Published in final edited form as:
Aging Ment Health. 2010 September ; 14(7): 779–789. doi:10.1080/13607861003713265.

Daily Spiritual Experiences in a Biracial, Community-based Population of Older Adults

Kimberly A. Skarupski[1,2], **George Fitchett**[3,4], **Denis A. Evans**[1,2,5,6], and **Carlos F. Mendes de Leon**[1,2,4]

[1] Rush Institute for Healthy Aging, Rush University Medical Center, Chicago, IL

[2] Department of Internal Medicine, Rush University Medical Center, Chicago, IL

[3] Department of Religion, Health, and Human Values, Rush University Medical Center, Chicago, IL

[4] Department of Preventive Medicine, Rush University Medical Center, Chicago, IL

[5] Rush Alzheimer's Disease Center, Rush University Medical Center, Chicago, IL

[6] Department of Neurological Sciences, Rush University Medical Center, Chicago, IL

Abstract

Objectives—The objectives of this study were to describe the levels of daily spiritual experiences in community-dwelling older adults, to compare levels of spiritual experiences with levels of prayer and religious service attendance, and to examine demographic and psychosocial correlates of spiritual experiences.

Method—The data came from 6,534 participants in the Chicago Health and Aging Project, an ongoing population-based, biracial (65% African American) study of risk factors for incident Alzheimer's disease among older adults. A five-item version of the Daily Spiritual Experience Scale (DSES) was used in the study. Multivariable linear regression models were used to examine the relationship between sociodemographic and psychosocial factors and DSES scores.

Results—The majority of participants reported having spiritual experiences at least daily. In the bivariate analyses, African Americans and women had higher DSES scores than Whites and men, respectively (p's < 0.001). Prayer and worship were moderately associated with DSES scores. In the multivariable analyses, African American race, older age, female gender, better self-rated health, and greater social networks were associated with higher DSES scores, while higher levels of education and depressive symptoms were associated with lower DSES scores.

Conclusion—We observed high levels of spiritual experiences and found that the DSES is related to, but distinct from traditional measures of religiosity. We found associations between DSES, demographic, and psychosocial factors that are consistent with findings for other R/S measures. Future research should test whether daily spiritual experiences contribute to our understanding of the relationship between R/S and health in older adults.

Keywords

religiosity; spirituality; psychosocial correlates; race/ethnicity

Kimberly A. Skarupski, Ph.D., M.P.H., Associate Professor, Rush Institute for Healthy Aging, Rush University Medical Center, 1645 W. Jackson, Suite 675, Chicago, IL 60612-3227, (312) 942-3223 (office), (312) 942-2861 (fax), kimberly_skarupski@rush.edu.
Reprint requests should be addressed to Kimberly A. Skarupski, Ph.D., M.P.H., Rush Institute for Healthy Aging, 1645 W. Jackson, Suite 675, Chicago, IL, 60612-3227; telephone: 312-942-3350; Kimberly_Skarupski@rush.edu.

Introduction

The second half of life is commonly described as a time of heightened religious or spiritual interest. Descriptions of this phenomenon can be found in the social sciences (Atchley, 2000; Erikson, 1963; Fowler, 1981; Jung, 1964; Vogel, 1995), in popular literature (Leder, 1997; Moody & Carroll, 1997), and in ancient religious traditions (Isenberg, 1992; Thomas, 1994). Survey research consistently describes higher levels of religious involvement among older adults (Chatters, Taylor, & Lincoln, 1999; Idler et al., 2003; Levin & Taylor, 1997). For example, in the 2008 U.S Religious Landscape Survey (Pew Forum, 2008), 69% of those age 65 or older reported that religion was very important (compared to 59% among those age 50–64); 54% reported attending worship at least weekly (compared to 40% among those age 50–64); and 68% reported they pray daily outside of religious services (compared to 61% among those age 50–64). However, despite a substantial body of research exploring religiosity among older adults, there is relatively little research examining spirituality in population-based samples of older adults.

Drawing distinctions between spirituality and religious involvement calls for definitions of these complex and overlapping concepts. One discussion of these definitions comes from a team of experts convened by the Fetzer Institute and the National Institute on Aging. That group wrote that “religiousness has specific behavioral, social, doctrinal, and denominational characteristics because it involves a system of worship and doctrine shared within a group. Spirituality is concerned with the transcendent, addressing ultimate questions about life’s meaning, with the assumption that there is more to life than what we see or fully understand” (Fetzer Institute/National Institute on Aging, 1999:2). Although there are other approaches (see: Hill et al., 2000; Koenig, McCullough, & Larson, 2001; Miller & Thoresen, 2003; Zinnbauer et al., 1997), many investigators accept these definitions.

It is also important to understand that religion and spirituality (R/S) have multiple dimensions such as beliefs, devotional activities, and relationships (Fetzer Institute/National Institute on Aging, 1999; Koenig, McCullough & Larson, 2001; Williams, 1994). Recently, a new measure of the experiential dimension of R/S has been developed, the 16-item Daily Spiritual Experiences Scale (DSES; Underwood, 2006; Underwood and Teresi, 2002). The Scale was developed to provide investigators with a measure of a person’s everyday connection to the transcendent and the feelings that result from that connection (Underwood 2006; Underwood & Teresi, 2002). For example, the DSES includes statements such as: “I feel God’s presence,” and “I experience a connection to all life.”

One of the motivations for the development of the DSES was to address a frequently-mentioned hypothesis about the relationship between R/S and health (Underwood & Teresi, 2002); specifically, that religious involvement and/or spirituality enhance host resistance to the harmful effects of stress (Ellison & Levin 1998; Levin, 1996; Powell, Shahabi, & Thoresen 2003; Strawbridge, Cohen, Shema, & Kaplan, 1997). An important preliminary step to examining whether daily spiritual experiences increase a person’s resistance to the harmful effects of stress, or are otherwise associated with health, is to understand the prevalence of these experiences and their demographic and psychosocial correlates. Some data from the validation studies for the measure address this issue (Underwood & Teresi, 2002), but the samples used in those studies -convenience samples of college students and middle-age women and data from the General Social Survey - do not provide information about the DSES in older adults. Several subsequent population-based studies also provide information about the demographic and psychosocial correlates of the DSES (Ellison & Fan, 2008; Idler et al., 2003), but similarly, the application of these findings to older adults has

limits, as do the studies of the DSES in samples of medically-ill older adults (Keefe et al., 2001; Koenig, George, Titus, & Meador, 2003; Koenig, George, & Titus, 2004).

