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Relations among education, religiosity and socioeconomic variables

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This study demonstrates the relations of the position of education in the correlation between religiosity, and socioeconomic variables by using national-level, and large survey data. We used data from the international survey of 68 countries, and used statistical methods to create the composite scores of every variable. Next, we used Pearson and partial correlations to determine the significance of the relations between the three variables and path analysis to investigate the directions. The correlation coefficient between academic and religiosity variables was a significant and negatively high correlation; furthermore, the partial correlation was strong and significant when the socioeconomic variable was controlled. The correlation between religiosity and socioeconomic variables was a significant and negatively high correlation, and the partial correlation was not significant when the academic variable was controlled for. The correlation between academic and socioeconomic variables was a significant and positively high correlation, and the partial correlation was significant when the religious variable was controlled for. The path analysis reveals that the direction is as follows: socioeconomic, education, and finally, religiosity. Based on our results and the reviewed literature, this paper discusses how these results contribute to the secularization theory and how education mediates religiosity and socioeconomic variable.

Keywords: education; international study; religiosity; socioeconomic

Introduction

Globalisation has often been discussed when it comes to various academic and non-academic forums, ever since the early twentieth century (Keohane & Nye, 2000). Globalisation refers to the free trade of economic and communication products between countries and the subsequent competitiveness of those countries, especially in terms of how they develop the quality of their economic and communication products, including human resources. Furthermore, globalisation is not only related to the exchange of economic products, but also the dissemination of one country's culture to other countries, which influences social lifestyle. Socioeconomic development, as it now occurs in most countries in the world, has no other purpose than to improve citizens' quality of life, it is part of the process called *modernisation* (Hirschle, 2010).

Modernisation is a theory proposed by many sociologists and economists; one of the most well-known modernisation theories was proposed by Karl Marx (Inglehart & Baker, 2000). Karl Marx's modernisation theory assumes that a particular country's economic development can help in identifying the quality and lifestyle of its citizens as especially corresponding to the nation's cultural values. Karl Marx (1973) clearly stated that a country showing high economic development could indicate the quality of its future citizens' value toward culture. Most economics and sociology experts ardently examine the issue of citizens' increasing and decreasing value toward their culture, which has been contaminated by modernisation. However, given that modernisation is the objective of economic growth, Berger (2011) and Lunn (2009) assumed that it is adjacent to a secularisation process. Through such a secularisation process, modern and rational thought may replace traditional culture and citizens' faith, thus decreasing their dependency on supernatural entities.

In the eighteenth century, when globalisation and modernisation, which lead to secularisation, had not yet emerged, religion was the core of most countries' ideologies. This is strongly related to countries' economic, political, cultural, and even educational systems (Haynes, 2008). Thus, in this current era, a change in the trend of secularisation, which eliminates the religion as well as religiosity from the public and private sphere and does not allow space for it in the political sphere (Rakodi, 2012) either, is the kind of social war that Kurtz (2016) referred to as "culture wars." Although the secularisation theory is widely associated with the consequent loss of religious values in society (Norris & Inglehart, 2004; Rakodi, 2012), Katherine Marshall, a senior figure at the World Bank, argued in one of her speeches in April 2005 that socioeconomic variables and religion are two parts of life that cannot stand independently, and are even meant to support one another (Haynes, 2008). This is similar to the secularisation observed in Turkey, where religion still plays a significant role in society, politics, and international relations (Eskin, 2004).

Besides the problems and conflicts that have arisen between economic growth and religion due to secularisation, Sacerdote and Glaeser (2001) assumed that secularisation also affects education, thus complicating the relationship between the factors influenced by secularisation. Quality of education is another aspect that measures a country's modernisation level (Barber, 2011; Kurtz, 2016). The complexity correlation

between these three variables, namely education, religion, and socioeconomic variables, has been examined by social science experts and researchers (e.g., Kortt, Dollery & Pervan, 2012; Mayrl & Oeur, 2009; Schieman, 2011). However, unfortunately, because of the differences in each country's cultural variables and economic growth rates, the findings offer different results for every country. Moreover, most studies disregard the education factor from the secularisation theory, although it is thought to demonstrate high reliability in terms of the relations between economic variables and religiosity (Iannaccone, Stark & Finke, 1998; Kalediene & Petrauskiene, 2005).

In fact, many studies focus on how economic development decreases the value of religiosity, which is one of the aspects that is marginalised in the process of secularisation (Lunn, 2009). In contrast, no study directly uncovers the relationship between the three variables or the trends of world societies toward education, religiosity, and socioeconomic variables. Hence, this study attempts to uncover this relation by using international data directly; furthermore, it aims to propose a model based on the statistical results obtained. In advance, we provide a review of previous studies that have uncovered the relationship between education and socioeconomic variables, education and religiosity, and socioeconomic variables and religiosity. At the end of the review, we explore the weak points of these previous studies to unveil the relationship between these three variables.

