DOES RACE MODERATE SOCIAL SUPPORT AND PSYCHOLOGICAL DISTRESS
AMONG RURAL OLDER ADULTS?

by

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ABSTRACT

Psychological distress (PD) among older adults is prevalent but undertreated, especially in minorities. Most of what is known about late-life PD in African Americans comes from studies comparing them to Caucasians, but results are contradictory, with some concluding that African Americans have more symptoms, and others demonstrating that differences disappear when sociodemographic factors are controlled. One consistent finding among all older adults is that greater social support is associated with decreased PD. African American cultural values of collectivism may act as a buffer for PD, potentially making race an important moderator of the relationship between social support and PD. Participants were aged 60 and older (N=100) and part of the Project to Enhance Aged Rural Living (PEARL). Multiple regression analyses controlling for health, income, education, and gender were conducted to determine whether race moderates the relationship between different types of social support and PD. Results showed that race moderated satisfaction with social support and PD, but Caucasians benefitted from increases in satisfaction more than African Americans. Emotional support, quality of social support, and physical health were significant negative predictors of PD. Being male also significantly predicted PD. More research including religion is needed to understand racial differences in social support and PD. Interventions for African Americans experiencing PD may be best designed by targeting males; focusing on improving emotional support, quality social support, and satisfaction with social support; and promoting physical health, perhaps by enlisting the church as middle-man.

DEDICATION

This thesis is dedicated to everyone who guided, encouraged, and supported me during this process.

LIST OF ABBREVIATIONS AND SYMBOLS

α	Cronbach's index of internal consistency
F	Fisher's F ratio: A ration of two variances
R^2	Proportion of explained variance
M	Mean: the sum of a set of measurements divided by the number of measurements in the set
SD	Standard Deviation
p	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
B	Unstandardized regression coefficient
SE	Standard error
β	Standardized regression coefficient
t	Computed value of t test
$<$	Less than

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CONTENTS

ABSTRACT.....	ii
DEDICATION.....	iii
LIST OF ABBREVIATIONS AND SYMBOLS	iv
ACKNOWLEDGMENTS	v
LIST OF TABLES	vii
LIST OF FIGURES	viii
INTRODUCTION	1
METHOD	13
Design	13
Participants and Procedures.....	13
Measures.....	14
Data Analysis	16
RESULTS	18
DISCUSSION.....	29
REFERENCES	36

LIST OF TABLES

Table 1: Descriptive Characteristics of the Sample	17
Table 2: Multiple Regression of PD on Gender, Income, Education, Health, Race, and Social Support	22
Table 3: Multiple Regression of PD on Gender, Income, Education, Health, Race, and Total Satisfaction with Social Support	23
Table 4: Multiple Regression of PD on Gender, Income, Education, Health, Race, and Emotional Support.....	24
Table 5: Multiple Regression of PD on Gender, Income, Education, Health, Race, and Instrumental Support.....	25
Table 6: Multiple Regression of PD on Gender, Income, Education, Health, Race, and Informational Support.....	26
Table 7: Multiple Regression of PD on Gender, Income, Education, Health, Race, and Quantity of Social Support.....	27
Table 8: Multiple Regression of PD on Gender, Income, Education, Health, Race, and Quality of Social Support.....	28

LIST OF FIGURES

Figure 1: Interaction of satisfaction with social support and race on psychological distress	19
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INTRODUCTION

The National Survey on Drug Use and Health (Substance Abuse and Mental Health Service Administration [SAMHSA], June 26, 2008) reported that, in one year, 4.5% of adults aged 65 and older suffered from serious psychological distress (PD). Yet only 41.8% of them sought treatment, and 56.8% of these did not think they needed it, while 1.3% refused to seek help even though they felt they needed it. Relatedly, Sorkin, Pham, & Ngo-Metzger (2009) found that rates of service utilization are low for older adults in general, but ethnic minorities sought services less than Caucasians, though they were just as likely to report needing services. These facts reinforce that many older adults, and especially minorities, have PD and would benefit from treatment; mental health professionals need to better understand late-life PD and provide interventions that will effectively reach both groups.

A current shortcoming in the literature is the variability in operational definition of PD. It has included a variety of symptoms, most commonly anxious and/or depressive but also somatic, obsessive compulsive, interpersonal, hostile, phobically anxious, paranoid, and psychotic. Sometimes it runs the gamut of psychological symptoms and impairment (Derogatis, 1983; Lincoln, Taylor, Chae, & Chatters, 2010; Sun, Hilgeman, Durkin, Allen, & Burgio, 2009). This makes for quite an inconsistent picture of PD and its effects on the lives of older adults. The term can describe many individuals with diverse psychiatric disorders and therefore affects a larger proportion of the population than does one lone disorder (e.g. depression). Given the high incidence of comorbidity in the mentally ill (Widiger & Clark, 2000), however, it is arguably more useful to refer to PD than to a particular disorder when measuring the need for mental

treatment or designing treatment plans, because a broad operational definition will describe more people. In order to capture comorbidity in this study, PD will include all psychological symptoms and severity levels.

Considering that depression is the most common mental illness among older adults (Hooyman & Kiyak, 2011) and that the costs of treating late-life depression are 50% higher than for those without the disease (Skarupski, et al., 2005), the cost of treating the comprehensive “PD” in older adults must be staggering, though no literature to date has addressed it. Furthermore, if the rate of service utilization for those with PD increases, as would be the ultimate goal, the costs would be even greater. Therefore, it is important to enhance the knowledge base about PD in older adults so that better interventions that affect a larger proportion of the mentally ill can be created.

