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ABSTRACT

Environmental Engagement, Religion and Spirituality in the Context of Secularization

Over the past half century, a literature has developed across a range of disciplines exploring the relationship between religion and environmental engagement, including pro-environmental attitudes and behaviours.Empirical results are diverse and the relationship seems to vary in size and direction, depending on definitions and the method of investigation adopted. An increasingly important phenomenon which has received far less attention is that of spirituality, within/out the context of a religion. This paper contributes to the literature by examining the question in a predominantly Roman Catholic European Union country where church attendance is in decline. It employs a nationally representative dataset (n=1,029) which includes diverse measures of religiosity and spirituality, as well as measures of interest in environmental issues, in wildlife and natural history, and engagement in countryside activities and gardening, together with relevant socio-economic control variables. Our findings confirm that the usual socio-economic determinants are associated with this type of environmental engagement. We find that church attendance adds no further explanatory power to environmental engagement. On the other hand, participation in socio-cultural religious activities and self-assessed spirituality are positively and significantly associated of various dimensions of environmental engagement.

JEL Classification: O13, P18, Q51, Z12

Keywords: religion, spirituality, environment, catholic, secularization, quantitative

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1. Introduction and motivation

Over the past half century, an extensive literature across a range of disciplines has explored the relationship between religion and attitudes/behavior surrounding nature and the environment more broadly (Jenkins & Chapple, 2011; Tucker & Grim, 2007). Scholarly interest in the religion-environment correlation gathered momentum following the speech by historian Lynn White, delivered before the American Association for the Advancement of Science, on the role of religious thought on environmental concern. The publication that followed (Science, 1967), was described as *"one of the most significant articles to appear in environmental studies in the second half of the 20th century"* (Minteer & Manning, 2005, p. 166), and *"a foundational document"* (Radkau, 2012, p. 496). White mooted the theory that the Judeo-Christian religions have inherently negative effects on environmental concern, resulting from the belief (based on the Genesis) that God created nature for the definite purpose of being useful to humans (White, 1967). This engenders an exploitive attitude toward nature - intensified during the Industrial Revolution (Arbuckle & Konisky, 2015). White's thesis is contrary to that which sees Judeo-Christian religions as having an ethic of stewardship (Fowler, 1996), a responsibility to care for all of God's creations (Arbuckle & Konisky, 2015; Wilkinson, 2012) and a duty to protect the environment for social justice (Francis, 2015).

1.1 Environmental engagement and religion

The few empirical studies that have scientifically examined the relationship between religious beliefs and environmental engagement produce mixed results (Jenkins & Chapple, 2011). There are considerable differences in methodologies adopted, including in the definition of the key variables of interest and the analysis itself. For instance, while some studies define religion as a dichotomous variable, others adopt multi-dimensional measurements. Similarly, environmental engagement can vary from concern to far more elaborate definitions capturing attitudes and behaviors in diverse domains (see, Djupe & Hunt, 2009, for a review). Furthermore, while many empirical studies examine simple correlations between dimensions of religious and environmental engagement, others employ more rigourous regression analysis (e.g., Guth at al., 1993; Kanagy & Nelsen, 1995; Kanagy& Willits, 1993).

In early studies, Hand & Van Liere (1984) discovered that while environmental concern is higher among liberal Protestant denominations, it is lower among conservative/fundamentalist Protestant denominations. Kanagy &

Willits (1993), distinguished between environmental beliefs/attitudes and environmental behaviors and found that church attendance relates negatively to the former, and positively to the latter. Later, Kanagy & Nelsen (1995) used three measures of religiosity (frequency of church attendance; belief of "born again"; level of personal religious experience) and three environmental indicators (attitudes on federal environmental spending; relaxing environmental controls for economic growth; self-identification as an environmentalist). Employing national US survey data, they again found that the relationship between religiosity and environmental concern is dependent on the specific indicators: church attendees and "born again" believers had positive preferences for regulation while individuals with personal religious experience were less likely to support spending to protect the environment. Boyd (1999) found that the frequency of prayer had a positive effect on some behaviors, but no effect on perceived danger of environmental problems, or on willingness to pay for environmental quality.

In later studies, Schultz, Zelezny & Dalrymple (2000), adopted Thompson and Barton's distinction (Thompson & Barton, 1994) between eco-centric concerns (intrinsic values of plants and animals) and anthropocentric concerns (focusing on quality of life for oneself and for other people). They found strong associations between beliefs in Bible literalism and anthropocentric basis for environmental concern among undergraduate students from various countries. Djupe & Hunt (2009) find that religious communication from clergy overwhelmingly and positively correlate with environmental sentiment and that while negative correlations are observed (especially between biblical literalism and environmental protection attitudes), these do not survive regression analysis. Clements, McCright & Xiao (2014) summarize the evidence from studies that employed a range of religiosity indicators. They conclude that when measured by acceptance of dominion beliefs and biblical literalism, religion generally has a negative or insignificant effect on environmental concern, while religious behavior/intensity yields no clear pattern.

The question of how spirituality relates to environmental protection has received less attention. Driver et al. (1996, p. 5) define spirituality as: "*interaction with and relationship to something other and greater than oneself*". While Hill & Pargament (2003, p. 65) argue that many people experience spirituality within organized religions, Roof (1993) identifies individuals who consider themselves spiritual but in no way religious. Schnell & Keenan (2011) coin the term *"atheist spirituality"* (p. 101) and Schnell (2012) contends that, for some people, religiosity and spirituality can even be opposing concepts. Zinnbauer et al. (1997), survey US attendees of diverse churches, and found that while 4% of the participants identify themselves as religious not spiritual, 19% of respondents claimed

to be spiritual but not religious. Within this group, 44% consider the two concepts to be different, and 15% consider them not to overlap at all. To date, empirical studies that assess the distinction between religion and spirituality on environmental engagement are scarce. Taylor (2001, p. 176) highlights the prospect that spirituality may be linked with a perception of nature as a *"symbolic center","itself to be sacred"*. In a study among a group of people who consider themselves spiritual Bloch (1998) discovers that 82% of those interviewed show pre-occupation with environmental issues. With the spread of secularization and disaffiliation from religious denomination (Bar-El et al., 2013; Brañas-Garza, Garcia-Muñoz & Neuman, 2013), and as authority for belief systems increasingly shifts from the church to private spaces (Barker, 2004), the association between spirituality and environmental engagement can be expected to acquire an increasingly important space in the literature.

1.2 Co-determinants of environmental engagement

In assessing the impact of religion on environmental engagement, it is also necessary to control for the effect of the various factors that can co-determine engagement. One of the more comprehensive models is that developed by Hines, Hungerford & Tomara (1986), whose Model of Responsible Environmental Behavior, embraced several factors related to personality issues (personal responsibility, locus of control, and attitude), which when connected with knowledge (of issues and action strategies) and action skills, as well as appropriate situational factors (economic constraints, social pressures, and opportunities) would translate into the intention to act (or otherwise) in some pro environmental domain (Bamberg & Möser, 2006). Values remain among the most important and most researched determinants of Pro-Environmental Behavior (PEB) (Stern, Dietz, & Karlof, 1993), together with situations and contexts which may help or impede behavior (Kollmus & Ageyman, 2002). In economics, pro environmental behavior is often modelled as being driven by the desire to act in line with personal or social norms (Andreoni, 1990), while being constrained or stimulated by contextual conditions and policy interventions (Briguglio 2016).

