Undergraduate Economic Review

Volume 6 | Issue 1 Article 11

2010

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Recommended Citation
Colón-Bacó, Enrique (2010) "The Strength of Religious Beliefs is Important for Subjective Well-Being," *Undergraduate Economic Review*: Vol. 6 : Iss. 1 , Article 11.
Available at: https://digitalcommons.iwu.edu/uer/vol6/iss1/11

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The Strength of Religious Beliefs is Important for Subjective Well-Being

Abstract

What is the relationship between subjective well-being (SWB) and the strength of religious beliefs? A full account of the relationship between SWB and religion must include a measure of the effects of religious beliefs. Unfortunately, the empirical happiness literature focuses on the effects of the social aspects of religious life. I measured the effects of the strength of religious beliefs by using data on the frequency of prayer. I found that stronger religious beliefs are positively correlated with SWB. According to the happiness literature, religion influences SWB by providing meaning and purpose to people's lives; stronger religious beliefs reflect a stronger influence of religion when interpreting life events.1 Studying the social aspects of religion gives only a partial understanding of its relationship to SWB; it is important study the role of religious beliefs to get a more complete understanding of religion‟s effects on well-being.

Keywords

happiness, subjective well-being, religion, prayer, economics, economic psychology, positive psychology

Cover Page Footnote

I would like to thank my advisor Dr. Donald Cox for his guidance, Dr. Carlos Muñoz and Todd Reeves for their comments and suggestions, and Isabel Muñoz for her constant support and help with the entire research, writing, and editing process.

This article is available in Undergraduate Economic Review: https://digitalcommons.iwu.edu/uer/vol6/iss1/11

I. Introduction

This study analyzes the relationship between subjective well-being and the strength of religious beliefs. Religious life has been found to have a positive effect on well-being by the large majority of researchers that have studied this topic. However, researchers have not reached an agreement point on how and why religion increases subjective well-being. The internal workings of this relationship are yet to be understood.

Subjective well-being is the self-reported evaluation of a respondent's happiness and satisfaction. The two measures of subjective well-being are called 'personal happiness' and 'life satisfaction.' Personal happiness consists of data taken from a single question that asks respondents to say how happy they feel with their life as a whole. Life satisfaction is a multi-item measure that compiles data from fives questions that ask respondents how satisfied they are with their friends, families, health, home locations, and leisure time. Both measures have been found to be consistent measures of well-being.[1] However, 'life satisfaction' is a more stable measure of well-being than personal happiness because its data is taken from more than one question; it is less prone to be influenced by temporary emotions and moods.

Religious beliefs are the key component of religious life. In order to have a complete understanding of the relationship between religion and subjective well-being, it is important to account for the effect of religious beliefs. Without the element of belief, religious life would be no different than the life of a basketball player that routinely gets together with his friends on a Sunday afternoon to play basketball and talk about their week. Religion is uniquely powerful in the way that it creates meaning, motivates, and helps believers to cope with traumatic events.[2] Because of this, it cannot be studied as merely a facilitator of social support. It is important to account for the aspect of religion that distinguishes it from other human processes, religious beliefs.

Religion is understood to influence subjective well-being through various ways: the religious community gives people a sense of belonging and provides an important source of social support; religion gives people's lives meaning and purpose; and finally, religion encourages people to lead healthier lifestyles.[3] Even though the literature recognizes the complexity of religious life and the various ways it may influence well-being, the empirical research has focused on measuring the effects of the social aspects of religion. Many studies have found

[1] Diener (1984)
[2] Pargament (2002)
[3] Ellison (1991); Frey & Stutzer (2002)

that ‘attendance to religious services’ is the best predictor of subjective well-being among the religious variables. However, not all researchers agree with the route the literature has taken of reducing religion to simply its social components.

Following the path of researchers like Ed Diener and Kenneth Pargament, this study aims to measure the role of religious beliefs, in the positive relationship between religion and subjective well-being. The variable I used to measure the strength of religious beliefs is frequency of prayer. I chose this measure of strength of religious beliefs because the frequency with which respondents pray reveals the extent to which religion plays a part of their life. According to the happiness literature, religion raises subjective well-being by influencing the way people interpret their experiences and surroundings. Other measures of strength of religious beliefs that have been used are ‘confidence in the existence of God’ and the frequency with which respondents doubted their religious beliefs. These measures do not address the degree to which religion plays a part of the respondent’s life; because of this, the measures do not account for the aspect of religious life the literature recognizes to raise well-being.

The models I used are modified versions of those used by Steven Barkan and Susan Greenwood in 2003. a set of models which is largely representative of the religion-happiness literature. The models have six main explanatory variables: frequency of prayer; attendance to religious services; social interaction with friends, family, and neighbors; and traumatic life events. In addition to those variables I controlled for several socio-demographic factors that have been shown to influence subjective well-being.

The results of the regressions reveal that ‘frequency of prayer’ is positively related to subjective well-being. In the regression I controlled for attendance to religious services; social interaction with friends, family, and neighbors; traumatic life events; and other socio-demographic variables that have been found to be related to subjective well-being. I found that adding the ‘frequency of prayer’ variable to the model decreased the size of the estimated relationship between ‘attendance to religious services’ and subjective well-being. These results suggest that part of the positive effects attributed to attendance to religious services was actually related to the unmeasured effects of the strength of religious beliefs of the respondents.

Understanding the way in which religion influences well-being helps us determine ways in which we can increase the well-being of individuals. If religion was nothing more than a facilitator of social relationships, future studies would focus on other ways to achieve social relationships. However, because religious beliefs were found to be an important aspect of the relationship between religion

and subjective well-being, religion must be recognized as a unique factor that influences subjective well-being.

