Master Thesis

(45 ECTS)

Islamic Environmentalism

An empirical investigation and recommendations

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Contents

Abstract

This research looks at the psychological antecedents, namely religion and attitudes, that lead to environmentally significant behaviours of Muslims in the Netherlands. By drawing upon and incorporating Value-Belief-Norm theory, the Post Critical Belief scale and the Environmental Attitudes Inventory, the Islamic Environmentalism Model is the first comprehensive attempt at constructing a predictive model of environmental behaviours of Muslims. While the results do not enable this research in definitively accepting or rejecting the model, interesting observations arise that could provide policy recommendations as well as set the direction for future research in this nascent field.

1. Introduction

Backed by extensive research, the processes driving global warming over the last few decades have largely been traced to anthropogenic origins(Intergovernmental Panel on Climate Change, 2013), or human behaviours that lead to significant environmental impact (Stern, 2000). Attendant are stark warnings concerning the existential consequences for human civilization (Hansen, 2012). These human behaviours are referred to as environmentally significant behaviours.

Environmentally significant behaviours can be described either through their impact, signifying the degree to which they affect the availability of resources and alter the composition of the biosphere itself; or its intent, meaning behaviour undertaken with the expectation to change (usually, to benefit) the environment (Stern, 2000). This research looks at the latter, withtheterms pro-environmental, pro-environmental behaviours and environmentalism used inter-changeably.

These behaviours arise as humans fulfil their range of abilities and desires (Stern, 2000), which are in turn motivated by factors such as human attitudes, predispositions, beliefs and social structures (Swim et al., 2011). The academic discipline of environmental psychology has looked deeply into cognitive motivators of environmentally significant behaviours, analysing causal factors and related theories leading to higher or lower frequency of environmentalism (Newsome & Alavosius, 2011).

One area of focus for environmental psychology is religion (Stern, 2000), the argument being that certain Judeo-Christian beliefs make adherents susceptible against(Hand & Liere, 1984; Kanagy & Willits, 1993; Schultz, Zelezny, & Dalrymple, 2000; White Jr, 1967) or predisposed in favour of acting pro-environmentally (Boyd, 1999; Sherkat & Ellison, 2007). However, literature increasingly contends that it is not so much having religious beliefs that decide whether or notdevotees will behave pro-environmentally, but rather the manner in which they process their beliefs and accompanying texts(Gennerich & Huber, 2006; Tarakeshwar, Swank, Pargament, & Mahoney, 2001)

The importance of focusing on groups motivated through religion are myriad, ranging from it being a powerful force shaping people's worldviews; having a broad and receptive audience; significant institutional and economic resources; and connectivity that nurtures community and the achievement of collective goals (Gardner & Peterson, 2002; Veldman, Szasz, & Haluza-DeLay, 2014). Furthermore, the corpus on environmental activism has noted that

environmental activism often has a spiritual dimension (Kearns & Keller, 2007), and that environmental spirituality may be considered a religion in itself (Taylor, 2010).

In spite of this, climate change movements have largely maintained exclusively secular credentials, wilfully shunning religiously inspired activism(Nita, 2014).Further, despite growth in literature trying to understand the influence of religious beliefs on environmentalism, calls for greater efforts have been made. This applies to enhancement and consolidation of empirical measures of religion (Hill, 2013) and environmentalism (Milfont, 2012), as well as(the focus of this research), the link between the two (Veldman et al., 2014).An overview of the literature investigating the relationship of religion on environmentalism reveals a wide range of measurements and models (Guth, Green, Kellstedt, & Smidt, 1995; Horenstein, 2012).

A majority of religio-environmental studies have focused on Judeo-Christian samples with the United States (Veldman et al., 2014), which has led to a general neglect of other religions and regions. Islam is one of the major religions of the world, with over 1.6 billion followers (Pew Research Center, 2011). Muslim scholars posit that Islam provides a comprehensive belief system, drawn from their holy book the Qur'an and sayings of the Prophet Muhammad (Foltz, Denny, & Baharuddin, 2003) This hold over the imagination claims to extend into the environmental domain, whereby humans are considered one part of an intricate system designed by God, in which their role includes ensuring survival, but within the confines of responsible leadership (Al-Dīn, 2000; Foltz et al., 2003).

However, despite the presence of almost a million Muslims in the Netherlands (Pew Research Center, 2011), there are no major Islamic institutions addressing environmental issues, and most environmentalism is a result of private behaviours (Huiskes, 2014).Globally too, Muslim's practical response towards behaving pro-environmentally has been varied at best (Veldman et al., 2014). Furthermore, empirical measures of the psychology underpinning Muslims behaviours have been tabulated to a lesser extent than even smaller sized religions (Abu-Raiya & Hill, 2013).

Nonetheless, this research is less interested in the degree of environmental behaviours among Muslims, and more so how religion influences their environmental attitudes and behaviours; since the major aim of this research is to look at the *causes* and not amount or types of behaviours. This in turn gives rise to exciting possibilities, in coming up with quantitative socio-psychological motivators unique to Muslim samples; advancing models that move

towards creating a truly international psychology of Islamic and perhaps even general religious, environmentalism. Thus, the main ambition of this research is to develop a 'Model of Islamic Environmentalism'.