Socio-demographic variables like education, income age, gender, employment status, marital status and political interest often predict pro environmental engagement (Briguglio 2016). Education is typically found to be a significant and positive determinant, often linked with environmental awareness/information and income (Davison & Briguglio, 2020). Income can facilitate the choice of environmentally friendly goods but can also be linked with higher consumption of energy and waste, while ge can be a proxy for certain values, like consumerism (Lynn & Longhi, 2011; Mobley et al., 2010). Women tend to be more altruistic than men, married

or co-habiting couples tend to be more involved in cooperative environmental behavior (Briguglio, Delaney & Wood, 2016; Tittle, 1980), and though parents tend to be more concerned about the state of the environment, having children in the household can render some behavior (e.g. modal shifts) unfeasible (Briguglio& Formosa, 2017).

2. Materials and methods

2.1 Hypotheses and Conceptual Model

Against the insights provided by the review of relevant works, our empirical work sets to estimate a model of environmental engagement, where religious participation and spirituality are the variables of interest together with the socio-demographic aspects suggested by the literature. More specifically, we set out to test our null hypothesis (H0) that neither religiosity nor spirituality contribute any additional explanatory power to explain environmental engagement against our alternative hypotheses, namely: H1: Religiosity is significantly but negatively associated with environmental engagement; H2. Religiosity is significantly and positively associated with of environmental engagement; and H3. Spirituality is significantly associated with environmental engagement. We follow the main convention in the literature and control for key socio-economic variables namely gender, education, age, marital status, being a parent, and employment status (for income). We control for the possible impact of policy by the variables "region of residence" and "interest in politics". These socio-economic variables constitute the vector of control variables in the conceptual model below.

$$\text{Environmental engagement} = a_o + a_1 * \text{Control vector} + a_2 * \text{Religion/Spirituality} + \text{Error}$$

2.2 Context

Our empirical work takes place in a European Union member state - Malta. With a population of around 470,000 in in 316 km^2 (National Statistics Office [NSO], 2018a), Malta (and its sister island Gozo) is typically described as an economic success story (Briguglio, L. & Buttigieg, 2004). But economic activity and high population density (measuring around 1350 per km^2, and rising annually) has taken its toll on the environment (Moncada, Spiteri & Briguglio, 2018): almost 20% of Malta's land area is built up (in contrast with Europe's average of 1.5%) with impacts on eco-systems and biodiversity (MEPA, 2012). Malta demonstrates a high dependency on fossil fuels (NSO, 2015) and a high ratio of waste to landfill (NSO, 2017b). Many Maltese

people currently consider environmental issues to be the biggest threat facing the islands (EC, 2018). On the religious front, Malta is Roman Catholic by Constitution (Laws of Malta, 1964), though there has been a march towards secularity (Ellul, 2014), including through legislative changes in the social sphere and a decline in social pressure to attend mass (Pace & Ross, 2019). Weekly church attendance declined from 81% in 1967 to 36% in 2017 (Caruana, 2019). This said, 92% of people in Malta consider themselves Catholics, 95% believe in God and 61% feel that religion is still relevant (Caruana, 2019). Beyond the homily, the catholic church in Malta manages media outlets, organizes numerous volunteer groups, absorbs almost 30% percent of the school population (Cini, 2019; NSO, 2018b). It is highly present in the community scene with year-long preparations for numerous religious celebrations across the islands (Briguglio & Sultana, 2015). The church is also increasingly active in environmental issues (for instance Archdiocese of Malta, 2019; Church Environment Commission, 2018).

2.3 Data

Within this context, we employ data from a recent survey conducted by Malta's National Statistics Office (n=1,029). This dataset has the specific advantage of including measures of religiosity and spirituality, as well as environmental engagement and all the key co-determinants necessary to parse out the association with religiosity or spirituality, once these effects are controlled for. Data for this survey was collected through face-to-face interviews in October-November 2016 (NSO, 2017a), and the sample was set to represent the total resident population of Malta aged 16 and over. The demographics drawn from this dataset provide a timely glimpse of the reality within which the study is contextualized.[1] The sample is representative of national data, revealing an aging Maltese population (Statistics European Commission, 2017), where over 90% live on the main island of Malta, and the remainder live on Gozo (NSO, 2018a). The majority of respondents (43.9%) have completed up to a secondary level of education, with 18.5% having post-secondary schooling and 16.2% having a tertiary level of education. Just over half of the respondents are employed, while the other half are either students, retirees, inactive, or unemployed. Just over half of the sample respondents are married, while the rest are either single, widowed, separated or divorced. Nationwide, around 24% of the adult population have children at home (NSO, 2017a), with the figure in our sample being almost identical (23.4%).The variables utilized in our estimation and their descriptive statistics are presented in Table 1.

[1]Our study is focused only on Maltese people (98% of the sample). We consider that the influx of foreigners to Malta since then certainly merits its own study.

Table 1: Variable definitions and descriptive statistics

Name	Description	Min	Max	Mean	SD
E_OUTDOOR	Likes to go to countryside/outdoors (1=Strongly agree)	0	1	0.510	0.500
E_GARDEN	Personal interest/hobby in gardening (1=Yes)	0	1	0.358	0.479
E_WILDLIFE	Personal interest/hobby in wildlife/natural history (1=Yes)	0	1	0.458	0.498
E_GREEN	Personal interest/hobby in green/environment issues (1=Yes)	0	1	0.398	0.490
E_FACTOR	Environmental Factor Variable (53% of 4 variables' variance)	0	1.336	0.564	0.444
R_ACTIVITY	Personal interest/hobby in religious activities? (1=Yes)	0	1	0.397	0.490
R_ATTEND	In past year, attended religious services (1=Daily or Weekly)	0	1	0.581	0.494
SPIRITUAL	Considers self as spiritual person (1= Strongly agree/Agree)	0	1	0.639	0.480
AGE_55+	Age group (1=55+)	0	1	0.420	0.494
FEMALE	Gender (1=female)	0	1	0.481	0.500
NO_SCHOOL	Education level (1=Preprimary or none)	0	1	0.015	0.124
PRIMARY	Education level (1=Primary)	0	1	0.198	0.399
SECONDARY	Education level (1=Secondary)	0	1	0.439	0.496
POST_SEC	Education Level (1=Post Secondary)	0	1	0.185	0.388
TERTIARY	Education level (1= Tertiary)	0	1	0.162	0.369
POLITICS	Personal interest/hobby in politics (1=Yes)	0	1	0.266	0.442
MARRIED	Current Civil Status (1=Married/civil union)	0	1	0.539	0.499
CHILDREN	Has children under 16 at home (1=Yes)	0	1	0.237	0.425
EMPLOYED	Current employment status (1=Employed)	0	1	0.507	0.500
GOZO	Resident in the island of Gozo (1=Gozo)	0	1	0.091	0.288