II. Religiosity and Well-Being

Believing in God has been found to be positively related to well-being in the large majority of the studies conducted on this subject. The recent focus of the religion-happiness literature has been to identify the specific ways in which religion increases well-being. The reasons belief in God elevates the well-being of those who practice religion have been summarized into three major points.

The first way in which religious life influences well-being is through the attendance of religious services. Attendance to religious services provides religious individuals with an important source of social support. The community that arises around religious organizations provides individuals with a sense of communion and belonging that is particularly helpful when going through unwanted situations. This source of support may also be especially valuable for elderly people and widows that have lost other traditional sources of support, like family and friends (Durkheim 1947, Frey and Stutzer book, Ellison 1991).

Secondly, religion provides an all-inclusive set of meanings and values "for the ordering and interpretation of human events."[4] This framework gives individuals, with strong religious beliefs, the ability to extract meaning and significance from seemingly routine and everyday situations.[5] This ability to reinterpret life through the lens of religion is especially useful when individuals are confronted with traumatic events. Religion gives individuals who have fully internalized their beliefs, an increased ability to cope with stressful situations. "A bad event can be overcome if it is attributed to the will of God." [6]

Lastly, the third point explains that religious communities have established norms that provide its adhering members with an above average state of health. "[Religious people] drink and smoke less and are sexually less promiscuous" than non-religious people on average. [7] It is no surprise then, that the average religious person tends to live a longer, healthier life than the average person.

Religion has also been observed to have macro effects on the well-being of groups of people. Communities arise around religious organizations. As these communities grow, the religious organizations influence the values of the society.

[4] Ellison (1991)
[5] Ellison (1991), Berger (1947), Frey and Stutzer (2002), Ferriss (2002), Brinkerhoff and Jacob (1987)
[6] Frey & Stutzer (2002)
[7] Frey and Stutzer (2002), Jarvis and Northcott (1987)

The greater influence of religion over a community, the better the quality of life of its members.[8]

Religion plays a complex role in influencing the well-being. However, many researchers have come to the conclusion that the social and integrative aspects of religion are the "crucial determinant[s] of life satisfaction rather than the spiritual function."[9] However, not all researchers acknowledge the position that religion's influence on subjective well-being is nothing more than as a facilitator of social interactions and support.

In 2002, Kenneth Pargament wrote a paper titled, "Is Religion Nothing but…? Explaining Religion versus Explaining Religion Away." In this paper, Pargament argues that religion is a unique phenomenon of human beings; he defines religion as the "search for significance in ways related to the sacred."[10] Religion can be analyzed and explained in terms of psychological, social, physical, and evolutionary terms, but this does not "invalidate the significance of religion as a legitimate phenomenon of interest."[11] In other words, an evolutionary account of the way religion influences subjective well-being does not imply there is nothing more to religion than evolutionary forces at play. Pargament bemoans the reductionist tendencies of many social scientists when studying religion. To illustrate the uniqueness of religion, Pargament gives several examples of how religious motivations and religious coping are especially strong versions of their secular equivalents. [12]

One of the examples Pargament talks about is a study that compares couples who perceived their marriages as sacred with couples who perceived their marriages as very important, but not sacred. Given the subtle difference between these two ways of understanding marriage, I did not expect any significant differences between the groups. However, Pargament and others found that the couples that viewed their marriages as sacred "reported significantly greater marital satisfaction, more investment in their marriages, and better marital problem solving strategies than couples who saw their marriages as very important but not sacred."[13] These results are evidence of how the effects of religion may be hard to separate from the complex collection of factors that simultaneously affect well-being.

[8] Ferriss (2000)
[9] Barkan and Greenwood (2003), Markides (1983), Durkheim (1947)
[10] Pargament (2002)
[11] Ibid.
[12] Ibid.
[13] Ibid.

In the same edition of the journal that Pargament published the above mentioned paper, Ed Diener and Don Clifton published an article titled, "Life Satisfaction and Religiosity in Broad Probability Samples." The goal of this paper was to examine the relationship between the levels of religiosity and the levels of life satisfaction and happiness. They asked themselves the question: "Might religious activity (church attendance) be a stronger predictor of subjective well-being than is belief?"[14] Diener and Clifton found that activity variables did not present stronger correlations with subjective well-being than variables that measured religious beliefs. Also, they found that the effects of religion on subjective well-being were quite regular across nations, and as result discounted the cultural and societal effects on the relationship between religion and well-being.

III. Data and Measurement:

The data for this study is taken from the General Social Survey (GSS), a cross-sectional data set containing demographic, behavioral, and attitudinal data of the United States.[15] The data used is from the years 1983, 1988, 1989, 1990, 1993, and 1994. These years included questions about frequency of prayer, attendance to religious services, traumatic life events, and social interaction, as well as other socio-demographic details.