Yet, this still begs the question: why study the attitudes and behaviours ofMuslims in the Netherlands through the lens of religion, when various scholars of migration and religion have predicted religious decline and secularization amongst immigrant populations(Bruce, 2011; Inglehart & Norris, 2009; Van Tubergen, 2006)?

In fact, the most recent studies of Muslims in the Netherlands have shown that religion still plays an ongoing and crucial role for this demographic. Smits & Ultee (2013) demonstrated that over a period stretching from 1997-2012, Muslims self-identification with religion registered a slight increase, and that citizens of Turkish and Moroccan-Dutch background had significantly greater chances of identifying with Islam and attending mosques compared to the religious leanings of the general population.

Similarly, Maliepaard and colleagues (2012)found that after a decreasing trend until 2004, the frequency of mosque attendance of Muslims stabilized, belying claims of secularization. A study on second generation Turks in four major Western European capitals (including Amsterdam) found them self-identifying as Muslims with high levels of religious identification and practices (Fleischmann & Phalet, 2011).

Thus, if climate change is to be addressed, it will require the collective effortsand change in behaviours of a variety of actors, of which religious groups are an important one. Factors motivating behaviour must be understood, further enabling the conversion of understanding into effective interventions (Stern, 2000). This research will therefore delve into understanding the religious motivators of environmental attitudes and behaviours among Muslims in the Netherlands, leading towards a model of Islamic Environmentalism. This will enable filling to knowledge gap of cognitive motivators of environmental behaviours of Muslims in the Netherlands. Policy recommendations shall follow.

2. Research Design

2.1   Scientific and social relevance

Scientific relevance

There is a dearth of research exploring the religious determinants of environmentalism. A considerable proportion of the literature is theological and prescriptive rather than empirical or social scientific. Furthermore, the vast majority of research has been conducted on Christian population situated within the United States(Veldman et al., 2014). The lack of empirically tested knowledge of Muslim's religious motivations towards environmental behaviours is even more stark (Rice, 2006).

This research will thus address this gap by being amongst the first that addresses the link between Islam and environmentalism by conducting an empirical research on Muslims in the Netherlands, leading to a Model of Islamic Environmentalism.

Further, the field of environmental psychology is generally littered with "an anarchy of measurements" (Stern, 1992, p. 279)signifying the a-theoretical and fragmented nature of studies within (Dunlap & Jones, 2002).This holds true also in the case of scales and measurement of religion in general (Hill, 2013)including Islam(Abu-Raiya& Pargament, 2011). Emerging work around this topic has focused on advancing and consolidating concepts, theories and measurements (Hill, 2013; Milfont, 2012).

This research will thus address this gap by aiding in the advancing of existing measures that lead to a quantitative model, describing Islamic environmentalism of Muslims in the Netherlands.

Social relevance

In her research of Christians and Muslims participating in Climate Movements and Transition Towns Movement in the United Kingdom, Maria Nita(2014) observed how religious organizations or personswere actively discouraged or prohibited from approaching the issue of climate change through a religious perspective. These tactics range from avoidance of any official associations between the two; discouragement from the expression of faith identity or outright denial of entry as a religious group; and non-faith activists constructing a common narrative that gravitated towards excluding those from traditional religious backgrounds.

This leads to religious activists experiencing identity conflicts, due to their involvement in both religious and climate movements. Nita (2014) goes on to suggest various tools for these activists to bridge this gap, while maintaining the ability to frame their concerns through a 'green' religion. This research can go some way in aiding this.

This research will thus address this gap by showing the psychological mechanisms and perhaps similarity of interpretations among these two different groups (religious vs. non/anti-religious), as well as recommending policies for implementation by policy planners.

Governance relevance

Furthermore, the lessons can also be applied by policy makers seeking behavioural change among Muslim agents towards climate change. One instrument of behaviours change is mandated through message campaigns, structured in such a way that it can resonate with the target audience. It is conceivable that Muslims will be more susceptible to influence if messages can reflect the unique religious and attitudinal antecedents leading to behaviour changes. Then again, it may appear that there is no unique relationship between specific populations and methods of behaviour change, compared to conventional populations. This research will explicate upon justifying and recommending either based on the results.

This research will thus address this gap by suggesting ways in which policy makers could structure messages for specific population to induce behaviour change.

2.2   Research objective

The major aims of this paper are theoretical and empirical.

Environmental impacts are most often a result of human behaviours. In order to understand the cognitive or psychological antecedents giving rise to these, the primary objective of this research is to investigate the religious motivators of Dutch Muslims towards environmental attitudes and behaviours. This will result in an Islamic Model of Environmentalism.

There is great fragmentation in the formulation of the psychology of religious beliefs and the environmentalism. A further objective of this research is to move towards a consolidation of theories and models of religious and environmental theories and models. This will result in a Islamic Model of Environmentalism that is based on the most comprehensive concepts of religion and environmentalism. Consequently, this research will be addressing the following research question:

How does Islam influence the environmental attitudes and behaviours of Muslims in the Netherlands?