Data source: NSO 2017a

Table 1 includes four variables related to environmental engagement which were available in the dataset, namely E_OUTDOOR, E_GARDEN, E_WILDLIFE and E_GREEN. In addition, using factorial analysis, we combine these four dichotomous variables using Principal Component Analysis (polychoric correlation matrix) into one factor (E_FACTOR). This new variable captures 53% of the variability of the original variables. For religiosity, the dataset included three relevant measures. The first is frequency of attendance to mass. Here the data indicates that 58% of the respondents attend mass at least once a week. The second variable is interest in religious activities, a variable which speaks to the involvement by citizens in the church's socio-cultural events like the organization of village feasts to celebrate a patron saint, fund-raising activities and other community events. The data indicates that 39% have such an interest. The third variable is drawn from the question which asks respondents if they consider themselves to be spiritual. We note that 64% of the interviewed persons consider themselves to be spiritual.

3. Results and discussion

3.1 Results

Table 2 presents the estimation of two sets of regression models. The dependent variable in the main set of regressions is the composite factor variable (E_FACTOR), as the dependent variable. A second set of regressions employs the environmental proxy that provides the closest measure to environmentalism (E_GREEN). For each of these dependent variables, we first estimate a model using the typical predictor variables included in regressions that forecast environmental engagement (our control vector), and we report these results as Model 1. We then proceed to test the coefficients on religion variables, using first "interest in religious activities" (Model 2), then "frequency of attendance to mass" (Model 3) and finally, "self-assessed spirituality" (Model 4). Given the distribution of E_FACTOR we employ ordinary least squares to estimate the regression. We employ logistical regression to fit the model for E-GREEN, given that it is a dichotomous variable.

We first examine the coefficients of the socio-economic control variables, finding them to be in line with those in the literature. Education plays a positive and significant role, married individuals tend to engage more, as do older individuals. Employed people are more likely to be interested in green environmental issues and to score highly on the composite factor variable. Living in Gozo yields a neutral effect on the environmental factor (this combines a positive significant effect on "getting out into countryside" and "personal interest in gardening" and a negative effect on "personal interest in environmental issues" (as reported in Appendix Table A1).

Table 2: Regressions models - E_FACTOR and E_GREEN

	E_FACTOR				E_GREEN			
VARIABLES	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 1**	**Model 2**	**Model 3**	**Model 4**
AGE_55+	0.095**	0.063*	0.091**	0.082**	0.195	0.041	0.167	0.146
	(0.039)	(0.038)	(0.039)	(0.038)	(0.207)	(0.214)	(0.210)	(0.208)
FEMALE	0.020	0.005	0.019	0.007	0.076	0.013	0.070	0.025
	(0.027)	(0.026)	(0.027)	(0.027)	(0.145)	(0.149)	(0.145)	(0.147)
MARRIED	0.080***	0.070**	0.078***	0.072**	-0.009	-0.066	-0.026	-0.042
	(0.028)	(0.027)	(0.028)	(0.028)	(0.151)	(0.156)	(0.153)	(0.152)
CHILDREN	-0.003	-0.015	-0.004	-0.013	-0.128	-0.193	-0.131	-0.169
	(0.035)	(0.034)	(0.035)	(0.035)	(0.186)	(0.191)	(0.186)	(0.187)
NO SCHOOL	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
PRIMARY	0.180*	0.201*	0.179*	0.191*	1.117	1.238	1.120	1.182
	(0.108)	(0.104)	(0.108)	(0.107)	(0.797)	(0.806)	(0.799)	(0.801)
SECONDARY	0.294***	0.312***	0.291***	0.309***	1.539*	1.669**	1.533*	1.619**
	(0.108)	(0.104)	(0.108)	(0.107)	(0.795)	(0.805)	(0.798)	(0.800)
POST-SEC	0.238**	0.267**	0.235**	0.270**	1.336*	1.504*	1.331	1.490*
	(0.112)	(0.108)	(0.112)	(0.111)	(0.811)	(0.822)	(0.814)	(0.816)
TERTIARY	0.390***	0.400***	0.386***	0.409***	2.279***	2.409***	2.265***	2.391***
	(0.113)	(0.109)	(0.113)	(0.113)	(0.816)	(0.826)	(0.818)	(0.821)
EMPLOYED	0.101***	0.117***	0.102***	0.104***	0.460***	0.571***	0.471***	0.482***
	(0.0331)	(0.032)	(0.033)	(0.033)	(0.177)	(0.182)	(0.177)	(0.178)
POLITICS	0.295***	0.244***	0.294***	0.292***	1.506***	1.366***	1.504***	1.511***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.161)	(0.166)	(0.161)	(0.162)
GOZO	0.031	0.006	0.026	0.032	-1.010***	-1.221***	-1.046***	-1.022***
	(0.045)	(0.045)	(0.046)	(0.045)	(0.279)	(0.290)	(0.282)	(0.281)
R_ACTIVITY		0.234***				1.074***		
		(0.027)				(0.152)		
R_ATTEND			0.018				0.129	
			(0.028)				(0.148)	
SPIRITUAL				0.113***				0.476***
				(0.028)				(0.153)
Constant	0.068	-0.008	0.063	-0.005	-2.602***	-3.047***	-2.649***	-2.945***
	(0.111)	(0.108)	(0.112)	(0.112)	(0.811)	(0.826)	(0.815)	(0.823)
Observations	1,029	1,029	1,029	1,029	1,029	1,029	1,029	1,029

Note: Standard errors in parentheses; Significance levels *** p<0.01, ** p<0.05, * p<0.1

