remained significantly correlated with mental health difficulty. In the adjusted model, the coefficient of determination indicated that 72% of the variance of mental health difficulty could be accounted for by this item and the covariates.

Older Group. In the unadjusted stepwise regression of MOS in the older group, four models significantly predicted mental health difficulty. All models included the item “someone to love and make you feel wanted”, with the additional items (“someone to turn to for suggestion about how to deal with a personal problem”, “someone to confide in or talk to about your problems”, “someone to help you with your daily chores if you were sick”) were added into each

subsequent model. In the adjusted analysis, none of the MOS items remained significant, and thus no variables were entered into the model. The excluded item, “someone to love and make you feel wanted,” however, was marginally significant (Table 6).

Discussion

Our primary hypothesis, that social support would have a greater benefit on mental health in the older compared to the younger group, was not fully supported. While perceived support and community integration generally improved mental health in male veterans, higher perceived support had a greater impact on reducing mental health difficulty and likelihood of screening positive for a mental disorder in the younger, rather than the older group. Although community integration, which is an indicator of one’s broader social network, was demonstrated to be more beneficial for mental health in the older relative to the younger group, this pattern was somewhat contrary to the socio-emotional selectivity theory, which emphasizes the importance of having emotionally close relationships in older age.

The finding that higher emotional-based perceived support best predicted a decrease in mental health difficulty, however, provided support for the theory. This result suggests that older individuals may benefit more from emotional social support, and that a greater perception of love and care from another individual may be especially important in reducing current symptoms of anxiety, depression and/or PTSD. These results are also consistent with a study by Oxman et al. (1992), which found that of all the social support variables they examined, higher adequacy of emotional support had the greatest impact on reducing depression symptoms in older individuals.

Although the overall perceived interaction results contradicted the socio-emotional selectivity theory, it is possible that the interaction of age with perceived social support and

mental health may be driven by the lower rates of mental distress and diagnosis in the older group, rather than social support itself. Specifically, the lack of significant effect of perceived support in the older group could have been due to homogeneity in the mental health outcome variable. The findings related to age differences in mental health outcomes, however, are consistent with epidemiological studies, which demonstrate that fewer older adults suffer from depressive and anxiety disorders compared to younger adults. A similar pattern was observed in a study of veterans, in which younger (<50 years) and middle aged (50-64 years) veterans reported more severe PTSD symptoms compared to older veterans (≥ 65) (Magruder et al., 2005). It is hypothesized that older individuals have lower rates of mental health concerns because of the cognitive processes and improved coping strategies that may develop as individuals age (Whitbourne & Meeks, 2011). Furthermore, with greater time elapsed since the traumatic event, it is possible that PTSD symptoms may decrease as older veterans recover over time.

Although contrary to our expectations, it is a significant finding regarding the importance of higher perceived support on mental health in the younger population, who may be at higher risk on average for mental health concerns. What constitutes valuable perceived social support in the younger group however, was further illustrated in the secondary analysis of the MOS social support scale. Rather than closer and emotionally supportive relationships, the younger group received the greatest benefit for positive social interaction support, such as getting together with friends to socialize. This type of social support is believed to reduce stress by distracting individuals from worrying about their problems and enhancing one's mood (Cohen & Wills, 1985). One explanation for this finding is that younger veterans may best manage stress or mental concerns through avoidant coping mechanisms such as drinking with their friends. In

general, there is a high prevalence of alcohol and substance abuse co-morbidity with mental health symptoms, especially PTSD, among veterans. In a current national sample of OEF/OIF service members, 39 percent screened positive for probable alcohol abuse (Jakupcak et al., 2010). If avoidant coping is in fact the mechanism behind this finding, it is unclear whether the use of alcohol or substances for self-medication (Bremner, Southwick, Darnell, & Charney, 1996) even in a social setting, could have negative impacts on mental health in the long-term. Additional research into the relationship of perceived support, coping strategies, and prevalence with alcohol use disorders is needed.

