

Religiosity Moderates the Relationship between Income Inequality and Life Satisfaction across the Globe

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Abstract

This paper reports two studies that sought to examine whether religiosity moderates the relationship between income inequality and life satisfaction. Practice-based and belief-based aspects of religion were both included in the analyses. Using multi-level analyses on 85 nations across the world ($N = 217,591$) and 27 European nations ($N = 49,763$), we found evidence in support of our hypothesis that religiosity mitigates the negative influence of income inequality on life satisfaction. Our results also indicate that it is religious belief, not religious practice, that functions as a buffer in the relationship between income inequality and life satisfaction. The importance and implications of the results are discussed.

Keywords: income inequality, the GINI, religiosity, subjective well-being, life satisfaction, happiness

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Introduction

For the last 30 years, many nations around the world have observed continual increases in income inequality (Atkinson & Piketty, 2007). This has caused many social scientists to investigate the effects of income inequality on societies and individuals, although few psychologists have investigated the issue (Oishi, Kesebir, & Diener, 2011). The relationship between income inequality and subjective well-being “is generally hypothesized to be negative” (Senik, 2009, p. 12), although the evidence has been described as “mixed” (Dolan, Peasegood, & White, 2008, p. 108). Whereas many researchers have argued that income inequality has negative effects on mental health and subjective well-being (e.g., Oishi et al., 2011; Pickett & Wilkinson 2010; Verme, 2011), Rözer and Kraaykamp (2012) and Berg and Veenhoven (2010) found a slightly positive relationship between income inequality and subjective well-being in a large international sample.

Several studies and reviews have argued that the relationship between income inequality and subjective well-being will differ across cultures because of divergent beliefs, for example, about the fairness of income inequality and the extent of income mobility (Alesina, Di Tella, & MacCulloch, 2004; Dolan et al., 2008; Napier & Jost 2008; Oishi et al., 2011; Savani & Rattan, 2012; Senik, 2009). Indeed, it is plausible that some members of a population find income inequality inherently unfair, while others see it as important for individual and national economic progress. It is also plausible that the proportions of people with these beliefs vary in different cultural and economic contexts.

Despite many studies investigating the relationship between income inequality and subjective well-being, few of them have looked outside of Europe and North America, potentially leading to an under-appreciation of cultural moderators of this relationship. To address this issue, this paper investigates whether an important psychological variable,

religiosity, moderates the relationship between income inequality and subjective well-being across a wide range of Western and non-Western nations.

Religiosity as a Moderator

The mixed results for the relationship between income inequality and subjective well-being suggest competing pressures, i.e., income inequality is probably both positively and negatively linked to subjective well-being in different ways and in different contexts (Berg & Veenhoven, 2010). Regardless of the exact net relationship between income inequality and subjective well-being, negative effects are likely to be present in the relationship, and those effects might be buffered by religiosity. Religiosity is a broad concept, often described as incorporating “various dimensions associated with religious beliefs and involvement” (Bergan & McConatha, 2001, p. 24).

Studies have shown that religiosity tends to act as a buffer on relationships between many negative life circumstances and mental health or subjective well-being (Diener, Tay, & Myers, 2011; Inglehart, 2010; Lazarus, 1993; Ryff, Singer, & Palmersheim, 2004; Smith, McCullough, & Poll, 2003; Williams, Larson, Buckler, Heckmann, & Pyle, 1991), including poverty (Gebauer, Nehrlich, Sedikides, & Neberich, 2012) and injustice (Joshanloo & Weijers, 2015). This religiosity-as-buffer effect is often explained with reference to the Terror Management theory of religion (Greenberg, Pyszczynski, & Solomon, 1986) or the Life Stress paradigm (Ellison, 1994; Schnittker, 2001). With both kinds of explanation, religious belief or participation is argued to quell various forms of anxiety or distress, such as by instilling the belief that no matter how bad life might seem, there is nevertheless a good, God-given, reason for why it is this way (Hackney & Sanders, 2003).

If the negative effects of poverty and injustice on subjective well-being are buffered by religiosity (e.g., Gebauer et al., 2012; Joshanloo & Weijers, 2015), then religiosity might

also buffer the negative effects of the related concept, income inequality, on subjective well-being. Those with strong religious beliefs might find the negative aspects of income inequality in their country less stressful or depressing because of their belief that God will either correct this problem or has permitted or caused this problem for an important reason. Therefore, the religiosity-as-buffer hypothesis predicts that the negative effect of income inequality on subjective well-being reduces as religiosity increases. The main aim of this paper is to report on two studies that cross-culturally examine this prediction.

Religiosity is a not a unidimensional construct. For example, researchers across fields have distinguished between religious belief and religious participation (e.g., Ben-Nun Bloom & Arikan, 2013; Norris & Inglehart, 2011; Saroglou, 2011). Religious belief measures the subjective or self-identified importance of religion or God in an individual's life, whereas religious participation measures the frequency of religious practice (e.g., prayer or attendance at services of worship). Although these two aspects of religion tend to be positively related, they have been found to have somewhat different relationships with other variables. For example, Bloom and Arikan (2012) found that these two dimensions of religiosity have differential effects on attitudes towards democracy. A subsidiary aim of this paper was to report on which aspects of religiosity, if any, are most important in the buffering role of religion. To this end, we include both religious belief and religious participation as potential moderators in our analyses. We also control for religious affiliation, as this is another important aspect of religiosity, and it allows us to examine whether our findings hold across major religious affiliations.

Study 1

This study examines our hypotheses using data from the most recent waves of the World Values Survey and European Values Study. The data were simultaneously subject to

two levels of analysis (individual and national) using multi-level modelling (Hox, 2010). In multi-level analysis, both individual- and cultural-level predictors can be used, which enables the investigation of cross-level interactions between predictors, and makes this kind of analysis the most appropriate for this study. We also included national economic prosperity as a control variable because it might independently affect our variables of interest, as implicated by its correlations with life satisfaction (e.g., Di Tella, MacCulloch, & Oswald, 2003; Helliwell, 2003) and religiosity (e.g., Pew Forum on Religion & Public Life, 2007; Barro & Mitchell, 2004). Furthermore, when cross-culturally investigating the relationship between income inequality and subjective well-being, Berg and Veenhoven (2010) found that controlling for wealth significantly affected the relationship, even changing negative relationships to positive ones.