Dependent Variables

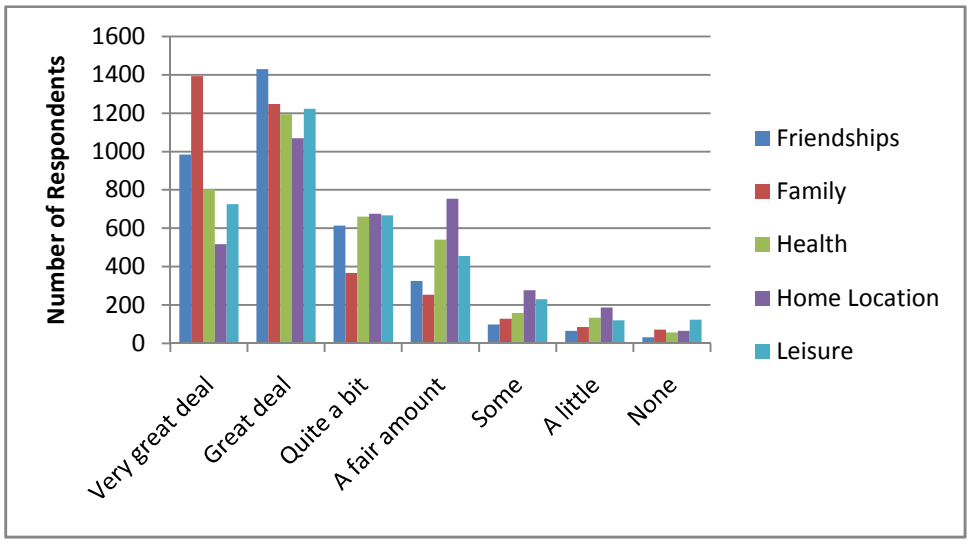
The dependent variables of this study are two measures of subjective well-being: 'life satisfaction' and 'personal happiness.' Personal happiness is an indicator that is influenced by temporary evaluations of well-being. The measure of 'personal happiness' is taken from the respondents answer to the question of how happy they were feeling. Respondents could choose to answer 'not to happy,' 'pretty happy,' and 'very happy.'

[14] Diener & Clifton (2002)
[15] General Social Survey Website

Graph1: Personal Happiness Level of Respondents

The measure of 'life satisfaction' is the respondent's average level of satisfaction with: the city or place they live in; their family life; their friendships; their health and physical condition; and, their leisure time, hobbies and other non-working activities. The respondents were asked to rate how much satisfaction they received from each of these factors in a scale from one to seven, one being 'none' and seven being 'very great deal.'[16]

Graph2: Life Satisfaction Level of Respondents



[16] Ellison (1991)

'Life satisfaction' is a more stable evaluation of subjective well-being than 'personal happiness.'[17] This multi-item measure is less prone to the affective mood and emotional swings that may influence the respondents' answers to the 'personal happiness' question.

Independent Variables

The main variable explanatory variable of this study is 'frequency of prayer.' Frequency of prayer is the measure used to account for the strength of religious beliefs of the respondents. The frequency with which respondents pray reflects the degree to which religion plays a part of their life. This variable provides a measure of how much religion influences the way respondents think about their experiences and surroundings. According to the literature, religion raises subjective well-being by providing meaning and purpose to people's lives. The data comes from the question in the GSS that asks respondents how often they prayed: 'several times a day;' 'once a day;' 'several times a week;' 'once a week;' 'less than once a week;' and 'never.'

Table 1 presents the average life satisfaction level by the 'frequency of prayer.' There is not a large difference between the average levels of 'life satisfaction' and the 'frequency of prayer.' The group of respondents that prayed the most, several times a day, has the highest average level of satisfaction. Excluding the group of respondents that never prayed, there is an observable trend of higher frequencies of prayer being related to higher levels of 'life satisfaction.

Table 1: Average Life Satisfaction by Frequency of Prayer[18]

	Frequency of Prayer						
Life Satisfaction	1	2	3	4	5	6	Total
Mean	5.468	5.261	5.415	5.410	5.485	5.569	5.437
SD	0.906	0.964	0.892	0.899	0.960	0.932	0.946
n	74	825	277	480	1063	827	3546
Percent of Total	2.09%	23.27%	7.81%	13.54%	29.98%	23.32%	100.00%

The relationship between respondent's attendance to religious services and well-being has been given much attention in the religion-happiness literature. 'Attendance to religious services' is used as a measure of the level of integration into the religious community. Many researchers have attributed most of the

[17] Ellison (1991); Diener (1984)

[18] Frequency of prayer scale: 1= never; 2= less than once a week; 3= once a week; 4= several times a week; 5= once a day; 6= several times a day

relationship between religion and subjective well-being to the social aspects of religious life. The religious community provides its members with source of support that help them deal with psychological stress of going through tough times. Respondents were asked how often they attended religious services; they were given nine choices ranging from 'never' to 'more than once a week.'

Table 2: Average Life Satisfaction by Attendance to Religious Services[19]

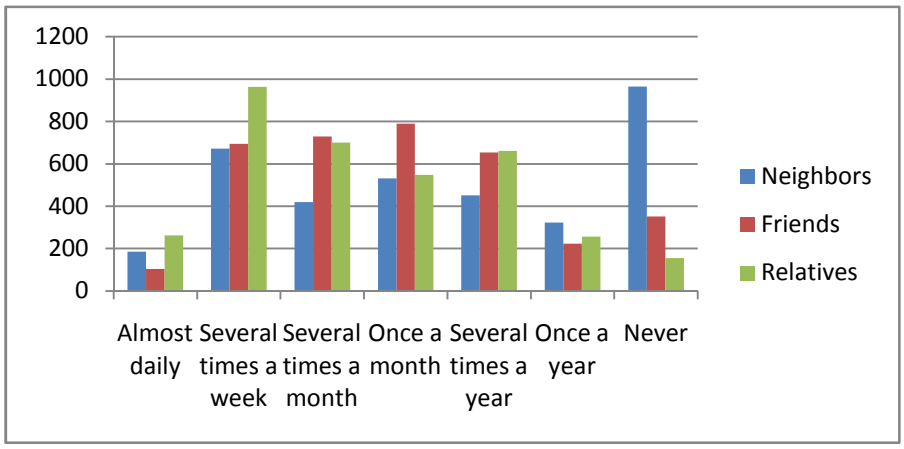
	Attendance to Religious Services									
Life Satisfaction	0	1	2	3	4	5	6	7	8	Total
Mean	5.132	5.286	5.391	5.460	5.380	5.492	5.576	5.611	5.633	5.437
SD	1.108	0.967	0.887	0.918	0.892	0.884	0.900	0.876	0.885	0.946
n	533	300	435	431	280	332	201	753	281	3546
Percent of total	15.03	8.46	12.27	12.15	7.90	9.36	5.67	21.24	7.92	100.00

Table 2 presents the average life satisfaction by attendance to religious services. The relationship between attendance to religious services and life satisfaction seems to follow the same trend as with the frequency of prayer. The group of respondents with the most attendance to religious services had the highest average life satisfaction. With the exception of the group of respondents that attended religious services once a month, as attendance decreases the average life satisfaction decreases. The group that attended religious services once a month had a lower level of life satisfaction than the next two groups that attended religious services less frequently.