The following sub-questions will steer the research:

S1: What are the various models of environmental attitudes and behaviours in literature? *This will be done by looking at existing literature in order to look at present state of theory, and to build up, accept, reject, and integrate into the theoretical framework of this research.*

S2: What are the various models of religiosity in literature? *This will be done by looking at existing literature in order to look at present state of theory, and to build up, accept, reject, and integrate into the theoretical framework of this research.*

S3: What are the various models studying the relationship between religion and environmentalism in literature? *This will be done by looking at existing literature in order to look at present state of theory, and to build up, accept, reject, and integrate into the theoretical framework of this research.*

S4: What are the pro-environmental behaviours of Muslims in the Netherlands? *This is in order to get the most common and relevant environmental behaviours within Dutch society.*
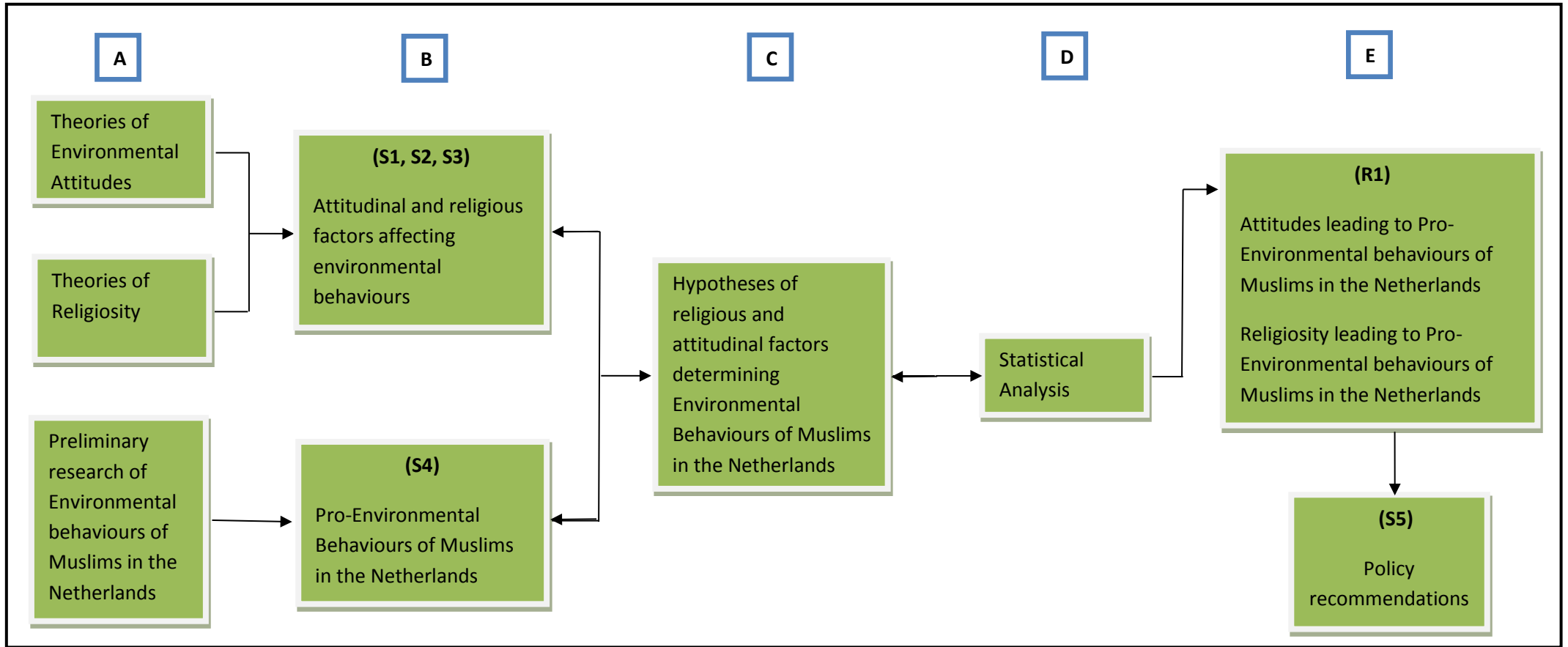
S5: What recommendations can be provided to policy makers for environmental behaviour change among Muslims in the Netherlands? *This is so that policy makers*

may design governance structures best reflecting potential environmental behaviour change.

2.3   Research Framework

This research will be structured according to the follow the following framework (see Figure 1):

A.) An overview of literature related to environmental attitudes and religiosity will enable this research to justify shortlisting the most pertinent factors predicting environmental behaviours of individuals. This effort will reveal a list of independent variables. A second overview of will investigate and list the various typologies of pro-environmental behaviours of Dutch Muslims. This effort will reveal possible dependent variables.

B.) A short-listing of dependent and independent variables will allow the answering of sub-question 1, 2, 3 and 4, research to form hypotheses, subjected against various types of pro-environmental behaviours of Dutch Muslims.

C.) The predictive power of the hypotheses and overall model will be subjected to a statistical analysis.