Method

Participants

The data are drawn from the World Values Survey and European Values Study (EVS, 2011; WVS, 2009). These surveys are large-scale surveys on human values and norms that have been conducted in developing and industrialized nations in several waves since 1981. These sources provide data from representative national samples of over 80 societies that contain 85% of the world's population. We combined data from all waves of the World Values Survey and European Values Study from 1999 to 2010 (i.e., 1999–2004, 2005–2007, and 2008–2010 waves) in the present study. Data related to a total of 217591 participants from 85 nations who completed all measures of the study were used in our analyses. The included countries, sample sizes, and national-level means of the variables under study are reported in Table 1.

Measures

Life satisfaction. Personal-level life satisfaction scores were used as the outcome in our analyses. Participants answered the question “All things considered, how satisfied are you with your life as a whole these days?” on a 10-point scale ranging from 1 = *completely dissatisfied* to 10 = *completely satisfied*.

Importance of God. Religious belief/value was measured with participants’ answers to the question “How important is God in your life?” on a 10-point scale ranging from 1 = *not at all important* to 10 = *very important*. This variable was group-mean centered.

Religious participation. The second measure of religiosity tracks the frequency of participants’ attendance at religious services. To measure this, we used participants’ answers to the question “Apart from weddings, funerals and christenings, about how often do you attend religious services these days?” on an 8-point scale ranging from 1 = *more than once a week* to 8 = *never, practically never*. The responses were reverse-coded such that higher scores indicated a higher frequency of religious participation. This variable was group-mean centered.

Religious affiliation. We controlled for religious affiliation to see if our results would hold across various religious denominations. All religious affiliations that accounted for more than one percent of the sample were recoded into dummy variables, and added to the model. These affiliations include Buddhist, Hindu, Muslim, Evangelical, Orthodox, Protestant, Roman Catholic, and Shia. The left-out category included all other religious affiliations and those not affiliated with any religion.

National income inequality. The income Gini index was used to measure income inequality in the nations of the study. This index is a “measure of the deviation of the distribution of income (or consumption) among individuals or households within a country from a perfectly equal distribution. A value of 0 represents absolute equality, a value of 100

absolute inequality” (United Nations Development Programme, 2013, p. 155). The most recent measurement available from 2000–2010 was used (obtained from Association of Religion Data Archives, 2011). This variable was grand-mean centered.

National economic prosperity. To measure the economic prosperity of the nations in the study, the economy sub-index of the 2012 Legatum Prosperity Index was used. This index measures “countries’ performance in four key areas: macroeconomic policies, economic satisfaction and expectations, foundations for growth, and financial sector efficiency” (Legatum Institute, 2012, p. 12). The economy index ranges from -6.78 to 3.33. This variable was grand-mean centered.

Other covariates. Age, gender (male = 0, female = 1), and highest educational level attained (ranging from 1 = *Inadequately completed elementary education* to 8 = *University with degree/Higher education - upper-level tertiary certificate*) were also included in the analysis as control variables, because previous research has indicated that they are significant predictors of life satisfaction (e.g., Alesina et al., 2004; Greene & Yoon, 2004; Witter, Okun, Stock, & Haring, 1984).

Results

We first tested an unconditional means model (Peugh & Enders, 2005), excluding all the predictors. An unconditional means model is identical to a one-way ANOVA with random effects. The results of this analysis reveal the proportion of variability in life satisfaction that exists at the individual and cultural levels before adding covariates. The results showed that there was statistically significant variability both at the individual ($b = 5.16$, Wald $Z = 329.777$, p (one-sided) $< .001$) and cultural ($b = .96$, Wald $Z = 6.46$, p (one-sided) $< .001$) levels. Therefore, it was justifiable to add predictors to the model to explain the existing unexplained variance at both levels.

In a second analysis, we added all the predictors and interaction terms as well as control variables (age, gender, educational level, religious affiliations, and national economic prosperity) to the model. A random-intercept/random slope model was specified, in which the intercept and the slopes of all individual-level variables are allowed to vary across the groups. For reasons of model identification, however, the dummy variables of religious affiliation were specified as fixed effects. The results showed that the slopes of age ($b = .0001$, Wald $Z = 5.869$, p (one-sided) $< .001$), gender ($b = .043$, Wald $Z = 5.166$, p (one-sided) $< .001$), educational level ($b = .005$, Wald $Z = 5.700$, p (one-sided) $< .001$), importance of God ($b = .003$, Wald $Z = 4.577$, p (one-sided) $< .001$), and religious participation ($b = .002$, Wald $Z = 5.126$, p (one-sided) $< .001$), were all significantly variable across the cultures.

Adding all of the variables to the model reduced the unexplained within-culture variability by ($5.16 - 4.97 =$) 0.19 , indicating that adding the variables reduced the unexplained variance in the individual-level scores of life satisfaction by about 4%. The remaining amount of unexplained variance was significantly different from zero ($b = 4.97$, Wald $Z = 329.441$, p (one-sided) $< .001$). Adding all the predictors to the model also reduced the unexplained between-culture variability by ($.96 - .81 =$) 0.15 , reducing about 16% of the unexplained variation in the nation-level scores of life satisfaction. A significant amount of variance remains to be explained by additional covariates ($b = .81$, Wald $Z = 5.95$, p (one-sided) $< .001$).

The estimates for fixed effects are shown in Table 2. Among the demographic variables, age (negative) and educational level (positive) significantly predicted life satisfaction. Among the eight religious affiliations included, Orthodox (negative), Protestant (positive), and Shia (positive) significantly predicted life satisfaction. The two individual-level religiosity variables predicted life satisfaction significantly and positively. National income inequality and national economic prosperity were both significant positive predictors,

albeit income inequality's contribution was relatively small. With regards to our moderation hypotheses, as can be seen in Table 2, the interaction between importance of God and national income inequality was significant, indicating that religious value moderates the relationship between national income inequality and life satisfaction. Yet, the interaction between religious participation and income inequality was not significant, indicating that religious participation does not moderate the relationship between income inequality and life satisfaction.

The moderating effect of importance of God is shown in Figure 1 (produced by Interaction; Soper 2013). The results of a simple slope analysis showed that, for highly religious individuals, the relationship between income inequality and life satisfaction was significant and positive (simple slope = 0.038, $p < 0.001$). For moderately religious individuals, the relationship between income inequality and life satisfaction was significant and slightly positive (simple slope = 0.001, $p < 0.01$). Finally, for lowly religious individuals, the relationship between income inequality and life satisfaction was significant and negative (simple slope = -0.034, $p < 0.001$).