Literature Review

The relation between education and socioeconomic variables

It has been suggested that a positive relationship exists between education and socioeconomic variables, especially in a secularisation process (Hannum & Buchmann, 2005; Hirschle, 2013; Sylwester, 2000; Van der Velden & Wolbers, 2007). However, the causal direction, in terms of which factor influences and which is influenced, is still unclear. Thus, this has become a topic of some extended discussion in social science studies (Van der Velden & Wolbers, 2007). If we assume that such a relationship is based on the secularisation and modernisation theory, which begins with economic growth, the direction followed is from economic growth to education. This direction has been suggested by Hannum and Buchmann (2005), who investigated the relationship between Gross National Product (GNP) and citizens participating in educational activities. Their results revealed that GNP affected citizens' participation in educational activities, such as schooling. De Jong (1965) conducted research on the relationship between fertility norms and socioeconomic variables. The results indicated that individuals with a higher socioeconomic status show decreased fertility

norms, which are influenced by their educational level. Thus, De Jong concluded that socioeconomic variables influence education. Furthermore, Hirschle (2013) developed a model of the relation between economic growth and secular goods, including education, and found that economic growth shapes and influences the existing educational system.

In contrast with the above findings, some studies found education to affect socioeconomic variables, and not vice versa. For instance, Sylwester (2000) found the growth of economic development to be a long-term effect of education. Müller and Gangl (2003) and Sewell and Hauser (1975) obtained a clear result, indicating that the level of education influences income, occupation status, and employment opportunity. Even the theory of human capital assumed that education directly affects a nation's socioeconomic status (Becker, 1994). Van der Berg and Burger (2003) reported that inequality differences in the labour market are caused by differences in laborers' education levels. Moreover, although some studies reported a strong relationship between education and socioeconomic variables, they did not indicate a direction. Two such studies are those conducted by Homola, Knudsen and Marshall (1987) and by Voas (2014), which only showed a high correlation between people's occupations and incomes and their education levels.

The relation between education and religiosity

The relation between education and religiosity has become an important issue in the development of secularisation. Examining the relation between these two variables, especially by using diverse samples and research methods, is still one of the main topics in the social sciences, as it requires further discussion (Mayrl & Oeur, 2009). Based on the results of several studies, the trend of the relations between the two variables is negative, where, as reported by Pyle (2006), education quality improves, the characteristics of evangelism, emotionalism, and other sects decrease. Moreover, Sacerdote and Glaser (2001) also added that people attend Christian church less frequently as their education level improves.

The results of longitudinal research reveal the same findings, namely, that students and the general public discuss topics related to religious perspectives with less frequency as their education level or education year advances (Astin, Astin & Lindholm, 2011; Hill, 2009; Saenz & Barrera, 2007). Even more so, in cross-cultural studies such as those conducted by Sherkat (2008), people with a higher education level were found to believe less in supernatural entities, which are strongly related to religion and religiosity. In studies by Ecklund (2010), Gross and Simmons (2007), as well as Voas (2014), elite university staff members

(including faculty members) were revealed to have less religiosity in accordance with the influence of secularisation adopted by their institutions. Therefore, many fundamentalists argue that a higher level of education is the same as following secularisation (Smith & Snell, 2009).

Besides their interest in disclosing the relationship between education and religiosity, many researchers, especially science education researchers, are also interested in disclosing the relationship between science, as part of education, and religiosity (Scheitle, 2011). Scheitle (2011) likewise argued that researchers are interested in unveiling the relation between science and religiosity because they assume that both claim knowledge of identical aspects of life, namely, reality and truth. One branch of science that researchers often connect with religiosity is the theory of evolution. Studies that express the relation between evolution and religiosity are highly diverse, from the relationship between acceptance of evolution and religiosity, to that between knowledge of evolution and religiosity. The relation between the acceptance and knowledge of evolution has been one of the main research topics in science education, especially since the 1980s (Brem, Ranney & Schindel, 2003; Dagher & BouJaoude, 1997; Deniz, Donnelly & Yilmaz, 2008; Ha, Haury & Nehm, 2012; Ingram & Nelson, 2006). The common findings of these science-education studies on the relation between the acceptance and knowledge of evolution indicate that the acceptance of evolution is associated with religion as well as religiosity and the knowledge of evolution is associated with the level of education. The level of religiosity is negatively correlated with the level of acceptance of evolution (e.g., Deniz et al., 2008; Ha et al., 2012).

In contrast to the above explanation, from the relation between religiosity and education to that between religiosity and science, and finally between religiosity and evolution, which always has a negative connection, some researchers found that higher education is not always related to decreased religiosity level (e.g., Schwadel, 2015). Moreover, research conducted by Voas (2014) on the relation between education and religiosity in Taiwan revealed that religiosity in Taiwan is highlighted owing to the interest of both the public officers and the government. This aligns with Sacerdote and Glaeser's (2001) explanation that the relationship between education and religiosity in one country is connected to its political interest, and that hence, in these countries, such a relation continues to fluctuate. Hill (2011) justified these fluctuating and unclear findings by stating that most studies only employ one or two sub-variables of those two variables, while several other sub-variables remain ignored. Therefore, Mayrl and Oeur (2009) argued that these two variable

relations need further empirical justification that can be sought by adding more sub-dimensions of religiosity and education.