Furthermore, the higher benefit of community integration on mental health in the older group suggests that involvement in one's community may be especially important for mental health in older age. Greater participation in the community may increase the likelihood of accessing social support, and thus protection from mental distress. For example, older individuals could have access to health-related information through elder-focused organizations or may interact with more individuals, who could potentially act as informal sources for coping with stress or mental health concerns (Kawachi & Berkman, 2001). In addition, greater integration into the community, where they can perhaps help others, may contribute to older individuals' sense of purpose and identity. This might be particularly important for older adults, who may be more concerned with generativity at this stage of the life span (Erikson, 1968). Although community integration represents a broader, rather than closer social network, the benefit on mental health from higher integration may also reflect a buffer against social isolation. This explanation is consistent with previous research, which indicates that social isolation and loss of social ties have been demonstrated to be some of the most significant predictors of depressive symptoms in older adults (Oxman, Berkman, Kasl, Freeman, & Barrett, 1992).

There were not any significant main or interaction effects for either of the mental health variables for the measure of close structural support. Other studies of social support and mental health have found weak relationships with quantitative aspects of social support, such as the number of friends reported (Dalgard, Bjork, Tambs, 1995, Jette et al., 1986). Rather than focusing on the number of close friends or family, the quality of these relationships, and thus one's perception of this friend support may be more important for mental health. A study of individuals (mean age=41.1, SD=17.0) found that the size of one's close social network was unrelated to current psychological distress, however, more qualitative aspects of their social network, such as higher mutual dependency (i.e. reciprocity in the relationship) of their network, was related to lower distress (Griffith, 1985). In older individuals, in general, the size of the social network may not be that influential. Although in the current study, older individuals reported having a higher number of close friends as well as greater satisfaction with social and family relationships, as mentioned in previous research, satisfaction and perception of one's social support tend to be higher in older individuals regardless of the size of their social network (Lansford, Sherman, & Antonucci, 1998, Luong, Charles, & Fingerman, 2011).

These findings should be considered in the context of several important limitations. As the data is cross-sectional, the results are correlational, so we are unable to establish a causal link between social support and mental health. As reverse causation could have also occurred, it is also possible that poor mental health could predict decreased social support, perhaps due to the breaking down of social ties as a result of one's illness over time (Friedman, 2006, Litz, 2007). In addition, the outcome measures are self-report and include sensitive subject matter related to mental health so it possible that self-report bias could have occurred. For example, social desirability, or the tendency to portray one's self in a positive light could lead to an

underreporting of one's current symptoms or exaggerate levels of social support. Also, there may be several concerns involving generalizability with our results to veterans in the middle-ages and women, since these groups were excluded from this particular study. Regardless, the results provide an overall depiction of the social support and mental health needs of younger and older veteran groups to better inform research and how to best care for these individuals.

There are many strengths of this study to take into account as well. Use of a nationally representative survey of veterans allows us to apply these results to a national scale of younger and older veterans. In addition, mental health was assessed both dichotomously and continuously, which permitted us to evaluate the impact of social support on screening positive for a clinical diagnosis, as well as to observe its effect on the spectrum of mental health symptomatology. Furthermore, various types of functional and structural aspects of social support were assessed in one study, which allowed us to compare how they may differentially affect mental health in the younger compared to older group of veterans.

Although the results of the study will provide additional insight into the role of age in social support and mental health, more research will be needed to expand this area of study. For instance, longitudinal data from later waves of the survey can be evaluated to identify whether perceived social support and its relationship with mental health across age groups changes over time. Also, future research evaluating social support in veteran samples of women and middle aged adults to determine how these groups may compare to younger and older male veterans could contribute to the aging research involving social support. Finally, our current results could hopefully inform future social support interventions targeted towards male veterans of different age groups specifically. These results may have clinical implications as well, such as

psychological intervention for younger veterans with low social support and encouraging older veterans, especially those with mental health concerns, to integrate into the community.

Although we found mixed support for the socio-emotional selectivity theory, we determined that there were significant differences in benefit from social support in younger compared to older veterans. Specifically, perceived support had a greater impact on mental health in the younger group, while community integration and emotional-based support were more beneficial in the older group. Using the knowledge we gained from our study regarding the nature of social support and its influence on mental health, we hope to further the field of aging and learn how to better care for veteran populations in different stages of life.