Discussion

Our main prediction was that religiosity would moderate the relationship between national income inequality and individual-level life satisfaction. We used two individual-level moderators: importance of God and religious participation. Our results showed that whereas importance of God was a significant moderator of the relationship between income inequality and life satisfaction, religious participation was not a significant moderator. The schematic representation of the results related to importance of God as presented in Figure 1, clearly demonstrates the buffering effect of importance of God. In highly religious individuals, income inequality was a positive predictor of life satisfaction, whereas for lowly

religious individuals, income inequality was a negative predictor of life satisfaction. This result supports our main hypothesis, and is at least partially explained by the postulations of the previously mentioned theories—that belief in a higher power enables religious devotees to provide positive justifications for negative circumstances and thereby experience less negative effects from those circumstances (e.g., Hackney & Sanders, 2003). It is important to note that we controlled for religious affiliation in our analysis, which discounts the possibility that our findings are valid only in some religious groups. Thus, the moderating effect of religiosity is expected to hold across major religious affiliations worldwide.

Interestingly, of the two measures of religiosity, only importance of God was a significant moderator of the relationship between income inequality and life satisfaction. The most apparent explanation for importance of God having this effect while religious attendance does not can be found in the most common explanations for religiosity's buffering effects against adverse conditions. As mentioned previously, the religiosity-as-buffer effect is often explained with reference to the Terror Management theory of religion (Greenberg, Pyszczynski, & Solomon, 1986) or the Life Stress paradigm (Ellison, 1994; Schnitker, 2001). According to these theories, it is the belief that adverse aspects of income inequality are part of God's plan for the greater good, and so they are nothing to worry about. Belief in the importance of God are likely highly correlated with belief that adverse aspects of income inequality are part of God's plan for the greater good, but regular attendance at religious ceremonies is only likely to promote such beliefs to the extent that attendees also have a strong belief in the importance of God. Consider that many people might be under considerable social pressure to attend religious services, even if they have weak or no belief in God. In other words, religious attendance does not necessitate religious belief, and religious belief seems most likely to drive the religiosity-as-buffer effect, at least in regards to negative feelings about the inherent unfairness of income inequality.

Results related to our covariates also deserve attention. The results of the multi-level modelling for the control variables are generally consistent with previous research. Age was a negative predictor of life satisfaction, which is to be expected when a linear relationship is assumed (Blanchflower & Oswald, 2004). Although many multi-national studies of this type have found that women report slightly higher levels of subjective well-being than men (e.g., Alesina et al., 2004), the result for gender was not significant. This probably reflects the recent decline in the subjective well-being of women in developed nations, in which women generally used to report slightly higher levels of subjective well-being (Stevenson & Wolfers, 2009), and is certainly not an unprecedented result (e.g., Louis & Zhao, 2002). Education turned out to be a relatively strong positive predictor of life satisfaction, among the demographic variables we included, which indicates its importance for individuals' well-being worldwide (Witter, Okun, Stock, & Haring, 1984). However, we did not include personal income in the analysis (due to a large rate of missing values on the variables related to income in the data set), and it is likely that personal income will explain all or part of the positive effects of educational level on life satisfaction (Helliwell, 2003).

National economic prosperity was a significant predictor of life satisfaction in the analysis, indicating that people who are living in wealthier nations are generally more satisfied with their lives. This finding, when combined with the previously reported correlations between economic prosperity and religiosity at the national-level (e.g., Pew Forum on Religion & Public Life, 2007; Barro & Mitchell, 2004), supports the inclusion of National economic prosperity as a control variable in the present study. Consistent with the results of Berg and Veenhoven (2010) and Rözer and Kraaykamp (2012), we found a relatively weak but positive relationship between national income inequality and life satisfaction. This does not come as surprise, considering recent reviews of the relationship between inequality and life satisfaction (e.g., Senik, 2009), suggesting that national income

inequality is not significantly correlated with life satisfaction. To explore this further, we conducted two separate multi-level analyses. The results showed that when included as a sole predictor of life satisfaction, income inequality was not a significant predictor of individual-level life satisfaction, yet, when economic prosperity is added to the model, income inequality becomes a positive (albeit weak) predictor. Therefore, it seems that this positive relationship is a result of accounting for economic prosperity, and may indicate that life satisfaction of individuals living in nations where income inequality co-occurs with higher economic prosperity is higher than in nations where poverty and inequality are both high. This result probably reflects one of the bases for this study; the idea that the relationship between national income inequality and life satisfaction is affected by competing mechanisms with different strengths in different cultural and economic contexts. Study 2 sought to replicate these findings using a more recent multinational data set and slightly different scales.

Study 2

In this study, we use data from 27 European nations to retest our main hypotheses. Due to the availability of data, some of the items used are slightly different. For example, in this study we included a question about the frequency of prayer which was not available in Study 1. Moreover, the multinational sample we use in this study is somewhat different from that used in the first study. For instance, European countries are above the world average on many socio-economic indicators (e.g., Legatum Institute, 2012). Relative to the nations used in Study 1, the European nations in Study 2 are on average less religious and more secularized (Norris & Inglehart, 2011). In sum, the present study sought to replicate the findings of Study 1, using slightly different items and a different selection of nations.

Method

Participants

The data are drawn from the sixth round of the European Social Survey (2012), which was conducted in 2012. The European Social Survey has been conducted in over 30 European countries since 2001. The project relies on random sampling procedures to produce representative samples. The sixth round is the most recent wave, which includes questions related to religiosity and well-being. Data related to a total of 49763 participants from 27 nations who completed all measures of the study were used in the present study. The included countries, sample sizes, and national-level means of the variables under study are reported in Table 3.

Measures

Life satisfaction. Participants answered the question “All things considered, how satisfied are you with your life as a whole nowadays?” on an 11-point scale ranging from 0 = *extremely dissatisfied* to 10 = *extremely satisfied*.

Self-identified religiosity. The extent of participants’ self-assessed belief in and association with religion was measured with their answers to the question “Regardless of whether you belong to a particular religion, how religious would you say you are?” on an 11-point scale ranging from 0 = *not at all religious* to 10 = *very religious*. This variable was group-mean centered. This measure is referred to as “religiosity” in Table 4 and Figure 2.

Religious participation. To measure participants’ attendance at religious services, we used participants’ answers to the question “Apart from special occasions such as weddings and funerals, about how often do you attend religious services nowadays?” on a 7-point scale ranging from 1 = *every day* to 7 = *never*. The responses were reverse-coded such that higher

scores indicated a higher frequency of religious participation. This variable was group-mean centered.

Prayer. The frequency of prayer was measured using the item “Apart from when you are at religious services, how often, if at all, do you pray?” on a 7-point scale ranging from 1 = *every day* to 7 = *never*. The responses were reverse-coded such that higher scores indicated a higher frequency of prayer. This variable was group-mean centered.