The relation between socioeconomic variables and religiosity

In the past decades, the aforementioned explanation of modernisation as part of secularisation, which focuses on how socioeconomic variables further affect the deflation of religiosity (Barro & McCleary, 2003), has become a speculated subject in social science studies, and has to be examined empirically (Homola et al., 1987). This issue concerning the relationship between socioeconomic variables and religiosity was initially examined by Weber in 1920 (Offutt, Probasco & Vaidyanathan, 2016). According to Inglehart and Baker (2000), economic growth is strongly correlated with religiosity, because a deep examination of one country's economic growth can lead to a discussion on national culture, including religiosity. Moreover, Berger (1969) added that an understanding of an individual's socioeconomic status could explain an individual's religious behaviour, where it may be used to trigger a change in that individual's religious behaviour as well.

From a secularisation perspective, religiosity is an impediment to economic growth and is thus incompatible with the characteristics of modern society (Lunn, 2009). This statement aligns with the results of several studies, such as those of Gursoy, Altinay and Kenebayeva (2017), which revealed that religiosity is negatively correlated with hedonistic behaviour. Barro and McCleary (2003), who examined the relationship between church attendance, life expectancy, and urbanisation rate, found that church attendance had an inversed correlation or negative correlation with life expectancy and urbanisation rate. Furthermore, Guiso, Sapienza and Zingales (2003) found that the correlation between economic growth and religiosity was negative, not only within Christian samples, but also within Muslim participants. Next, Stolz (2010) found the same results when he examined consumptive behaviour and religiosity, which are negatively correlated, and he called this phenomenon "fighting a silent battle."

In relation to GDP per capita, Schwadel (2015) found that higher a country's Gross Domestic Product (GDP) per capita, lowers its religiosity scale. Similar findings are also reported by studies conducted in several European countries (e.g., Wolf, 2008). Apart from the fact that religiosity has a strong correlation with economic growth, Foner and Alba (2008) and Lunn (2009) found that religiosity can be the trigger that causes social conflict, unrest, and violence, leading to poverty that makes people socioeconomically vulnerable.

Although many studies have suggested that a direct relation exists between socioeconomic variables and religiosity, none have explained the exact model of their relation. Only Hirschle (2013), who examined the relationship between both variables using hypothetical models and statistical analysis, found that there are still social and human welfare variables that must be traversed between socioeconomic variables and religiosity. Furthermore, Norris and Inglehart (2004) likewise argued that no direct correlation exists between socioeconomic variables and religiosity or religiosity; moreover, they stated that to prove this more sub-variables are required. Hence, this study attempts to flesh out Hirschle's hypothetical model with the assumption that education is the mediator for variables in the correlation between socioeconomic variables and religiosity. Before disclosing smaller factors, like consumptive behaviour as a result of secularisation, we first need to engage the larger variable, namely, education, which constitutes one of the most important parts of secularisation.

Current study

This study attempts to provide a clearer model of the relation between these three variables by completing the models proposed by Hirschle (2013). We assume that consumptive behaviour is not the mediator between socioeconomic variables and religiosity and that the social aspect of education plays a more important role, especially in modernisation and secularisation. Thus, in this current study, we propose the model based modernisation and secularisation, involving education as the main variable. We also examine what kind of trend that occurs in the Asian country based on international data sources.

Method

Participants and Data Sources

We gathered data from the open freely accessed data of international studies. We only used the average of every country to find out the trend of and correlations between the three variables. The more detail data are explained in the following sections.

Academic (education) variables

We used the Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) test scores to indicate each country's academic level. PISA is an international comparative study of 15-years-old students' academic performance in mathematics, science, and reading led by the Organization for Economic Cooperation and Development (OECD). PISA results have been reported every three years since 2000. TIMSS is also an international comparative study of students'

knowledge levels regarding mathematics and science. It is conducted by the International Association for the Evaluation of Educational Achievement (IEA), which aimed to compare students' educational achievements and education systems and enable people to learn from others through the implementation of effective educational systems (e.g., science and mathematics). We used 2006, 2009, and 2012 PISA test scores for mathematics, science, and reading. Then, we used the averages of those scores, because not all countries partook in the PISA test in all three years. Likewise, we used 2003, 2007, and 2011 average TIMSS test scores in Mathematics and Science. To compile these five scores (e.g., PISA mathematics, PISA science, etc.) into one academic variable, we used categorical principal component analysis (CATPCA). The internal consistency reliability (Cronbach's Alpha) was 0.987 and the variance accounted for was 95.2%. The two Asian countries with the highest academic variables were China-Shanghai (2.10) and Singapore (1.86), while those with the lowest academic variables were South Africa (-2.34) and Ghana (-2.25). It should be noted that Shanghai joined the PISA study in China. Therefore, we should be cautious about generalising our results for China as a whole.