D.) The data for the statistical analysis will be derived through an administered survey. The survey will consist of multi-item religion, and environmental attitude and behaviour questions.

E.) A regression analyses should reveal the predictive power of the hypotheses, and the underlying attitudes and religiosity of Muslims in the Netherlands that lead to pro-environmental behaviours. The results shall then be converted into policy recommendations.

A

Theories of Environmental Attitudes

Theories of Religiosity

Preliminary research of Environmental behaviours of Muslims in the Netherlands

B

(S1, S2, S3)

Attitudinal and religious factors affecting environmental behaviours

(S4)

Pro-Environmental Behaviours of Muslims in the Netherlands

C

Hypotheses of religious and attitudinal factors determining Environmental Behaviours of Muslims in the Netherlands

D

Statistical Analysis

E

(R1)

Attitudes leading to Pro-Environmental behaviours of Muslims in the Netherlands

Religiosity leading to Pro-Environmental behaviours of Muslims in the Netherlands

(S5)

Policy recommendations

3. Theoretical Framework

This section starts with the genesis of the religio-environmental debate; a brief coverage of empirical findings in literature; an overview of relevant models to this research; and finally a presentation of a potential model that seeks to explains the psychological motivators of environmental behaviours of Muslims in the Netherlands.

3.1 Religion and Nature: The White Debate

The modern debate regarding the role of religion and the environment began inauspiciously enough: historian Lynn White(1967) contented that Judeo-Christianity provided the basis for Western civilizations present exploitation of nature. This apparently stemmed from biblical passages such as "...*Be fruitful and multiply and fill the earth and subdue it and have dominion over the fish of the sea and over the fowl of the air and every beast the moves upon the earth*" (Bible, 2000; Gen 1:28).

Thus, according to White's thesis, Earth and nature within a Judeo-Christian perspective were conceived as an exploitable resource, in thrall to the needs of humankind. It was inherently anti-environmental; the only solution out of this was by rejecting these views towards nature and enacting a new value system (White Jr, 1967).

Critics of White's (1967)charged that the claim was sociological and historical rather than empirical (Truelove & Joireman, 2009), and led to a slew of articles exploring the relationship between religion and nature. Furthermore, by White's own admission, other religions seemed to have less of an antagonistic relationship with nature.

3.2 Religion and Environmentalism: General Empirical Findings

The research corpus looking at the relationship between religion and environmentalism reveals a mixed picture, in terms of models, theories, measures and results. Generally, these can be divided into the following findings: a negative relation found between religiousness and environmentalism; differences in level of environmentalism depending upon religious denomination; no effect of religiosity on environmentalism; and finally, a positive relationship between religiosity and environmentalism (Horenstein, 2012).

Perhaps due to the mixture of approaches, no clear trends have been established. For instance, from a religiosity perspective, studies have looked at the effect of Conservatism(Eckberg & Blocker, 1996; Tarakeshwar et al., 2001; Truelove & Joireman, 2009), sanctified

nature(Tarakeshwar et al., 2001), denomination(Hand & Liere, 1984; Hayes & Marangudakis, 2001) and religious beliefs (Schultz et al., 2000), among others.

These were subjected against various measures of environmentalism, such as beliefs and willingness to sacrifice(Boyd, 1999; Tarakeshwar et al., 2001), behaviours(Tarakeshwar et al., 2001), concern (Hand & Liere, 1984; Schultz et al., 2000), awareness of consequences (Truelove & Joireman, 2009) and different measures grouped as environmental attitudes (Djupe & Hunt, 2009; Eckberg & Blocker, 1996; Hayes & Marangudakis, 2001), to name a few.

Thus the only consistency in literature seems to be inconsistency; a carefully considered process will have to be undertaken to create a coherent model and understanding of how religion influences people's environmental attitudes and behaviours.

3.3   Towards the Construction of a Model: Some Comments

In evaluating models of religion and spirituality, Hill (2013; p. 56) looks at four criteria that decide if these are 'exemplary': the 'theoretical basis' (*"clearly grounded in well established, perhaps dominant, theoretical framework")*; 'sample representativeness' (*"clearly represents a broadly conceived population, not limited by a religious tradition or narrow spirituality")*; 'reliability' (*"excellent 'r > .80'"*) and 'validity' (*"high correlations across multiple and diverse samples from different studies on at least two types of validity")*.

Despite referring to measures of religion and spirituality, these apply to models in general too, and will form the basis upon which the Islamic Environmentalism model will be created.

3.4   Choosing a Foundational Model: The VBN Model

This research draws heavily from the separate but related disciplines of environmental and religious psychology; it looks at how these areas have theorized cognitive antecedents leading to certain types of behaviours. These serve to enrich the eventual model of Islamic Environmentalism since these are areas that have had the benefit of better theorizing and testing; as well as developing a multi-level interdisciplinary paradigm.