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Table 1

Veteran characteristics: Younger ($\leq 10^{\text{th}}$ percentile) versus Older ($\geq 90^{\text{th}}$ percentile) Age Group

	Younger raw n (weighted % or mean [SD])	Older raw n (weighted % or mean [SD])
N	290 (57.1%)	326 (42.9%)
Demographics		
Age**	37.0 (6.9)	81.7 (3.2)
Caucasian race/ethnicity**	207 (61.1%)	298 (91.5%)
Some college or higher education	235 (62.9%)	278 (66.8%)
Married/living with partner	222 (71.9%)	243 (71.0%)
Working**	228 (76.6%)	16 (6.7%)
Metropolitan residence	246 (83.9%)	279 (83.3%)
Household income > \$60K**	157 (49.2%)	135 (32.8%)
Military characteristics		
Enlisted in military**	288 (99.8%)	218 (67.7%)
Branch		
Army**	90 (25.9%)	141 (41.9%)
Navy*	71 (22.7%)	90 (30.4%)
Air Force	56 (16.7%)	70 (18.2%)
Marine Corps**	56 (27.9%)	13 (4.8%)
Other Branch	17 (6.9%)	8 (3.7%)
Combat veteran	128 (41.0%)	139 (46.3%)
VA main source of healthcare**	60 (23.0%)	34 (14.2%)
Health characteristics		
	Mean (SD)	Mean (SD)
Physical health difficulties factor**	-0.33 (0.95)	0.37 (0.98)
Cognitive functioning**	31.8 (5.8)	33.2 (3.1)
Mental health difficulties factor**	0.54 (1.5)	-0.27 (0.53)
Mental health difficulties factor (Transformed)**	0.04 (0.86)	-0.46 (0.49)
Any potential mental health diagnosis**	56 (19.3%)	16 (5.9%)
Mental Health Treatment		
Any treatment ever**	77 (30.1%)	40 (14.4%)
Any current treatment	35 (15.5%)	12 (5.5%)
Prescription medication*	29 (12.4%)	10 (3.3%)
Psychotherapy or counseling	23 (11.6%)	6 (3.6%)
Psychosocial characteristics		
	Mean (SD)	Mean (SD)
Number of lifetime traumas**	3.7 (3.1)	2.6 (2.2)
Social support factors		
MOS Social Support**	18.6 (5.5)	20.6 (4.2)
Structural support**	5.7 (4.7)	10.1 (7.5)
Community integration**	3.6 (1.7)	5.1 (1.5)
Satisfaction with:		
Family relationships**	3.7 (1.1)	4.4 (0.75)
Social relationships**	3.5 (1.1)	4.1 (0.81)

Note. SD=standard deviation, degrees of freedom for chi-squared tests=1; Groups differ significantly at * $p < 0.05$ or ** $p < 0.01$. Continuous variables were compared using independent t-tests; categorical variables were compared using chi-squared tests.

Table 2
 Summary of Main Effects and Interactions for Age and Social Support Variables Predicting
 Mental Health Difficulty

Variable	Unadjusted					Adjusted ^a				
	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Main effects										
Age group	-0.22	0.06	-0.14	-3.67	<0.001	-0.25	0.07	-0.16	-3.80	<0.001
Perceived Support	-0.06	0.01	-0.41	-11.1	<0.001	-0.03	0.00	-0.21	-6.97	<0.001
Structural Support	-0.01	0.01	-0.05	-1.34	0.180	-0.01	0.00	-0.05	-1.87	0.062
Community Integration	-0.08	0.02	-0.18	-4.65	<0.001	-0.03	0.01	-0.08	-2.68	<0.01
<i>Constant</i>	1.43	0.10		14.4	<0.001	1.67	0.17		9.67	<0.001
<i>R</i> ²					.35					.66
Adj. <i>R</i> ²					.35					.65
<i>F</i>					79.94					76.07
Interaction Effects										
Perceived Support	0.05	0.01	0.72	4.54	<0.001	0.04	0.01	0.55	4.64	<0.001
Structural Support	0.01	0.01	0.08	0.93	0.353	0.00	0.01	0.03	0.41	0.685
Community Integration	0.00	0.03	0.00	0.00	1.00	-0.06	0.03	-0.19	-2.16	0.031
<i>Constant</i>	1.71	0.11		15.1	<0.001	1.75	0.17		10.1	<0.001
<i>R</i> ²					.38					.68
Adj. <i>R</i> ²					.37					.67
<i>F</i>					51.64					67.11

Note: *B* = unstandardized regression coefficient; *Beta* = standardized regression coefficient.