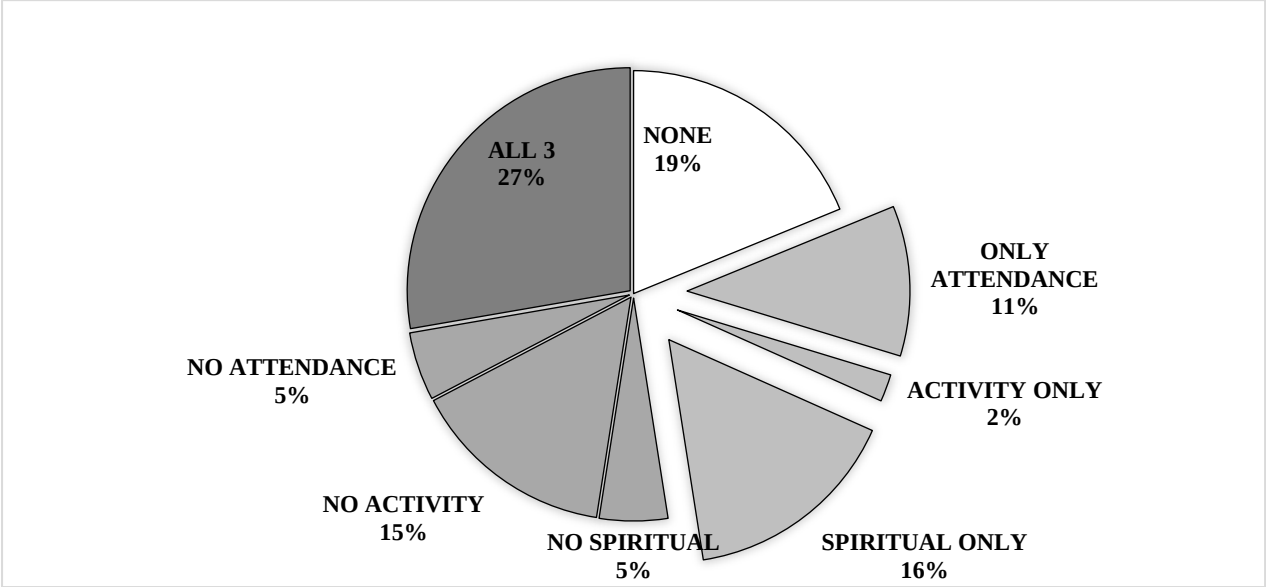
Gender and children add little explanatory power. We then turn to the key variables under investigation, namely "interest in religious activities", "church attendance", and "spirituality". We find that having an interest in religious activities is associated with an increase of 0.234 in the score on the factor variable (which ranges from 0 to 1.336). Considering one-self as spiritual, increases the environmental factor variable by roughly half that size (0.113). Interpreting the coefficients from the Logit models requires computation of the odds-ratio. Calculation of these ratios for E_GREEN (Table 2) reveals that the odds of having an interest in this environmental issue, for people with "interest in religious activities", is 2.93 times larger compared to the odds for people without interest in religious activities, while the odds of having interest in the GREEN environmental issue for people considering themselves to bee "spiritual" is 1.61 times that of not spiritual people.

These results suggest that we may reject our null hypothesis, which, for ease of reference states that *neither* religiosity nor spirituality contribute any additional power to explain environmental attitudes/behavior. Similarly, we find no support for H1 which posits that religiosity is a significant but *negatively* associated with environmental attitudes/behavior. On the other hand, we do find some support for H2. If religiosity is measured by "interest in religious activities", then it is indeed a significantly positively associated with some dimensions of environmental engagement, *ceteris paribus.* Regressions of the various sub-indicators of environmental engagement (reported in Appendix Table A1) reveal that interest in religious activity is associated with a higher probability of being engaged in all environmental dimensions except “getting out into the countryside", while mass attendance is significant and positive only for “interest in gardening”. We find clearer support for H3. It seems clear that the association between spirituality and engagement is a significant and positive not only of the composite factor variable of environmental interest, but also of all the separate sub-components of this factor variable.

In order to further explore the distinctions between religiosity and spirituality, we next assess the relationship between these variables themselves. Some 43% claim to be spiritual and to attend mass frequently and the Pearson chi-squared test for association of variables rejects the hypothesis that both variables are independent ($\chi^2 = 63.60$, p-value=0.00). In turn, 33.3% of respondents claim to be both intereted in religous activites and spiritual, and the Pearson chi-squared test for association of variables also rejects the hypothesis that both variables are independent ($\chi^2 = 113.95$, p-value=0.00). A total of 27.9% of the respondents demonstrate all dimensions of religiosity and spirituality. In the light of these descriptive results, we decompose our sample population into segments, and set out to explore the marginal effect of each dimension of religion or spirituality, jointly and

individually. In Figure 1, the segments pertain to the individuals who are engaged in all 3 dimensions, none of the dimensions, any 2, or only 1 of the dimensions (e.g. only "interest", only "attendance", or only "spirituality"). In our analysis, we define the reference group as the group composed of those respondents who demonstrate none of the three dimensions (NONE – 19.0%). A total of 27.9% are individuals who demonstrate interest in *all* three dimensions (ALL_3); 15.6% self-assess as spiritual but have no interest in religion or regular mass attendance (ONLY_SPIRITUAL); 15.2% are not interested in church activities (NO_ACTIVITY), but self-assessed as spiritual, and attend mass; 10.5% only attend mass, with no interest in religious activities, and no self-assessed spirituality (ONLY_ATTENDANCE). The remaining three segments include those are those who are interested in religious activities and consider themselves spiritual, but do not attend mass (NO_ATTENDANCE - 5.3%), those who are interested in activities, frequently attend mass, but do not consider themselves to be spiritual (NOT_SPIRITUAL - 4.6%), and those who demonstrate only an interest in religious activities, considering themselves to be neither spiritual nor frequent mass goers (ONLY_ACTIVITY - 1.9%).[2]

Figure 1: Sample decomposition by type of religious/spiritual engagement



[2]This compares with Zinnbauer et al. (1997) who found that 4% of their US sample identified themselves to be "religious but not spiritual" (Malta 5.3%), and 19% to be "spiritual but not religious" (Malta 15.6%).

Table 3: Regression models with interacted spiritual/religious variables

VARIABLES	E_FACTOR	E_GREEN	E_OUTDOOR	E_GARDEN	E_WILDLIFE
AGE_55+	0.073*	0.085	0.290	0.454**	0.208
	(0.038)	(0.217)	(0.196)	(0.207)	(0.209)
FEMALE	0.001	0.011	-0.018	0.068	-0.036
	(0.026)	(0.151)	(0.136)	(0.146)	(0.145)
MARRIED	0.075***	-0.022	0.068	0.627***	0.342**
	(0.028)	(0.158)	(0.142)	(0.152)	(0.152)
CHILDREN	-0.019	-0.208	0.144	-0.033	-0.082
	(0.034)	(0.192)	(0.174)	(0.189)	(0.184)
NO SCHOOL	Ref.	Ref.	Ref.	Ref.	Ref.
PRIMARY	0.212**	1.241	0.218	1.723**	0.398
	(0.104)	(0.807)	(0.542)	(0.791)	(0.640)
SECONDARY	0.330***	1.707**	0.434	1.753**	1.292**
	(0.104)	(0.806)	(0.542)	(0.791)	(0.639)
POST-SEC	0.295***	1.562*	0.737	1.446*	1.062
	(0.108)	(0.824)	(0.564)	(0.812)	(0.660)
TERTIARY	0.427***	2.465***	0.483	1.670**	1.759***
	(0.109)	(0.828)	(0.570)	(0.814)	(0.666)
EMPLOYED	0.112***	0.562***	0.434***	0.262	0.379**
	(0.032)	(0.183)	(0.165)	(0.181)	(0.176)
POLITICS	0.243***	1.376***	-0.125	0.494***	1.160***
	(0.030)	(0.167)	(0.152)	(0.159)	(0.165)
GOZO	0.028	-1.170***	1.270***	0.619***	-0.017
	(0.044)	(0.296)	(0.254)	(0.235)	(0.244)
ALL	0.241***	1.063***	0.263	1.038***	0.836***
	(0.040)	(0.224)	(0.204)	(0.229)	(0.214)
NOT SPIRITUAL	0.168**	0.983***	-0.249	1.015***	0.339
	(0.067)	(0.374)	(0.348)	(0.360)	(0.355)
NO ACTIVITY	-0.028	-0.198	0.385*	0.129	-0.513**
	(0.045)	(0.271)	(0.233)	(0.268)	(0.255)
NO ATTENDANCE	0.278***	0.880**	0.635**	0.920***	1.377***
	(0.063)	(0.348)	(0.320)	(0.341)	(0.359)
ONLY ATTENDANCE	-0.042	-0.436	-0.140	0.183	-0.197
	(0.049)	(0.299)	(0.252)	(0.290)	(0.266)
ONLY ACTIVITY	0.320***	1.424***	1.111**	0.675	1.376**
	(0.094)	(0.550)	(0.518)	(0.514)	(0.565)
ONLY SPIRITUAL	0.095**	0.357	0.492**	0.582**	0.067
	(0.043)	(0.242)	(0.222)	(0.255)	(0.232)
NONE	Ref.	Ref.	Ref.	Ref.	Ref.
Constant	-0.040	-3.102***	-1.122**	-3.716***	-2.307***
	(0.109)	(0.834)	(0.571)	(0.826)	(0.671)
Observations	1,029	1,029	1,029	1,029	1,029

