**Extended Abstract**: Religious Belief, Religiosity and Mental Health in Context: An Analysis of Older Adult Depressive Symptoms across Latin America and the Caribbean.

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## Overview

Understanding and alleviating the heavy global burden of disease associated with depressive symptoms and disorders, conditions that are growing increasingly pervasive and disabling in low and middle income countries, is a foremost challenge facing scholars in the fields of epidemiology, social demography and the sociology of aging and the life course (Reynolds et al. 2012). Depression is the leading cause of years of life lived with disability, a burden weighing relatively heavily on the world's women and older adults (Lopez et al. 2006). Alongside numerous investigations indicating effectiveness of socially supportive relationships and support group membership as buffers against depression (e.g., Vanderhorst and McLaren 2005; Disch, et al 2007; Leung et al 2007) is a growing body of literature which explores religious beliefs and religiosity as they influence health, and specifically mental health, outcomes. This field of inquiry has reached a stage where researchers are increasingly focused upon specifying causal mechanisms, parsing out confounding factors, and identifying the specific aspects of religion that matter for particular dimensions of health (Yeager et al. 2006).

A central theme emerging through these analyses of religion and mental health is that the results consistently suggest context-specific, group-specific and faith-specific patterns of association. As Maselko and Kubzansky observe in an investigation of racial-ethnic and denominational differences in the US (2006:2848), "it may not be appropriate to generalize findings about the relationship between spirituality/religiosity and health from one form of spirituality/religiosity to another, across denominations, or to assume effects are uniform for men and women." The complex patterns of association between religion and mental health that maintain across subpopulations of the US suggest that parallel, cross-national comparative investigations of the relationships among religion, religiosity and health have the potential to further illuminate the contexts within which religious belief can serve to enhance or protect older adult mental health. Indeed, while the literature has been largely US-centric, the significant minority of studies examining religious belief, religious practice and mental health in other regions of the world generates doubt about the generalizability of robust religiosity-mental health associations observed in the United States. For example, Yeager and colleagues (2006) find that in Taiwan only religious attendance (and not the strength of belief) positively predicts health status, but this association is mediated by social networks and prior health status. In fact, in the Taiwanese context relatively strong religious beliefs are negatively associated with health status, a pattern suggestive of reverse causality.

Although Latin America is one of the most religious areas of the world (Koenig et al. 2012), Latin American older adults have been almost entirely overlooked in inquiries on the mental health implications of religious affiliation and beliefs. While still sparse, more numerous studies have investigated religion and religious coping as they relate to the health of Latin American immigrants and refugees within the United States (e.g., Hovey and Magaña 2000; Dunn and O'Brien 2009). The LAC region is a fertile ground for comparative research on religion and health given its increasingly diverse religious traditions and degrees of religiosity and secularism (Smith and Prokopy 1999). In one of the few studies investigating the significance of religion across Latin America and the Caribbean region, Reyes-Ortiz and

colleagues (2007) find a positive association between religiosity and self-rated health status. Older adults who considered religion to be a very important part of their lives were less likely than those with lower attachment to religion, to report poor health.

We posit that religious affiliation and religiosity will differentially influence older adult mental health across cities of LAC. We derive our hypotheses on the cross-national nature of the religion-depression association in older adults through a critical assessment of dominant religion and the extent of religiosity/secularism that holds sway in the population. Assuming that denominational affiliation and religiosity are indicative of spiritual meanings that bring about positive or negative coping with life stressors, and/or that participating in religion provides relationships that are instrumentally or emotionally supportive, we hypothesize that the effect of belonging to a particular religious denomination upon depressive symptoms depends on how one's religious membership relates to the social norm, in particular whether one adheres to a majority or minority religion. Using Roman Catholicism as the consistent reference group given its status as the dominant religion throughout much of the region, and especially in Mexico City, Mexico; Buenos Aires, Argentina; and Santiago, Chile, we hypothesize that being atheistic or practicing a minority religion in these settings will be positively associated with depressive symptoms. On the other hand, we hypothesize that atheism, or the absence of affiliation with an organized religion, will have a non-significant or negative effect on depressive symptoms in those settings characterized by polytheism or the absence of dominant Catholicism (i.e., Bridgetown and Havana). With respect to religiosity, we hypothesize that older adults with lower levels of commitment to religion will have more depressive symptoms in relatively religions societies, whereas high religiosity will positively predict depressive symptoms in relatively secular societies.