Religious affiliation. We controlled for religious affiliation to see if our results would hold across various religious denominations. All religious affiliations that accounted for more than 1000 participants in the overall sample were recoded into dummy variables, and included in the analysis. These affiliations include Roman Catholic, Protestant, Eastern Orthodox, Judaism, and Islam. The left-out category included all other religious affiliations, and those not affiliated with any religion.

Other covariates. The same national income inequality and national economic prosperity indices used in Study 1 were also used here. Age, gender (male = 0, female = 1), and educational level (ranging from 0 = *not completed ISCED level 1* to 800 = *ISCED 6, doctoral degree*) were also included. Finally, we measured satisfaction with household’s income using the item “Which of the descriptions on this card comes closest to how you feel about your household’s income nowadays?” with responses ranging from 1 = *living comfortably on present income* to 4 = *finding it very difficult on present income*. The responses were reverse-coded such that higher scores indicated higher satisfaction.

Results

We first tested an unconditional means model excluding all the predictors. The results showed that there was statistically significant variability both at the individual ($b = 4.64$, Wald $Z = 157.69$, p (one-sided) $< .001$) and cultural ($b = 1.10$, Wald $Z = 3.59$, p (one-sided) $<$

.001) levels. In a second analysis, we added all the predictors and interaction terms as well as control variables (age, gender, educational level, satisfaction with household's income, religious affiliations, and national economic prosperity) to the model. A random-intercept/random slope model was specified, in which both the intercept and the slopes of individual-level predictors are allowed to vary across the nations. For reasons of model identification, however, educational level and the dummy variables of religious affiliation were specified as fixed effects. The results showed that the slopes of age ($b = .000$, Wald $Z = 3.216$, p (one-sided) $< .001$), gender ($b = .012$, Wald $Z = 2.030$, p (one-sided) $< .05$), household income satisfaction ($b = .074$, Wald $Z = 3.425$, p (one-sided) $< .001$), religiosity ($b = .001$, Wald $Z = 2.424$, p (one-sided) $< .01$), religious participation ($b = .002$, Wald $Z = 1.965$, p (one-sided) $< .05$), and prayer ($b = .002$, Wald $Z = 2.494$, p (one-sided) $< .01$), were all significantly variable across the nations.

Adding all of the variables as predictors to the model reduced the unexplained within-culture variability by $(4.64 - 3.88 =) 0.76$, accounting for about 16% of the variability in the individual-level scores of life satisfaction. The remaining amount of unexplained variance is significantly different from zero ($b = 3.88$, Wald $Z = 157.259$, p (one-sided) $< .001$). Adding the predictors to the model also reduced the unexplained between-culture variability by $(1.10 - .92 =) 0.18$, indicating that adding all the variables to the model reduced the explained national-level variance in life satisfaction scores by about 16%. A significant amount of variance remains to be explained by additional covariates ($b = .92$, Wald $Z = 3.229$, p (one-sided) $< .001$).

The estimates for fixed effects are shown in Table 4. Among the demographic variables, age (negative) and satisfaction with household income (positive) significantly predicted life satisfaction. Among the five religious affiliations, Judaism (positive) and Islam (negative) significantly predicted life satisfaction. Self-identified religiosity and religious

participation predicted life satisfaction significantly and positively, whereas prayer was a significant negative predictor. National income inequality and national economic prosperity were not significant predictors of life satisfaction. With regards to our moderation hypotheses, as can be seen in Table 4, the interactions between religiosity (i.e., self-identified religiosity) and national income inequality was significant, indicating that religiosity moderates the relationship between national income inequality and life satisfaction. However, the interactions between religious participation and the frequency of prayer with income inequality were not significant, indicating that these two variables do not moderate the relationship between income inequality and life satisfaction.

The moderating effect of national religiosity is shown in Figure 2 (produced by Interaction; Soper 2013). The results of a simple slope analysis showed that, for highly religious individuals, the relationship between income inequality and life satisfaction was significant and negative (simple slope = -0.038 , $p < 0.001$). For moderately religious individuals, the relationship between income inequality and life satisfaction was stronger (simple slope = -0.053 , $p < 0.001$), and for lowly religious individuals, the negative relationship between income inequality and life satisfaction was the strongest (simple slope = -0.067 , $p < 0.001$).

Discussion

Our main prediction was that religiosity would moderate the relationship between national income inequality and individual-level life satisfaction. We used three individual-level moderators: self-identified religiosity, religious participation, and frequency of prayer. Only self-identified religiosity was a significant moderator of the relationship between income inequality and life satisfaction. A schematic representation of the results related to self-identified religiosity, as presented in Figure 2, clearly demonstrates the buffering effect.

The relationship between income inequality and life satisfaction became progressively less negative as self-identified religiosity increases. Furthermore, since we controlled for religious affiliation in our analysis, the moderating effect of self-identified religiosity is expected to hold across major religious affiliations worldwide. So, again, this result supports our main hypothesis—that religiosity can buffer some of the negative psychological effects of income inequality.

However, only the belief-based measure of religiosity—self-identified religiosity—was a significant moderator of the relationship between income inequality and life satisfaction. The two practice-based measures of religiosity—religious participation and frequency of prayer—were not significant moderators of the relationship between income inequality and life satisfaction. This is consistent with the findings of the first study. Again, the most plausible explanation for this failure of the practice-based measures of religiosity to buffer the negative effects of income inequality is that practice-based measures of religiosity are not as direct a measures of religious belief, and religious belief usually brings with it the perception that hardships are not as bad as they seem because they are part of God's plan for a greater good (e.g., Hackney & Sanders, 2003).

As with the previous study, the results of the multi-level modelling for the control variables are generally consistent with previous research. The individual-level covariates returned similar significant relationships with life satisfaction, except for education level. Education level was not significant in this study, most likely due to the inclusion of satisfaction with household income in this study and not the previous one.

Turning to the national-level covariates, national economic prosperity was not a significant predictor of life satisfaction in this study. This result differs from the significant positive association between national economic prosperity and life satisfaction in the first study, again, most likely due to the inclusion of satisfaction with household income in the

present analysis. It is quite plausible that the beneficial effects of living in a wealthy nation are mostly felt through satisfaction with personal prosperity.