Religiosity variables

We used data from the World Values Survey (WVS) to indicate each country's religiosity level. The WVS is a worldwide research project that aims to investigate people's perceived values, beliefs, and social factors (e.g., education and religion) relating to values and beliefs. The WVS data include more than 100 items; however, we only used variables relating to religiosity. The following six items were used: (1) Whenever science and religion contradict each other; religion is always right; (2) Important in life: Religion; (3) Important child qualities: religious faith; (4) How often do you attend religious services; (5) Religious person; and (6) How important is God in your life? Except for Item 4, all others were scale-type items (e.g., Likert-type or Thurstone-type). We used data collected since 2001 and calculated the averages as one value for each variable. Then, we transformed the scores of the six variables into one composite score using CATPCA. The internal consistency reliability (Cronbach's Alpha) was 0.965, and the variance accounted for was 84.9 percent. The two Asian countries with the highest religious variable were Qatar (1.82) and Indonesia (1.65), while those with the lowest religious variable were China (-1.92) and Sweden (-1.78).

Socioeconomic variables

To identify each country's socioeconomic level, we used the GNP, the schooling year from the 2012 Human Development Index, and four variables

(ladder, social support, freedom, and healthy life expectancy) from the World Happiness Report. We used the 2013 GNP data; however, in cases where this data was unavailable, we estimated the GNP by using trends from 2009 to 2013. Second, we used schooling year data from the 2012 Human Development Index. Lastly, we used the World Happiness Report, which aimed to measure the happiness level. This investigation was conducted by the United Nations Sustainable Development Solutions Network. Among several variables, we focused on four variables relating to learning and religion (ladder, social support, freedom, and healthy life expectancy). The six variables for socioeconomic variables (GNP, year of school, and four variables from the World Happiness Report) were condensed into one composite variable indicating each country's socioeconomic level using CATPCA. The internal consistency reliability (Cronbach's Alpha) was 0.892 and the variance accounted for was 69.8 percent. The two countries with the highest socioeconomic variable were Norway (1.89) and Australia (1.84), while those with the lowest socioeconomic variable were Egypt (-1.71) and Tunisia (-1.53). To identify each country's major religion, we used religion data from the Association of Religion Data Archives (n.d.).

Statistical Analysis

We used the aforementioned Categorical Principal Component Analysis (CATPCA), which allowed us to reduce a set of variables, including both quantitative/continuous and categorical/ordinal variables. This method also created composite scores that can be used in standard linear models (Linting, Meulman, Groenen & Van der Kooij, 2007). We used CATPCA to create the composite scores of academic levels (using PISA and TIMSS scores), religious levels (World Values Survey), and socioeconomic levels (GNP). This study used Pearson correlations as the second main statistical method. Following analysis, we performed the Pearson correlation test and a partial correlation test to examine the relation between the three variables, and identify which variable acted as the mediator. We assumed, when the Pearson correlation was computed, that the A and B variables were strongly correlated with the C variable. Furthermore, A and B were also significantly correlated, even though their correlation was not very strong, and thus the variable C might then be the mediator for variables A and B. This assumption could be tested by performing a partial correlation test with C as the controlled variable for A and B. The result of the partial correlation indicated that the significant correlation between A and B was now absent; thus, we can conclude that C is the mediating factor. We

performed every statistical analysis through IBM SPSS Statistics version 22.

After we determined which variable was the mediator, the subsequent step was path analysis. Even though we had already obtained the mediator from the Pearson and partial correlation tests, these could not determine the direction of the relation between those variables. Therefore, we examined the possible directions through path analysis, which we performed using IBM SPSS AMOS version 22.0.0 to generate and analyse the model fit. We used the path model robustness produced from the AMOS software to decide which model was acceptable. We decided the best model based on path analysis model fitness; according to Browne and Cudeck (1992) and Schumacker and Lomax (2004) and, this includes the cutoff value of (1) p -value of Chi-square > 0.01 ; (2) the adjusted goodness of fit index (AGFI); (3) the normed fit index (NFI) that is more than 0.90; (4) the comparative fit index (CFI); (5) the Tucker-Lewis Index (TLI) that is more than 0.95; and (6) the root-mean-square error of approximation (RMSEA), which should be less than 0.08.