3.4.1 VBN Theory

The value-belief-norm (VBN) theory (see figure 1) was originally conceived to explore movement support for environmentalism by looking at pro-environmental behaviours and their determinants (Stern, Dietz, Abel, Guagnano, & Kalof, 1999); it builds and broadens upon several crucial concepts in environmental psychology by tying value theory (Schwartz,

1994), norm activation theory (Schwartz, 1977) and the new environmental paradigm (Dunlap, Liere, Mertig, & Jones, 2000) in a causal chain of five variables that transmit into environmental behaviours.
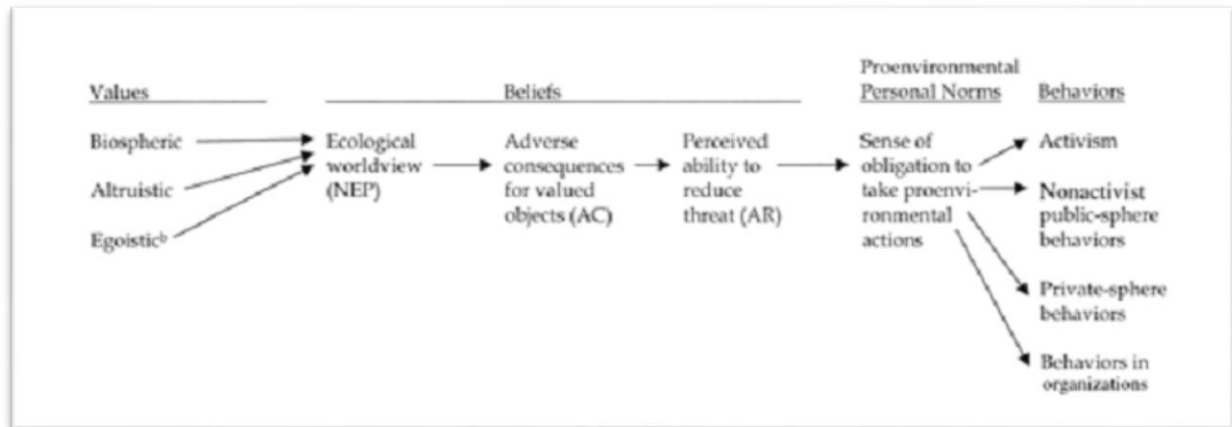

Figure1: Stern et al (2000) Value Belief Norm Model

VBN theory contends that environmental behaviours arise due to the successive triggering in causal fashion of psychological antecedents. This causal chain transmits from comparatively stable, central elements of personality and structures of belief (values), towards more focal beliefs about relations between humans and nature (NEP), their consequences (AC) and responsibility of individuals for taking corrective action; finally sparking a sense of moral obligation (personal norms) to act pro-environmentally (Stern, 2000).

VBN theory posits that there are generally four sub-types of environmental behaviours: *environmental activism* (of the committed sort); *non-activist behaviours in the public sphere* (these can be distinguished between a.) active types of environmental citizenship, such as becoming a member of and contributing towards environmental organizations and b.) acquiescing towards or accepting of public policy, such as purported approval of environmental regulations); *private sphere environmentalism* (involving the purchase, use and disposal of personal and household items that have an impact on the environment); and finally *organizational behaviours*(Stern et al., 1999; Stern, 2000).

3.4.2 Reasons for Choosing the Model

The VBN model will form the foundational basis for the Islamic Environmentalism Model. The reasons are many fold: an assessment of literature reveals 15% of all studies using the VBN model as a theoretical framework for environmental behaviour analysis, and another 15% for the norm activation theory, which is closely related to the former (Klöckner, 2013),indicating a model that has been tested against a variety of behaviours.

The hierarchical and mediating nature of varying psychological concepts leading to the enactment actions or behaviours is also documented (Milfont, Taciano L., Duckitt, John, & Wagner, 2010). Furthermore, elements within the model, such as values, have been tested for similarities against overlapping theories on religion (see: Gennerich & Huber, 2006), allowing for a replacement of components within VBN without compromising its veracity.

3.4.3 Changes in the Model

3.4.3.1 Values scale replaced with religion scale

Schwartz's Values

Schwartz's (Schwartz, 1994) seminal thesis on values, defined as *"trans-situational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity"* (Schwartz, 1994; p.21),exhaustively distinguished 10 different types(see figure 2) that are universal across regions: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity and security. Each of these values forms a continuum of differing concomitant motivations, leading to a circular structure of human values.
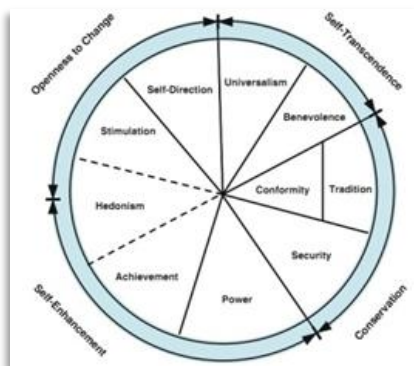
Value types with compatible goals are positively related and emerge adjacent to one another in the two-dimensional representation. Value types with conflicting goals are negatively related and are situated opposite one another. Schwartz (1992) determined three main conflicts within this value structure.

The first relates to conflict between openness to change and conservation; this opposition concerns value types novelty and personal autonomy (Stimulation and Self-Direction) versus value types leading to stability, surety and social order (Tradition, Conformity, and Security).