All *F* values significant at $p < 0.001$, Statistically significant main effects and interactions (at least $p < 0.05$) are shown in bold.

^aAdjusted for any mental health treatment, race, marital status, working, income, enlistment, traumas, cognitive functioning, physical health, education, and combat (N=596, weighted)

Table 3
 Summary of Main Effects and Interactions for Age and Social Support Variables Predicting a
 Positive Screen for a Mental Disorder

Variable	Unadjusted			Adjusted ^a		
	Wald χ^2 (df=1), <i>p</i>	OR	95% CI	Wald χ^2 (df=1), <i>p</i>	OR	95% CI
Main effects						
Age group	5.31, 0.021	0.50	0.28-0.90	8.34, <0.01	0.20	0.07-0.60
Perceived Support	43.3, <0.001	0.86	0.82-0.90	18.2, <0.001	0.87	0.82-0.93
Structural Support	0.62, 0.431	1.02	0.97-1.07	0.03, 0.868	1.00	0.94-1.07
Community Integration	21.5 <0.001	0.69	0.59-0.81	11.52, <0.01	0.71	0.59-0.87
Interaction Effects						
Perceived Support	8.26, <0.01	1.19	1.06-1.33	6.06, 0.014	1.21	1.04-1.41
Structural Support	6.13, 0.013	1.14	1.03-1.26	3.81, 0.051	1.16	1.00-1.35
Community Integration	0.36, 0.551	0.90	0.64-1.27	3.68, 0.055	0.66	0.431-1.00

Note: Statistically significant main effects and interactions (at least $p < 0.05$) are shown in bold.

^aAdjusted for any mental health treatment, race, marital status, working, income, enlistment, traumas, cognitive functioning, physical health, education, and combat (N=754, weighted).

Table 4

Summary of Multiple Regression Analyses for Social Support Variables Predicting Mental Health Difficulty in Young and Older Groups

Variable	Younger Group				Older Group											
	<i>B</i>	<i>SE B</i>	β	<i>t, p</i>	<i>B</i>	<i>SE B</i>	β	<i>t, p</i>	<i>B</i>	<i>SE B</i>	β	<i>t, p</i>	<i>B</i>	<i>SE B</i>	β	<i>t, p</i>
	<i>Unadjusted</i>				<i>Adjusted^a</i>				<i>Unadjusted</i>				<i>Adjusted^b</i>			
Perceived Support	-0.07	0.01	-0.49	<0.001	-0.04	0.01	-0.26	<0.001	-0.02	0.01	-0.16	0.016	-0.00	0.01	-0.02	0.743
Structural Support	-0.01	0.01	-0.07	0.137	-0.01	0.01	0.05	0.097	0.00	0.00	-0.06	0.40	-0.01	0.00	-.07	0.24
Community Integration	-0.08	0.02	-0.15	<0.01	-0.01	0.02	0.01	0.673	-0.08	0.02	-0.24	<0.001	-0.07	0.02	-0.20	<0.01
<i>Constant</i>	1.70	0.13		<0.001	1.45	0.20		<0.001	0.34	0.16		0.035	1.79	0.33		<0.001
<i>R²</i>				.35				.72				.12				.34
<i>Adj. R²</i>				.34				.71				.11				.31
<i>F</i>				64.82				83.19				10.10				14.06

Note. *B* = unstandardized regression coefficient; *Beta* = standardized regression coefficient; statistically significant β s (at $p < 0.05$) are shown in bold; All *F* values significant at $p < 0.001$; weighted *N*s are reported below.