Findings

Table 1 shows the results of the Pearson correlation for all sub-variables. The education variables included the PISA scores (math, science, and reading) and the TIMSS scores (math and science). The religious variables included the averages of six World Values Survey questions (e.g., conflict with science, the importance of religion, level of religious faith, attendance at religious organizations, level of religiosity, and importance of God in their lives). The socioeconomic variables included GNP, schooling year, position on the social ladder, social support, freedom, and healthy life expectancy. The first dark-coloured part illustrates the Pearson correlations between education and religious variables. All coefficients were negative and significant. The highest correlation coefficient was between the PISA science score and the importance of God variable, and it was -0.759 ($p < 0.01$). The lowest correlation coefficient was between the PISA reading score and attendance at religious organisations, and it was also strongly significant ($r = -0.464$, $p < 0.01$). The second dark-coloured part illustrates the Pearson correlations between religious and socioeconomic variables. All coefficients, except one, were also negative and significant. The highest correlation coefficient was between the importance of God and healthy life expectancy, and it was -0.625 ($p < 0.01$). The bright square area illustrates the Pearson correlations between education and socioeconomic variables. The highest correlation coefficient was between the TIMSS science score and healthy life expectancy, and it was -0.759 ($p < 0.01$).

Table 1 Pearson correlation test of sub-variables of religion, education, and socioeconomic variables

	Academic					Religion						Socioeconomic					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
PISA-Math (1)	1.000																
PISA-Science (2)	.966‡	1.000															
PISA-Reading (3)	.945‡	.983‡	1.000														
TIMSS-Math (4)	.921‡	.858‡	.819‡	1.000													
TIMSS-Science (5)	.937‡	.931‡	.878‡	.941‡	1.000												
Conflict (6)	-.746‡	-.707‡	-.678‡	-.686‡	-.672‡	1.000											
Importance of religion (7)	-.699‡	-.702‡	-.643‡	-.744‡	-.744‡	.824‡	1.000										
Religious faith (8)	-.641‡	-.601‡	-.544‡	-.747‡	-.702‡	.815‡	.923‡	1.000									
Attendance (9)	-.542‡	-.520‡	-.464‡	-.644‡	-.703‡	.585‡	.855‡	.780‡	1.000								
Religiosity (10)	-.717‡	-.661‡	-.629‡	-.677‡	-.664‡	.619‡	.784‡	.726‡	.722‡	1.000							
Importance of God (11)	-.733‡	-.759‡	-.706‡	-.747‡	-.735‡	.753‡	.940‡	.855‡	.797‡	.794‡	1.000						
GNP (12)	.437‡	.457‡	.470‡	.330‡	.377‡	-.243	-.395‡	-.303‡	-.481‡	-.355‡	-.456‡	1.000					
Schooling year (13)	.455‡	.443‡	.421‡	.624‡	.611‡	-.546‡	-.546‡	-.494‡	-.470‡	-.321‡	-.485‡	.525‡	1.000				
Ladder (14)	.272	.327‡	.384‡	.312‡	.410‡	-.378‡	-.366‡	-.305‡	-.331‡	-.333‡	-.325‡	.753‡	.414‡	1.000			
Social support (15)	.347‡	.451‡	.423‡	.322‡	.423‡	-.409‡	-.521‡	-.446‡	-.380‡	-.388‡	-.488‡	.563‡	.448‡	.724‡	1.000		
Freedom (16)	.317‡	.375‡	.361‡	.155	0.195	-.364‡	-.334‡	-.234	-.249‡	-.341‡	-.348‡	.606‡	.255‡	.720‡	.623‡	1.000	
Healthy life expectancy (17)	.660‡	.724‡	.741‡	.686‡	.759‡	-.496‡	-.598‡	-.506‡	-.547‡	-.514‡	-.625‡	.716‡	.541‡	.643‡	.498‡	.449‡	1.000

Note. ‡ $p < 0.01$, † $p < 0.05$, 'no mark' refers to 'non-significant.'