Figure2: Schwartz's Value Types

The second is a conflict between self-enhancement and self-transcendence, which opposes value types referring to the pursuit of selfish interests (Achievement and Power) against value types promoting the welfare of both near and distant others (Benevolence and Universalism). The third is a conflict between values referring to indulgence in one's desires (Hedonism) and values implying self-restraint and the acquiescence towards external limits (Tradition and

Conformity).Related clusters or grouping can alternatively be called higher order values(Schwartz, 1994).

In a review of theories analyzing social movement support, individuals engage in such activities that relate to the provision of collective goods. In case of movements such as the environmental one, this collective good is oftentimes provided on a regional, national and even global scale, thus giving rise to the 'free rider' problem. However, despite suggestions that some individuals may be fine with provision of collective good on egoistic grounds since they expect adequate personal gain, most are actually motivated for purely broader altruistic concern, whatever the free rider problem.

These two 'value types' for environmental concern, egoistic or self-interest (gain for the self) and altruistic (gain for the other), correspond to the two higher order values: self-enhancement and self-transcendence clusters respectively(Stern et al., 1999).

The Post Critical Belief Scale

In the equally seminal examination of religion and psychology, Wulff (1997) theorized that all religious experience could be organized along two bi-polar dimensions, labelled as exclusion vs. inclusion of transcendence and literal vs. symbolic. The former, on the horizontal axis, concerns the metaphysical aspect of religion while the latter, on a vertical axis, pertains to the type of interpretation towards religious texts. Metaphysically, individuals vary in their level of belief of the transcendental, or experience beyond the physical level. Interpretively, they vary in their understanding of religious texts and objects, a continuum that runs between literal or symbolic extremes of interpreting faith.

Through interaction between these dimensions, four quadrants are formed: Literal Affirmation, Literal Disaffirmation, Reductive Interpretation and Restorative Affirmation (or Second Naiveté). Each relates to a specific religious attitude: Literal Affirmation concerns a belief in the transcendental and draws upon literal interpretations of religious literature; Literal disaffirmation rejects the transcendental while using literal understanding of faith to disavow any possibility of it having

Figure3: The Post Critical Belief Scale
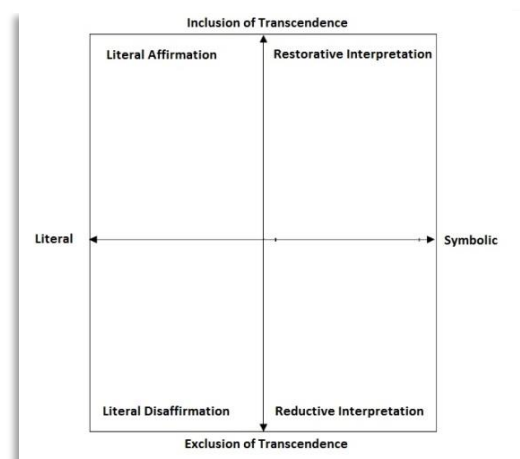
symbolic meaning; Reductive Interpretation acknowledges the value of religious texts through their underlying secular intent or in coming up with more mature forms of faith without including the possibility of transcendence; while Restorative Interpretation (or Second Naiveté) is driven by symbolic interpretations of faith in service of a transcendental metaphysical power.

Hutsebautand colleagues (Bart Duriez, Fontaine, Hutsebaut, & Leuven, 2000; Hutsebaut, 1996, 1997)operationalized this approach by developing the Post-Critical Belief Scale (PCBS) (see figure 3). The initial versions of the scale, ranging from 24 to 33 items, were tested on 16 different Belgian Flemish samples of Roman Catholic background (N=4648), consisting of adolescents, university students and adults between the ages of 16 to 92 (mean=39 years)(Fontaine, Duriez, Luyten, & Hutsebaut, 2003). The PCBS was subjected to a variety of tests with successful results: internal structure analysis revealed support for its construct validity; a high overlap between empirical and theoretical structure supported the authors understanding of the empirical structure in terms of Wulff's(1997) transcendental and interpretive dimensions; and the final structure proved to be relatively consistent across various versions of the PCBS across time and samples.

Replacing values with PCBS

Elaborating upon the definition above, values are considered to be core aspects of the self-concept people posses concerning desirable and undesirable behaviour and end states of existence (Rokeach, 1973). These are transmitted through a variety of institutions, of which religion is one (Rokeach, 1969). Fontaine and colleagues(Fontaine, Duriez, Luyten, Corveyleyn, & Hutsebut, 2005) investigated how at the level of psychological functioning values and religiosity related to each other.

The results of this research were promising, with considerable support for studying the religiosity-values relationship interchangeably through both the PCBS and Schwartz's value model. Exclusion vs. inclusion of transcendence dimension was clearly associated with conflicting Hedonism and Tradition higher order values; while the literal vs. symbolic dimension was characterized by an association with the conflicting self-enhancement vs. self-transcendence higher order values.