**Data and Samples**

Data for this study are drawn from the Survey of Health, Well-Being and Aging in Latin America and the Caribbean (SABE), a multi-center research project conducted between 1999 and 2000 under the auspices of the Pan American Health Organization with support from the Center for Demography and Ecology at the University of Wisconsin (Pelaez et al 2000) in seven urban cities in the region. The sampled population consists of noninstitutionalized adults ages 60 and older. Cities in the study include Buenos Aires, Argentina (N=903); Montevideo, Uruguay (N=1,236); Santiago, Chile (N=1, 182); Sao Paulo, Brazil (N=1, 922); Mexico City, Mexico (N=1, 139); Havana, Cuba (N=1, 667) and Bridgetown, Barbados (N=1, 248). This comparative analysis is made possible by the parallel surveys used in each country. In addition to detailed questions on their demographic and economic characteristics, older adults in each setting were asked to indicate the religious denominations that they identify with, the importance of religion in their daily lives and their experience of depressive symptomatology. This provides a valuable opportunity to conduct comparative analysis of the associations between religious beliefs, religiosity and the psychological well-being of older adults in Latin America and the Caribbean.

**Measures and Analytic Strategy**

The *dependent variable, experiencing symptoms of depression,* was derived from respondents' answers to 15 measures of depressive symptomatology used in the Yesavage Geriatric Depression Scale (Yesavage and Brink 1983). Older adults were asked to indicate whether they experienced feelings of helplessness, loss of interest in life and similar questions related to life satisfaction within two weeks prior to the survey. Responses to these items were

dichotomized and summed to create a continuous measure of depression. As shown in Figure 1 and Table 1, on average older adults in all cities experience relatively few symptoms of depression. Older adults in Santiago reported the highest levels of depressive symptoms, on average (3.8), while those in Bridgetown reported the lowest on average (1.7).

*Religious belief is* measured by older adults' responses to the question, "What is your religion?" Four categories of religion are considered: Roman Catholic, Evangelical, Other and No Religion/Atheist. A separate category was created for missing cases. In all cities, with the exception of Bridgetown, the category Evangelical also includes those who identified as Protestant. In Bridgetown, Evangelical represents a combination of those identifying as Anglican, Pentecostal or Methodist. In all cities the category "Other" combines responses for all other religions, including Judaism and various syncretic religious systems. As indicated in Table 1, in all cities except Bridgetown the majority of older adults are affiliated with Roman Catholicism. Only in Bridgetown do the majority of older adults identify with Protestant and Evangelical faiths. Havana is relatively unique within the region, as older adults are almost evenly split into those professing Roman Catholicism and those indicating they are atheistic or do not identify with any religion.

*Religiosity* is measured as an ordinal categorical variable for older adults' responses to the question, "How important would you say religion is in your daily life?" The categories include very important, which is chosen as the reference group; somewhat important; and not very important. Similar to the measure of religious belief, a separate category was included for missing cases. As shown in Figure 2, older adults in all cities consider religion to be a very important aspect of their lives. Older adults in Bridgetown appear to be the most religious with nearly 90% of older adults indicating religion is very important to them. In contrast, Havana shows the lowest proportion of older adults indicating religion is very important, 36%.

Other covariates in our analyses (shown in Table 1) include demographic, socioeconomic and health characteristics of older adults shown in previous studies to correlate with depressive symptoms (Lorant et al. 2003). We estimate separate ordinary least squares regression models for each city to predict older adults' self-reported depressive symptoms. Select results related to our hypotheses are shown in Table 2 with full model results shown in Appendix Table A1.

**Results and Discussion**

As seen in the select model results presented in Table 2, we find partial support confirming our hypotheses about context-specific associations between religious affiliation, religiosity and depressive symptoms as measured by the Geriatric Depression Scale. Specifically, our results indicate that in Buenos Aires, an overwhelmingly Catholic city, where nearly 85% of respondents report that they are Roman Catholic, individuals who are atheistic or who do not affiliate with an organized religion report moderately higher degrees of depressive symptomatology than do Roman Catholics. In addition, Buenos Aires residents who belong to other, unspecified minority religions also report greater degrees of depression than their Roman Catholic counterparts. While these results maintain, we do not observe parallel results in other Roman Catholic dominant cities, in particular Mexico City, where Roman Catholicism is cited as the religious denomination of over 90% of respondents. At the other end of the spectrum, and also consistent with our hypotheses, older adults who report atheism or no religious affiliation report significantly fewer depressive symptoms than Roman Catholics in Bridgetown, Barbados, a city with very mixed religious traditions and in which Roman Catholicism is in the minority. While preliminary, these results suggest that the mental health advantage associated with a

particular religious affiliation depends on the broader religious belief system and whether one is part of a religious majority or minority.