Notes: Standard errors in parentheses; significance level: *** p<0.01, ** p<0.05, * p<0.1

Table 3 presents the results which allow us to understand the extent to which being in any one of these segments helps explain higher levels of environmental engagement, relative to the reference group. contributes to environmental engagement, relative to the reference group. Examining the coefficients on the variables ONLY_ACTIVITY, ONLY_ATTENDANCE and ONLY_SPIRITUAL gives us an indication of the marginal impacts. Once again, we find that "interest in religious activities" by itself (ONLY_ACTIVITY), even stripped of the complementary church attendance or spirituality contributes the largest marginal effect on environmental engagement (relative to those who are not engaged at all). Further tests reveal that the coefficients of this variable are positive and significant in four out of the five environmental dimensions. Being spiritual but not religious (ONLY_SPIRITUAL) also explains stronger environmental engagement in three out of the five environmental dimensions examined. On the other hand, attending mass, by itself, without interest in religious activities or spirituality (ONLY_ATTENDANCE) is associated with very small and insignificant marginal effects in all domains of environmental engagement. Focusing on the results for the model with the factor variable as the dependent variable, we can see that the marginal effect of being interested in church activities (relative to not being engaged at all) is 0.320, while that of being exclusively spiritual is 0.095. The marginal effect of attending mass once a week or more frequently is not significantly different from not being religious or spiritual at all. These results again suggest that we may reject H0 and H1 and that there is support for H2 and H3. They again accentuate the finding that church attendance is only positively associated when linked with spirituality and with interest in religious activities. In and of itself, frequent attendance to mass, yields no additional explanatory power to environmental engagement, as defined by any of the constructs.

3.2 Discussion

For the purposes of robustness testing, we also estimate models where all three variables (Activity, Attendance and Spirituality) are included simultaneously, with and without interacted variables (Table A2). This is performed using the environmental composite factor as the dependent variable. When the three variables are included together, the results yield a *negative* and significant signal on the church attendance variable, suggesting that this phenomenon, has a potentially negative association with environmental engagement if spirituality and interest in religious activities are kept constant. However, once we control for the interaction effects between the variables, the negative coefficient is no longer significant. This outcome once again supports our previous findings that interest in church activities and spirituality yield positive and significant outcome, while the net pure effect of church attendance, *by itself*, yields no significant explanatory power on environmental engagement, either way.

To further assess the reliability of our results we examine multicollinearity in our models using Variance Inflation Factors (VIF). We find our explanatory variables to be well below the threshold criteria (VIF<10). For the OLS regressions we also tested heteroscedasticity (Breush-Pagan test) finding no heteroscedasticity problems. Finally, to glean further insights/prospects we also examined the underlying demographics that distinguish our eight segments. The only group with significant differences in the demographics is the reference group "NONE", composed of those people who are dis-interested in religious activities, do not attend mass frequently, and do not consider themselves to be spiritual. They are younger, more likely to be male, married and employed.

Our results suggest that while the relationship between church attendance and environmental engagement is tenuous, participation in religious activities (in our context being those of a socio-cultural nature) is positively associated with most of the dimensions of environmental engagement at our disposal. Similarly, the increasingly relevant phenomenon of spirituality is associated with environmental engagement in all domains. While these results are highly interesting and contribute novel insights to the literature, they are still subject to the limitations of the method we employed. In particular, the data used presents the usual problems encountered when using secondary data based on surveys. While the data furnished us with an opportunity to assess more than one aspect of environmental engagement and religiosity, there are several other important aspects of environmental engagement that we could not examine as the questions were not included in the original questionnaire. Moreover, given that the answers given by respondents were based on self-assessment the data may be flawed – although there is no reason for us to believe that the error is systematic.

A further set of limitations arise out our reliance on cross-sectional analysis. This limits our ability to identify causal effects. As in other studies of this nature, the estimated coefficients may suffer from unobserved variable bias, that is, results may be driven by some preferences which we did not observe or control for. In such instances, the explanatory variables could be correlated with the error term (endogeneity) resulting in potential mis-estimation of the coefficients and preventing us, again, from making causal claims. While endogeneity does not invalidate the regression specification it leaves open the possibility of enriching the right-hand side in our specification. For instance, it may well be that those who are interested in church activities have stronger pro-social preferences - in turn associated with stronger pro-environmental behavior. To test for this prospect, we returned to the original data set and constructed an additional variable that captures pro-social preferences on a scale from 1-15 by combining data on frequency of meeting family (1-5), frequency of meeting friends (1-5) and

frequency of volunteering (1-5). Re-estimating the models in Table 2 and 3 with the inclusion of this variable (reported in Appendix Table A3) resulted in a slight *reduction* of the coefficient on the variable capturing interest in church activities (R_ACTIVITY) but did not change the main conclusion that this phenomenon is positively and significantly associated with environmental engagement.

While our estimations are underpinned by a theoretical model of environmental engagement, and while we have sought to control for the impact of co-determinants by, we have been careful to avoid reference of the *effects* of religion. In the spirit of scientific caution, we have also stopped short of making policy recommendations. Future research could enrich our findings by employing field experiments to analyse causality.

4. Conclusion

The relationship between religion and environmental engagement has long been philosophically debated, but empirical studies are limited and display diverse results. Our review of the literature reveals that the relationship between the two sets of phenomena seems to vary not only in size but also in direction, depending on definitions and the method of investigation adopted. An increasingly important phenomenon which has received far less attention is that of spirituality, within/out the context of a religion. Our study has assessed these relationships empirically through econometric modelling and estimation. We employed data drawn from a predominantly Roman Catholic country where environmental degradation is high and where secularization is on the increase. We examined interest in environmental issues, interest in wildlife and natural history, engagement in countryside activities and gardening.