The primary aim of the present research was to use a 5-item abbreviated version of the DSES to describe the everyday experiential dimension of R/S in a population-based, biracial study of older adults. As such, we sought to: 1) examine the frequency of daily spiritual experiences in this population, 2) compare frequency of daily spiritual experiences with frequency of prayer and religious service attendance, and 3) examine demographic and psychosocial correlates of daily spiritual experiences.

Although there have been no prior studies of the DSES in a large sample of older adults, evidence from prior studies using the DSES provide us with information that informs the hypotheses for our three study aims. Specifically, regarding our first study aim, we hypothesize that our sample of community-based older adults will report a high frequency of spiritual experiences occurring daily. This hypothesis is based on the high levels of daily spiritual experiences reported by a sample of 604 older adults from Detroit (Dunn, Chapleski, Stinson, & Massanari, 2003) and 838 older medical patients (Koenig et al., 2004), and the high levels of religiousness, noted earlier, that are usually found among older adults (Chatters, Taylor, & Lincoln, 1999; Idler et al., 2003; Levin & Taylor, 1997; Pew Forum, 2008).

Previous studies using the DSES also provide preliminary evidence about its association with other measures of religion. For example, in data about the general adult population from the General Social Survey, DSES scores had a moderate association with public religious activity (frequency of attendance at worship and other religious activities; $r = 0.58$, $p < 0.05$), and a strong association with private religious practices (frequency of private prayer or meditation and devotional reading; $r = 0.70$, $p < 0.05$; Idler et al., 2003). Dunn and colleagues (2003) report similar findings for their sample of older adults in central city Detroit. Based on this evidence, we hypothesize a moderate association between DSES and frequency of worship attendance and a strong association between DSE and frequency of private prayer or meditation in our sample.

Regarding our third aim, there is a consistent body of evidence demonstrating the associations between increased religiousness and older age, among females, and among African Americans (Dunn et al., 2003; Idler et al., 2003; Idler, 2006; Levin, Taylor, & Chatters 1994; Miller and Stark, 2002). In light of this literature, we hypothesize that higher levels of DSES will be observed in women and African Americans in our study. Due to the restricted age of our sample, we do not expect to find an association between DSES and age.

There is also evidence from other research about *religiousness* and other factors such as self-rated health, social networks, and depression. Regarding self-rated health, using data from the General Social Survey, Ferraro and Albrecht-Jensen (1991) reported an association between higher levels of religious practice and better self-rated health. Using data from 146 people in a rehabilitation clinic, Idler has reported a similar pattern (1995). Several investigators have reported positive associations between religious involvement and social support among older adults (Idler & Kasl, 1997a; Krause, 2002, 2006). The inverse relationship between religious involvement and depressive symptoms has been reported in many studies, including a meta-analysis by Smith and colleagues (2003). Research using the DSES also points to positive associations with self-rated health (Kalkstein & Tower, 2009), social support (Underwood & Teresi, 2002), and inverse associations with loneliness and depressive symptoms (Kalkstein & Tower, 2009; Mofidi et al., 2006; Underwood and Teresi, 2002). In light of this evidence, we hypothesize that in our large, population-based

sample of older adults, higher levels of DSES will also be associated with better self-rated health, larger social networks, and fewer depressive symptoms.

We know that for many people, both those who self-identify as religious and those who do not, spirituality is an important dimension of life that heretofore has not been adequately addressed. Our study attempts to fill the gap in our knowledge about daily spiritual experiences in an older adult population.

Methods

Participants

The data for this study come from the Chicago Health and Aging Project (CHAP) which is an ongoing longitudinal, bi-racial (65% African American), population-based study of risk factors for incident Alzheimers' Disease and other age-related chronic conditions among community-dwelling residents age 65 and older. A complete census of three contiguous neighborhoods on the South Side of Chicago resulted in a total of 6,158 residents who participated in the baseline survey conducted from 1993 to 1997 (response rate of 78.9%). Details of study procedure have been provided elsewhere (Bienias, Beckett, Bennett, Wilson, & Evans, 2003); essentially, assessments are conducted at approximately 3-year intervals beginning in 2000. Two modifications have been made to the composition of the original CHAP cohort: 1) successive age cohorts have been enrolled as community residents reach 65 years of age to ensure that the cohort does not become increasingly older and smaller; and 2) a supplemental cohort of residents age 65+ from an adjacent neighborhood has been enrolled to add more older whites in order to reduce the racial imbalance in the cohort. All data were collected in the participants' homes by trained interviewers. The interviews include performance-based tests of physical and cognitive function as well as structured questions about sociodemographic characteristics, health, and lifestyle. For this analysis, participant data are from the third CHAP original cohort interview cycle (2000–2002) and also include baseline participant data from the supplemental cohort participants who joined the study between 2000 and 2005. The Institutional Review Board of Rush University Medical Center approved the study and all participants provided written, informed consent.

Measures

Religiosity/Spirituality—A six-item version of the Daily Spiritual Experiences scale (DSES) was developed for inclusion into larger surveys; for example, it was incorporated in the 1997–1998 General Social Survey (David, Smith, & Marsden, 2001; Idler et al., 2003; Underwood & Teresi, 2002). As part of the in-home CHAP interviews, participants were asked 5 of the 6 questions from the DSES: I feel God's presence; I find comfort in my religion or spirituality; I feel deep inner peace or harmony; I feel God's love for me directly; and I desire to be closer to God or in union with him, and ask participants how often they feel that way: (1 = many times a day; 2 = everyday, 3 = most days, 4 = some days, 5 = once in a while, or 6=never or almost never). The five items were reverse-coded so that higher scores reflect greater daily spiritual experiences and then averaged into a composite DSES score; calculation of the composite score required at least four of the five items to be non-missing. Only 0.03% of the values for the DSES composite were missing (170/6,534).

The psychometric properties of both the original 16- and 6-item DSES versions have been established and the DSES has been shown to be a valid and reliable measure of the daily spiritual experience construct (Idler et al., 2003; Underwood & Teresi, 2002). In addition, both DSES versions were validated in a sample of 40 African American community-dwelling residents (Loustalot, Wyatt, Boss, & McDyess, 2006). Furthermore, in a sample of

Caucasian and African-American women from the Chicago site of the Study of Women's Health across the Nation (SWAN), the correlation between the 5-item version of the DSES used in CHAP and the full 16-item version was 0.93. We also found that the DSES has high internal consistency; in this present study, the Cronbach's alpha of the 5-item scale was 0.91.