As discussed, older minorities are a necessary group to target. Most research on late-life PD in African Americans is done by comparing them to Caucasians. However, the research has been contradictory. Some studies have concluded that there are no racial differences in PD, while others have shown that African Americans have more symptoms (Lincoln et al., 2010; Sorkin et al., 2009). The latter may be explained by the fact that external stressors have been known to trigger PD, and African Americans frequently have more of these risk factors. They include education, income, medical illness, functional disability, poor interpersonal support, past substance abuse, and cognitive deficits. (Lincoln et al., 2010; SAMHSA, June 26, 2008; Sorkin et al., 2009; Sriwattanakomen, et al., 2010). This investigation will address the risk factors of education, income, medical illness, and social support.

To focus specifically on the relationship between health and PD, death rates for cardiovascular disease, stroke, cancer, and diabetes are much higher in African Americans than

in Caucasians, translating to greater illness burden among the former group. In a study of 83 low-income African Americans aged 60 and older with at least one health condition (i.e. cardiovascular disease, chronic obstructive pulmonary disease, type 2 diabetes, hypertension, and arthritis), 79% of subjects admitted to having multiple conditions, and 53% of subjects rated their health as fair to poor. Interestingly, distress was a predictor of health-related quality of life, and 65% of subjects endorsed mild, 30% moderate, and 5% severe distress. Self-rated health was significantly poorer than for similarly aged, non-distressed people, and distress had a significant negative relationship with health (Hu, 2007). Other studies of older adults have demonstrated a similar relationship; chronic illness increased the chances of experiencing mild, moderate, or severe PD by 1.8-4.8 times, independent of age, age and disease interaction, gender, marital status, and education (Goulia et al., 2012). This significant negative relationship has been found by others who posit that negative affect can lead to suboptimal care of one's health, which in turn worsens health or health outlook further, which then impacts both mental and physical health (Hu & Gruber, 2008). Thus, health can have a large effect on PD, and if African Americans are at greater risk for medical comorbidity, then their mental health is at risk as well.

To consider another risk factor, SES, some researchers have found that less education was associated with greater PD (Goulia et al., 2012). SAMHSA's report (June 26, 2008) of adults older than 50 showed that serious PD is less common in those with more education and higher income. Other researchers have found that total household income was negatively correlated with PD, but only subjects' perception of their economic status significantly predicted PD and explained more of the variance, such that those who believed that they did not have enough money had worse PD (Sun et al., 2009). Importantly, Sorkin et al. (2009) surveyed Caucasians, African Americans, Hispanics, and Asians and discovered that it was still more

likely for ethnic minorities to have a higher incidence of PD even after controlling for education and other covariates. In contrast, when other researchers have controlled for age, gender, income, and education, racial differences in PD have disappeared (Lincoln et al., 2010). Lack of money and education to recognize mental illness or to understand the importance of treatment may be the true reason for racial differences, signaling that older Caucasians with low SES have the same incidence of PD as older African Americans with low SES; there are no racial differences. However, the uncertainty in outcomes makes it essential to devote more research to understanding the particulars of PD in African Americans.

One factor that may distinguish PD in African Americans from that of Caucasians is culture. Abdullah and Brown (2011) reported that African Americans place great value on mutual reliance, unlike Caucasians, who have an individualistic culture that values success achieved independently. The same authors stated that African Americans consider others in their ethnic group, unrelated by blood, as part of their family. Similarly, Gallant, Spitze, and Grove (2010) discussed filial responsibility as important to African Americans, but the family includes members beyond the nuclear family that is dominant in Caucasian culture. Likewise, Gerstel (2011) reported results of a national survey of families and households, showing that the extended family provides much social support and plays a large role in the lives of African Americans, especially among those of lower SES. They rely on their kin, visit them more, and give and receive more instrumental support (e.g. providing childcare, transportation, and doing household chores). In fact, 40% of African Americans live in multi-generation households of extended family, compared to 20% of Whites (Gerstel, 2011). In contrast, rather than social support, Whites often provide monetary assistance to their family members (Gerstel, 2011).

Thus, the community is quite central to African American culture and could be vital for mitigating PD.

Similar to the importance of community in African American culture, religion also figures prominently. African Americans are the most religious group in the country. Furthermore, older, female, and rural African Americans are more religious than younger, male, and urban residents. African Americans believe that their health is in the hands of God and that prayer will facilitate good health. Churches serve as health educators and service providers, giving food, financial assistance, transportation, and counseling (Holt, Schulz, & Wynn, 2009). A review of the literature found that involvement in the church increases social support, which is associated with better health. The same review reported that most studies indicate religion improves physical and mental health; only one demonstrated no effect. In terms of race, however, there have been conflicting results, with some resulting in no racial differences in the effect of religion on health and others showing that one race (i.e. Caucasian or African American) benefits more from religion than another (Levin, Chatters, & Taylor, 2005). Roff et al. (2004) found that very religious African Americans reported less depression than their Caucasian counterparts in a model that included race, gender, income, health, and social support. Caucasian women with poor health, low income, low social support, and low religiosity were at risk for depression. Clearly, religion may have a central role in physical and mental health, perhaps especially for African Americans.

Given that African American culture values the support of others, and religious participation can produce the health benefits of increased social support, it is worthwhile to review the literature dealing with social support and PD in older African Americans. Such research is small and varied in design. The small pool of research that deals with African

Americans alone usually studies children or younger adults. That which is known about social support in this minority group must be inferred from all of these sources. Researchers have shown that it has a significant negative relationship with PD (Trask-Tate, Cunningham, & Lang-DeGrange, 2010). One study of African American women in their 30's found that low SES neighborhoods were significantly associated with less social support, which in turn caused significantly elevated PD. However, the neighborhood was also significantly related to PD by itself, so social support was only a partial mediator (Lin, Thompson, & Kaslow, 2009). Another investigation of community-dwelling older Caucasians and African Americans who had recently experienced verbal, financial, and/or physical abuse found that those who were abused but had social support experienced less PD than older adults who were abused but had no social support. Specifically, those who had lower PD had access to positive social support, participated in social activities, and felt that the social support they received was satisfactory (Luo & Waite, 2011). Social support had an amazing, and perhaps unexpected, impact on elder abuse, showing its power to influence PD in one of the worst of circumstances.