^aAdjusted for any mental health treatment, marital status, working, income, traumas, cognitive functioning, physical health, education (N=365)

^bAdjusted any mental health treatment, marital status, cognitive functioning, physical health, combat (N=231)

Table 5
Binary Logistic Regression Models Predicting a Positive Screen for a Mental Disorder in Younger and Older groups

	<i>Younger Group</i>			<i>Older Group</i>		
	Wald χ^2 (df=1), p	OR	95% CI	Wald χ^2 (df=1), p	OR	95% CI
Perceived Support <i>Unadjusted</i>	40.4, <0.001	0.84	0.79-0.89	0.02, 0.903	0.99	0.90-1.10
Perceived Support <i>Adjusted^a</i>	13.1, <0.001	0.87	0.80-0.94	0.04, 0.839	1.01	0.89-1.16
Structural Support <i>Unadjusted</i>	2.69, 0.101	0.93	0.85-1.01	4.21, <0.05	1.06	1.00-1.12
Structural Support <i>Adjusted^a</i>	2.54, 0.111	0.90	0.78-1.03	1.19, 0.276	1.04	0.97-1.11
Community Integration <i>Unadjusted</i>	12.9, <0.001	0.71	0.59-0.85	9.43, <0.01	0.64	0.48-0.85
Community Integration <i>Adjusted^a</i>	3.00, 0.08	0.81	0.63-1.03	9.35, <0.01	0.60	0.43-0.83

Note: Statistically significant ORs (at p<0.05) are shown in bold; weighted Ns are reported below.

^aAdjusted for any mental health treatment, marital status, working, income, sum of traumas, cognitive functioning, and physical health in younger group (N=366) and any mental health treatment, marital status, cognitive functioning, physical health, combat in the older group (N=313).

Table 6
Stepwise Regression of Perceived Social Support (MOS-5) items Predicting Mental Health Difficulty in Younger and Older Groups

	Younger Group						Older Group						
	R^2	$R^2 Adj.$	F	B	SE B	β	R^2	$R^2 Adj.$	F	B	SE B	β	p
Remaining model(s)	.35	.35	196.56	-0.39	0.03	-0.59	1) .08	.08	20.80	-0.13 ^a	0.03	-0.28	<0.001
							2) .10	.09	12.89	-0.18 ^a	-0.04	-0.40	<0.001
										-0.09 ^b	0.04	0.18	0.032
							3) .12	.11	11.40	-0.16 ^a	0.04	-0.33	<0.001
									0.15 ^b	0.05	0.31	<0.01	
									-0.13 ^c	0.05	-0.25	<0.01	
						4) .15	.13	10.34	-0.12 ^a	0.04	-0.26	<0.01	
									0.18 ^b	0.05	0.37	<0.001	
									-0.13 ^c	0.05	-0.24	<0.01	
									-0.08 ^d	0.03	-0.19	0.01	
Remaining Model (adjusted) ^c	.73	.72	119.94	-0.20	0.02	-0.30	*No variables were entered into model Excluded item ^a marginally significant (B in=-0.11, $p=0.074$)						
MOS Items included in model(s)	Someone to get together with for relaxation						^a Someone to love and make you feel wanted ^b Someone to turn to for suggestion about how to deal with a personal problem ^c Someone to confide in or talk to about your problems ^d Someone to help you with daily chores if you were sick						

Note: All p-values of β and F in younger group models were significant at $p < 0.001$. Weighted Ns are reported below.

^cAdjusted for any mental health treatment, marital status, working status, income, sum of traumas, cognitive functioning, and physical health in younger group (N=367) and any mental health treatment, marital status, and cognitive functioning in the older group (N=243).