Two other questions measuring participants' religious activity were included. Participants are asked to indicate how often they pray or meditate, using the same response categories as for the DSES items, (i.e., 1 = many times a day, 6 = never or almost never). Participants are also asked to indicate how often they go to religious services (1= every day or almost every day; 2=several times a week; 3=several times a month; 4=several times a year; and 5=once a year or less). Both questions were reverse-coded so that higher scores are equivalent to greater *prayer and attendance frequency*.

Sociodemographics—Included in the analyses were: sex, age, race (African American vs. Non-African American), years of education, yearly personal income (low [<US$15,000], mid-range [US$15,000–29,999], high [>US$30,000]), and marital status (married, widowed, divorced, separated, never married).

General health & psychosocial factors—To assess general health, we used the single self-rated health question from the Centers for Disease Control and Prevention (CDC) health-related quality of life (HRQOL) core items: "As compared to other people your own age, would you say that your health is excellent, good, fair, or poor?" (CDC, 2000). These responses were recoded into three categories: fair or poor, good, and excellent, with higher scores equivalent to better self-rated health.

The psychosocial factors included two domains, social networks and depressive symptoms. Social networks was measured by asking the participants to indicate the number of living children, relatives, and friends they have, as well as the frequency of face-to-face interaction with each type of relationship. (Barnes, 2004). A psychometric analysis of these questions revealed that information on social networks clusters by type of relationship (Glass, Mendes de Leon, Seeman, & Berkman, 1997). Following procedures used in previous studies (e.g., Mendes de Leon, Glass, & Berkman, 2003), three variables were constructed based on the number of children (children network), relatives (relatives network), and friends (friends network) each respondent reported seeing at least once a month. Scores on these variables ranged from 0 to 15 (mean 2.36, SD = 2.1) for children network, from 0 to 75 (mean 2.18, SD = 3.55) for relatives network, and from 0 to 15 (mean 2.43, SD = 3.05) for the friends network. A composite measure consisting of the sum of the three role-specific networks was created to obtain a total network score (range 0–92, mean 6.97, SD = 6.06), where higher scores are equivalent to larger social networks.

Assessment of depressive symptoms was based on the 10-item version of the Center for Epidemiologic Studies Depression scale (CES-D) (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). This abbreviated CES-D is derived from the original 20-item version (Radloff, 1977), and has acceptable reliability and a similar factor structure compared with the original version (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). Item responses are coded in a yes-no format, yielding a summary measure (CES-D) with a range from 0 to 10 after one sums across the individual items. Higher scores indicate more depressive symptoms.

Analysis

We used univariate statistics to examine the levels of daily spiritual experiences in our sample. We also used the chi-square statistic to compare proportional differences and the

independent samples t-test or Wilcoxon test to compare mean or median differences between African Americans and Whites on the variables of interest. We used Spearman Correlation coefficients to examine the correlations between the DSES and the prayer/meditation and religious service attendance items and we used linear regression to model the variables associated with the DSES scores. In the regression analyses, we tested two sequential models. First, in model 1, we entered all the sociodemographic factors together to determine the correlates of daily spiritual experiences in an older population. In model 2, we entered our selected psychosocial factors - self-rated health, social networks, and depressive symptoms - together to model 1 to determine their associations with daily spiritual experiences, independent of sociodemographic factors. We used the continuous versions of the covariates (e.g., age, education, social networks, depressive symptoms, hostility,) in the models, centering age at 75 years and education at 12 years. Yearly personal income and self-rated health were modeled in their ordinal levels and sex, marital status (married vs. not married), and race are binary. The exclusion criterion for the regression modeling was participants with any missing data; hence, models were based on an average of 5,533 observations. Analyses were performed using SAS® Version 9.2 (SAS Institute Inc., 2008).

Results

Participants' sociodemographic and religious/spiritual (R/S) characteristics

Table 1 shows the sociodemographic and R/S characteristics of the 6,534 participants in the aggregate, as well as by race (66% African American). The average age of the participants was approximately 74 years, 62% were female, 56% were married, and 33% were widowed. The average number of years of education was approximately 13, with nearly one-third having both less than high-school and a high school education and slightly more than a third having education beyond high school. Nearly fifty percent of the participants reported income in the low category, 21% in the mid-income range, and 29% in the higher income range. African Americans were younger and had less education and lower income than Whites. The median DSES score was 5 (range: 1–6) and African Americans reported higher median DSES scores compared with Whites (5.0 vs. 4.8, for African Americans and Whites, respectively). Table 1 also shows that 77% of participants reported that they pray or meditate at least daily and 65% reported that they go to religious services frequently, i.e., at least several times a month. African Americans had a higher rate of daily prayer/meditation (78% vs. 74%, for African Americans and Whites, respectively), but a slightly lower rate of frequent religious service attendance (64% vs. 69%, for African Americans and Whites, respectively) than Whites.

Figure 1 illustrates the distribution of the DSES scores for the population. For ease of interpretation, we recoded the averaged, composite DSES score variable into three groups indicating high (many times a day or everyday), medium (most days or some days), and low (once in awhile or never, almost never) spiritual experiences. The figure shows that the majority of participants reported at least daily spiritual experiences and that African Americans were more likely to report at least daily spiritual experiences than Whites.

DSES Correlations with Prayer and Religious Service Attendance

Table 2 shows the Spearman correlation coefficients for the DSES composite with both the prayer or meditation and the religious service attendance frequency items. Prayer or meditation was more strongly correlated with the DSES composite (0.59) than the religious service attendance item (0.37) and the correlations were slightly larger for Whites than for African Americans. In an attempt to better illustrate the complex association between daily spiritual experiences and more traditional religiosity, we graphed the weakly correlated relationship between average DSES scores and religious service attendance, which is a

commonly-used measure of religiosity, among participants with no walking limitations (see Figure 2). The figure shows highest levels of DSES among those who attend religious services most frequently; however, the figure also shows relatively high DSES levels among those who also report rarely or never attending worship.