Social support's value was demonstrated in another study that analyzed whether different forms of coping were preferred by four ethnic groups of older adults (i.e. U.S.-born African American, African descent born in Caribbean, U.S.-born European American, and an Eastern European immigrant control group). The methods of coping included self-medication, active coping, prayer, social support, and distraction. Among all the older adults, social support and an active coping style were most utilized. No ethnic differences emerged (Conway, Magai, McPherson-Salandy, & Milano, 2010). While social support was once again beneficial for coping, these results question whether there truly are racial differences in the effect of social support on PD.

Another investigation, however, reinforced the idea of a distinct impact of African American culture on the relationship between social support and emotional well-being. In a study of African American and Caucasian family caregivers (18-88 years old) of advanced cancer patients, both African Americans and Caucasians experienced decreased depression and anxiety at the same time they experienced more social support from family and health providers, but racial differences in the types of preferred relationships were significant. When both groups had similarly poor relationships with health care providers, Caucasians were significantly more distressed (i.e. depressed and anxious) than African Americans. When both groups had poor family relationships, on the other hand, African Americans had significantly worse depressed mood than Caucasians (anxiety symptoms were not related). The authors argue that this phenomenon is not just due to African Americans' mistrust of medical professionals but also to the emphasis African Americans place on the extended kin model of family, as opposed to Caucasians' nuclear family model. African American families are more involved in the health care decision-making of their care recipients than Caucasian families (Francis, Bowman, Kypriotakis, & Rose, 2011). Caucasians appear more likely to value the input of their physicians and other medical professionals and to believe that they will make the best decisions for them as individuals, whereas African Americans count on the shared values of their family in making the best decisions for them. That which is good for the individual African American is dependent upon what is beneficial for the family as a whole. When this information is considered from a mental health perspective, it is reasonable to infer that when African Americans experience PD, the people most likely to assist them in coping with their distress are their extended kin. Consequently, the member will feel supported and valued, counteracting the PD.

Considering that social support seems beneficial for mental health in general, it may be especially useful in rural areas, where the current study's sample resides. Fewer resources and social isolation predispose people to poorer health. Black, Cook, Murry, and Cutrona (2005) found that rural residents with better marital relationships had better mental and physical health, and more community supports strengthened this relationship. Thus, social support may be vital to rural older adults at risk for psychological distress.

Given that there is some evidence for the benefits of social support in mitigating PD, perhaps there are differences in the types of social support that are useful. Instrumental support, as described earlier, has been associated with greater well-being among African Americans (Walls, 1992). Additionally, it has been shown to make up part of the variance in life satisfaction (Cook, Black, Rabins, & German, 2000). Compared to U.S.-born European-Americans, African Americans utilize instrumental support more often. The same study demonstrated that African Americans also engage in informational support (i.e. advice-giving or providing information) more frequently than the former group (Fiori, Consedine, & Magai, 2008). For example, one study found that African Americans were more likely to complete screenings for prostate cancer if they received informational support from their families (Ford, Vernon, Havstad, Thomas, & Davis, 2006). Instrumental and informational supports appear helpful for African Americans.

Some research has found that quantity of social support is important for decreasing depression as well (Antonucci, Fuhrer, & Dartigues, 1997; Hays et al., 1998). Quantity can refer to how often one receives support, the size of one's social network, or the composition of the network. The number of people one interacts with does not always equate with the quality of relationships, however. Sometimes people with bigger social networks are lonelier than people

with smaller social networks because those with smaller networks are able to depend on the people in their networks more than those with larger networks (Hays et al., 1998). Studies have shown that it is more important that people are happy with their social support than that their social network is structured in a certain way or consists of a certain number of people (Antonucci et al., 1997; Henderson & Moran, 1983).

Thus, quality of social support may be the key to better mental health. Unfortunately, very few studies have looked at quality of social support variables among African Americans, but those that have found favorable outcomes. Emotional support is one indicator of quality and refers to the people one is close to, who will listen, and with whom one can confide and depend upon. Emotional support has been associated with greater well-being and decreased depression (Walls, 1992). In one study, subjects who reported receiving emotional support were significantly more likely to report better mental health. Higher quality relationships with friends were found to be significantly associated with higher-rated emotional health (Warren-Findlow, Laditka, Laditka, and Thompson, 2011). Having emotional support often leads to satisfaction with social support, which also connotes the quality of relationships (Bosworth, McQuoid, George, & Steffens, 2002; Hays et al., 1998). In a study of rural African American adults, subjects who had greater satisfaction with social support from their extended families had less depression (Dressler, 1985). Another study comparing African American to Caucasian adults found that the former needed emotional support more than the latter, and satisfaction with emotional support was associated with greater mental-health-related quality of life. There was also a main effect for emotional support on mental health, indicating that better emotional support predicts better mental health (Bloor, Sandler, Martin, Uchino, and Kinney, 2006). Thus, it appears that quality of social support makes an important difference to African Americans'

mental health. Perhaps African Americans will benefit more from quality social support, considering their cultural propensity for mutual reliance.

The literature reviewed suggests that social support may indeed influence PD, but more research is necessary to determine if there are racial differences in the association between the two constructs. The current study aims to contribute to this goal. It is modeled on a study by Kubzansky, Berkman, and Seeman (2000) that assessed high functioning (i.e. no disability, good cognitive ability, and good health), 70-79 year old African Americans and Caucasians to test models of the relationship between race and PD, which eventually included the variables of SES and social support. It found that there was no interaction between race and social support on PD, but the subjects in that study were in much better health than the current sample, which is medically-compromised, frail, and rural, offering a different set of circumstances that may result in distinct outcomes. Although they did do a second analysis on a lower-functioning sample, they reported that it had a very small sample size, justifying the current analysis with its larger, low-functioning sample. Kubzansky et al. (2000) also did a mediation analysis, using social support as the mediator between race and PD. It seems more appropriate to do a moderation analysis in the current study, with race as the moderator, because the relationship between social support and PD is more consistently established than that between race and PD.