These results thus strongly support replacing the values component of the VBN model from Schwartz's integrated values structure with Wulff's two dimensional framework of religion

represented through the PCBS, since it replicates the original approach while being grounded in religion. Further important to mention are the facts that the PCBS is a multi-dimensional approach towards analyzing religion, which compares favourably to the typically uni-dimensional approach taken by earlier research (Fontaine et al., 2005); and that the PCBS has been applied in at least one case to Muslim samples in Iran with generally successful results: factor analysis *"exhibited internal reliabilities that were acceptable for research purposes"*(Ghorbani & Watson, P. J., Shamohammadi, K., Cunningham, 2009; p.160).

In their study of the link between religiosity and racism,Duriez and Hutsebut(2000)measured belief salience (the degree to which belief is considered important for daily life) through the indicator of frequency of church attendance. Despite finding a positive correlation between the two variables, it was not strong enough to suggest that similar things are being measured. This research takes the view that while there may seem to be correlation between other aspects of the total religious experience, attendingchurch (or mosques) and other manifestations of physical belief actually represent a unique aspect of the total religious experience. Thus, a further change within the PCBS is to add one extra dimension to the existing transcendence and interpretive ones: that of religious 'practice'.

3.4.3.2 Beliefs replaced with attitudes

New Ecological Paradigm

Stern's (2000) VBN theory assumes that behaviour is directly predicated by personal norms, that this is initiated by ascription of responsibility, and this further by awareness of consequences, in that order. Further up the causal chain is the New Ecological Paradigm (NEP), which relates to a general ecological worldview. This ecological worldview is composed of accepting that(1) resources are finite, (2) humans are not permitted to dominate nature, (3) human actions threaten natural equilibrium, (4) rejection of exceptionalism, and (5) the possibility of an eco-crisis(Dunlap et al., 2000).

In the original model, the NEP functions as a general environmental attitude (EA), or to measure broad beliefs about the biosphere and the impact of human actions on it; in the VBN theory however it is used to link general beliefs to specific beliefs towards the environment, the latter represented through the awareness of consequences variable .Thus, its purpose within VBN theory is not that of an attitude but rather a link between value orientations and personal norms (Klöckner, 2013).

Environmental Attitudes Inventory

EA are defined as *"a psychological tendency to evaluate the natural environment, and factors affecting its quality, with some degree of favour or disfavour"*(Milfont, 2012; p.270). While there have been a plethora of EA measures, none have been developed to measure the overall structure of this psychological variable, and there is no accepted 'gold standard' in literature. Milfont and Duckitt(2010)attempt to address this gap by conducting an exhaustive literature review and thereafter developing the Environmental Attitudes Inventory (EAI);claiming that EA are multidimensional that can be organized in a hierarchical manner, and consist of a horizontal and vertical structure of environmental attitudes.

The horizontal structure pertains to the dimensionality of EA, or the various perceptions of, or beliefs concerning, the natural environment. EA are multidimensional in nature since these perceptions, or attitudes, can be expressed in terms of several dimensions. The EAI is composed of 12 uni-dimensional scales, which cover the following dimensions: (1) Enjoyment of Nature, (2) Support for Interventionist Conservation Policies, (3) Environmental Movement Activism, (4) Conservation Motivated by Anthropocentric Concern, (5) Confidence in Science and Technology, (6) Environmental Fragility, (7) Altering Nature, (8) Personal Conservation Behaviour, (9) Human Dominance Over Nature, (10) Human Utilization of Nature, (11) Ecocentric Concern, and (12) Support for Population Growth Policies(Milfont, 2009).

The vertical structure in turn concerns the hierarchical cognitive grouping of the horizontal structure. This hierarchical nature arises since the dimensions underlying these attitudes are based on fewer values. Milfont(2012) argues that these values are grounded within two correlated higher attitude dimension, namely Preservation and Utilization, thus comprising the vertical structure of EA. Preservation attitudes expresses the belief that there should be a priority towards maintaining nature and species and biodiversity in its original state; while Utilization attitudes express the belief that it is correct and required to nature and all natural phenomena within to be exploited for human needs (Milfont, 2009). Dimensions 1, 2, 3, 6, 8, 11 and 12 comprise the Preservation higher order factor, while 4, 5, 7, 9 and 10 the Utilization higher order factor.

Replacing NEP with EAI

Due to limitations and different approach of this study, it dispenses with the environmental beliefs component of the VBN theory, and replaces it with an EA scale (which the NEP was originally designed to measure): The EAI scale. The mediating role of attitudes between values and behaviours has also been documented cross culturally, supporting the theoretical assertion that cognitions are organized in a hierarchical fashion, starting from abstract cognitions (e.g. values) to mid-range cognitions (e.g. attitudes) and finally behaviours (Milfont, Taciano L. et al., 2010).

This follows contemporary approaches towards the definition and structure of attitudes: attitudes are understood to be evaluative tendencies, and therefore the structure of is based upon these evaluative tendencies. From this, attitudes can be deduced from, and have an influence on beliefs, affects and behaviours regarding human-environment relations (Milfont, 2009).