Average DSES scores by sociodemographic characteristics

Table 3 shows the participants' average DSES scores by sociodemographic characteristics within race groups. In the total population, women had higher DSES scores than men, unmarried participants had higher DSES scores than their married counterparts, participants with a high school education or less had higher DSES scores than those with education beyond high school, and DSES scores were higher among those with lower income. There were no age differences in DSES scores in the total population or within race groups. For both African Americans and Whites, women had higher DSES scores than males. Among African Americans, widowed and divorced participants had higher DSES scores than their married counterparts, but for Whites, DSES scores were highest among widows, followed by married participants and then divorced and separated participants. Among African Americans, participants with more than a high school education had slightly higher DSES scores than their counterparts, but among Whites, the differences in DSES scores by education were not significant. There were no differences in DSES scores by income among either African Americans or Whites. Overall, the differences were small among each of the subgroups.

Modeling DSES

Table 4 shows the results from the linear regression models of the sociodemographic and psychosocial correlates of DSES. When modeling the sociodemographic variables only, African American race, female gender, and higher income were positively associated with daily spiritual experiences (Model 1). Interestingly, adding the psychosocial factors in Model 2 strengthened the estimate for race. Each of the three psychosocial factors was associated with DSES, that is, better self-rated health, larger social networks, and lower depressive symptoms were associated with higher levels of daily spiritual experiences.

Discussion

Spirituality levels

The primary purpose of this study was to first, describe daily spirituality experiences in a biracial, community-based population of older adults. We know very little about spiritual experiences in community-dwelling older adults. Much of the empirical literature to date has been limited to studies that include single 'religiosity' questions asking about denominational preference, prayer frequency, or religious service or church attendance. We found surprisingly high levels of daily spiritual experiences in our population; the overwhelming majority (70%) of participants indicated having spiritual experiences at least daily. Similarly, slightly more than three-quarters of our sample reported praying or meditating at least daily and 65% reported attending religious services at least several times per month.

Convergent validity of the DSES

Second, we also demonstrated adequate convergent validity of the DSES for measuring spirituality in older African American and White adults. We observed that the DSES is related to, but distinct from religious involvement such as worship attendance. We observed modest correlations between spirituality, prayer or meditation, and religious service attendance, but we also showed relatively high spirituality across all levels of church

attendance, including those who report attending services once a year or less. So, although related to private devotional activity and organizational religious behavior, spirituality appears to be measuring a distinct construct. In fact, in further substantiation that the items are not measuring the same constructs, we found that among those who only attend worship a few times a year, more than half still reported at least daily spiritual experiences (data not shown). Furthermore, we found that the DSES has high internal consistency (alpha = 0.91), which corroborates Underwood and Teresi's (2002) report of high internal consistency - Cronbach's alphas of over 0.90 - across several studies.

Demographic and psychosocial correlates of spirituality

Third, the data largely support our hypotheses about the demographic and psychosocial factors associated with spirituality. We observed a number of interesting associations between demographic factors and spirituality, most notably between spirituality and race. First, we observed different associations depending on the level of analysis. For example, at the bivariate level, we found that in general, women, unmarried participants, and those with lower education and income reported higher spirituality. When we examined spirituality within race groups at the bivariate level, we still found that women reported higher spirituality in both African Americans and Whites. We found small differences in DSES by marital status in both race groups, in education for African Americans only, and in income for Whites only. Interestingly, age was not associated with spirituality at the bivariate level. Much of the existent evidence in this field is based on bivariate analyses; however, our project demonstrates different patterns of association via multivariable analyses. When we modeled the demographic factors only, although we found that African American race and female gender were still significantly associated with spirituality, we also found a weak, but significant, association between *higher* income and higher spirituality. Furthermore, when we added the health and psychosocial factors to the demographic model, we observed some interesting changes. Most notably, we observed a negative confounding effect such that the estimate for race increased from the demographics-only model. Typically, when adjusting for covariates, main effects are attenuated. However, in these data, partialling-out the variance associated with self-reported health, social network integration, and depressive symptoms *strengthened* the association between African American race and DSES.

We were not surprised to find that better self-rated health was associated with higher levels of daily spiritual experiences since evidence to date in fact does support the protective effect of R/S on physical and mental health (Idler & Kasl, 1997a, 1997b; Koenig et al., 1999; Koenig, McCullough, & Larson, 2001; Krause, 2002); however, the causal mechanism for this salutogenic effect is less well-understood (Krause, 2004). Our finding of a positive association between social network integration and spiritual experiences is also consistent with other research including the report of a significant *bivariate* correlation between DSES and general perceived social support among a sample of 233 midlife women (Underwood & Teresi, 2002) and the report of an association between lower levels of daily spiritual experiences and having fewer close friends among a mixed sample of 409 adults and 84 older adults (Kalkstein & Tower, 2009). Our finding of an inverse association between spiritual experiences and depressive symptomatology is also consistent with other reports using this measure (Kalkstein & Tower, 2009; McCauley, Tarpley, Haaz, & Bartlett, 2008; Mofidi, DeVellis, Blazer, DeVellis, Panter, & Jordan, 2006; Underwood & Teresi, 2002), as well as a large body of evidence for other measures of R/S (Smith, McCullough, & Poll, 2003). Ellison & Fan (2008) reported no association between 'psychological distress' and the DSES, but did observe significant associations between the DSES and one-item measures of happiness, optimism, excitement with life, and satisfaction with self. Positive associations between the DSES and mental health were also reported for a large sample of older adults from the Detroit area (Dunn, Chapleski, Stinson, & Massanari, 2003).

African Americans and spirituality

As expected, we found that African Americans reported higher levels of daily spirituality experiences than Whites. These results align with the well-established finding of higher levels of most all measures of R/S among African Americans as compared to Whites (Baylor Institute for Studies of Religion, 2006; Fitchett et al., 2007; Levin, Taylor, & Chatters, 1994; Pew Forum on Religion & Public Life, 2008; Taylor, Chatters, Jayakody, & Levin, 1996). We also found significant African American-White differences in prayer or meditation and religious service attendance, such that African Americans reported slightly higher rates of daily prayer or meditation but slightly lower rates of frequent religious service attendance than Whites. One explanation for these race differences may lie in the unique historical context of the African American church, namely, the elements of strong social and community support (Billingsley, 1999; Du Bois, 2000) and the concomitant salience of religious meaning for African Americans (Krause, 2003). That is, religious service attendance, religiosity, and spirituality may have different 'religious meaning' for African Americans compared to Whites because of the historical, pivotal role of the church in the African American community. Thus, understanding these subtle, but meaningful racial differences related to worship attendance, prayer, and spirituality is critical as we attempt to examine possible racial differences in the relationship between R/S and health outcomes.