Besides regional differences, we found that married, employed, older individuals, and those with higher education tend to have higher levels of environmental engagement. These findings echo those in the mainstream literature. In relation to the central question addressed by this study, we found that both interest in religious activities (referring to socio-cultural activities) and (self-assessed) spirituality are associated with higher probabilities of being engaged in several of the environmental dimensions assessed. These findings survive different specifications and estimation methods. On the other hand, in and of itself, frequent attendance to mass, yields no additional explanatory power to environmental engagement, as defined by any of the constructs. In conclusion, while we find scant evidence of a relationship between church attendance and environmental

engagement, we do find that interest in religious activities and self-assessed spirituality are both positively and significantly associated with environmental engagement.

References

Andreoni, J. (1990). Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal, 100*(401), 464-477.

Arbuckle, M. B., & Konisky, D. M. (2015). The role of religion in environmental attitudes. *Social Science Quarterly, 96*(5), 1244-1263.

Archdiocese of Malta. (2019). *The Archbishop's appeal to refrain from destroying what is beautiful to make money.* Retrieved from http://thechurchinmalta.org/en/posts/78670/the-archbishops-appeal-to-refrain-from-destroying-what-is-beautiful-to-make-money

Bamberg, S., & Möser, G. (2006). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behavior. *Journal of Environmental Psychology, 27*, 14-25.

Bar-El, R., García-Muñoz, T., Neuman, S., & Tobol, Y. (2013). The evolution of secularization: Cultural transmission, religion and fertility: Theory, simulations and evidence. *Journal of Population Economics, 26*(3), 1129-1174.

Barker, E. (2004). The church without and the God within: Religiosity and/or spirituality. In D. Jerolimov, S. Zrinscak & I. Borowik (Eds.), *Religion and patterns of social transformation.* (pp. 23-47). Zagreb: Institute for Social Research.

Bloch, J. P. (1998). Alternative spirituality and environmentalism. *Review of Religious Research, 40*(1), 55-73.

Branas-Garza, P., Garcia-Munoz, T., & Neuman, S. (2013). Determinants of disaffiliation: An international study. *Religion, 4*(1), 166-185.

Briguglio, L. (M. ?), & Buttigieg, E. (2004). Competition constraints in small jurisdictions. *Bank of Valletta Review, 30, Autumn*, pp. 1-13.

Briguglio, M. (2016). Household cooperation in waste management: Initial conditions and interventions. *Journal of Economic Survey, 20*(3), 297-525.

Briguglio, M., & Formosa, G. (2017). When households go solar: Determinants of uptake of a photovoltaic scheme and policy insights. *Energy Policy, 108, 108*(154-162).

Briguglio, M., & Sultana, A. (2015). The effect of the Maltese *Festa* on well-being: An Economic analysis, with a focus on youth participation. In A. Azzopardi (Ed.), *Young People and the "Festa" in Malta* (pp. 51-73).

Malta: Best Print Co. Ltd. Retrieved from http://festiinklussivi.eu/wp-content/uploads/2016/12/publikazzjoni.pdf

Briguglio, M.,Delaney, L., & Wood, A. (2016). Voluntary recycling despite disincentives. *Journal of Environmental Planning and Management, 59*(6), 1751-1774. doi: https://doi.org/10.1080/09640568.2015.1086323

Caruana, C. (2019, January 27). Mass attendance set to collapse in the years to come: Data from last census shows young people are staying away in droves**.** *The Sunday Times of Malta* [Online]. Retrieved from https://www.timesofmalta.com/articles/view/20190127/local/mass-attendance-set-to-collapse-in-the-years-to-come.700305

Church Environment Commission (Malta). (2018, March 13.). *Worrisome decisions by planning authority and environment resources authority*. Retrieved from http://thechurchinmalta.org/en/posts/75894/worrisome-decisions-by-planning-authority-and-environment-resources-authority

Clements, J. M., McCright, A. M., & Xiao, C. (2014). An examination of the 'Greening of Christianity' thesis among Americans. *Journal for the Scientific Study of Religion, 53*(2), 373-391.

Davison, K. & Briguglio, M. (2020, forthcoming). *The effect of political preferences on willingness to pay for landscape protection: The case of Zonqor Point, Malta*

Djupe, P. A., & Hunt, P. K. (2009). Beyond the Lynn White thesis: Congregational effects on environmental concern. *Journal for the Scientific Study of Religion, 48*(4), 670-686.

Driver, B. L., Dustin, D., Baltic, T., Elsner, G., & Peterson, G. (Eds.) (1996). *Nature and the human spirit: Toward an expanded land management ethic.* State College, PA: Venture Publishing.

Ellul, J. (2014). The Catholic identity of Malta after ten years of European Union membership: Challenges and prospects. *Reflections of a Decade of EU Membership: Expectations, Achievements, Disappointments and the Future. Occasional Papers, 2*. Msida, Malta: The institute of the European Studies (Malta), University of Malta.

European Commission (EC). (2018). Special Eurobarometer 416: Attitudes of European citizens towards the environment. Retrieved from https://data.europa.eu/euodp/en/data/dataset/S2008_81_3_416

Fowler, J. W. (1996). *Faithful change: The personal and public challenges of postmodern life.* Nashville, TN.: Abingdon Press.

Francis. (2015). *Laudato si': On care for our common home.* Retrieved from http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si_en.pdf

Guth, J. L., Kellstedt, L. A., Smidt, C. E., & Green, J. C. (1993). Theological perspectives and environmentalism among religious activists. *Journal for the Scientific Study of Religion, 32*(4), 373-382.

Hand, C. M., & Van Liere, K. D. (1984). Religion, mastery-over-nature, and environmental concern. *Social Forces, 63*(2), 555-570.

Hill, P. C., & Paragament, K. I. (2003). Advances in the conceptualization and measurement of religion and spirituality: Implications for physical and mental health research. *The American Psychologist, 58*(1), 64-74.

Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1986/87). Analysis and synthesis of research on responsible environmental behaviour: A meta-analysis. *Journal of Environmental Education, 18*(1-8).

Jenkins, W., & Chapple, C. K. (2011). Religion and environment. *The Annual Review of Environment and Resources, 36*, 441-463.

Kagany, C. L., & Willits, F. K. (1993). A greening of religion? Some evidence from a Pennsylvania sample. *Social Science Quarterly, 74*(3), 674-683.

Kanagy, C. L., & Nelsen, H. M. (1995). Religion and environmental concern: Challenging the dominant assumptions. *Review of Religious Research, 37*(1), 33-45.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research, 8*(3), 239-260. doi:10.1080/13504620220145401.

Laws of Malta. (1964). *Constitution of Malta*. Retrieved from http://justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=8566

Lynn, P., & Longhi, S. (2011). Environmental attitudes and behaviour: Who cares about climate change? In Understanding Society *Early findings from the first wave of the UK's household longitudinal study.* (pp. 109-116). Essex, England: University of Essex, Understanding Society.