Social interaction and support provides positive effect to well-being. The positive effect may be from providing support during stressful times or it may have a positive effect irrespective of the circumstances.[20] The amount of social interaction the respondent was engaged in was measured by three variables: how often they spent social evening with friends, relatives, and neighbors. Some studies have created a combined index of these three variables. I decided to include each of these variables separately in order avoid diluting the effects of any of them.[21] Respondents were asked to choose from answers ranging from one, 'never,' to seven, 'almost daily.'

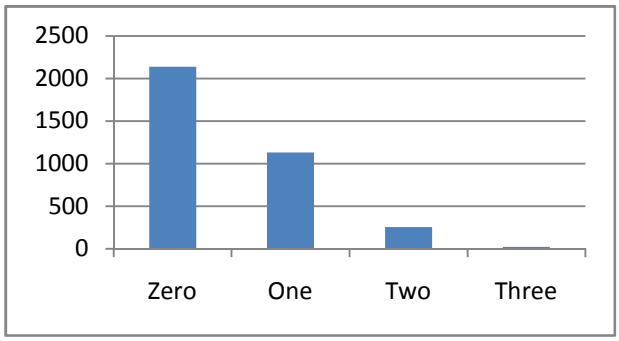
[19] Attendance to religious services scale: 0 = Never; 1 = Less than once a year; 2= Once a year; 3= Several times a year; 4= Once a month; 5= Two to three times a month; 6= Nearly every week; 7= Every week; 8= More than once a week.
[20] Cohen (1992); Cohen & Willis (1985)
[21] Ellison (1991); Barkan & Greenwood (2003)

Graph 3: Social Integration Levels by Respondents



The effects of traumatic events have clear consequence on subjective well-being. Respondents that have suffered traumatic events report lower levels of happiness and life satisfaction. There are many theories that say that people adapt and adjust to most circumstances but growing evidence indicates that this adaptation and recovery is not quick nor does it bring people back to their original levels of well-being. [22] A measure of trauma was taken into consideration by including a variable that asked respondents to state the number of traumatic events they have suffered in the last year; the types of events included in this question were: deaths, divorces, unemployment, and hospitalizations-disabilities.

Graph 4: Number of Traumatic Events suffered by Respondents



I also controlled for a number of socio-demographic factors that have been shown to influence well-being including age, in years; education, in years; family

[22] Kesebir & Diener (2008)

income, a 12-point scale ranging from under $1000 to over $25,000[23]; race; gender; marital status; region in the US; and size of place respondent lives in, six point scale ranging from the largest, '12 Largest Standard Metropolitan Statistical Areas (SMSAs),' to smallest, 'Other Rural.' [24] I also included a variable to account for the year the respondent was interviewed. [25]

Table 3: Descriptive Statistics of Socio-demographic variables

Variable	n	Mean	SD	Min	Max
Age	3546	44.52453	17.46841	18	89
Education	3546	12.68923	3.048898	0	20
Income	3546	10.03321	2.591531	1	12
Size of town or city	3546	4.058094	1.485998	1	6
Non-white	3546	0.13621	0.34306	0	1
Female	3546	0.562324	0.496171	0	1
Married	3546	0.580654	0.493522	0	1

IV. Model and Method

The models I used are based on the models used by Barkan and Greenwood (2003). I chose to use these models because they are largely representative of the religion-happiness literature. I have two sets of models. The first set of models, Model 1A and Model 2A, use life satisfaction as the dependent variable. The second set of models, Model 1B and Model 2B, use personal happiness as the dependent variable.

Models 1A and Model 1B represent the standard religion-happiness literature model. These models have 'attendance to religious services' as the only religion variable. The other variables are the three social interaction variables (friends, neighbors, and family), number of traumatic events, the socio-demographic controls, and year dummies.

[23] A large part of the respondent did not report their income. I dealt with this situation by substituting the missing income with the mean income of all the respondents. I also created a dummy variable to label those respondents that had missing incomes. This strategy was taken from Ellison (1991).
[24] Race, gender, marital status, and region in US where included in the model using dummy variables: Non-white, female, married, and South.
[25] Ellison (1991); Barkan & Greenwood (2003)

Models 2A and 2B add the 'frequency of prayer' variable to the standard literature model in order to account for the strength of religious beliefs of the respondents. These two models include 'attendance to religious services,' as well as the other variables included in Models 1A and 1B.

In other words, there are two dependents variables and two sets of independents variables. Both Models A have life satisfaction as the dependent variables; both Model Bs have personal happiness as the dependent variable. Both Model 1s are the standard literature model; and both Model 2s are the new models that include the variable 'frequency of prayer.'

I decided to include the standard literature model in my study to be able to see the effects of adding the 'frequency of prayer' variable. In the results section I reported the regression results of the standard literature models (1A and 1A) next to the regression results of the strength of religious belief models (2A and 2B) in order to be able to directly compare how the estimated coefficients changed when the new variable was added to the mix.