There are limitations to our study. First, CHAP is a study of Chicago's urban-dwelling, bi-racial, older adult population. That said, our sample may not be representative of older adults living in smaller cities, rural areas, other geographic areas of the country, or of older adults from other ethnic groups. Second, our data are cross-sectional and therefore, we cannot ascertain causal relationships between the psychosocial factors and daily spiritual experiences. Finally, as is the case with measures of religious involvement in most epidemiological studies, DSES was only measured once in this population. Thus, we do not have a good sense of how this aspect of daily spiritual experiences may evolve or change over the life course (George, Hays, Flint, & Meador, 2004). Furthermore, we only have a 5-item DSES, which may limit comparison to other studies which may use the 6 or 16-item DSES. Nonetheless, the primary strength of our study lies in the fact that our data come from a population-based sample of older adults that was drawn from a census of a community-dwelling population. Second, our sample from the CHAP population has good representation of the African American population (66%) with adequate power to detect differences. Third, most information about demographic correlates of religiosity and spirituality come from bivariate analyses; our analyses have contributed to this research field via multivariable modeling.

As noted, a substantial body of research is developing about religious involvement and health; for example, Underwood & Teresi (2002) posited that the relationship between daily spiritual experiences and improved health may be mediated by reduced stress via reduced alcohol intake, improved quality of life, and positive psychosocial status. It has also been suggested that spirituality may serve as a stress buffer via an improved coping response (Krause, 2006) or via reduced depression. To date, the lack of good measures has restricted research about spirituality and health. This will become a serious limitation for research with older adults as it appears that, compared to prior generations, the Baby-Boomer cohort includes a larger proportion of spiritual seekers and lower levels of institutional religious involvement (Marler & Hadaway, 2002; Roof, 1999). In light of this shift, having good measures of spirituality and experiences, such as the DSES, as well as measures of religious involvement, will be important for future research about religiosity/spirituality (R/S) and health among older adults.

In summary, there has been little investigation of spirituality in older adults in population-based studies. Ours is one of the first papers to examine spiritual experiences in a biracial sample of community-dwelling older adults. Our results indicate a high level of spirituality in older age and that the DSES is a valid instrument for measuring spiritual experiences in older adults. We have also provided evidence that African Americans may not only have more overt religiosity via religious service attendance than Whites, but that African Americans may also have stronger perceptions of daily spiritual experiences than Whites. Finally, we have also shown that self-rated health, social network integration, and depressive symptoms are associated with daily spiritual experiences in older age. Longitudinal analyses are required to determine if and how daily spiritual experiences may enhance host resilience to the deleterious effects of aging-related stressors and declines in health.

Acknowledgments

This research was supported by grants from the National Institutes of Health: National Institute on Aging (R01AG11101, K08AG020145, R01AG032247). We thank Mr. Flavio LaMorticella and Ms. Jennifer Tarpey for coordination of the study. We also thank Mr. Zhaotai Cui, M.S. for statistical programming.

References

Atchley, RC. Spirituality. In: Cole, TR.; Kastenbaum, R.; Ray, RE., editors. Handbook of the humanities and aging. 2. New York: Springer Pub; 2000. p. 324-341.

Barnes LL, Mendes de Leon CF, Bienias JL, Evans DA. A longitudinal study of black-white differences in social resources. Journal of Gerontology: Social Sciences 2004;59:146–153.

Baylor Institute for Studies of Religion. American piety in the 21st Century: New insights to the depths and complexity of religion in the US. Dallas, TX: Baylor Institute for Studies of Religion; 2006.

Bienias JL, Beckett LA, Bennett DA, Wilson RS, Evans DA. Design of the Chicago Health and Aging Project (CHAP). Journal of Alzheimer's Disease 2003;5:349–355.

Billingsley, A. Mighty like a river: The Black church and social reform. New York: Oxford University Press; 1999.

Centers for Disease Control and Prevention (CDC). Measuring healthy days. Atlanta, GA: CDC; 2000.

Chatters LM, Taylor RJ, Lincoln KD. African-American religious participation: A multisample comparison. Journal for the Scientific Study of Religion 1999;38:132–145.

David, JA.; Smith, TW.; Marsden, PV. General Social Surveys, 1972–2000 Cumulative Codebook. Chicago: National Opinion Research Center; 2001.

Du Bois, WEB. Du Bois on religion. Zukerman, P., editor. New York: Alta Mira Press; 2000.

Dunn KS, Chapleski E, Stinson LW, Massanari RM. Everyday spirituality in central city elders. Journal of Religious Gerontology 2003;15:41–59.

Ellison CG, Levin JS. The religion-health connection: Evidence, theory, and future directions. Health Education and Behavior 1998;25:700–720. [PubMed: 9813743]

Ellison CG, Fan D. Daily spiritual experiences and psychological well-being among U.S. adults. Social Indicators Research 2008;88:247–271.

Erikson, EH. Childhood and society. New York: Norton; 1963.

Ferraro KF, Albrecht-Jensen CM. Does religion influence adult health? Journal for the Scientific Study of Religion 1991;30:193–202.

Fetzer Institute/National Institute on Aging. Multidimensional measurement of religiousness/spirituality for use in health research. Kalamazoo, MI: Fetzer Institute; 1999.

Fitchett G, Murphy PE, Kravitz HM, Everson-Rose SA, Krause NM, Powell LH. Racial/Ethnic differences in religious involvement in a multi-ethnic cohort of midlife women. Journal for the Society for the Scientific Study of Religion 2007;46:119–132.

Fowler, JW. Stages of faith: The psychology of human development and the quest for meaning. San Francisco: Harper & Row; 1981.

George, LK.; Hays, JC.; Flint, EP.; Meador, KG. Religion and health in life course perspective. In: Schaie, KW.; Krause, N.; Booth, A., editors. Religious influences on health and well-being in the elderly. New York: Springer; 2004. p. 246-282.

Glass TA, Mendes de Leon CF, Seeman TE, Berkman LF. Beyond single indicators of social networks: A LISREL analysis of social ties among the elderly. Social Science & Medicine 1997;44:1503–1517. [PubMed: 9160440]

Hill PC, Pargament KI, Hood RW Jr, McCullough ME, Swyers JP, Larson DB, Zinnbauer BJ. Conceptualizing religion and spirituality: Points of departure. Journal for the Theory of Social Behavior 2000;30:51–77.