Malta Environment and Planning Authority (MEPA). (2012). *The environment report indicators 2010-2011*. Retrieved from https://era.org.mt/en/P.s/The-Environment-Report-Indicators-2010-2011.aspx

Minteer, B. A., & Manning, R. E. (2005). An appraisal of the critique of anthropocentricism and three lesser known themes in Lynn White's 'The historical roots of our ecological crisis'. *Organization and Environment, 18*(2), 163-176.

Mobley, C., Vagias, W. M., & Deward, S. L. (2010). Exploring additional determinants of environmentally responsible behaviour: The influence of environmental literature and environmental attitudes. *Environment and Behaviour, 42*(4), 420-447. doi: https://doi.org/10.1177/0013916508325002

Moncada, S., Spiteri, J., & Briguglio, M. (2018). Environmental economics and small states. In L. Briguglio (Ed.), *Handbook of small states: Economic social and environmental issues (European perspectives: Emerging economies).* (pp. 492-596) Routledge Abingdon, England.

National Statistics Office (NSO) Malta. (2015). *Malta in figures 2014.* Valletta, Malta: National Statistics Office (Malta). Retrieved from https://nso.gov.mt/en/publicatons/Publications_by_Unit/Documents/D2_Dissemination_Unit/Malta_in_Figures_2014.pdf

National Statistics Office (NSO) Malta. (2018a, July 11). *News release 107/2018: World population day.* Retrieved from https://nso.gov.mt/en/News_Releases/View_by_Unit/Unit_C5/Population_and_Migration_Statistics/Documents/2018/News2018_107.pdf

National Statistics Office [NSO] Malta. (2017a). *Cultural participation survey 2016: An Arts Council Malta publication*. Retrieved from https://nso.gov.mt/en/publicatons/Publications_by_Unit/Documents/C1_Living_Conditions_and_Culture_Statistics/Cultural%20Participation%20Survey%202016.pdf

National Statistics Office [NSO] Malta. (2018b). *Statistics on Pre-Primary, Primary and Secondary Formal Education 2012/2013 - 2016/2017*. Retrieved from https://nso.gov.mt/en/publicatons/Publications_by_Unit/Documents/C4_Education_and_Information_Society_Statistics/Statistics_on_Pre-primary, primary and Secondary Formal Education.pdf

National Statistics Office, NSO Malta. (2017b). *NSO news release, 030/2017: Municipal waste: 2015.* Retrieved from https://nso.gov.mt/en/News_Releases/View_by_Unit/Unit_B3/Environment_Energy_Transport_and_Agriculture_Statistics/Documents/2017/News2017_030.pdf

Radkau, J. (2012). Religion and environmentalism. In J. R. McNeil, & E. S. Mauldin (Eds.), *A comparison to global environmental history*. Malden, MA and Oxford, England: Wiley-Blackwell.

Roof, W. C. (1993). *A generation of seekers: The spiritual journeys of the baby boom generation.* San Francisco: Harper-Collins.

Schnell, T. (2012). Spirituality with and without religion – differential relationships with personality. *Archive for the Psychology of Religion, 34*, 33-61.

Schnell, T., & Keenan, W. J. F. (2011). The construction of atheist spirituality: A survey based study. In H. Westerink, & S. Heine (Eds.), *Constructs of meaning and religious transformation.* Vienna: Vandenhoeck& Ruprecht.

Schultz, P. W., Zelezny, L., & Dalrymple, N. J. (2000). A multinational perspective on the relation between Judeo-Christian religious beliefs and attitudes of environmental concern. *Environment and Behavior, 32*(4), 576-591.

Stern, P.S., Dietz, T. & Karlof, L. (1993). Values orientation, gender, and environmental concern. *Environment and Behavior*, 25(3), pp. 322–348.

Taylor, B. (2001). Earth and nature-based spirituality (part I). *From Deep Ecology to Radical Environmentalism, Religion, 31*(2), 175-193. doi:10.1006/reli.2000.0256.

Tittle, C. R. (1980). *Sanctions and social deviance: The question of deterrence.* New York, NY: Praeger.

Tucker, M. E., & Grim, J. (2007). The greening of the world's religions. *Chronicle of Higher Education, 53*(23), B9-B10.

White, L. J. (1967). The historical roots of our ecological crisis. *Science, 155*, 1203-1207.

Wilkinson, K. W. (Ed.). (2012). *Between God and green: How Evangelicals are cultivating a middle ground on climate change.* New York, NY: Oxford University Press.

Zinnbauer, B. J., Pargament, K. I., Cole, B., Rye, M. S., Butter, E. M., Belavich, T. G., & Kadar, J. L. (1997). Religion and spirituality: Unfuzzying the fuzzy. *Journal for the Scientific Study of Religion, 36*(4), 549-564.

Appendix Table A1: Regression Analyses of Other Components of Environmental Engagement

	E_OUTDOOR			E_GARDEN			E_WILDLIFE		
VARIABLES	**Model 2**	**Model 3**	**Model 4**	**Model 2**	**Model 3**	**Model 4**	**Model 2**	**Model 3**	**Model 4**
AGE_55+	0.297	0.346*	0.265	0.446**	0.488**	0.499**	0.120	0.264	0.225
	(0.193)	(0.196)	(0.194)	(0.211)	(0.207)	(0.207)	(0.203)	(0.204)	(0.202)
FEMALE	0.0182	0.0316	-0.0215	0.0854	0.122	0.0862	-0.0312	0.0403	0.00768
	(0.134)	(0.134)	(0.135)	(0.143)	(0.141)	(0.143)	(0.144)	(0.140)	(0.141)
MARRIED	0.0799	0.104	0.0566	0.632***	0.617***	0.621***	0.296**	0.329**	0.308**
	(0.139)	(0.140)	(0.139)	(0.152)	(0.150)	(0.150)	(0.150)	(0.147)	(0.146)
CHILDREN	0.172	0.179	0.144	-0.0200	0.0212	-0.0138	-0.0759	-0.0241	-0.0496
	(0.172)	(0.171)	(0.173)	(0.191)	(0.187)	(0.187)	(0.184)	(0.182)	(0.182)
NO SCHOOL									
	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
PRIMARY	0.181	0.186	0.211	1.709**	1.542*	1.610**	0.336	0.220	0.255
	(0.530)	(0.533)	(0.528)	(0.811)	(0.806)	(0.811)	(0.556)	(0.576)	(0.578)
SECONDARY	0.371	0.390	0.416	1.730**	1.555*	1.655**	1.178**	1.033*	1.078*
	(0.529)	(0.532)	(0.528)	(0.812)	(0.807)	(0.811)	(0.554)	(0.575)	(0.576)
POST_SEC	0.603	0.617	0.708	1.381*	1.178	1.349	0.936	0.755	0.847