In terms of religiosity, the results shown in Table 3 are also partially supportive of our hypotheses. Specifically, a significant, positive association between religiosity (i.e., indicating the importance of religion in one's daily life) and depressive symptoms is observed in Havana, the city in our LAC cross-national analysis where religious affiliation and religiosity are arguably the most complex and laden with historical meaning. Although Roman Catholicism officially holds sway as the dominant religion and can be freely practiced in the current era, older adults in the sample will have faced restrictions against religious practice and endured an era in which Catholics faced discrimination in many Cuban social institutions, an era in which many Catholics sought exile in the United States. Having survived an era of religious persecution, so that many Cubans continue to elect to keep their faith private (Oliva 1994), the heightened depression observed among Havana's older adults who report a high degree of religiosity is intriguing. The uniqueness of the Cuban situation, notwithstanding, it is a pattern that conforms to our hypothesis that religiosity will exhibit a positive association with depressive symptoms in societies that are relatively secular in nature. The association between religiosity and depressive symptoms also lends weak support to our hypothesis in the context of Buenos Aires and Sao Paulo. In these two cities, which are in the middle range of the religious-secular spectrum, relatively weak religiosity is associated with higher depressive symptom scores. Clearly, the hypothesized relationship between religiosity and depressive symptoms does not maintain across all cities of LAC, raising questions about how the particularities of social context and the religious system of beliefs influences the meaning of religion for older adults, the patterns of religious practice and the social relationships that accompany a particular set of religious beliefs.

Following on these initial patterns, which reveal a very strong, positive association between ill health and disability and depression in all of the seven cities under investigation, we plan to conduct further analyses which explore whether the negative associations between self-reported health and disability and depression are moderated under differing degrees of religiosity. It may be that religion and religiosity come to matter more at particular stages in the life course, such as at times when older adults suffer from ill health and functional limitations. Numerous studies have shown that depression is highly correlated with physical pain (e.g. Pamerlee, Katx and Lawton 1991; Geerlings et al 2002; Bair et al 2003) and that it is comorbid with a range of chronic illnesses such as diabetes, asthma and arthritis (Black 1999; Blazer et al 2002; Moussavi et al 2007). We hypothesize that, especially in societies where a dominant religious belief system holds sway, the positive association between ill health and depression will be attenuated in older adults who indicate a strong degree of religiosity. A significant interaction effect, such that strong religiosity lessens the degree of depressive symptoms in older adults who are disabled or in poor health, would be consistent with the tenets of religious coping and health status. Interactions between self-rated health and religiosity are also tested to determine whether religious commitment is protective when older adults are in a vulnerable state of health.

Despite the limitations of measurement and cross-sectional data, these results provide an initial glimpse of the associations that maintain across religious denomination, religiosity and depression in a rapidly aging region of great religious diversity and shifting religious beliefs. The comparative analysis of cities across the LAC region provide novel insights into the ways that relationships among religion and health are contextualized. Religion and religiosity may be more or less protective of health depending upon the extent to which they are typify the broader cultural milieu.

Figure 1: Depressive Symptoms Experienced by Older Adults by City of Residence, showing mean, median and standard deviation