This study focuses on the relationship between social support and PD in a sample of African Americans and Caucasians by controlling for health, income, and education, which the literature has shown to have an effect on PD, and which is important for the current frail, rural sample. Additionally, gender will be a covariate because relationships were found to be more important to females than males (Trask-Tate et al., 2010). In one study, social support made up 18% of the variance in happiness for men and 23% for women (Antonucci & Akiyama, 1987).

Women may be more amenable to sharing their feelings with a support system than men (Lindsey, et al., 2010). They often have bigger, more varied support networks than males, who mostly receive their support from their spouses (Antonucci & Akiyama, 1987). Thus, female participants may experience greater access to and benefit from social support than males, potentially affecting the level of PD.

The first hypothesis is that the covariates will account for a significant portion of the variance in PD. This will be analyzed by entering the covariates in the first step of a multiple regression. The second hypothesis is that race, as a stand-in for culture, will act as a moderator between social support and PD. This will be analyzed by creating an interaction variable of race and social support, which will be entered in the third step of the multiple regression and preceded by entering race and social support in the second step of the multiple regression so that main effects and variances of those variables may be analyzed, if the interaction is not significant. It is further hypothesized that a significant interaction will show that older African Americans with less social support will have more severe PD than older Caucasians with less social support, and older African Americans with more social support will have less severe PD than older Caucasians with greater social support.

Following the main analysis, exploratory analyses will be conducted to determine whether certain types of social support are especially important to African Americans as compared to Caucasians. A regression of each type of social support on PD will be carried out in the same manner as the main analysis. Given that African Americans rely more on social support if they have low SES, and the rural, frail population sampled here will probably be isolated and especially amenable to receiving instrumental support that includes help with transportation and household chores, it is hypothesized that instrumental support will

demonstrate a significant interaction with race, with African Americans benefitting more than Caucasians. Likewise, research suggests that African Americans may rely on informational and emotional supports more than Caucasians, so it is hypothesized that there will be a significant interaction between race and informational or emotional supports. Satisfaction with social support and quality of social support are expected to have the same results. Finally, quantity of social support is not hypothesized to have different racial effects or to significantly predict PD.

If the results are that social support, and specifically, certain types of social support have more of an impact on PD in African Americans than in Caucasians, then understanding of PD in this ethnic group will be enhanced and potentially lead to improved treatments that consider social support, race, health status, SES, and gender in case conceptualizations.

METHOD

Design

This study analyzed secondary data from the Project to Enhance Aged Rural Living (PEARL), an efficacy study of home-delivered cognitive-behavioral therapy (CBT). The dataset has University of Alabama Institutional Review Board (IRB) approval to be used for secondary data analysis. Detailed information about the methods can be found elsewhere (Scogin et al., 2007). In brief, participants endorsed PD and at least one medical condition to participate, but the average number of health conditions endorsed was three, making this a medically-compromised sample. Participants were randomized into CBT or minimal support control groups. Three months post-intervention, they were re-assessed (Scogin et al., 2007). Only baseline data was used for the current analysis.

Participants and Procedures

Participants (N=100; 64 African Americans and 36 Caucasians) were 60 and older in rural areas surrounding Tuscaloosa and Montgomery, AL. Inclusion criteria included a T score of greater than 36 on the Global Severity Index (GSI) of the SCL-90R. Exclusion criteria were a history of schizophrenia, bipolar disorder, or current substance abuse; current treatment with psychotherapy; or cognitive impairment of less than 24 on the MMSE (Scogin et al., 2007). In all analyses, any deviation in sample size is due to elimination of participants who did not have

complete data. Using the G*Power computer program, a sample size of 100 provided power of 0.80 to achieve a moderate effect size of 0.10, with alpha at 0.05, for two tested predictors and six total predictors (Faul, Erdfelder, Lang, & Buchner, 2007). This was sufficient power for this investigation.

Measures

Psychological Distress

PD was measured by using the GSI total score of the SCL-90R, which is an inventory of 90 psychological symptoms that characterize somatization, obsessive compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, or psychoticism. The severity of each symptom is recorded for the last week, including the current day, on a scale from 0 to 4: “not at all,” “a little bit,” “moderately,” “quite a bit,” or “extremely.” The GSI measures overall symptom distress (Derogatis, 1983). GSI scores were compared to norms for nonpatient adults in the original study. Cronbach’s alpha for the 90 items at baseline was .96 (Scogin et al., 2007). Researchers have demonstrated that the GSI is a valid measure of general PD (Berghout & Zevalkink, 2008; Hafkenscheid, 1993).

Social Support

Social support was measured by 23 items that were drawn from various sources (Krause & Markides, 1990; Lubben, 1988). The scale evaluates different types of support (e.g. instrumental or emotional) as well as participants’ satisfaction with the support available to them. Exemplary questions include “Overall, how satisfied have you been in the last month with the

help you have received from friends, neighbors, or family members (other than caregiver)?”, “How many friends (other than caregiver) do you feel close to? That is, how many friends (not including relatives) do you feel at ease with, can talk to about private matters, or can call on for help?”, “When you have an important decision to make, do you have someone (other than caregiver) you can talk to about it?”, “In the past month, how often has someone helped you with shopping?” For the main analysis, a composite score of the 23 items was calculated and found to have high internal reliability (Cronbach $\alpha = .82$). For the exploratory analyses, questions whose content described a type of social support (i.e. satisfaction, emotional, informational, instrumental, quantity, and quality) were combined and summed into total scores for each type. Some questions overlapped into multiple types and were counted multiple times (e.g. “In the past month, how often has someone provided comfort to you?” was included in the emotional support total as well as the quantity of social support total.). The reliability for each social support subscale was calculated. Quantity of social support had a Cronbach alpha of .76 and quality of social support had .79, which are good reliabilities (Pallant, 2007). For the subscales that consisted of fewer than ten questions, the mean inter-item correlations are reported rather than the Cronbach alphas. An ideal range for the mean inter-item correlation is .2-.4 (Pallant, 2007). The mean inter-item correlations were .41 for satisfaction, .25 for emotional support, .27 for instrumental support, and .40 for informational.