	(0.549)	(0.552)	(0.549)	(0.833)	(0.826)	(0.831)	(0.577)	(0.597)	(0.600)
TERTIARY	0.389	0.421	0.453	1.625*	1.469*	1.601*	1.575***	1.449**	1.508**
	(0.555)	(0.559)	(0.554)	(0.838)	(0.831)	(0.835)	(0.587)	(0.605)	(0.606)
EMPLOYED	0.439***	0.422***	0.449***	0.259	0.212	0.214	0.411**	0.319*	0.331*
	(0.162)	(0.163)	(0.164)	(0.177)	(0.175)	(0.176)	(0.174)	(0.171)	(0.171)
POLITICS	-0.127	-0.103	-0.121	0.489***	0.641***	0.641***	1.166***	1.322***	1.319***
	(0.152)	(0.149)	(0.149)	(0.158)	(0.153)	(0.153)	(0.164)	(0.158)	(0.158)
GOZO	1.161***	1.214***	1.183***	0.592**	0.596**	0.666***	-0.152	-0.0245	-0.0286
	(0.252)	(0.255)	(0.249)	(0.230)	(0.233)	(0.231)	(0.240)	(0.231)	(0.228)
R_ACTIVITY	0.0875			0.773***			1.027***		
	(0.138)			(0.142)			(0.146)		
R_ATTEND		-0.160			0.241*			-0.0174	
		(0.138)			(0.144)			(0.143)	
SPIRITUALITY			0.397***			0.444***			0.298**
			(0.140)			(0.151)			(0.144)
Constant	-0.871	-0.804	-1.102**	-3.462***	-3.160***	-3.408***	-2.283***	-1.850***	-2.060***
	(0.545)	(0.547)	(0.549)	(0.832)	(0.822)	(0.835)	(0.575)	(0.589)	(0.600)
Observations	1,029	1,029	1,029	1,029	1,029	1,029	1,029	1,029	1,029

Notes: Robust standard errors in parentheses; Significance levels: *** p<0.01, ** p<0.05, * p<0.1

Appendix Table A2: Regressions with interacted spiritual/religious variables

VARIABLES	E_FACTOR	E_FACTOR
AGE_55+	0.073*	0.073*
	(0.038)	(0.038)
FEMALE	0.002	0.001
	(0.026)	(0.026)
MARRIED	0.075***	0.075***
	(0.027)	(0.028)
CHILDREN	-0.019	-0.019
	(0.033)	(0.034)
EDUCATION: NO SCHOOLING	Ref.	Ref.
PRIMARY	0.214**	0.212**
	(0.104)	(0.104)
SECONDARY	0.333***	0.330***
	(0.104)	(0.104)
POST-SECONDARY	0.297***	0.295***
	(0.108)	(0.108)
TERTIARY	0.427***	0.427***
	(0.109)	(0.109)
EMPLOYED	0.114***	0.112***
	(0.032)	(0.032)
POLITICS	0.243***	0.243***
	(0.030)	(0.030)
GOZO	0.026	0.028
	(0.044)	(0.044)
R_ACTIVITY	0.245***	0.320***
	(0.029)	(0.094)
R_ATTEND	-0.079***	-0.042
	(0.029)	(0.049)
SPIRITUALITY	0.056*	0.095**
	(0.029)	(0.043)
R_ACTIVITY*R_ATTEND		-0.109
		(0.117)
R_ACTIVITY*SPIRITUALITY		-0.136
		(0.113)
R_ACTIVITY*SPIRITUALITY		-0.080
		(0.066)
R_ACTIVITY*R_ATTEND*SPIRITUALITY		0.195
		(0.138)
Constant	-0.028	-0.040
	(0.109)	(0.109)
Observations	1,029	1,029

Notes: Standard errors in parentheses; Significance levels: *** p<0.01, ** p<0.05, * p<0.1

Appendix Table A3: Regressions with inclusion of social capital variables

	E_FACTOR				E_GREEN			
VARIABLES	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 1**	**Model 2**	**Model 3**	**Model 4**
AGE_55+	0.096**	0.063*	0.093**	0.083**	0.202	0.042	0.177	0.152
	(0.039)	(0.038)	(0.039)	(0.039)	(0.208)	(0.214)	(0.210)	(0.209)
FEMALE	0.021	0.005	0.020	0.008	0.081	0.014	0.075	0.031
	(0.027)	(0.026)	(0.027)	(0.027)	(0.145)	(0.150)	(0.146)	(0.147)
MARRIED	0.082***	0.070**	0.080***	0.074***	0.003	-0.064	-0.014	-0.031
	(0.028)	(0.027)	(0.029)	(0.028)	(0.152)	(0.156)	(0.154)	(0.153)
CHILDREN	-0.001	-0.016	-0.001	-0.0117	-0.112	-0.190	-0.117	-0.154
	(0.035)	(0.034)	(0.035)	(0.035)	(0.186)	(0.192)	(0.187)	(0.188)
NO SCHOOL	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
PRIMARY	0.177	0.202*	0.176	0.188*	1.097	1.235	1.103	1.165
	(0.108)	(0.104)	(0.108)	(0.107)	(0.797)	(0.806)	(0.799)	(0.801)
SECONDARY	0.287***	0.313***	0.285***	0.302***	1.499*	1.663**	1.500*	1.584**
	(0.108)	(0.104)	(0.108)	(0.107)	(0.797)	(0.806)	(0.799)	(0.801)
POST SEC	0.228**	0.269**	0.226**	0.261**	1.282	1.496*	1.285	1.441*
	(0.113)	(0.109)	(0.113)	(0.112)	(0.814)	(0.825)	(0.816)	(0.819)
TERTIARY	0.378***	0.401***	0.376***	0.398***	2.212***	2.400***	2.208***	2.330***
	(0.114)	(0.110)	(0.114)	(0.113)	(0.819)	(0.830)	(0.821)	(0.824)
EMPLOYED	0.102***	0.117***	0.103***	0.105***	0.467***	0.572***	0.475***	0.488***
	(0.033)	(0.032)	(0.033)	(0.033)	(0.177)	(0.182)	(0.177)	(0.178)
POLITICS	0.294***	0.244***	0.294***	0.291***	1.505***	1.366***	1.502***	1.509***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.161)	(0.166)	(0.161)	(0.162)
GOZO	0.031	0.006	0.027	0.031	-1.024***	-1.223***	-1.054***	-1.036***
	(0.045)	(0.043)	(0.046)	(0.045)	(0.280)	(0.291)	(0.283)	(0.282)
R_ACTIVITY		0.234***				1.072***		
		(0.027)				(0.153)		
R_ATTEND			0.015				0.115	
			(0.028)				(0.150)	
SPIRITUAL				0.113***				0.473***
				(0.028)				(0.153)
SOCIAL_CAP	0.011	-0.002	0.010	0.010	0.063	0.009	0.056	0.059
	(0.014)	(0.013)	(0.014)	(0.014)	(0.074)	(0.077)	(0.075)	(0.075)
Constant	0.072	-0.009	0.068	-0.001	-2.579***	-3.043***	-2.625***	-2.923***
	(0.112)	(0.108)	(0.112)	(0.112)	(0.811)	(0.826)	(0.816)	(0.824)
Observations	1,029	1,029	1,029	1,029	1,029	1,029	1,029	1,029

Notes: Standard errors in parentheses; Significance levels *** p<0.01, ** p<0.05, * p<0.1