Life Satisfaction Models

***Model 1A*:** Life Satisfaction= *Attendance to religious services* +Social Interaction variables

+Trauma +Socio-demographic controls +Year dummies

***Model 2A*:** Life Satisfaction= *Frequency of Prayer* +Attendance to religious services

+Social Interaction variables +Trauma +Socio-demographic controls +Year dummies

Personal Happiness Models

Model 1B: Personal Happiness= Attendance to religious services +Social Interaction variables

+Trauma + Socio-demographic controls +Year dummies

***Model 2B*:** Personal Happiness= *Frequency of Prayer* +Attendance to religious services

+Social Interaction variables +Trauma +Socio-demographic controls +Year dummies

V. Results

The regression results of subjective well-being on religiosity confirm the positive relationship between religious life and well-being that is described in the literature. After controlling for social interaction variables, trauma, and the socio-demographic factors, both life satisfaction and personal happiness were positively correlated with the frequency of prayer and attendance to religious services. The positive effect of attendance to religious services to subjective well-being was reduced when the prayer variable was added to the model. These results suggest that the previously estimated relationship between attendance to religious services and well-being may have included the unmeasured effects of religious life related to the religious beliefs, as measured by the frequency of prayer.

Table 1 presents the individual relationships between each of the variables studied and the two measures of subjective well-being. These relationships are the correlations between each of the independent variables and the dependent variables without controlling for any of the other factors. The relationship between the religious variables and well-being are positive according to these correlations, this means that as variables such as religious prayer increases, so does an individual's well being. This table shows attendance to religious services having a larger positive correlation to well-being than frequency of prayer. The individual correlations display the expected positive and negative relationships between the variables and well-being. Subjective well-being was positively correlated to the social interaction variables: income, education, and marriage. It was negatively correlated to trauma and being a minority (non-white). Tables 2 and 3 have the results of the individual relationships between each of these variables and subjective well-being, after controlling for the effects of the variables.

Table 1: Bivariate Correlations between Subjective Well-being and Explanatory variables

Variables:	Life Satisfaction	Personal Happiness
Prayer	0.108	0.064
Attend	0.166	0.125
Trauma	-0.172	-0.148
Relatives	0.111	0.050
Neighbors	0.094	0.006
Friends	0.116	0.012
Age	0.005	0.042
Female	0.042	-0.015
Education	0.173	0.078
Income	0.208	0.148
Income Missing	-0.027	0.015
Non-white	-0.121	-0.115
Married	0.187	0.214
City Size	0.080	0.057
South	0.014	0.043
1983	0.008	-0.060
1988	-0.003	0.009
1989	-0.002	0.033
1990	0.011	0.045
1993	-0.012	0.006
1994	-0.007	0.000

Life Satisfaction Regressions

Table 2 (in page 22) presents the regression results of life satisfaction on religious life and other variables. Model 1A displays the regression results with 'attendance to religious services' as the only religion variable. The estimated coefficient for attendance to religious services in this model was 0.0362, a positive and statistically significant correlation with life satisfaction. Social interaction with relatives, neighbors, and friends, were also found to be positive and statistically significant.

Model 2A includes the variable of 'frequency of prayer' to account for the strength of religious beliefs of the respondents. The estimated coefficient for 'frequency of prayer' was 0.0508, a positive and statistically significant correlation. This means that a one unit increase in 'frequency of prayer' is related to a 0.0508 unit increase in life satisfaction. In total, differences in 'frequency of prayer' accounted for 4.35% of the variation in 'life satisfaction.' In other words, a person who prays more than once a day is 4.35% happier than a person who never prays. The variation in 'life satisfaction' related to 'attendance to religious services' was 2.78%; to social interaction with friends was 6.06%; to social interaction with neighbors was 5.24%; to social interaction with family was 4.68%; and to traumatic events -10.23%.

Adding the 'frequency of prayer' variable to the model reduced the size and significance of the relationship between attendance and well-being that was measured in Model 1A. The estimated coefficient for attendance to religious services decreased in size from 0.0362 to 0.0216, and its t-value went from 6.3 in Model 1A to 3.23 in Model 2A. The correlation between 'life satisfaction' and 'frequency of prayer' was larger and more statistically significant than the correlation with 'attendance to religious services.'

Even more, the correlation between 'life satisfaction' and 'frequency of prayer' in Model 2A is larger than the estimated correlation between 'life satisfaction' and 'attendance to religious services' in Model 1A where the 'frequency of prayer variable' was not included. This result suggests that, in addition to explaining some of the variation previously attributed to 'attendance of religious services,' the 'frequency of prayer' variable explains part of the variation in 'life satisfaction' that had been left unexplained by the variables in the model.

Strangely, in Model 1A, the correlation between traumatic events and 'life satisfaction' was positive and statistically significant. Even though the correlation coefficient was small relative to the rest of the variables in the model, this result went against what I expected. However, when the 'frequency of prayer' variable was taken into consideration in Model 2A, the coefficient became negative, statistically significant, and large; the result that I had expected.

Personal Happiness Regressions

Table 3 (in page 23) presents the regression results for 'personal happiness' on religious life and other variables. Model 1B uses 'attendance to religious services' as the only religion variable, while Model 2B included both 'attendance to religious services' and 'frequency of prayer.' In Model 1B, the correlation coefficient of 'attendance to religious services' was 0.0213, a positive

and statistically significant correlation. The correlation between 'attendance to religious services' and 'life satisfaction' was larger and more statistically significant in Model 1A than it was to 'personal happiness' in this model.