Demographics

The remaining variables were collected through various means. Race, age, gender, income, and education were obtained as sociodemographic information. Self-rated health was measured by asking “In general, would you say your health is . . . ?” Participants selected one of

the following options: poor, fair, good, very good, excellent. The corresponding values were poor=1, fair=2, good=3, very good=4, and excellent=5.

Data Analysis

Using SPSS version 20, descriptive statistics or frequencies were split by race and calculated for age, gender, income, education, health, social support composite scores, and GSI totals. They are reported in Table 1. A few assumptions for multiple regression were met. Recommended sample size for social science research is 15 subjects per predictor, which is 90 subjects, in this case (Pallant, 2007). The present sample size (N=100) exceeds this condition. The assumptions of multicollinearity, singularity, outliers, normality, linearity, homoscedasticity, and independence of residuals were also met. A hierarchical multiple regression was conducted. The covariates were entered in the first step, followed by the main effects of race and social support in the second step. The interaction term (created with standardized race and social support variables to prevent multicollinearity with the predictor variables) was entered on the third step.

Table 1
Descriptive Characteristics of the Sample

Characteristic	African American (<i>n</i> = 64) M (SD) or %	Caucasian (<i>n</i> = 36) M (SD) or %
Age	76.23 (7.61)	76.17 (6.54)
Gender		
Male	21.9%	22.2%
Female	78.1%	77.8%
Income ^a	1.75 (1.75)	1.66 (1.24)
Health		
Poor	25.4%	55.6%
Fair	46.0%	36.1%
Good	15.9%	8.3%
Very Good	9.5%	0%
Excellent	3.2%	0%
Education (in years)	7.81 (4.01)	10.58 (3.26)
Total Social Support	44.13 (11.20)	47.08 (12.30)
Total satisfaction with social support	8.40 (2.68)	7.51(2.84)
Total emotional support	13.35 (4.72)	12.51 (5.41)
Total instrumental support	2.71 (1.84)	2.69 (1.75)
Total informational support	3.73 (3.12)	3.25 (2.62)
Quantity of social support	30.95 (10.03)	29.12 (9.89)
Quality of social support	24.63 (7.73)	22.68 (8.35)
Total GSI scores	58.22 (8.02)	60.81 (10.28)

^aThe mean income for African Americans and Caucasians lies somewhere between \$5,000 and \$9,999.

RESULTS

Descriptive characteristics of the sample are shown in Table 1. There were no significant differences between African Americans and Caucasians on age, gender, income, total social support, total satisfaction with social support, total emotional support, total instrumental support, total informational support, quantity of support, quality of support, or level of PD. However, African Americans ($M = 2.19$, $SD = 1.03$) reported significantly better physical health than Caucasians ($M = 1.53$, $SD = .65$); $t(97) = 3.48$, $p < .01$ (two-tailed). In contrast, Caucasians ($M = 10.58$, $SD = 3.26$) had significantly more years of education than African Americans ($M = 7.81$, $SD = 4.01$); $t(98) = -3.54$, $p < .01$ (two-tailed).

The results of the first model of the main analysis showed that the covariates (i.e. gender, income, education, self-rated health) accounted for 13.2% of the variance in PD, $F(4, 89) = 3.39$, $p < .05$. Adding race and social support to the model accounted for an additional, nonsignificant 0.2% of the variance in PD, so it was dropped from the model. The interaction of race and social support did not account for a significant additional portion of the variance in PD, so it was also dropped from the model. Self-rated health was the only variable that was significantly related to PD, suggesting that poorer health predicts greater PD. Further details are provided in Table 2.

The results of the exploratory analysis of satisfaction with social support ($N=92$) showed that the overall model was significant, $R^2 = .22$, $F(7, 84) = 3.30$, $p < .05$. Race significantly moderated the relationship between satisfaction with social support and PD. Figure 1 shows the nature of the moderation, which demonstrates that Caucasians who were more satisfied with their

social support experienced less PD, while African Americans remained at about the same level of PD, regardless of their satisfaction with social support. Further details are provided in Table 3.

Figure 1. Interaction of satisfaction with social support and race on psychological distress.

The results of the first model of the exploratory analysis of emotional support (N=94) showed that the covariates (i.e. gender, income, education, self-rated health) accounted for 13.8% of the variance in PD, $F(4, 89) = 3.55, p < .05$. Adding race and emotional support to the model accounted for an additional, significant 6.9% of the variance in PD. This second model

was significant $F(6, 87) = 3.77, p < .01$. The interaction of race and emotional support did not account for a significant additional portion of the variance in PD, so it was dropped from the model. The final, second model demonstrated self-rated health and emotional support significantly predicted PD, suggesting that poorer self-rated health and less emotional support predict greater PD. Further details are provided in Table 4.

The results of the first model of the exploratory analysis of instrumental support (N=95) showed that the covariates (i.e. gender, income, education, self-rated health) accounted for 14.0% of the variance in PD, $F(4, 90) = 3.65, p < .01$. Adding race and instrumental support to the model did not add a significant amount of variance to PD, nor did the interaction, so both models were dropped. The first model demonstrated that gender and self-rated health were significant, suggesting that being male and having poorer health predict greater PD. Further details are provided in Table 5.