The relationship between national income inequality and life satisfaction also returned a slightly different result from the first study. In this study, consistent with a recent review (Senik, 2009), national income inequality was not a significant predictor of life satisfaction, although it was nearly so. Interestingly, the association was negative in the present study, whereas it was positive in the first study. This association may be caused by the fact that income inequality is relatively low in many European nations, and thus living in a nation with a higher level of income inequality within the European region could cause higher levels of dissatisfaction, as the higher income inequality is more noticeable and seems less fair. Another reason for the difference in associations could be that European nations are on average less religious than other nations (Norris & Inglehart, 2011), and considering that the negative effects of inequality on subjective well-being are partly buffered by religiosity, Europe as a region is likely to be more dissatisfied with inequality than more religious regions. Finally, this difference in associations could also be due to the inclusion of satisfaction with household income as a covariate in the present study as well as using a different selection of countries. Whether income inequality causes dissatisfaction with life in general is likely to have a great deal to do with how satisfied you are with your income. This change in the relationship between national income inequality and life satisfaction could be seen as evidence that individual- as well as national-level economic factors seem to affect the inequality-life satisfaction relationship.

General Discussion

The main aim of this paper was to investigate whether the religiosity-as-buffer hypothesis applies to the relationship between income inequality and life satisfaction. In this

context, the religiosity-as-buffer hypothesis predicts that the negative effect of income inequality on subjective well-being reduces as religiosity increases. In two multi-national studies, we found that certain aspects of religiosity did moderate the relationship between income inequality and subjective well-being (measured with life satisfaction); among more religious people, the relationship between income inequality and life satisfaction was not as negative as it was among less religious people. This result demonstrates another domain in which religiosity demonstrates a buffer effect on the negative psychological influences of unfavorable circumstances (for others, see, e.g., Diener, Tay, & Myers, 2011; Gebauer, Nehrlich, Sedikides, & Neberich, 2012; Inglehart, 2010; Joshanloo & Weijers, 2015; Lazarus, 1993; Ryff, Singer, & Palmersheim, 2004; Smith, McCullough, & Poll, 2003; Williams, Larson, Buckler, Heckmann, & Pyle, 1991).

The subsidiary aim of this paper was to report on which aspects of religiosity are most important in this buffering role. Only one measure of religiosity in each study was found to moderate the relationship between national income inequality and life satisfaction: importance of God, in Study 1, and self-indicated religiosity, in Study 2. Religious attendance was not a significant moderator in either study, and frequency of prayer, which was only included in the second study, was also not a significant moderator. The main difference between the significant moderators—importance of God and self-indicated religiosity—and the others seems to be that the significant moderators are belief-based measures of religiosity, whereas the others are practice-based.

Earlier, we presented evidence in support of the notion that the key mechanism in most religiosity-as-buffer effects is the belief that unfavorable circumstances are part of God's plan for a greater good. The main idea was that however dissatisfying circumstances are, everything is running according to God's plan, and, since God is wise, powerful, and good beyond our comprehension, we needn't worry. Put into context, a firm belief in God,

will likely diminish dissatisfaction with high income inequality, as with other potential unjust circumstances (Joshanloo & Weijers, 2015), since the existence of the inequality is likely necessary for some greater good further down the line.

Applying this idea of a strong belief in God reducing dissatisfaction with seemingly unfair circumstances to the current studies might help us to understand why some aspects of religiosity moderate the relationship between income inequality and life satisfaction while others do not. As mentioned, the significant moderators were importance of God and self-identified religiosity. Both of these measures of religiosity seem to tap directly into strength of belief in God. Practice-based measures of religiosity, such as praying and attendance at religious services, on the other hand, do not necessitate a strong belief in God. Of course, prayer and attendance at religious services implies religious belief, but when these two kinds of measures are included in a regression analysis, the belief-based measures or religiosity are likely to strip a lot of the belief-based correlative power out of the attendance-based measures. So, those who report high levels of belief-based religiosity are likely to view the negative aspects of income inequality as being less dissatisfying because they are part of God's plan. Those who report high levels of practice-based religiosity are also somewhat likely to view the negative aspects of income inequality in this way, but mainly to the extent that they also hold a strong belief in God.

Also worthy of discussion in regards to the buffering effects of belief-based and practice-based measures of religiosity is the difference in the extent of the buffering effect revealed by a comparison of Figure 1 and Figure 2. The buffering effect demonstrated in Figure 2 is much less pronounced than the effect shown in Figure 1, meaning that the relevant measure of religiosity has a stronger buffering effect in Study 1 than the relevant measure in Study 2. We propose two possible complimentary explanations for this difference.

The first builds on the immediately prior discussion of the belief-based mechanism that may be the key driver of religiosity's buffering effect. The stronger buffering effect in Study 1 was found for the importance of God measure of religiosity. This measure seems a slightly more direct measure of belief in God than the measure used in Study 2, answers to a question about how religious people think they are. Depending on which religion they subscribe to, someone might be religious without believing in God. Furthermore, someone might experience a strong connection to the practice or institution of their theistic religion while only experiencing a weak connection to the God of their religion.

The second possible reason for religiosity's stronger buffer effect in Study 1 points to a difference in the samples between the two studies. Study 1 investigated 85 nations from around the world, whereas Study 2 was limited to 27 European nations. As a cursory glance at Tables 1 and 3 reveals, the nations in Study 1 cover a broad range of levels of religiosity. Such diversity is less true of the nations in Study 2. As a result of this difference in the variability of religiosity between the two studies, the differences between what constitutes "high", "medium", and "low" religiosity should be smaller in Study 2. Smaller differences between the brackets of religiosity in Study 2 are likely to result in religiosity having a decreased buffering effect.

So, all things considered, the results presented here are consistent with belief-based aspects of religiosity buffering the negative effect of income inequality on subjective well-being. We have identified the ability of religious belief to quell various forms of anxiety or distress, via faith in God and his plan, as the likely psychological mechanism behind this religiosity-as-buffer effect. The present findings concerning the differential functions of religious belief and religious participation are in line with other findings across various fields of investigation that indicate the necessity of taking into account the distinction between

various aspects of religiosity when studying the impacts of religion in various life domains (Ben-Nun Bloom & Arikan, 2013; Norris & Inglehart, 2011; Saroglou, 2011).

Our findings shed new light on some existing riddles regarding income inequality. For example, the United States seems to be much more comfortable than most European nations with the existence of extreme income inequality (Alesina, Di Tella, & MacCulloch, 2004). Previously, this result has been explained by reference to differences in economic views, such as belief in income mobility (Alesina & La Ferrara, 2005). However, based on our results, one could speculate that part of this difference is brought about by higher levels of religiosity in the United States compared to most European nations (Norris & Inglehart, 2011).

Another puzzle about income inequality was identified by Berg and Veenhoven (2010), when they attempted to discover a guideline for adjusting income inequality on utilitarian grounds. Their aim was to see if any particular level of income inequality was particularly conducive to producing the greatest happiness for the greatest number, as measured by national averages of subjective well-being. Berg and Veenhoven did not find evidence for a particular level of income inequality that was conducive to happiness. What was ignored in their study, however, seems to be potential covariates and moderators. To successfully discover a level of income inequality that should be produced on utilitarian grounds, relevant covariates and moderators should also be included in the analyses. Indeed, given the large variations between different nation's cultural and economic factors related to income inequality, not including them may produce untrustworthy results. The results of the present investigation suggest that an important candidate to include in any such analysis is a measure of belief-based religiosity.