Idler EL. Religion, health, and nonphysical senses of self. Social Forces 1995;74:683–704.

Idler, EL. Religion and aging. In: Binstock, RH.; George, LK., editors. Handbook of Aging and the Social Sciences. 6. Burlington, MA: Academic Press; 2006. p. 277-300.

Idler EL, Kasl SV. Religion among disabled and nondisabled persons I: Cross-sectional patterns in health practices, social activities, and well-being. Journal of Gerontology: Social Sciences 1997a; 52:294–305.

Idler EL, Kasl SV. Religion among disabled and nondisabled persons II: Attendance at religious services as a predictor of the course of disability. Journal of Gerontology: Social Sciences 1997b; 52:306–316.

Idler EL, Musick MA, Ellison CG, George LK, Krause N, Ory MG, Pargament KI, Powell LH, Underwood LG, Williams DR. Measuring multiple dimensions of religion and spirituality for health research: Conceptual background and findings from the 1998 General Social Survey. Research on Aging 2003;25:327–365.

Isenberg, S. Aging in Judaism: “Crown of glory” and “Days of sorrow”. In: Cole, TR.; Van Tassel, DD.; Kastenbaum, R., editors. Handbook of the humanities and aging. New York: Springer; 1992. p. 147-174.

Jung, CG. Man and his symbols. New York: Laurel; 1964.

Kalkstein S, Tower RB. The daily spiritual experiences scale and well being: Demographic comparisons and scale validation with older Jewish adults and a diverse internet sample. Journal of Religious Health 2009;48:402–417.10.1007/s10943–008–9203–0

Keefe FJ, Affleck G, Lefebvre J, Underwood L, Caldwell DS, Drew J, Egert J, Gibson J, Pargament K. Living with rheumatoid arthritis: The role of daily spirituality and daily religious and spiritual coping. The Journal of Pain: Official Journal of the American Pain Society 2001;2:101–110. [PubMed: 14622831]

Koenig HG, George LK, Titus P. Religion, spirituality, and health in medically ill hospitalized older patients. Journal of the American Geriatrics Society 2004;52:554–562. [PubMed: 15066070]

Koenig HG, George LK, Titus P, Meador KG. Religion, spirituality, and health service use by older hospitalized patients. Journal of Religion and Health 2003;42:301–314.

Koenig HG, Hays JC, Larson DB, George LK, Cohen HJ, McCullough ME, Meador KG, Blazer DG. Does religious attendance prolong survival? A six-year follow-up study of 3,968 older adults. Journal of Gerontology: Medical Sciences 1999;54:370–376.

Koenig, HG.; McCullough, ME.; Larson, DB. Handbook of religion and health. Oxford; New York: Oxford University Press; 2001.

Kohout FJ, Berkman LF, Evans DA, Cornoni-Huntley J. Two shorter forms of the CES-D (Center for Epidemiological Studies Depression) depression symptoms index. Journal of Aging and Health 1993;5:179–193. [PubMed: 10125443]

Krause N. Church-based social support and health in old age: Exploring variations by race. Journal of Gerontology: Social Sciences 2002;57:332–347.

Krause N. Religious meaning and subjective well-being in late life. Journal of Gerontology: Social Sciences 2003;58:160–170.

Krause N. Religion, aging, and health: Exploring new frontiers in medical care. Southern Medical Journal 2004;97:1215–1222. [PubMed: 15646760]

Krause N. Exploring the stress-buffering effects of church-based and secular social support on self-rated health in late life. Journal of Gerontology: Social Sciences 2006;61:35–43.

Leder, D. Spiritual passages: Embracing life's sacred journey. New York: Jeremy P. Tarcher/Putnam; 1997.

Levin JS. How religion influences morbidity and health: Reflections on natural history, salutogenesis and host resistance. Social Science in Medicine 1996;43:849–864.

Levin JS, Taylor RJ. Age differences in patterns and correlates of the frequency of prayer. The Gerontologist 1997;37:75–88. [PubMed: 9046709]

Levin JS, Taylor RJ, Chatters LM. Race and gender differences in religiosity among older adults: Findings from four national surveys. Journal of Gerontology: Social Sciences 1994;49:137–45.

Loustalot FV, Wyatt SB, Boss B, McDyess T. Psychometric examination of the Daily Spiritual Experiences Scale. Journal of Cultural Diversity 2006;13:162–167. [PubMed: 16989254]

McCauley J, Tarpley MJ, Haaz S, Bartlett SJ. Daily spiritual experiences of older adults with and without arthritis and the relationship to health outcomes. Arthritis & Rheumatism 2008;59:122–128. [PubMed: 18163414]

Marler PL, Hadaway CK. "Being religious" or "being spiritual" in America: A zero-sum proposition? Journal for the Scientific Study of Religion 2002;41:289–300.

Mendes de Leon CF, Glass TA, Berkman LF. Social engagement and disability in a community population of older adults: The New Haven EPESE. American Journal of Epidemiology 2003;157:633–642. [PubMed: 12672683]

Miller AS, Stark R. Gender and religiousness: Can socialization explanations be saved? American Journal of Sociology 2002;107:1399–1423.

Miller WR, Thoresen CE. Spirituality, religion, and health. an emerging research field. The American Psychologist 2003;58:24–35. [PubMed: 12674816]

Mofidi M, Devellis RF, Blazer DG, Devellis BM, Panter AT, Jordan JM. Spirituality and depressive symptoms in a racially diverse US sample of community-dwelling adults. Journal of Nervous & Mental Diseases 2006;194:975–977.

Moody, HR.; Carroll, D. The five stages of the soul: Charting the spiritual passages that shape our lives. New York: Anchor Books; 1997.

Pew Forum on Religion & Public Life. US Religious Landscape Survey. Washington, DC: Pew Forum on Religion & Public Life; 2008.

Powell LH, Shahabi L, Thoresen CE. Religion and spirituality: Linkages to physical health. American Psychologist 2003;58:36–52. [PubMed: 12674817]

Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. Applied Psychological Measurement 1977;1:385–401.

Roof, CW. Spiritual marketplace. Princeton, NJ: Princeton University Press; 1999.

SAS Institute. SAS/STAT user's guide, Version 8. Cary, NC: SAS Institute; 2008.