Figure 1. Interaction of Age and Perceived Support Predicting Mental Health Difficulty

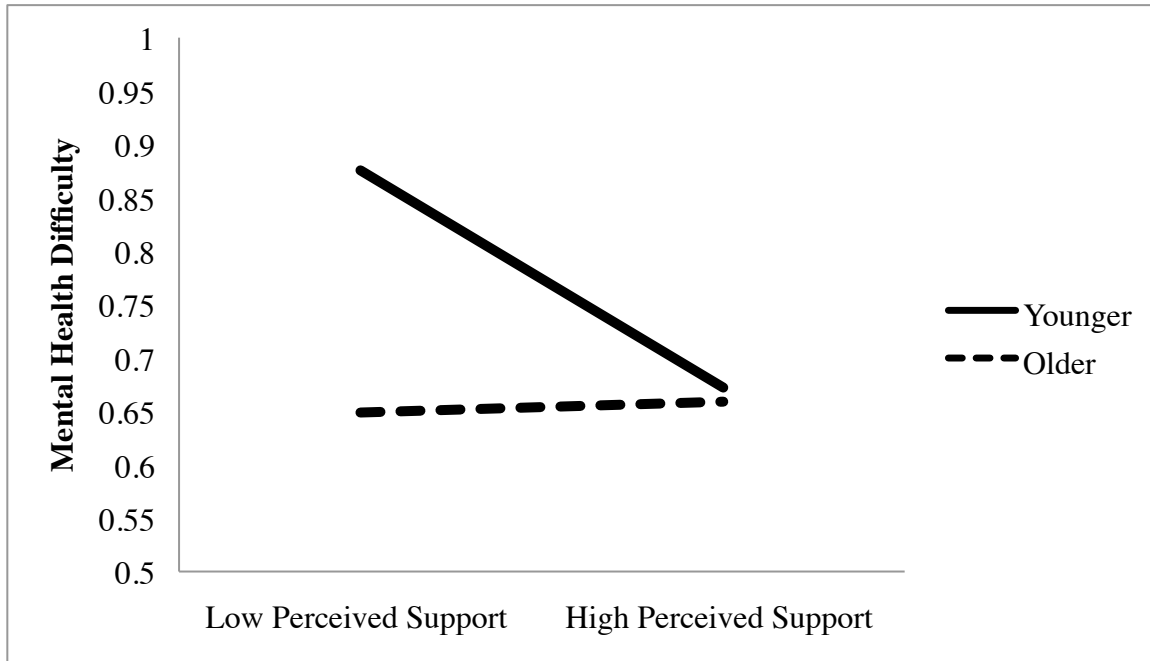


Figure 1. Predicted values of mental health difficulty for low perceived support (Mean – 1 SD) and high perceived support (Mean + 1 SD) in adjusted model.

Figure 2. Interaction of Age and Perceived Support Predicting a Positive Screen for a Mental Disorder