In terms of future research, our findings here might usefully be built on by subsequent explorations of the relationship between other forms of inequality and subjective well-being. For example, it might be found that belief-based religiosity has a similar buffering effect on

the negative influence of gender inequality and economic inequality on life satisfaction. As explained by Sen (1997), economic inequality is a broader concept than income inequality, including all relevant economic goods. Indeed, maturation of a body of research along these lines might eventually help achieve policy-related aims, such as Berg and Veenhoven's (2010) aim to discover preferable levels of income inequality, to set economic policy in a way that promotes well-being by taking into account relevant cultural factors, including religiosity.

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Table 1

Sample sizes and mean scores for Study 1

| | Sample size | Life satisfaction | Importance of God | Religious participation | Income Gini | Economic prosperity |
|---------------------|-------------|-------------------|-------------------|-------------------------|-------------|---------------------|
| Denmark | 2406 | 8.32 | 4.04 | 3.05 | 24.70 | 2.13 |
| Colombia | 2996 | 8.31 | 9.67 | 5.32 | 58.50 | 1.00 |
| Mexico | 2979 | 8.20 | 9.40 | 5.65 | 51.60 | 1.43 |
| Iceland | 1708 | 8.05 | 6.06 | 3.11 | 29.30 | .38 |
| Norway | 2092 | 8.04 | 4.19 | 2.82 | 25.80 | 3.26 |
| Ireland | 1880 | 8.03 | 7.48 | 5.62 | 34.30 | 1.91 |
| Guatemala | 992 | 7.94 | 9.72 | 6.48 | 53.70 | .24 |
| Switzerland | 2397 | 7.94 | 6.12 | 3.33 | 33.70 | 3.33 |
| New Zealand | 839 | 7.88 | 5.29 | 2.82 | 36.20 | 1.81 |
| Netherlands | 3477 | 7.88 | 4.93 | 3.13 | 30.90 | 2.48 |
| Austria | 2969 | 7.81 | 6.20 | 4.10 | 29.10 | 2.56 |
| Finland | 2993 | 7.81 | 5.64 | 3.07 | 26.90 | 2.40 |
| Canada | 3983 | 7.80 | 7.43 | 4.10 | 32.60 | 2.76 |
| Sweden | 3008 | 7.69 | 3.96 | 2.35 | 25.00 | 2.79 |
| Brazil | 1481 | 7.64 | 9.64 | 5.43 | 55.00 | 1.59 |
| Venezuela | 1184 | 7.54 | 9.54 | 4.68 | 43.40 | .23 |
| Great Britain | 3321 | 7.53 | 5.09 | 2.85 | 36.00 | 1.86 |
| Belgium | 3320 | 7.52 | 5.02 | 3.10 | 33.00 | 2.08 |
| Argentina | 2239 | 7.48 | 8.41 | 3.98 | 48.80 | .92 |
| Uruguay | 442 | 7.46 | 8.75 | 4.13 | 47.10 | .87 |
| United States | 2385 | 7.46 | 8.39 | 4.88 | 40.80 | 2.12 |
| Slovenia | 3255 | 7.37 | 5.24 | 3.84 | 31.20 | 1.17 |
| Australia | 1350 | 7.31 | 6.04 | 2.92 | 35.20 | 2.65 |
| Trinidad and Tobago | 985 | 7.26 | 9.66 | 5.46 | 40.30 | -.25 |
| Singapore | 1508 | 7.24 | 8.23 | 5.34 | 42.50 | 3.22 |
| Thailand | 1510 | 7.22 | 7.97 | 6.21 | 42.50 | 2.24 |
| Chile | 2081 | 7.21 | 8.74 | 4.23 | 52.00 | 1.79 |
| Spain | 4894 | 7.17 | 5.73 | 3.54 | 34.70 | 1.23 |
| Italy | 4308 | 7.12 | 7.45 | 5.20 | 36.00 | 1.39 |
| Czech Republic | 3424 | 7.11 | 3.81 | 2.52 | 25.80 | 1.68 |
| Germany | 5898 | 7.04 | 4.31 | 3.03 | 28.30 | 2.78 |
| France | 4043 | 6.99 | 4.42 | 2.46 | 32.70 | 2.03 |
| Indonesia | 2842 | 6.94 | 9.71 | 6.35 | 37.60 | 1.09 |
| Croatia | 2409 | 6.93 | 7.22 | 4.79 | 29.00 | .39 |
| Viet Nam | 2361 | 6.88 | 4.98 | 2.91 | 37.80 | 1.25 |
| Nigeria | 2014 | 6.87 | 9.62 | 7.39 | 42.90 | -1.61 |
| Poland | 3421 | 6.86 | 8.29 | 6.05 | 34.90 | .84 |
| Greece | 2463 | 6.78 | 7.62 | 5.18 | 34.30 | -.39 |
| South Africa | 5910 | 6.76 | 9.14 | 5.72 | 57.80 | -.42 |
| China | 490 | 6.76 | 5.21 | 3.28 | 41.50 | 2.59 |
| Japan | 2097 | 6.75 | 4.99 | 3.92 | 24.90 | 2.59 |
| Peru | 2935 | 6.73 | 9.09 | 5.64 | 50.50 | 1.26 |