The results of the first model of the exploratory analysis of informational support (N=96) showed that the covariates (i.e. gender, income, education, self-rated health) accounted for 13.1% of the variance in PD, $F(4, 91) = 3.44, p < .05$. Adding race and informational support to the model did not add a significant amount of variance to PD, nor did the interaction, so both models were dropped. The first model demonstrated that gender and self-rated health were significant, again suggesting that being male and having poorer health predict greater PD. Further details are provided in Table 6.

The results of the first model of the exploratory analysis of quantity of social support (N=89) showed that the covariates (i.e. gender, income, education, self-rated health) accounted for 15.8% of the variance in PD, $F(4, 84) = 3.93, p < .01$. Adding race and quantity of social support to the model did not add a significant amount of variance to PD, nor did the interaction,

so both models were dropped. The first model demonstrated that gender and self-rated health were significant predictors of PD, suggesting once again that being male and having poorer health predict greater PD. Further details are provided in Table 7.

The results of the first model of the exploratory analysis of quality of social support (N=90) showed that the covariates (i.e. gender, income, education, self-rated health) accounted for 10.7% of the variance in PD, $F(4, 85) = 2.54, p < .05$. Adding race and quality of social support to the model accounted for an additional, significant 7.0% of the variance in PD. This second model was significant $F(6, 83) = 2.98, p < .05$. The interaction of race and quality of social support did not account for a significant additional portion of the variance in PD, so it was dropped from the model. The final, second model demonstrated that quality of social support was the only significant predictor of PD; as it decreased, PD increased. Further details are provided in Table 8.

Table 2

Multiple Regression of PD on Gender, Income, Education, Health, Race, and Social Support

Predictor	ΔR^2	<i>B</i>	<i>SE</i>	β
Step 1	.13*			
Gender		-4.15	2.21	-.19
Income		.30	.41	.07
Education		.35	.23	.15
Self-rated Health		-2.38	.94	-.25*
Step 2	.002			
Gender		-4.21	2.24	-.19
Income		.33	.43	.08
Education		.34	.25	.15
Self-rated Health		-2.39	1.02	-.25*
Race		.12	2.13	.01
Social Support		-.03	.08	-.04
Step 3	.01			
Gender		-4.41	2.25	-.20
Income		.40	.43	.10
Education		.34	.25	.15
Self-rated Health		-2.37	1.02	-.25*
Race		.18	2.13	.01
Social Support		-.04	.08	-.05
Interaction (Race x Social Support)		-.87	.92	-.10

* $p < .05$

Table 3

Multiple Regression of PD on Gender, Income, Education, Health, Race, and Total Satisfaction with Social Support

Predictor	ΔR^2	<i>B</i>	<i>SE</i>	β
Step 1	.10			
Gender		-3.91	2.19	-.18
Income		.20	.40	.05
Education		.35	.23	.16
Self-rated Health		-1.94	.96	-.21*
Step 2	.06*			
Gender		-4.00	2.14	-.19
Income		.19	.39	.05
Education		.35	.23	.16
Self-rated Health		-1.68	1.01	-.18
Race		-.66	2.03	-.04
Satisfaction		-.80	.32	-.25*
Step 3	.05*			
Gender		-4.50	2.09	-.21*
Income		.22	.38	.06
Education		.33	.23	.15
Self-rated Health		-1.75	.98	-.19
Race		-.73	1.98	-.04
Satisfaction		-.77	.31	-.24*
Interaction (Race x Satisfaction)		-2.08	.87	-.23*

* $p < .05$

Table 4

Multiple Regression of PD on Gender, Income, Education, Health, Race, and Emotional Support

Predictor	ΔR^2	<i>B</i>	<i>SE</i>	β
Step 1	.14*			
Gender		-4.17	2.16	-.19
Income		.39	.44	.09
Education		.34	.23	.15
Self-rated Health		-2.42	.94	-.26*
Step 2	.07*			
Gender		-3.90	2.10	-.18
Income		.30	.42	.07
Education		.33	.24	.15
Self-rated Health		-2.14	.98	-.23*
Race		-.11	2.03	-.01
Emotional support		-.48	.18	-.27**
Step 3	.03			
Gender		-4.38	2.09	-.20*
Income		.43	.42	.10
Education		.32	.23	.14
Self-rated Health		-2.20	.97	-.23*
Race		-.12	2.01	-.01
Emotional support		-.44	.17	-.24*
Interaction (Race x Emotional support)		-1.53	.82	-.18

* $p < .05$, ** $p < .01$

Table 5

Multiple Regression of PD on Gender, Income, Education, Health, Race, and Instrumental Support

Predictor	ΔR^2	<i>B</i>	<i>SE</i>	β
Step 1	.14**			
Gender		-4.46	2.14	-.21*
Income		.34	.40	.08
Education		.36	.23	.16
Self-rated Health		-2.41	.93	-.26*
Step 2	.01			
Gender		-4.28	2.17	-.20
Income		.32	.41	.08
Education		.33	.24	.14
Self-rated Health		-2.32	1.01	-.25*
Race		.27	2.09	.02
Instrumental support		-.41	.51	-.08
Step 3	.00			
Gender		-4.32	2.18	-.20
Income		.32	.41	.08
Education		.34	.25	.15
Self-rated Health		-2.38	1.02	-.25*
Race		.19	2.10	.01
Instrumental support		-.42	.51	-.08
Interaction (Race x Instrumental support)		-.56	.99	-.06

* $p < .05$, ** $p < .01$

Table 6

Multiple Regression of PD on Gender, Income, Education, Health, Race, and Informational Support