In Model 2B, the introduction of the 'frequency of prayer' variable, again, reduced the size and statistical significance of the estimated coefficient for 'attendance to religious services,' as it did in Model 2A. The estimated correlation for the 'frequency of prayer' variable was only statistically significant to the 90% level. However, its effect was significant in the way that it reduced the size of the correlation between 'attendance to religious services' and 'personal happiness.' The correlation of 'attendance to religious services' went from 0.0213 in Model 1B to 0.0176 in Model 2B when 'frequency of prayer' was included. The rest of the variables of Model 2B had almost identical correlations to 'personal happiness' as they did in Model 1B, before 'frequency of prayer' was added.

In Model 2B the attendance to religious services accounted for 3.96% of the variation in 'life satisfaction.' This can be understood by saying that a person who attends religious services more than once a week is 3.96% happier as a result of this attendance than a person who never attends religious services. Before accounting for strength of religious beliefs, the Model 1B estimated that 'attendance to religious services' accounted for 4.80% of the variation in 'life satisfaction.' Social interaction with friends was responsible for 2.43% of the variation in 'life satisfaction;' social interaction with neighbors for 2.20%; and social interaction with family 2.48%. The number of traumatic life events accounted for -10.75% of the variation in 'life satisfaction.'

General Results

In Model 2A and Model 2B, the introduction of the 'frequency of prayer' variable significantly reduced the size and the statistical significance of the correlation between the measures of subjective well-being and 'attendance to religious services.' This result suggests that a large part of the previously estimated correlations between subjective well-being and 'attendance to religious services' may have been due to the absence of a variable that accounted for the strength of beliefs of the respondents. This interpretation of the results is further substantiated by the high bivariate correlation between 'frequency of prayer' and 'attendance to religious services' (Correlation = 0.549). Regular attendees of religious services also showed to have strong religious beliefs.

The religion, social interaction, and trauma variables were better at explaining life satisfaction than personal happiness. Models 1A and 2A had R^2 of .1539 and .1582 when the dependent variable was life satisfaction; the R^2 for Models 1B and 2B where .0953 and .0959 when the dependent variable was

personal happiness. The F-tests for both sets of regressions were well beyond the level needed to reject the null hypothesis. In the life satisfaction models the values for the f-test were 33.75 and 33.11 for Models 1A and 2A; in the personal happiness models the values were 19.56 and 18.7 for Model 1B and 2B lower than the life satisfaction models but still well past the threshold to reject the null hypothesis.

These differences between the results for the two measures of subjective well-being were expected because of the consistency of the life satisfaction data relative to personal happiness data. Even though 'life satisfaction' and 'personal happiness' are both good measures of subjective well-being, personal happiness is more susceptible to the affective aspects of well-being; it can be influenced more by mood and emotions. Life satisfaction is a more stable measure of subjective well-being because of it being a multi-item measure and because its relationship to the cognitive aspects of well-being. Because of this, models that use 'life satisfaction' as a dependent variable can expect to receive stronger results than those that use 'personal happiness.'

Table 2: Regression of Life Satisfaction on Frequency of prayer and other variables

	MODEL 1A:		MODEL 2A:		
Variables:	**Estimated Coefficients**	**t values**	**Estimated Coefficients**	**t values**	**Mean**
Prayer	---	---	0.051	4.230	4.160
Attendance	0.036	6.300	0.022	3.230	3.939
Trauma	0.004	4.090	-0.179	-7.750	0.481
Relatives	0.119	3.900	0.047	4.940	4.500
Neighbors	0.037	6.750	0.052	6.960	3.529
Friends	0.040	5.990	0.061	6.110	4.078
Age	-0.079	-1.480	0.003	3.320	44.525
Female	-0.196	-4.230	0.093	2.980	0.562
Education	0.251	7.580	0.038	6.850	12.689
Income	0.032	3.000	0.042	6.280	10.033
Non-white	0.048	5.080	-0.213	-4.590	0.136
Married	0.052	6.860	0.249	7.550	0.581
City Size	0.059	5.940	0.033	3.080	4.058
South dummy	0.056	1.740	0.048	1.470	0.326
N	3546		3546		
Dependent Variable mean	5.437		5.437		
R^2	0.154		0.158		
F-test	33.750		33.110		

*Variables omitted from the table: Missing Income and Year Dummies

Table 3: Regression of Personal Happiness on Frequency of Prayer and other variables

	MODEL 1B:		MODEL 2B:		
Variables:	**Estimated Coefficients**	**t values**	**Estimated Coefficients**	**t values**	**Mean**
Prayer	---	---	0.013	1.530	4.160
Attendance	0.021	5.260	0.018	3.720	3.939
Trauma	0.002	2.660	0.002	2.360	0.481
Relatives	-0.001	-0.060	-0.008	-0.370	4.500
Neighbors	0.008	2.130	0.008	2.160	3.529
Friends	0.010	2.100	0.010	2.200	4.078
Age	0.044	1.180	0.044	1.170	44.525
Female	-0.172	-5.250	-0.176	-5.360	0.562
Education	0.226	9.650	0.225	9.630	12.689
Income	0.002	0.210	0.002	0.230	10.033
Non-white	0.015	2.170	0.014	2.120	0.136
Married	0.012	2.330	0.013	2.360	0.581
City Size	0.013	1.920	0.014	1.970	4.058
South dummy	0.062	2.720	0.060	2.620	0.326
N	3546		3546		
Dependent Variable mean	2.207		2.207		
R^2	0.095		0.096		
F-test	19.560		18.700		

*Variables omitted from the table: Missing Income and Year Dummies

VI. Conclusion

In this study, I evaluated the impact of religious beliefs on subjective well-being. I found that the strength of religious beliefs is a statistically significant predictor of subjective well-being. Stronger beliefs are correlated with higher levels of subjective well-being. Therefore, I concluded that religious beliefs and subjective well-being are positive related to each other.