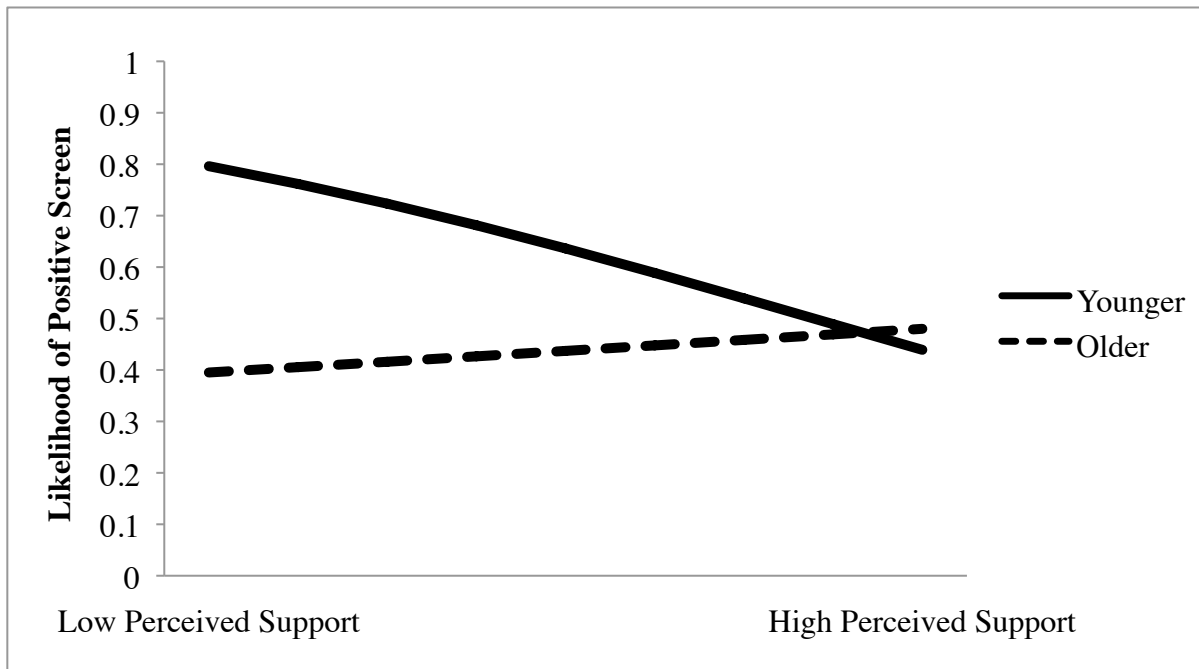


Figure 2. Predicted values of likelihood of screening positive for a mental disorder for low perceived support (Mean – 1 SD) and high perceived support (Mean + 1 SD) in adjusted model.

Figure 3. Interaction of Age and Community Integration Predicting Mental Health Difficulty

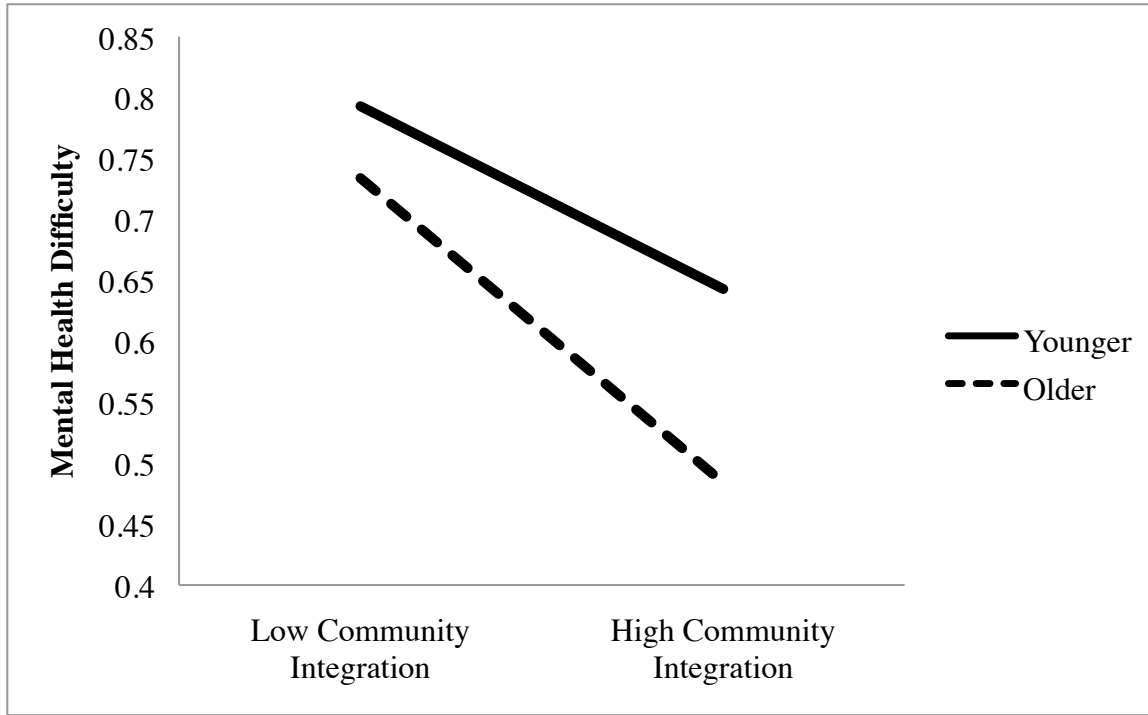


Figure 3. Predicted values of mental health difficulty for low community integration (Mean – 1 SD) and high community integration (Mean + 1 SD) in adjusted model.