Predictor	ΔR^2	<i>B</i>	<i>SE</i>	β
Step 1	.13*			
Gender		-4.32	2.14	-.20*
Income		.27	.40	.07
Education		.35	.23	.15
Self-rated Health		-2.33	.93	-.25*
Step 2	.00			
Gender		-4.38	2.17	-.20*
Income		.26	.40	.07
Education		.34	.24	.15
Self-rated Health		-2.31	1.00	-.25*
Race		.18	2.10	.01
Informational support		.14	.31	.05
Step 3	.03			
Gender		-4.40	2.14	-.20*
Income		.19	.40	.05
Education		.33	.24	.15
Self-rated Health		-2.45	.99	-.26*
Race		-.31	2.09	-.02
Informational support		.25	.31	.08
Interaction (Race x Informational support)		1.65	.89	.19

* $p < .05$

Table 7

Multiple Regression of PD on Gender, Income, Education, Health, Race, and Quantity of Social Support

Predictor	ΔR^2	<i>B</i>	<i>SE</i>	β
Step 1	.16**			
Gender		-4.61	2.13	-.22*
Income		.66	.45	.15
Education		.33	.23	.15
Self-rated Health		-2.17	.94	-.23*
Step 2	.01			
Gender		-4.29	2.18	-.20
Income		.63	.45	.14
Education		.34	.24	.15
Self-rated Health		-2.22	1.02	-.24*
Race		-.44	2.11	-.02
Quantity of social support		-.10	.09	-.11
Step 3	.00			
Gender		-4.23	2.18	-.20
Income		.63	.45	.14
Education		.34	.24	.15
Self-rated Health		-2.22	1.02	-.24*
Race		-.44	2.11	-.02
Quantity of social support		-.10	.09	-.11
Interaction (Race x Quantity of support)		.29	.93	.03

* $p < .05$, ** $p < .01$

Table 8

Multiple Regression of PD on Gender, Income, Education, Health, Race, and Quality of Social Support

Predictor	ΔR^2	<i>B</i>	<i>SE</i>	β
Step 1	.11*			
Gender		-3.78	2.21	-.18
Income		.32	.44	.08
Education		.34	.23	.15
Self-rated Health		-2.05	.98	-.22*
Step 2	.07*			
Gender		-3.56	2.15	-.17
Income		.22	.43	.05
Education		.35	.24	.16
Self-rated Health		-1.87	1.01	-.20
Race		-.61	2.05	-.03
Quality of social support		-.30	.11	-.27**
Step 3	.03			
Gender		-4.13	2.15	-.19
Income		.33	.43	.08
Education		.33	.23	.15
Self-rated Health		-1.94	1.00	-.21
Race		-.41	2.03	-.02
Quality of social support		-.28	.11	-.26*
Interaction (Race x Quality of support)		-1.54	.87	-.18

* $p < .05$, ** $p < .01$

DISCUSSION

The main analysis did not support the hypothesis that race moderates the relationship between broad social support and PD. This was somewhat surprising, given the literature and the differences in cultural values (Abdullah & Brown, 2011; Francis et al., 2011; Gerstel, 2011; Jesse & Swanson, 2007; Roff et al., 2004). However, there have been few studies that have investigated this question, and the ones that have been completed had larger sample sizes, which may account for the lack of a significant finding here, as the current study only had sufficient power to detect a moderate effect size. More research is needed.

The only significant predictor in the main analysis model was health, such that the poorer one's health, the greater PD one experiences. Other studies have found similar results (Hu, 2007; Hu & Gruber, 2008; Warren-Findlow et al., 2011). For example, older adults with chronic illness have been shown to express it through depressive and somatic symptoms. As 80% of older adults have a chronic illness (Conway et al., 2010) this finding indicates a crucial aspect of older adult physical functioning that can have a significant effect on mental health and should be considered in any intervention.

Although the main analysis did not demonstrate any racial differences in the relationship between social support and PD, differences did emerge when analyzing satisfaction with social support. Caucasians experienced decreased PD with greater satisfaction with social support than African Americans, who did not seem to be influenced by their satisfaction. Similar results were found by Bloor et al. (2006) and Jesse and Swanson (2007). The former authors showed that

satisfaction with emotional support was moderated by race and predicted better mental health, with Caucasians benefitting more than African Americans. Satisfaction was even more important for those with lower levels of education, which describes the present sample. The latter authors found that Caucasians with less social support were at significantly greater risk for depression than African Americans. Nevertheless, social support was considered important to African Americans and was associated with risk for depression. Perhaps the difference favors Caucasians because their culture is not as community-oriented, so any perceived improvement in social support seems much more special and useful than a perceived increase seen by African Americans who are accustomed to receiving social support on a frequent basis.

Another explanation for the results may involve religion. African Americans are the most religious group in the U.S., and those residing in rural areas are even more religious than those residing in urban areas (Holt et al., 2009; Kubzansky et al., 2000). For example, 29% of rural adults in one study stated that God was their source of social support (Kemppainen, Taylor, Jackson, Kirby, & Kim-Godwin, 2009). The current sample was rural and Southern, making religion salient for this group. It could be that an older African American sample representative of all, less religious, regions of the U.S. would suggest a more important role for satisfaction with social support than the current sample, whose PD may be more influenced by religion. Peek and O'Neill (2001) made a similar suggestion. A past study speculated that religion may have a mediating effect on social support and physical/mental health among African Americans (Holt et al., 2009). Perhaps that is the reason that satisfaction with social support did not seem to make a difference for the African Americans in this study. If religion is a strong mediator, the relationship between satisfaction with social support and PD among African Americans should be weak and would need religion to show significant effects (Baron & Kenny, 1986). Another

study demonstrated that religious social support was more efficacious than general social support, and the authors suggested that support from church members may be more readily available than support from family and friends (Debnam, Holt, Clark, Roth, & Southward, 2012). This theory may be especially applicable to those in the current sample, who live in rural areas and whose families and friends may live farther away from them than their church. It may be that participants see their fellow church members more often than the people who make up their support systems. Other researchers have found that religiosity decreased the prevalence of depression (Levin et al., 2005), which may account for the lower baseline rates of distress in the African Americans in the current sample. Similarly, another study showed that extremely religious people were less depressed when social support, income, race, gender, and health were controlled (Roff et al., 2004). Perhaps the African American subjects in this dataset were much more religious than the Caucasian subjects, leading to the lower levels of distress that the African Americans demonstrated compared to their Caucasian counterparts and the insignificant effect of satisfaction with social support on their distress. Unfortunately, no data on religion were collected on this sample, so these theories cannot be tested.