Smith TB, McCullough ME, Poll J. Religiousness and depression: Evidence for a main effect and the moderating influence of stressful life events. Psychological Bulletin 2003;129:614–636. [PubMed: 12848223]

Strawbridge WJ, Cohen RD, Shema SJ, Kaplan GA. Frequent attendance at religious services and mortality over 28 years. American Journal of Public Health 1997;87:957–961. [PubMed: 9224176]

Taylor RJ, Chatters LM, Jayakody R, Levin JS. Black and White differences in religious participation: A multisample comparison. Journal for the Scientific Study of Religion 1996;35:403–410.

Thomas, LE. The way of the religious renouncer: Power through nothingness. In: Thomas, LE.; Eisenhandler, SA., editors. Aging and the religious dimension. Westport, CT: Auburn House; 1994. p. 51-64.

Underwood LG. Ordinary spiritual experience: Qualitative research, iInterpretive guidelines, and population distribution for the daily spiritual experience scale. Archive for the Psychology of Religion 2006;28:181–218.

Underwood LG, Teresi JA. The daily spiritual experience scale: Development, theoretical description, reliability, exploratory factor analysis, and preliminary construct validity using health-related data. Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine 2002;24:22–33. [PubMed: 12008791]

Vogel, LJ. Spiritual development in later life. In: Kimble, MA.; McFadden, SH.; Ellor, JW.; Seeber, JJ., editors. Aging, spirituality, and religion: A handbook. Minneapolis: Fortress Press; 1995. p. 74-86.

Williams, DR. The measurement of religion in epidemiological studies: Problems and prospects. In: Levin, JS., editor. Religion in aging and health: Theoretical foundations and methodological frontiers. Thousand Oak, CA: Sage Publications; 1994. p. 125-148.

Zinnbauer BJ, Pargament KI, Cole B, Rye MS, Butter EM, Belavich TG, Hipp KM, Scott AB, Kadar JL. Religion and spirituality: Unfuzzying the fuzzy. Journal for the Scientific Study of Religion 1997;36:549–564.

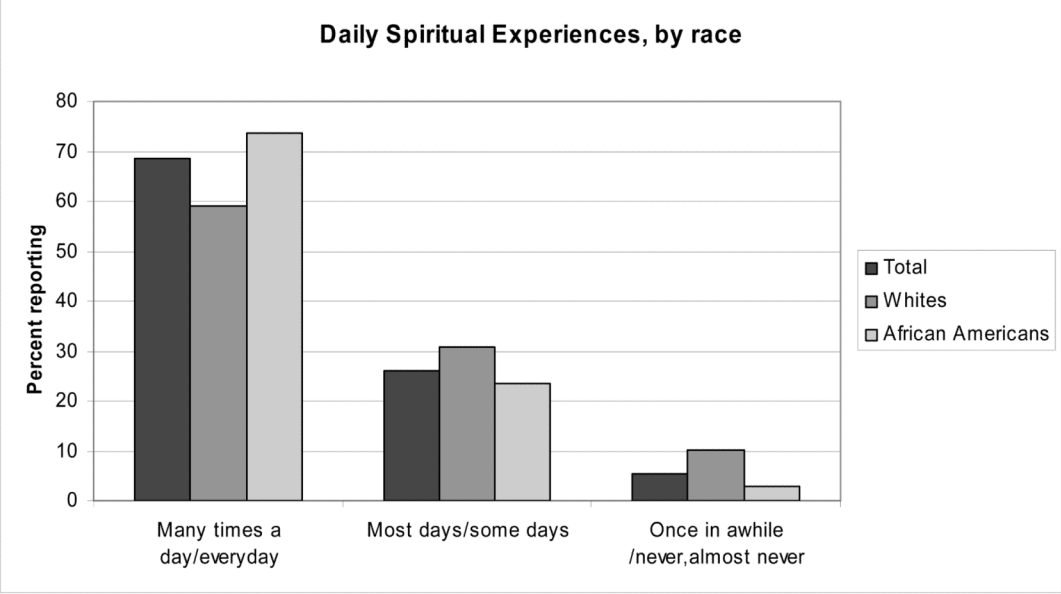

Figure 1.

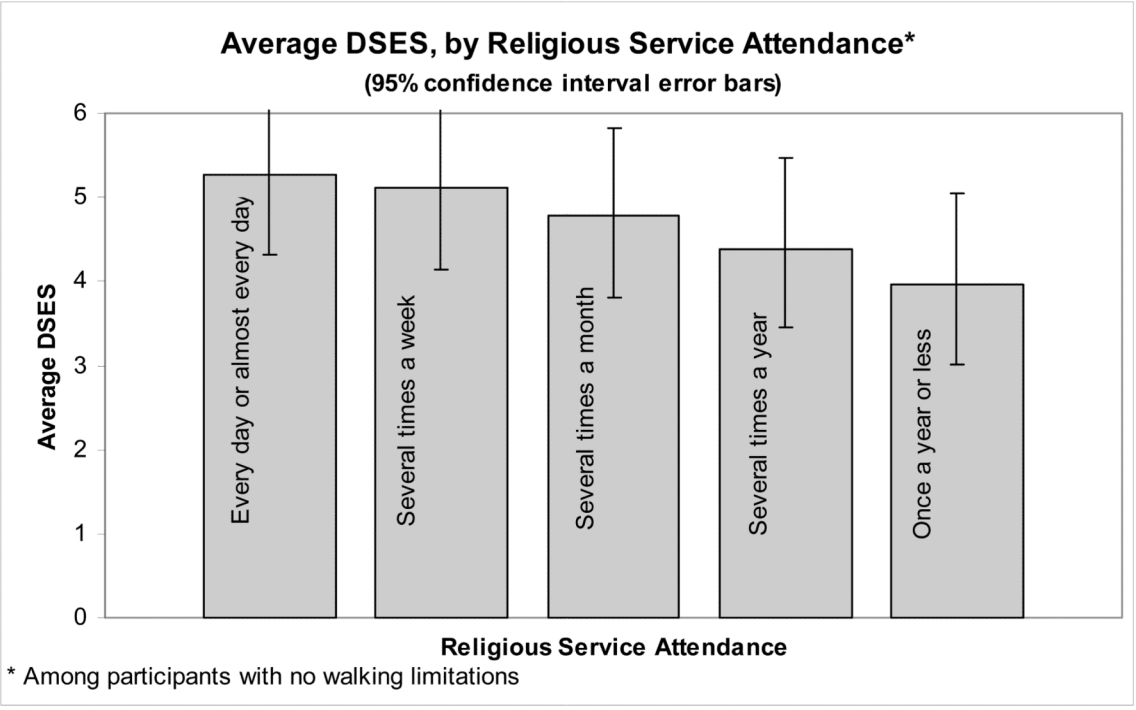

Figure 2.