| | | | | | | |
|------------------------|------|------|-------|------|-------|-------|
| Montenegro | 2326 | 6.71 | 6.77 | 3.57 | 36.90 | -.85 |
| Portugal | 2492 | 6.68 | 7.34 | 4.67 | 38.50 | .86 |
| Philippines | 1198 | 6.65 | 9.56 | 6.10 | 44.00 | .99 |
| Slovakia | 2643 | 6.59 | 6.80 | 4.83 | 25.80 | .67 |
| Bosnia and Herzegovina | 2593 | 6.48 | 7.79 | 4.95 | 36.30 | -1.25 |
| Kyrgyzstan | 1036 | 6.48 | 7.81 | 3.99 | 33.50 | -1.66 |
| Iran | 4785 | 6.42 | 9.50 | 5.19 | 38.30 | -.03 |
| Hong Kong | 1018 | 6.41 | 4.30 | 2.43 | 43.40 | 2.70 |
| Jordan | 2371 | 6.38 | 9.93 | 5.91 | 37.70 | -.71 |
| Estonia | 2378 | 6.36 | 4.37 | 2.95 | 36.00 | .38 |
| South Korea | 2366 | 6.31 | 5.58 | 4.33 | 31.60 | 2.00 |
| Serbia | 3616 | 6.25 | 6.74 | 4.19 | 28.20 | -1.59 |
| Turkey | 7852 | 6.16 | 9.32 | 4.43 | 41.20 | -.07 |
| Mali | 1199 | 6.14 | 9.22 | 6.50 | 39.00 | -.45 |
| Ghana | 1516 | 6.13 | 9.78 | 6.90 | 42.80 | -1.19 |
| Hungary | 2461 | 6.12 | 5.37 | 2.99 | 30.00 | .00 |
| Macedonia | 2369 | 6.11 | 7.66 | 4.78 | 42.80 | -1.04 |
| Zambia | 1413 | 6.08 | 9.18 | 6.29 | 50.70 | -1.31 |
| Morocco | 2248 | 6.07 | 9.95 | 4.49 | 40.90 | 1.43 |
| Romania | 4084 | 5.98 | 8.89 | 5.25 | 32.10 | -.56 |
| Latvia | 2364 | 5.93 | 5.68 | 3.35 | 36.30 | -.25 |
| Azerbaijan | 1412 | 5.91 | 6.96 | 4.38 | 16.80 | -.47 |
| Lithuania | 2230 | 5.91 | 6.46 | 4.42 | 35.80 | -.35 |
| Albania | 2356 | 5.85 | 7.09 | 3.68 | 33.00 | -.66 |
| Bangladesh | 1453 | 5.79 | 9.67 | 5.77 | 31.00 | -.07 |
| Armenia | 1398 | 5.67 | 8.44 | 4.77 | 30.20 | -1.93 |
| Algeria | 1215 | 5.67 | 9.80 | 4.76 | 35.30 | .86 |
| Moldova | 3482 | 5.66 | 8.15 | 4.63 | 37.40 | -1.67 |
| Uganda | 982 | 5.65 | 9.26 | 6.74 | 42.60 | -.61 |
| Belarus | 2274 | 5.62 | 6.24 | 3.80 | 28.80 | -.54 |
| Russian Federation | 5453 | 5.58 | 5.84 | 2.97 | 43.70 | .37 |
| Egypt | 6039 | 5.57 | 9.77 | 4.95 | 32.10 | -.84 |
| Burkina Faso | 1392 | 5.56 | 9.10 | 6.60 | 39.60 | -.72 |
| Ukraine | 3386 | 5.53 | 6.95 | 4.06 | 27.60 | -1.12 |
| Bulgaria | 3156 | 5.53 | 5.59 | 3.88 | 29.20 | -.56 |
| India | 3650 | 5.49 | 8.02 | 5.56 | 36.80 | .50 |
| Georgia | 2897 | 5.22 | 9.11 | 4.80 | 40.80 | -2.11 |
| Ethiopia | 1462 | 5.02 | 9.22 | 6.80 | 29.80 | -1.83 |
| Rwanda | 1499 | 4.97 | 9.45 | 7.64 | 46.70 | -1.34 |
| Iraq | 4463 | 4.90 | 9.84 | 3.87 | 28.60 | -.55 |
| Pakistan | 1691 | 4.85 | 10.00 | 7.09 | 31.20 | -1.26 |
| Zimbabwe | 991 | 3.94 | 9.61 | 6.30 | 50.10 | -6.78 |
| Tanzania | 1093 | 3.87 | 9.61 | 6.89 | 34.60 | -.34 |

Table 2
Hierarchical Linear Modelling Predicting Life Satisfaction (Study 1)

| | <i>b</i> | St. Error | <i>t</i> | Sig. |
|------------------------------------------------------|----------|-----------|----------|------|
| Intercept | 6.268 | .101 | 61.558 | .000 |
| Age | -.004 | .001 | -3.758 | .000 |
| Female | .026 | .025 | 1.072 | .287 |
| Educational level | .122 | .008 | 14.660 | .000 |
| Buddhist | .023 | .052 | .451 | .652 |
| Hindu | .069 | .059 | 1.164 | .245 |
| Muslim | -.039 | .026 | -1.510 | .131 |
| Evangelical | .056 | .043 | 1.292 | .196 |
| Orthodox | -.162 | .025 | -6.334 | .000 |
| Protestant | .096 | .021 | 4.514 | .000 |
| Roman Catholic | .021 | .018 | 1.173 | .241 |
| Shia | .236 | .051 | 4.554 | .000 |
| Importance of God | .053 | .006 | 7.821 | .000 |
| Religious participation | .038 | .005 | 6.439 | .000 |
| National economic prosperity | .335 | .039 | 8.528 | .000 |
| National income inequality | .018 | .007 | 2.394 | .019 |
| Importance of God × national income inequality | .003 | .000 | 3.911 | .000 |
| Religious participation × national income inequality | .000 | .000 | .821 | .414 |