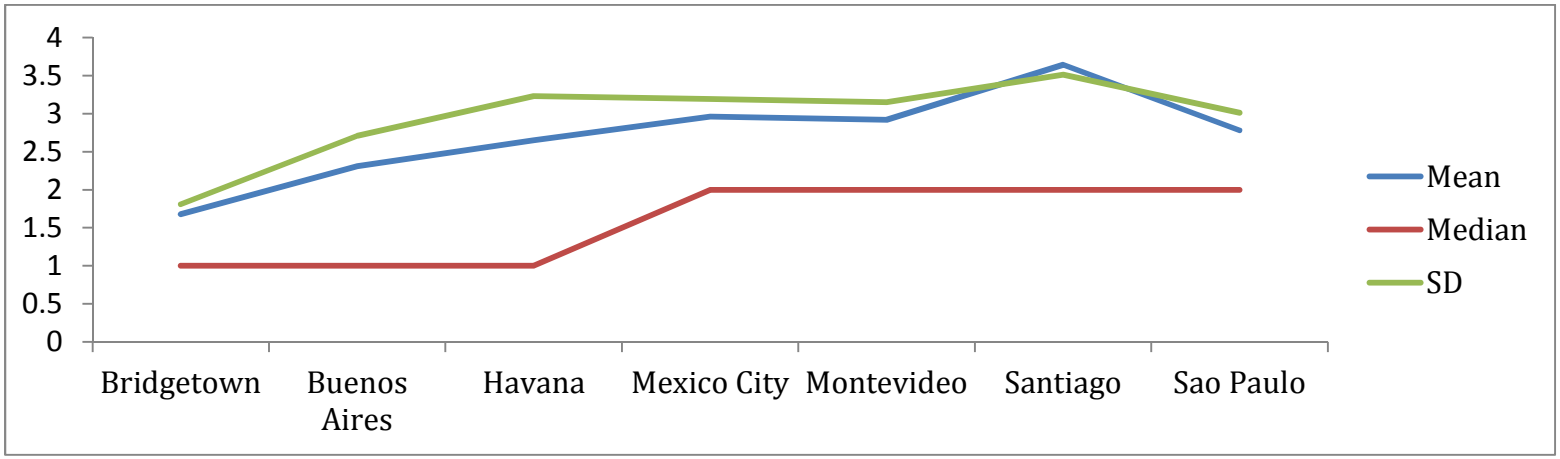


Figure 2: Percentage Distribution of Older Adults, in Each City, Indicating Religion is Very Important to their Lives

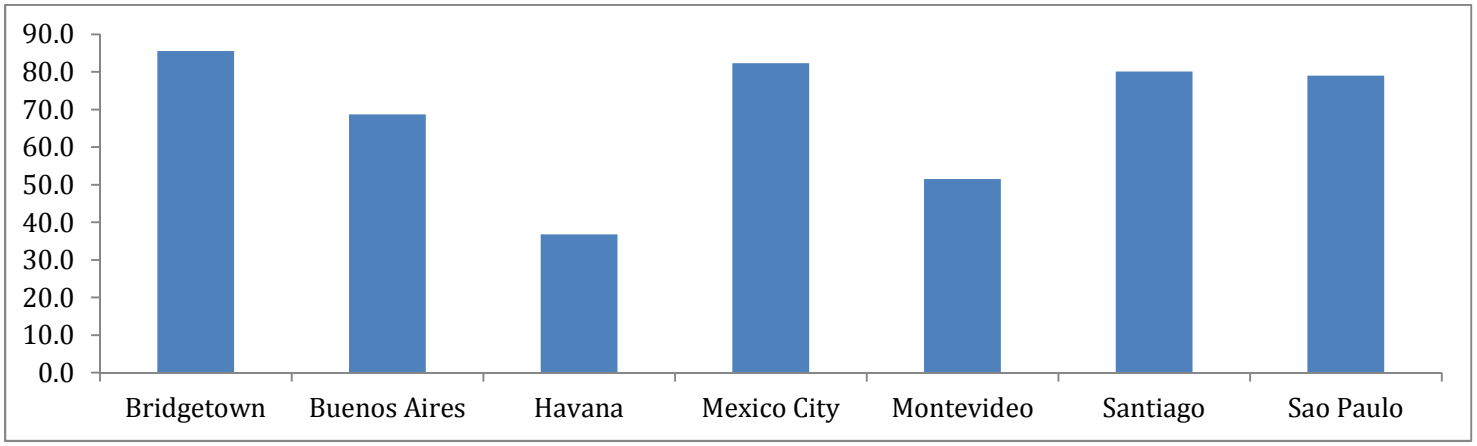

Table 1. Descriptive Statistics: Older Adult Demographic, Health Status and Religious Belief Variables, SABE 2000