If religion is highly meaningful for this sample, it may have implications for the findings in the main analysis. Levin et al. (2005) reviewed a study showing that older African Americans with more health problems who actively participated in religion claimed better self-reported health than older African Americans who were not religiously active, even if they had fewer health problems than the former group. Religious social support significantly predicted the promotion of a healthy lifestyle of diet and exercise better than general social support in another study, and African Americans reported that they found it easier to engage in regular physical activity when they had exercise partners from church (Debnam et al., 2012). Medically-

compromised older adults might be encouraged to devote more of their time to religious activities in hopes of improving physical health and decreasing PD.

A third finding of this study was that poorer emotional support predicted increased PD, though race did not moderate this relationship. The main effect has been supported in the literature (Bloor et al., 2006; Kubzansky et al., 2000). However, one study found that African Americans reported needing more emotional support than Caucasian participants in suburban and rural areas of North Carolina, though this was not the case among less educated African American participants (Bloor et al., 2006). The sample is similar to the present sample because it is Southern and contains some rural participants. Perhaps a larger sample would have yielded race differences favoring African Americans. Another possibility is that religion may mediate this relationship, which if measured, might have shown evidence for racial differences.

Emotionally-closer church communities have demonstrated better health, especially among older African Americans (Levin et al., 2005). Pastors and church members often provide emotional support to African Americans (Holt et al., 2009). One study showed that older African Americans gave and received more emotional support to/from their fellow church members than Caucasians (Hayward & Krause, 2013). Further research is necessary to understand religion and emotional support in older African Americans.

Similar connections to religion may be possible with regards to instrumental support, as the current study did not show that instrumental support was a significant predictor of PD, but churches have been known to provide instrumental support to African Americans (Walls, 1992). Nevertheless, a study of older African Americans and Caucasians did not find that instrumental support was a significant predictor of PD either (Kubzansky et al., 2000). In the current study, the older adults were predominantly low-income, so that may explain why instrumental support

was not an important predictor of PD in this case. Researchers have discovered that as older African Americans' income increases, they give and receive more instrumental support than European-Americans (Fiori et al., 2008). The participants in this study did not have the ability to do that. Another study further clarified that as older adults age, they gave and received less instrumental support but were more satisfied with the instrumental support they had (Hayward & Krause, 2013). Then perhaps it makes sense that instrumental support was not found to be a significant predictor in the current study but satisfaction with social support was. That is, participants were satisfied with the social support they had, which included instrumental support, but instrumental support by itself did not play an important enough role in their lives to be independently predictive of PD.

Informational support was also not a predictor of PD in this study. Although research has shown that African Americans often make use of informational support (Fiori et al., 2008; Ford et al., 2006), no research has been completed on this construct and PD in African Americans. Some research with Caucasians has resulted in no significant relationship between informational support and anxiety or PD (Bailey, Sabbagh, Loiselle, Boileau, & McVey, 2010; Brady & Helgeson, 1999), while others have shown a significant relationship with PD (Percy, Gibbs, Potter, & Boardman, 2009; Yu, Lee, Woo, & Thompson, 2004). More research is necessary to understand its importance, or lack thereof, among older African Americans.

Finally, quantity of social support was not a significant predictor of PD in the current analysis, though males were found to be significantly more likely to experience PD than females. Again, similar results have been shown in prior research. Antonucci and Akiyama (1987) found that males benefited more from quality of social support than quantity. They were likely to rely on their spouse as their predominant source of social support, so the strength of that relationship

was vital to their well-being. The authors note that as men age and the late-life divorce rate increases, they have a greater chance of losing that support system, potentially leading to PD. Just as the quality of social support benefitted men, better quality of social support was found to predict less PD in this study, but again race was not a moderator. This result mirrors others in the literature (Warren-Findlow et al., 2011). Thus, the number and frequency of support received is insignificant compared to how good and supportive relationships are. Satisfaction with social support, as found in the current analysis, may be the optimal measure to demonstrate the importance of social support in African American culture. This group is already expecting to have social support; what they want is to be satisfied with the support they have.

Meaningful social support (in this case, satisfaction, emotional support, and quality) may have been especially valuable in this sample, as it consisted of rural elderly, and social support has been shown to be a buffer for people who live in secluded areas with few resources (Black et al., 2005). Merely having social support does not auger good mental health; it is the quality of social support that makes the difference. The main analysis did not support the hypothesis that race moderates the relationship between broad social support and PD, but race did moderate the relationship between satisfaction with social support and PD, though it did not benefit African Americans as expected. Reasons for this result may include differences in expectations between cultures and religion. Although race did not change social support's effect on PD in any other analyses, community is clearly essential to the lives of African Americans (Gerstel, 2011). Furthermore, older, rural African Americans are quite religious, and religious involvement has been shown to enhance their social support, physical health, and mental health (Holt et al., 2009; Levin et al., 2005; Roff et al., 2004). Health and male gender predicted PD in this study. Thus, interventions for African Americans experiencing PD may be best designed by targeting males;

focusing on improving emotional support, quality social support, and satisfaction with social support; and promoting physical health, perhaps by enlisting the church as middle-man.

Interventions for PD among minorities may be most efficacious if delivered and promoted within a religious setting and with religious officials' support and understanding. Educating church figures about mental health and treatments may be a central strategy for integrating social support into a plan to improve the physical and mental health of the African American community.

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