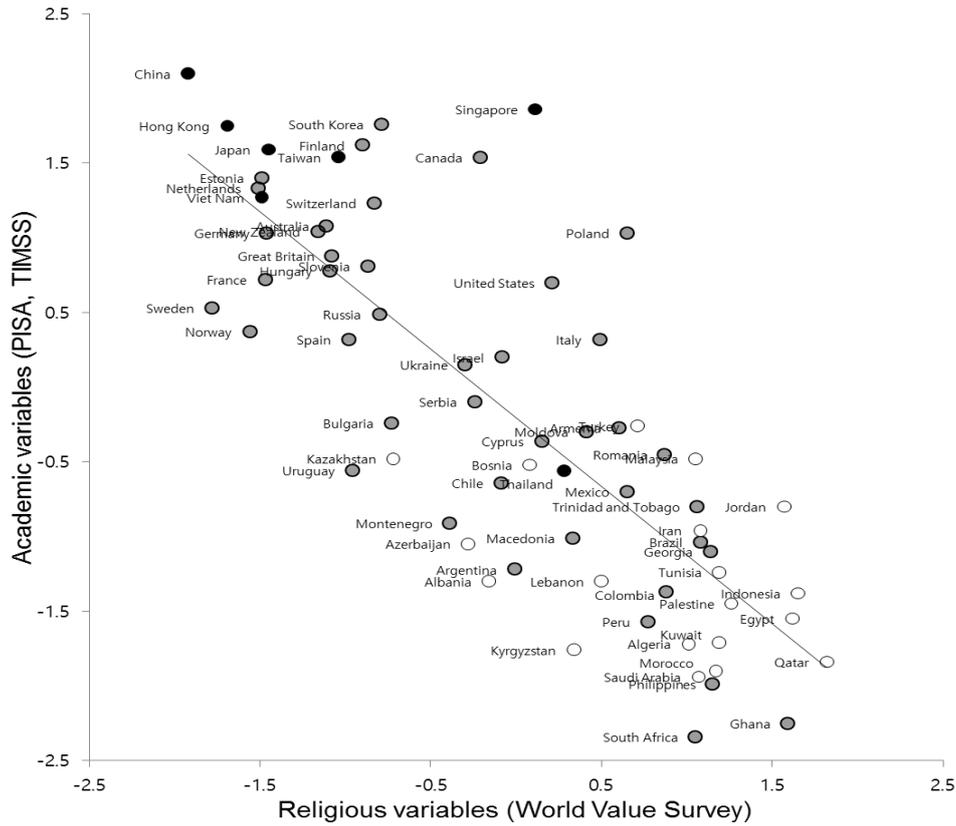


Figure 1 Scatter plot of the correlation between academic and religious variables

We performed the Pearson correlations between the composite scores of education, religiosity, and socioeconomic variables. It should be noted again that these composite scores were calculated by CATPCA. Figure 1 indicates the scatter plot and trend line illustrating the correlations between education and religious variables. The black ($n = 7$), white ($n = 19$), and gray ($n = 42$) dots indicate the countries with the highest Buddhist, Muslim, and Christian populations, respectively. Table 2 shows that the correlation coefficient was -0.793 ($p < 0.001$). It should be noted that the correlation between education and religious variables within the countries with the highest Christian population ($n = 42$) was also similar ($r = -0.747$, $p < 0.001$). Moreover, we performed partial correlations between education and religious variables in the condition in which the socioeconomic variable was controlled. The partial correlation was strong and

significant in all countries and in only Christian countries as well ($r = -0.701$, $p < 0.001$ and $r = -0.575$, $p < 0.001$, respectively).

Figure 2 shows the scatter plot and trend line illustrating the correlations between religious and socioeconomic variables. According to Table 2, the correlation coefficient was -0.532 ($p < 0.001$). The correlation between religious and socioeconomic variables within the countries with the highest Christian population ($n = 42$) was higher ($r = -0.617$, $p < 0.001$) than that within all countries. In addition, we performed partial correlations between religious and socioeconomic variables in the condition in which the education variable was controlled. It is interesting that the partial correlation was neither significant in all countries nor in only Christian countries ($r = -0.142$, $p = 0.251$ and $r = -0.244$, $p = 0.124$, respectively).