Table 1

Participants' sociodemographic and religious/spiritual characteristics, in aggregate and by race (N=6,534), *chi-square test results, unless otherwise noted*

Variables	**Total (N=6,534)**	**African Americans (n=4,322)**	**Whites (n=2,212)**	***p* value**
Age, *mean (SD)*[*]	74.2 (7.2)	73.0 (6.6)	76.4 (7.8)	<.0001
Female, *# (%)*	4015 (61.5)	2685 (62.1)	1330 (60.1)	0.1165
Marital status, *# (%)*				0.3480
Married	3507 (56.0)	2305 (54.6)	1202 (59.0)	
Widowed	2068 (33.0)	1358 (32.2)	710 (34.8)	
Divorced	558 (8.9)	437 (10.4)	121 (5.9)	
Separated	126 (2.0)	121 (2.9)	5 (0.3)	
Never married	1 (0.02)	1 (0.02)	0 -	
Education, *mean (SD)*[*]	12.5 (3.4)	11.7 (3.3)	14.1 (3.1)	<.0001
Education categories, # (%)				
<HS	1806 (27.7)	1591 (37.0)	215 (9.7)	<.0001
HS Grad	1966 (30.2)	1292 (30.0)	674 (30.5)	
>HS	2742 (42.1)	1423 (33.1)	1319 (59.7)	
Income[**], *# (%)*				<.0001
Low	2778 (49.4)	2290 (61.1)	488 (26.0)	
Mid	1203 (21.4)	808 (21.6)	395 (21.0)	
High	1644 (29.2)	648 (17.3)	996 (53.0)	
Daily Spiritual Experiences, *Median*[***] *(25^{th}, 75^{th} IQR) (Range: 1–6, where 6=many times a day)*	5.0 (4.2, 5.2)	5.0 (4.4, 5.2)	4.8 (3.8, 5.2)	<.0001
How often do you pray or meditate? *# (%)*				
At least daily *(many times a day, everyday)*	4913 (76.6)	3307 (78.1)	1606 (73.8)	<.0001
Other *(most days, some days, once in a while, never/ almost never)*	1501 (23.4)	930 (22.0)	571 (26.2)	
How often do you go to religious services? *# (%)*				
Frequently *(every day/almost every day, several times/week, several times/month,)*	4251 (65.4)	2739 (63.6)	1512 (68.9)	<.0001
Other *(several times per year, once a year or less)*	2248 (34.6)	1566 (36.4)	682 (31.1)	

[*] independent samples t-test

[**] Note: 14% of income data are missing

[***] Wilcoxon two-sample test

Table 2

Spearman Correlation Coefficients* and Internal Consistency Reliability Estimates for DSES, by race

	Total (N=6,534)	African Americans (n=4,322)	Whites (n=2,212)
DSES and Prayer or Meditation Frequency	0.59	0.55	0.66
DSES and Religious Service Attendance	0.37	0.35	0.44
DSES Scale alpha	0.91	0.90	0.93

*All p-values < 0.0001

Table 3

Average DSES scores by sociodemographic characteristics, within race groups, *means (SD)*

Variables	Total (N=6,534)	*p*-value	African Americans (n=4,322)	*p*-value	Whites (n=2,212)	*p*-value
Age		0.2130		0.1011		0.0618
65–74	4.68 (0.99)		4.79 (0.86)		4.35 (1.23)	
75–84	4.64 (1.05)		4.74 (0.91)		4.50 (1.21)	
85+	4.61 (1.15)		4.86 (0.94)		4.42 (1.25)	
Sex		<.0001		<.0001		<.0001
Males	4.38 (1.15)		4.51 (1.02)		4.13 (1.34)	
Females	4.83 (0.89)		4.94 (0.74)		4.61 (1.11)	
Marital status		<.0001		<.0001		0.0052
Married	4.60 (1.05)		4.72 (0.90)		4.38 (1.24)	
Widowed	4.75 (0.95)		4.86 (0.82)		4.55 (1.13)	
Divorced	4.71 (1.07)		4.85 (0.94)		4.20 (1.33)	
Separated	4.73 (0.87)		4.76 (0.83)		4.20 (1.70)	
Never married (n=1)	4.00 (−)		4.00 (−)		-	
Education		0.0114		0.0480		0.3309
<HS	4.71 (0.96)		4.76 (0.90)		4.38 (1.26)	
HS Grad	4.66 (1.00)		4.76 (0.86)		4.47 (1.20)	
>HS	4.62 (1.09)		4.83 (0.87)		4.39 (1.24)	
Income		<.0001		0.3424		0.0771
Low	4.73 (0.93)		4.78 (0.87)		4.52 (1.18)	
Mid	4.63 (1.00)		4.73 (0.87)		4.43 (1.21)	
High	4.53 (1.19)		4.79 (0.98)		4.37 (1.29)	

Aging Ment Health. Author manuscript; available in PMC 2010 September 1.

Table 4

Modeling Daily Spiritual Experiences, using ordinary least squares regression, *unstandardized estimate (standard error)*

Variable	Model 1	Model 2
Intercept	4.520 (0.051)***	4.356 (0.066)***
African American race	0.356 (0.034)***	0.435 (0.034)***
Age	0.002 (0.002)	0.006 (0.002)**
Male Sex	−0.479 (0.030)***	−0.474 (0.029)***
Married	0.016 (0.031)	0.014 (0.030)
Education	−0.005 (0.005)	−0.010 (0.005)*
Income	0.015 (0.007)*	0.000 (0.007)
Self-rated health		0.043 (0.020)*
Social networks		0.027 (0.002)***
Depressive symptoms		−0.053 (0.007)***
observations	*5,549*	*5,517*
F Value	*72.82***	*79.39***
Adjusted R-Square	*0.0721*	*0.1134*

* *p*-value ≤ 0.05;

** *p*-value ≤ 0.01;

*** *p*-value ≤ 0.001