| | Buenos Aires, Argentina | Bridgetown, Barbados | Sao Paulo, Brazil | Santiago, Chile | Havana, Cuba | Mexico City, Mexico | Montevideo, Uruguay |
|---|---|---|---|---|---|---|---|
| Religious Affiliation (%) | | | | | | | |
| Roman Catholic | 84.39 | 5.79 | 72.67 | 78.51 | 42.05 | 91.38 | 68.15 |
| Protestant/Evangelical | 7.97 | 42.48 | 17.33 | 14.55 | 4.2 | 1.93 | 6 |
| Other | 20.92 | 25.99 | 7.86 | 2.28 | 11.34 | 4.84 | 7.13 |
| None/Atheist | 4.54 | 20.92 | 2.13 | 4.31 | 42.41 | 1.76 | 18.48 |
| Missing | 0.22 | 4.83 | 0 | 0.34 | 0 | 0.09 | 0.24 |
| Importance of Religion in Life (%) | | | | | | | |
| Important | 69.88 | 91.6 | 87.04 | 80.78 | 37.61 | 84.02 | 51.55 |
| Somewhat Important | 16.28 | 5.23 | 8.53 | 11.52 | 11.7 | 12.36 | 23.16 |
| Not Very Important | 5.87 | 1.54 | 1.89 | 2.2 | 3.36 | 1.41 | 6.53 |
| No religion/atheistic | 7.97 | 1.63 | 2.54 | 5.5 | 47.33 | 2.21 | 18.76 |
| Mean Geriatric Depression Score | 2.43 | 1.68 | 2.62 | 3.81 | 2.69 | 3.04 | 2.82 |
| Poor Self-reported Health (%) | 5.43 | 5.05 | 9.31 | 21.32 | 12 | 32.13 | 6.47 |
| Has ADL or IADL limitation (%) | 32.78 | 26.76 | 45.01 | 37.31 | 33.17 | 19.4 | 24.11 |
| Gender (%) | | | | | | | |
| Male | 37.1 | 60.82 | 41.78 | 34.52 | 37.97 | 40.65 | 35.44 |
| Female | 62.9 | 39.18 | 58.22 | 65.48 | 62.03 | 59.35 | 64.56 |
| Age (mean) | 70.48 | 72.06 | 73.25 | 71.37 | 71.59 | 69.67 | 70.84 |
| Currently Married (%) | 45.52 | 34.54 | 52.86 | 43.06 | 33.59 | 48.99 | 49.03 |
| Education Attainment (%) | | | | | | | |
| No Education | 6.42 | 2.56 | 31.27 | 16.67 | 5.1 | 25.11 | 6.55 |
| Primary | 66.11 | 78.13 | 60.56 | 54.15 | 54.83 | 55.49 | 61.57 |
| High school Education | 17.61 | 14.42 | 3.64 | 18.02 | 32.99 | 12.38 | 16.91 |
| Greater than HS Education | 9.52 | 4.01 | 3.69 | 6.94 | 6.54 | 6.23 | 13.19 |
| Missing Education Info | 0.33 | 0.88 | 0.83 | 4.23 | 0.54 | 0.79 | 1.78 |
| Economic Insecurity (%) | 65.89 | 58.25 | 67.9 | 68.1 | 78.52 | 48.55 | 53.56 |
| Number of Living Sons (Mean) | 1.39 | 1.96 | 1.81 | 2.05 | 1.64 | 2.66 | 1.5 |
| Number of Living Daughters (Mean) | 1.3 | 2.04 | 1.94 | 2.14 | 1.63 | 2.66 | 1.44 |
| Lives with 1+ Grandchildren (%) | 21.82 | 27.88 | 26.12 | 45.77 | 50.27 | 38.02 | 15.7 |
| Total Sample Size (N) | 903 | 1,248 | 1,922 | 1,182 | 1,776 | 1,139 | 1,236 |

Table 2. OLS Regression Analysis of Geriatric Depression Scale among Older Adults in Latin America and the Caribbean, Select Results