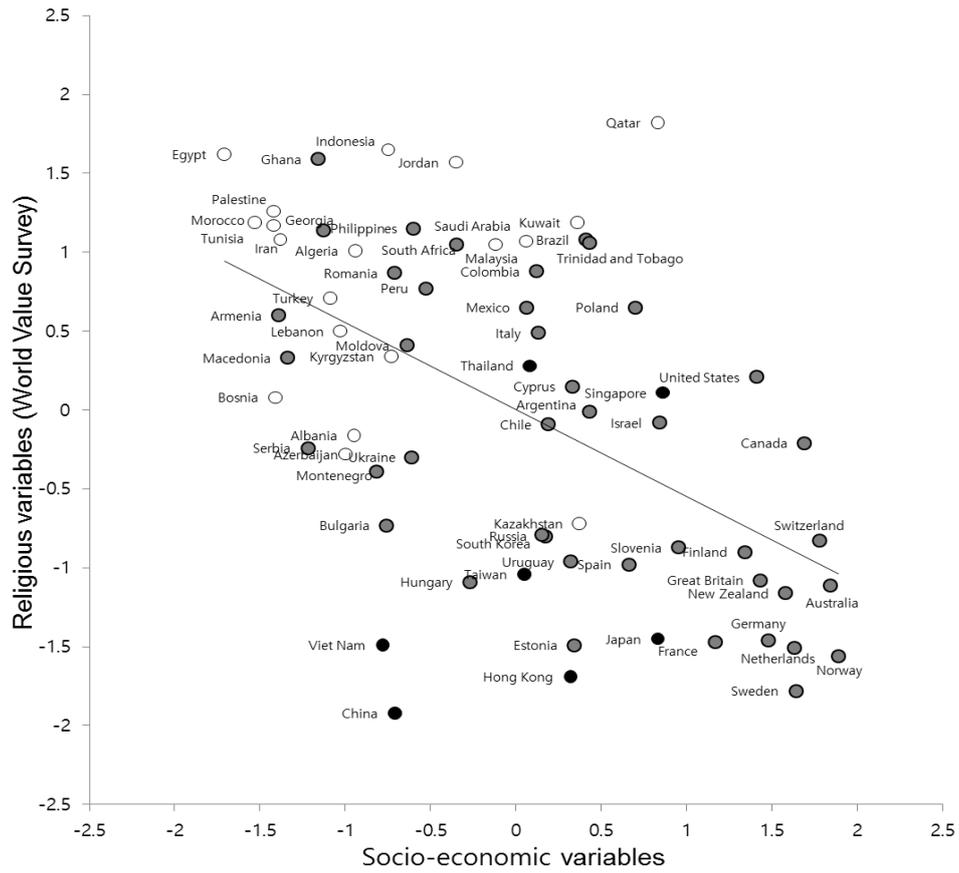


Figure 2 Scatter plot of the correlation between socioeconomic and religious variables

Table 2 Pearson correlation and partial correlation results of socioeconomic variables, education, and religiosity

Variable 1	Variable 2	Pearson correlation		Partial correlation (Controlled variable)					
		All country (n = 68)	Christian countries (n = 42)	Socioeconomic		Education		Religiosity	
				All country	Christian countries	All country	Christian countries	All country	Christian countries
Socioeconomic	Education	0.583‡	0.662‡	-	-	-	-	0.311‡	0.385†
Socioeconomic	Religion	-0.532‡	-0.617‡	-	-	-0.142	-0.244	-	-
Education	Religion	-0.793‡	-0.747‡	-0.701‡	-0.575‡	-	-	-	-

Note. ‡p < 0.01, †p < 0.05, ‘no mark’ refers to ‘non-significant.’

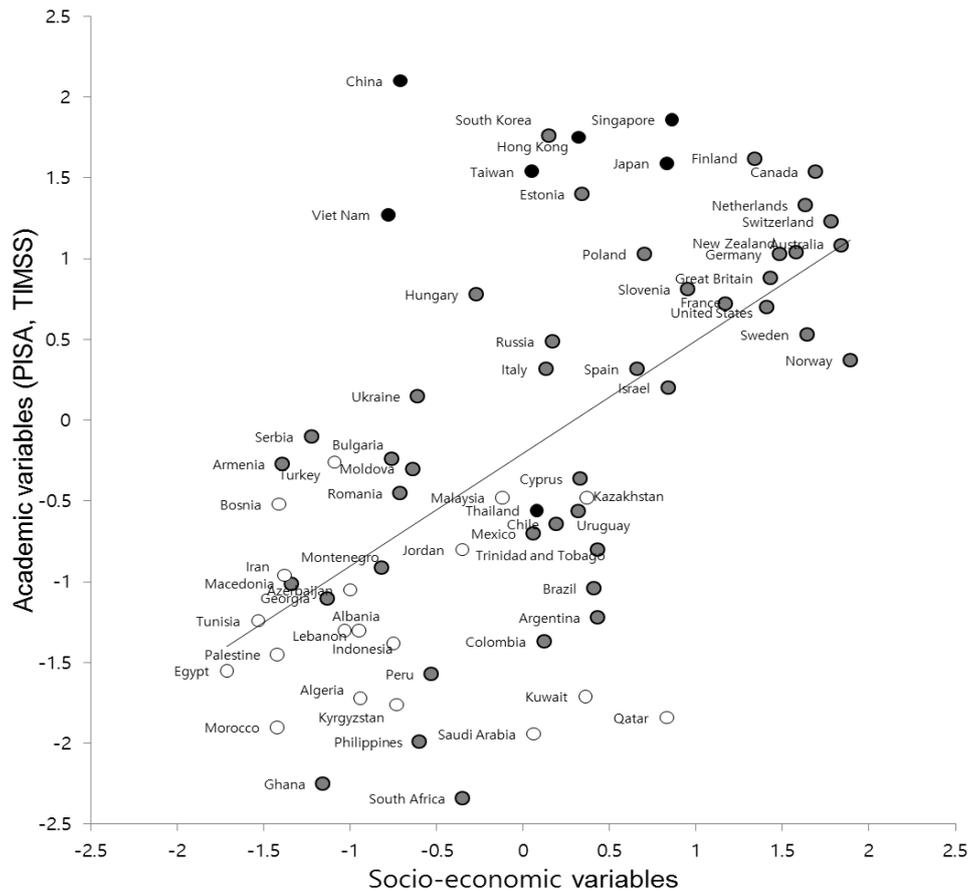


Figure 3 Scatter plot of the correlation between academic and socioeconomic variables

Figure 3 shows the scatter plot and trend line illustrating the correlations between education and socioeconomic variables. According to Table 2, the correlation coefficient was $r = 0.583$ ($p < 0.001$). The correlation between education and socioeconomic variables within the countries with the highest Christian population ($n = 42$) was higher ($r = 0.662$, $p < 0.001$) than that within all countries. The partial correlation between education and socioeconomic variables in the condition in which the religious variable was controlled was significant in all countries as well as in only the Christian countries ($r = 0.311$, $p = 0.010$ and $r = 0.385$, $p = 0.013$, respectively).