The bulk of the studies concerning the relationship between religious life and subjective well-being agree that religion is positively related to well-being. Many of the studies have accredited most of this positive relationship to the promotion of social integration and support that comes with the religious community. I found evidence that a large part of the positive relationship between religious life and subjective well-being can be explained by the strength of beliefs of the respondents.

Researchers recently started questioning the commonly held position in the religion-happiness literature that the positive effect of religion on subjective well-being is mostly due to the way it facilitates social relationships. My study answers the question asked by Diener & Clifton: is church attendance stronger predictor of subjective well-being than religious beliefs?[26] Evidence from the General Social Survey suggests that religious beliefs play larger role in raising subjective well-being. I found that accounting for the strength of beliefs of the respondents significantly reduced the positive effect that attending religious services had on an individual's subjective well-being.

My results suggest that a part of the previously estimated effect of attendance to religious services may have been due to the unobserved effects of the strength of religious beliefs. Frequent attendees of religious services tend to be people with strong religious beliefs; the strong correlation between attendance to religious services and the strength of religious beliefs confirms this.[27] Some of the positive effects attributed to frequent attendance to religious services may have been actually due to the strength of the beliefs of those respondents.

A large part of the success of my model is due to my decision to use data on the 'frequency of prayer' to account for strength of religious beliefs. I noticed that studies similar to mine were using measures of 'strength of religious beliefs' that did not address the main reason why this variable was important. The strength of religious beliefs should be a measure of the degree to which religion plays a part of the respondents' life.[28] 'Confidence in the existence in God' and the frequency with which a respondent doubts his religious beliefs are measures of the strength of religious beliefs that have been used in other studies. The strength of religious

[26] Diener & Clifton (2002)
[27] Correlation between 'Attendance' and 'Prayer' = .549. See Appendix2 for other correlations.
[28] Berger (1969)

belief these variables measure do not address the degree to which beliefs influence the respondent's daily life. [29] The 'frequency of prayer' variable directly addresses the degree to which religion plays a part of the respondent's life. This is why I was able to get a stronger measure of the relationship between strength of religious beliefs and subjective well-being more accurately.

The correlations between subjective well-being and the explanatory variables is not necessarily evidence that these variables cause the changes in the subjective well-being. Subjective well-being may be the driving force for the strength of religious beliefs, attendance to religious services, and the amount of social interaction. A person might pray and go to church because he is happy; these activities may come as a result of happiness and not be its source. The same may happen with social interaction; happy people might attract more friends, and as a result, report higher degrees of social interaction. It is certainly possible for the correlations not to be measuring direct causation. However, I believe that even if the correlations are not strict measure of causation, the regressions still give us valuable information about subjective well-being. The relationship between the variables shed light into the habits of happiness. Even if the correlations are not measures of the degree to which the explanatory variables cause changes in subjective well-being, the correlations are at-least an indication of a relationship. I believe that, on the very least, the causal relationship between the explanatory variables and subjective well-being is a two way road. Even if happy people spend more time with friends because they are happy, the time they spend with their friends is probably influencing their happiness as well. Happy people probably tend to choose to do activities that make them happier.

Religion's multidimensional relationship with subjective well-being makes it particularly important for researchers to make sure they are adequately measuring the ways different religious factors interact. Because so many of the dimensions of religious life cannot be quantified, it will be hard to use econometrics to get a complete image of the way it influences well-being. It is important to recognize the limitations of the data when trying to make sense of complicated questions like this one. Failing to recognize this may result in reducing complex phenomena to only the factors that are quantifiable and measured. Just because all of the details of religious life cannot be measured does not mean they are not important. Religion seems to have been the victim of reductionism in the past. There is evidence that more research needs to be done to understand the way religion influences subjective well-being.

[29] Diener & Clifton (2002); Ellison (1991)

VII. Appendices

Appendix 1:

In addition to the VIF test of Multicollinearity, I ran two additional regressions in order to make sure there were no Multicollinearity issues between my explanatory variables. I was especially concerned with my results being affected by the strong bivariate correlation between attendance to 'religious services' and 'frequency of prayer' (correlation = .549).

I regressed the two subjective well-being measures, 'life satisfaction' and 'personal happiness,' on the 'frequency of prayer' model using only data from the respondents with the highest levels of attendance to religious services. Therefore, I was controlling for attendance to religious services by only including in the dataset the respondents with high levels of attendance to religious services. The data consisted of the respondents who attended religious services 'almost every week,' 'every week,' and 'more than once a week' (the top three out of nine levels). This cut my dataset from 3546 observations to 1235.

The results of these regressions indicate that multicollinearity is not an issue in my model. The 'frequency of prayer' variable was statistically significant when only including data for the respondents with the highest levels of attendance to religious services. These results confirm my conclusion that the strength of religious beliefs of the respondents is an important part of the model.

The results of the regression are displayed in the next page.

Table 1: Regression results of Subjective Well-Being on Frequency of Prayer and other variables. Respondents with high attendance to religious services.