| | Buenos Aires, Argentina | Bridgetown, Barbados | Sao Paulo, Brazil | Santiago, Chile | Havana, Cuba | Mexico City, Mexico | Montevideo, Uruguay |
|---|---|---|---|---|---|---|---|
| R Experiences Economic Insecurity | 1.004** | 0.547** | 0.468** | 0.755** | 0.607** | 0.964** | 0.474** |
| | (0.192) | (0.104) | (0.145) | (0.208) | (0.183) | (0.182) | (0.170) |
| R Suffers from 1+ ADL or IADL Limitation | 1.765** | 1.042** | 0.861** | 1.532** | 0.903** | 1.781** | 2.181** |
| | (0.203) | (0.115) | (0.145) | (0.218) | (0.175) | (0.206) | (0.193) |
| Poor Self-reported health | 2.086** | 1.540** | 1.932** | 2.822** | 2.892** | 1.851** | 2.700** |
| | (0.393) | (0.220) | (0.226) | (0.241) | (0.233) | (0.231) | (0.325) |
| Religion: Evangelical (ref: Catholic) | -0.344 | -0.155 | -0.256 | -0.325 | 0.605 | -0.399 | -0.344 |
| | (0.325) | (0.213) | (0.174) | (0.265) | (0.376) | (0.631) | (0.334) |
| Religion: Other (ref: Catholic) | 0.880+ | -0.295 | -0.176 | -0.716 | 0.016 | -0.592 | 0.466 |
| | (0.515) | (0.220) | (0.241) | (0.613) | (0.249) | (0.406) | (0.306) |
| No Religion/Atheist (ref: Catholic) | 0.802+ | -0.486* | 0.364 | -0.497 | -0.146 | -0.820 | 0.077 |
| | (0.422) | (0.224) | (0.447) | (0.459) | (0.173) | (0.664) | (0.211) |
| Religion - Missing/No Response | -1.571 | 0.160 | | 0.420 | | -3.899 | 2.322 |
| | (1.815) | (0.294) | | (1.570) | | (3.198) | (1.594) |
| Constant | -4.387 | 8.098* | -7.304 | 0.896 | -6.949 | -5.435 | 10.576+ |
| | (7.080) | (3.662) | (4.459) | (6.813) | (4.818) | (6.777) | (6.318) |
| N | 903 | 1243 | 1921 | 1182 | 1667 | 1137 | 1234 |
| p | 0.000** | 0.000** | 0.000** | 0.000** | 0.000** | 0.000** | 0.000** |
| r2_a | 0.188 | 0.159 | 0.108 | 0.229 | 0.171 | 0.205 | 0.219 |
| bic | 4365.533 | 4905.204 | 9521.225 | 6168.999 | 8497.871 8 | 5786.456 5 | 6096.859 |

+ p<0.10, * p<0.05, ** p<0.10

Table 3. OLS Regression Analysis of Geriatric Depression Scale among Older Adults in Latin America and the Caribbean, Select Results

| | Buenos Aires, Argentina | Bridgetown, Barbados | Sao Paulo, Brazil | Santiago, Chile | Havana, Cuba | Mexico City, Mexico | Montevideo, Uruguay |
|---|---|---|---|---|---|---|---|
| R Experiences Economic Insecurity | 1.045** | 0.544** | 0.578** | 0.756** | 0.603** | 0.942** | 0.494** |
| | (0.188) | (0.107) | (0.148) | (0.208) | (0.183) | (0.182) | (0.171) |
| R Suffers from 1+ ADL or IADL Limitation | 1.968** | 1.015** | 1.486** | 1.518* | 0.951** | 1.757** | 2.176** |
| | (0.199) | (0.118) | (0.148) | (0.218) | (0.176) | (0.206) | (0.193) |
| Poor Self-reported health | 1.889** | 1.521** | 2.593** | 2.820* | 2.857** | 1.823** | 2.682** |
| | (0.384) | (0.226) | (0.249) | (0.242) | (0.233) | (0.231) | (0.326) |
| Religion is Somewhat Important (Ref: Very Important) | 0.687** | 0.812** | 0.082 | 0.034 | -0.658** | 0.260 | 0.034 |
| | (0.231) | (0.221) | (0.241) | (0.291) | (0.168) | (0.270) | (0.198) |
| Religion Not Important (Ref: Very Important) | 0.974** | 0.162 | 1.498** | 0.071 | 0.075 | 1.132 | 0.120 |
| | (0.367) | (0.400) | (0.490) | (0.632) | (0.244) | (0.748) | (0.335) |
| No Religion/Atheist (Ref: Very Important) | 0.874* | -0.705+ | -0.109 | -0.431 | 0.051 | -0.704 | 0.085 |
| | (0.414) | (0.421) | (0.436) | (0.461) | (0.417) | (0.664) | (0.223) |
| Religiosity Missing (Ref: Very Important) | -2.804** | -0.192 | -2.310 | -0.289 | -0.216 | 0.013 | 1.898 |
| | (0.484) | (0.965) | (1.925) | (0.846) | (1.332) | (1.354) | (1.941) |
| Constant | -1.300 | 8.948* | 0.763 | 0.313 | -5.741 | -4.928 | 9.414 |
| | (6.917) | (3.737) | (5.321) | (6.822) | (4.803) | (6.776) | (6.354) |
| N | 903 | 1166 | 1690 | 1181 | 1667 | 1133 | 1226 |
| p | 0.000** | 0.000** | 0.000** | 0.000* | 0.000** | 0.000** | 0.000** |
| r2_a | 0.230 | 0.161 | 0.170 | 0.227 | 0.178 | 0.203 | 0.217 |
| bic | 4317.672 | 4599.852 | 8298.018 | 6167.552 | 490.039 | 763.898 | 6058.198 |

Source: SABE 2000

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