Based on the results of the partial correlation shown in Table 2, we assumed that the education

variable was the mediator between socioeconomic factors and religion because the significant correlation between the socioeconomic factors and religion disappeared when we controlled education. Therefore, we attempted to propose a model in which the directions of these three variables go from socioeconomic variables to education and finally to religion. Figure 4 shows our hypothetical model. We subsequently tested our hypothetical model through AMOS and found that the fitness values for this model were Chi-square = 1.368, $df = 1$, p -value = .242, AGFI = 0.920, NFI = 0.986, TLI = 0.988, CFI = 0.996, and RMSEA = 0.074. According to Browne and Cudeck (1992) and Schumacker and Lomax (2004), these results conform to the acceptable model.



Figure 4 Relation model for socioeconomic variables, education, and religion

Discussion and Conclusion

Today, the secularisation process, which is a part of and might even be the core of modernisation, is

rampant in almost every country. Once, secularisation only occurred in a few countries, especially communist and socialist countries (Barro &

McCleary, 2003). However, according to our findings, secularisation has already expanded to almost every country in the world. This is supported by our proposed model of secularisation, which employed the most important variables and the largest sample of countries that have been examined so far to test the secularisation model. As Figure 4 illustrates, secularisation originated from the need for more socioeconomic development as it shapes modern society (Bruce, 2011; Lunn, 2009; Norris & Inglehart, 2004) and affects a country's education system. This would be very relevant to its citizens. Hence, the direction of the relations between the two variables became clearer, and more definite. Based on this study's findings, the high positive correlation between socioeconomic and education variables indicates that high socioeconomic quality will also increase the quality of education.

However, a negative relationship was observed between education and religion. The direction of this relation originated from the education variable, which implies that a country's religious value will be lower when its quality of education is higher. In addition, the results of our proposed model confirm that the education variable is the mediating factor between socioeconomic variables and religion. Based on the theory of secularisation, the relations among the three variables can be interpreted as a country's need for socioeconomic development (Norris & Inglehart, 2004). This would imply that the country should also have a high-quality educational system, which would then result in its citizens, who are continuously engaging in educational activities, infrequently partaking in religious activities, such as going to the temple, church or other places of worship. This would subsequently lead to a reduction in their religiosity values. Hirschle's (2013) findings also support the fact that, when people partake in more social activities (in this case education), their attendance at places of worship will become infrequent and finally their religiosity value will decrease.

The social phenomenon of secularism, as sketched in the model in Figure 4, was a country trend at the beginning of the 21st century. It eventually eliminated religion from countries' ideologies and life and was not a trend observed only in European, (e.g., Hirschle, 2013) communist (e.g., Barro & McCleary, 2003), or even Christian countries. Based on our study's result, we can confirm that this phenomenon occurred in almost all countries having any religious background, including that of Islam, Buddhism, Judaism, and others. Therefore, we can infer that the majority of the Earth's population began to stop believing in supernatural entities and started to think more realistically and in modern ways.

Indeed, maybe some countries, such as most Asian countries, that uphold religion as their ideology might not admit that they are now in the process of secularisation. However, this study provides real evidence and proves that the trend of citizen behaviour in almost every country having any religious background is part of the secularization process. It is possible that, in this case, education could bridge the relationship between religion and other variables that are involved in the secularisation process. Education is a mediator, and it becomes an important factor in terms of changing people's attitudes, views, and knowledge toward the secularisation process. Therefore, if a country's ideology is based on religion, it is highly recommended to make policies or even breakthroughs in its educational system to ensure that a positive relation develops among the three variables. This will also enable it to follow the process of modernisation while still considering religion and distancing itself from the process of secularisation. In our opinion, one of the most important elements of education, which is very influential and has a large stake in secularisation, is science education. Several studies have revealed the relationship between science and religion (e.g., Dagher & BouJaoude, 1997; Ecklund, 2010), and many others are attempting to improve this relationship. Like in Indonesia, which is implementing science education based on religion, educational reform, especially in science education, would have a great impact on remedying this relation. Hence, further research on various aspects of science education (not only an evolutionary theory), when conducted by connecting with religion, might become a productive research topic for social sciences, especially in terms of developing a public understanding of science.

Authors' Contributions

AR reviewed the literature, analysed the data and wrote the manuscript. MH gathered the data, analysed the data and made all the tables and graphs on this paper. JP conceptualised the main idea of the manuscript. All the authors reviewed, provided comments on the final manuscript and contributed to the revising process of the manuscript.

Notes

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