Life Satisfaction			**Personal Happiness**		
Variables	**Estimated Coefficients**	**t**	**Estimated Coefficients**	**t**	**Means**
Prayer	0.076	3.170	0.036	1.970	5.127
Trauma	-0.231	-6.050	-0.130	-4.450	0.433
Relatives	0.037	2.340	0.004	0.370	4.631
Neighbors	0.047	3.680	0.013	1.310	3.543
Friends	0.050	3.150	0.005	0.450	4.018
Age	0.004	2.980	0.002	1.610	48.913
Female	0.055	1.090	-0.049	-1.260	0.655
Education	0.040	4.630	0.011	1.640	12.640
Income	0.039	3.500	0.010	1.220	10.089
Missing income	-0.266	-3.220	0.023	0.370	0.089
Non-white	-0.354	-4.950	-0.221	-4.070	0.153
Married	0.128	2.300	0.186	4.410	0.649
City Size	0.004	0.220	-0.012	-0.900	4.213
South dummy	0.122	2.420	0.067	1.760	0.356
1983	0.133	1.330	0.095	1.260	0.450
1988	0.124	1.090	0.122	1.400	0.120
1989	0.194	1.700	0.141	1.620	0.117
1990	0.169	1.470	0.191	2.180	0.113
1993	0.068	0.610	0.126	1.490	0.134
1994	dropped		dropped		0.066
Number of Observations	1235		1235		
Dependent variable mean	5.610		2.293		
R^2	0.156		0.082		
F-test	11.860		5.730		

Appendix 2: Descriptive Statistics of Variables

Variable	n	Mean	SD	Min	Max
Personal Happiness	3546	2.207276	0.646277	1	3
Life Satisfaction	3546	5.436548	0.945903	1	7
Prayer	3546	4.16018	1.55056	1	6
Attend	3546	3.939086	2.697481	0	8
Trauma	3546	0.480542	0.655057	0	3
Relatives	3546	4.499718	1.602933	1	7
Neighbors	3546	3.528765	2.015705	1	7
Friends	3546	4.078398	1.604666	1	7
Age	3546	44.52453	17.46841	18	89
Female	3546	0.562324	0.496171	0	1
Education	3546	12.68923	3.048898	0	20
Income	3546	10.03321	2.591531	1	12
Income Missing	3546	0.084602	0.278328	0	1
Non-white	3546	0.13621	0.34306	0	1
Married	3546	0.580654	0.493522	0	1
City Size	3546	4.058094	1.485998	1	6
1983	3546	0.423576	0.494195	0	1
1988	3546	0.131134	0.337594	0	1
1989	3546	0.126622	0.332595	0	1
1990	3546	0.113367	0.317086	0	1
1993	3546	0.135646	0.34246	0	1
1994	3546	0.069656	0.254602	0	1
South	3546	0.326283	0.468918	0	1

Appendix 3: Multicollinearity Tests of Models

Life Satisfaction			**Personal Happiness**		
	MODEL 1:	**MODEL 2:**		**MODEL 1:**	**MODEL 2:**
Variables:	**VIF**		Variables:	**VIF**	
Prayer	---	1.62	**Prayer**	---	1.62
Attend	1.12	1.52	**Attend**	1.12	1.52
Trauma	1.07	1.07	**Trauma**	1.07	1.07
Relatives	1.08	1.08	**Relatives**	1.08	1.08
Neighbors	1.08	1.08	**Neighbors**	1.08	1.08
Friends	1.18	1.19	**Friends**	1.18	1.19
Age	1.21	1.25	**Age**	1.21	1.25
Female	1.06	1.11	**Female**	1.06	1.11
Education	1.32	1.32	**Education**	1.32	1.32
Income	1.39	1.4	**Income**	1.39	1.4
Income Missing	1.02	1.02	**Income Missing**	1.02	1.02
Non-white	1.17	1.18	**Non-white**	1.17	1.18
Married	1.24	1.24	**Married**	1.24	1.24
City Size	1.19	1.19	**City Size**	1.19	1.19
1983	4.21	4.21	**1983**	4.21	4.21
1988	2.53	2.53	**1988**	2.53	2.53
1989	2.48	2.49	**1989**	2.48	2.49
1990	2.34	2.35	**1990**	2.34	2.35
1993	2.56	2.56	**1993**	2.56	2.56
South	1.08	1.08	**South**	1.08	1.08
Mean VIF	1.6	1.62	**Mean VIF**	1.6	1.62

Appendix 4: Bivariate Relationships between all variables

	Life Satisfaction	Personal Happiness	Prayer	Attend	Trauma
Life Satisfaction	1.000				
Personal Happiness	0.421	1.000			
Prayer	0.108	0.064	1.000		
Attend	0.166	0.125	0.549	1.000	
Trauma	-0.172	-0.148	0.051	-0.054	1.000
Relatives	0.111	0.050	0.073	0.097	0.014
Neighbors	0.094	0.006	-0.012	0.025	0.063
Friends	0.116	0.012	-0.083	0.006	-0.006
Age	0.005	0.042	0.244	0.142	0.053
Female	0.042	-0.015	0.260	0.150	0.023
Education	0.173	0.078	-0.098	0.019	-0.163
Income	0.208	0.148	-0.101	0.048	-0.204
Income Missing	-0.027	0.015	0.027	-0.003	-0.020
Non-white	-0.121	-0.115	0.121	0.065	0.051
Married	0.187	0.214	0.030	0.119	-0.124
City Size	0.080	0.057	0.036	0.088	0.035

	Relatives	Neighbors	Friends	Age	Female	Education
Relatives	1.000					
Neighbors	0.105	1.000				
Friends	0.151	0.177	1.000			
Age	-0.114	-0.093	-0.285	1.000		
Female	0.067	-0.013	-0.021	0.036	1.000	
Education	-0.050	0.012	0.169	-0.232	-0.052	1.000
Income	-0.001	-0.117	0.074	-0.101	-0.130	0.358
Income Missing	-0.005	0.012	-0.029	0.081	0.056	-0.060
Non-white	0.053	0.042	0.014	-0.069	0.034	-0.101
Married	0.036	-0.135	-0.147	0.047	-0.102	0.038
City Size	0.036	0.015	-0.056	0.046	0.010	-0.166

	Income	Income Missing	Non-white	Married	City Size
Income	1.000				
Income Missing	0.016	1.000			
Non-white	-0.150	0.036	1.000		
Married	0.325	-0.042	-0.132	1.000	
City Size	-0.024	0.002	-0.264	0.142	1.000

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