Table 3

Sample sizes and mean scores for Study 2

| | Sample size | Life satisfaction | Religiosity | Religious participation | Prayer | Income Gini | Economic prosperity |
|----------------|-------------|-------------------|-------------|-------------------------|--------|-------------|---------------------|
| Denmark | 1614 | 8.58 | 4.18 | 2.14 | 2.21 | 24.70 | 2.13 |
| Switzerland | 1459 | 8.19 | 4.99 | 2.45 | 3.63 | 33.70 | 3.33 |
| Norway | 1606 | 8.14 | 3.80 | 2.14 | 2.50 | 25.80 | 3.26 |
| Finland | 2167 | 8.12 | 4.98 | 2.19 | 3.12 | 26.90 | 2.40 |
| Iceland | 723 | 7.98 | 5.31 | 2.04 | 3.21 | 29.30 | .38 |
| Sweden | 1805 | 7.87 | 3.20 | 2.15 | 2.25 | 25.00 | 2.79 |
| Netherlands | 1821 | 7.77 | 4.55 | 2.02 | 2.95 | 30.90 | 2.48 |
| Israel | 2322 | 7.52 | 5.07 | 2.94 | 3.48 | 39.20 | 1.71 |
| Germany | 2901 | 7.47 | 4.14 | 2.22 | 2.93 | 28.30 | 2.78 |
| Belgium | 1858 | 7.44 | 4.49 | 1.90 | 2.58 | 33.00 | 2.08 |
| United Kingdom | 2209 | 7.28 | 4.20 | 2.27 | 3.10 | 36.00 | 1.86 |
| Poland | 1759 | 7.09 | 6.20 | 4.05 | 5.07 | 34.90 | .84 |
| Slovenia | 1223 | 6.99 | 4.51 | 2.61 | 2.78 | 31.20 | 1.17 |
| Spain | 1853 | 6.91 | 4.47 | 2.50 | 3.42 | 34.70 | 1.23 |
| Ireland | 2555 | 6.71 | 5.09 | 3.53 | 4.77 | 34.30 | 1.91 |
| Italy | 866 | 6.69 | 5.90 | 3.15 | 4.30 | 36.00 | 1.39 |
| Slovakia | 1764 | 6.53 | 6.10 | 3.35 | 4.19 | 25.80 | .67 |
| Czech Republic | 1754 | 6.51 | 2.16 | 1.81 | 1.84 | 25.80 | 1.68 |
| France | 1952 | 6.40 | 4.52 | 1.94 | 2.53 | 32.70 | 2.03 |
| Estonia | 2326 | 6.18 | 3.45 | 2.14 | 2.13 | 36.00 | .38 |
| Portugal | 2012 | 5.94 | 5.28 | 2.99 | 4.15 | 38.50 | .86 |
| Russia | 2196 | 5.82 | 4.46 | 2.41 | 3.09 | 43.70 | .37 |
| Lithuania | 1924 | 5.82 | 5.62 | 3.20 | 3.48 | 35.80 | -.35 |
| Albania | 1162 | 5.76 | 7.29 | 2.45 | 3.95 | 33.00 | -.66 |
| Hungary | 1877 | 5.57 | 4.03 | 2.11 | 2.84 | 30.00 | .00 |
| Ukraine | 1889 | 5.04 | 5.11 | 3.11 | 4.00 | 27.60 | -1.12 |
| Bulgaria | 2166 | 4.34 | 4.68 | 2.82 | 3.28 | 29.20 | -.56 |

Table 4
Hierarchical Linear Modelling Predicting Life Satisfaction (Study 2)

| | <i>b</i> | St. Error | <i>t</i> | Sig. |
|------------------------------------------------------|----------|-----------|----------|------|
| Intercept | 4.562 | .191 | 23.860 | .000 |
| Age | -.007 | .001 | -4.427 | .000 |
| Female | .052 | .028 | 1.813 | .082 |
| Satisfaction with household income | .929 | .053 | 17.222 | .000 |
| Educational level | .000 | .000 | .662 | .508 |
| Roman Catholic | -.008 | .030 | -.293 | .769 |
| Protestant | .046 | .034 | 1.352 | .176 |
| Eastern Orthodox | -.039 | .045 | -.864 | .387 |
| Judaism | .665 | .107 | 6.172 | .000 |
| Islam | -.207 | .057 | -3.624 | .000 |
| Religiosity | .066 | .007 | 8.475 | .000 |
| Religious participation | .061 | .012 | 4.727 | .000 |
| Prayer | -.039 | .010 | -3.607 | .001 |
| National income inequality | -.025 | .012 | -2.030 | .054 |
| National economic prosperity | .078 | .046 | 1.689 | .104 |
| Religiosity × national income inequality | .003 | .001 | 2.265 | .033 |
| Religious participation × national income inequality | -.004 | .002 | -1.688 | .103 |
| Prayer × national income inequality | .002 | .002 | 1.411 | .171 |

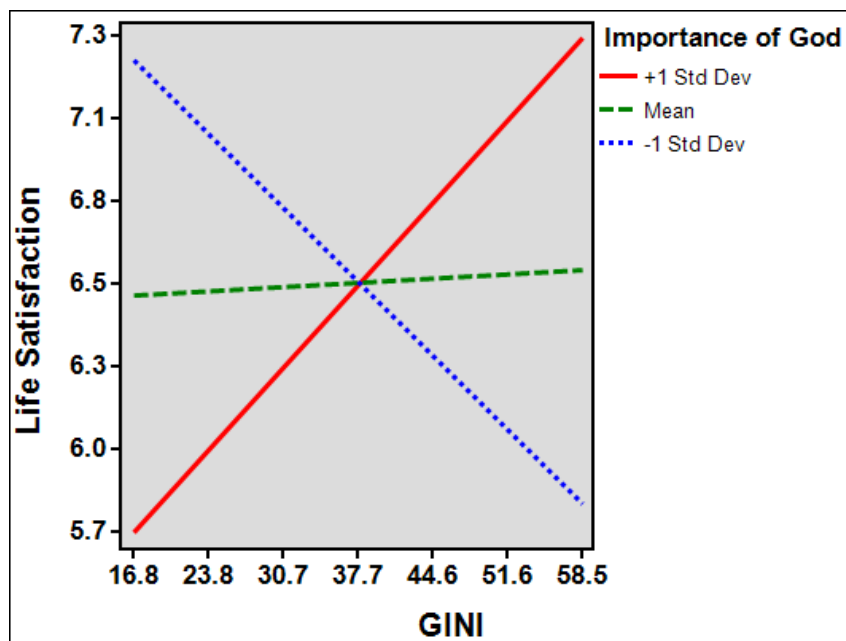


Figure 1. Graphical depiction of the moderation results for Study 1. Individual-level importance of God moderates the relationship between the national-level GINI index and individual-level life satisfaction. Note that the correlation between the GINI and life satisfaction was 0.021 in the whole sample.

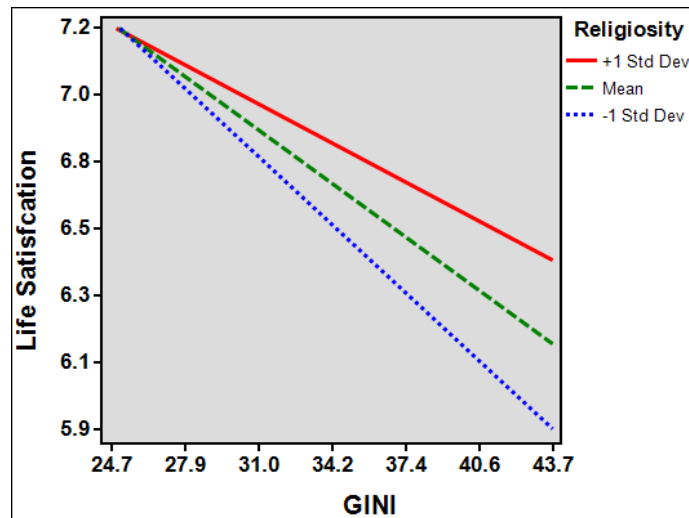


Figure 2. Graphical depiction of the moderation results for Study 2. Individual-level religiosity moderates the relationship between the national-level GINI index and individual-level life satisfaction. The correlation between the GINI and life satisfaction was -0.10 in the whole sample.