Furthermore, despite the widespread use of the NEP scale, a quantitative meta-analytic review of studies using this scale revealed the problematic manner in which the scale was used; and how variability in sample type and scale length affect scores (Hawcroft & Milfont, 2010).Lastly, and perhaps more importantly, the EAI represents a cumulative approach by building on previous theory rather than creating new measures, constructing a psychometrically sound, multi-dimensional inventory that has been assessed cross-culturally(Milfont & Duckitt, 2010).

3.4.3.3 Types of Behaviours

Stern and colleagues(Stern et al., 1999; Stern, 2000) identified four types of environmental behaviours based upon review of literature: activist behaviours, non-activist behaviours in the public sphere, private sphere environmentalism and organization behaviour. The present study's model of Islamic environmentalism will look at the middle two, since the socio-psychological determinants of activist behaviour differ from the ones identified through the model, whereas organizational behaviours pertain to institutions as opposed to individuals, the target of this research.

3.5 Model of Islamic Environmentalism

To reiterate, using the VBN theory and model as a basis for investigation, and switching components of Schwartz's values scale with the PCBS and an extra dimension of religious

practice, beliefs consisting of the NEP, AC, AR and personal norms with the EAI, and finally taking into account only non-activist behaviours in the public sphere and private sphere environmentalism, this research will attempt to construct a model of Islamic environmentalism which studies the psychological antecedents of Muslims in the Netherlands that lead to environmental behaviours. Fig 4 below illustrates this thinking:
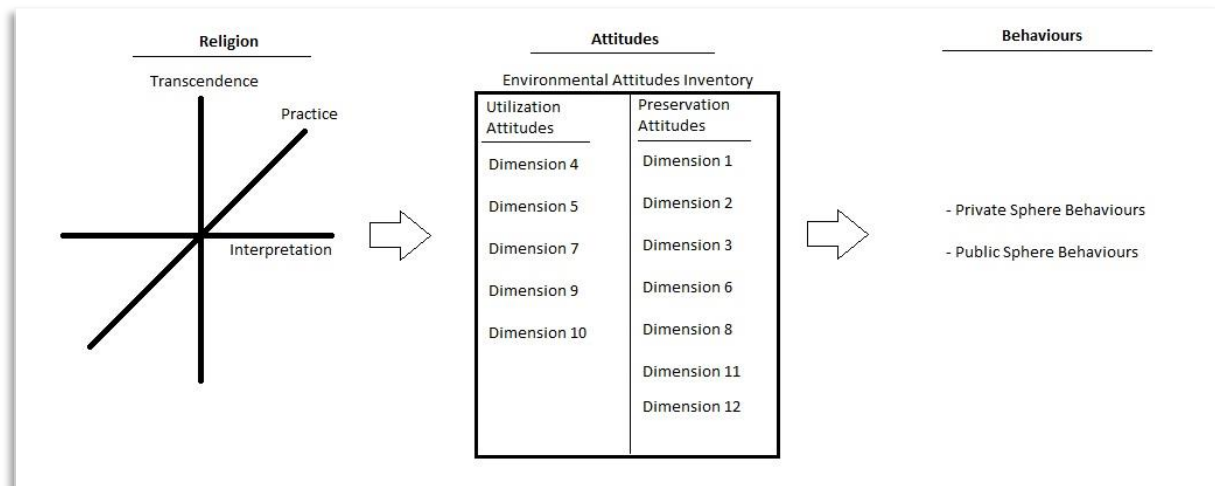
Figure4: Model of Islamic Environmentalism

3.6 Hypotheses

Given the literature review and theoretical framework, it is possible to derive a set of hypotheses:

H1a: respondents scoring high on inclusion of transcendence and symbolic interpretation (Second Naiveté) will score high on preservationist and low on utilitarian attitudes.

H1b: respondents scoring high on inclusion of transcendence, symbolic interpretation (Second Naiveté) and practices will score highest on preservationist and lowest on utilitarian attitudes.

H2a: respondents scoring high on inclusion of transcendence and literal interpretation (Literal Affirmation) will score high on utilitarian and low on preservationist attitudes.

H2b: respondents scoring high on inclusion of transcendence, literal interpretation (Literal Interpretation) and practices will score highest on utilitarian and lowest on preservationist attitudes.

H3a: respondents scoring high on pro-environmental behaviours will score high on inclusion of transcendence and symbolic interpretation and high on preservationist and low on utilitarian attitudes.

H3b: respondents scoring highest on pro-environmental behaviours will score highest on inclusion of transcendence, symbolic interpretation and practices, and will score highest on preservationist and lowest on utilitarian attitudes.

H3c: respondents scoring low on pro-environmental behaviours will score high on inclusion of transcendence and literal interpretation and high on utilitarian and low on preservationist attitudes.

H3d: respondents scoring lowest on pro-environmental behaviours will score highest on inclusion of transcendence, literal interpretation and practices and highest on utilitarian and lowest on preservationist attitudes.

4. Methodology

4.1 Data

The empirical data used to test the hypotheses were collected through an anonymized online survey software (survey gizmo); the survey (see Appendix B) was posted on various Dutch Muslim Facebook groups (see Table 5 in Appendix A) and was also sent through my personal network. All items within the survey were randomized. The duration of survey administration was approximately one month (March 6th, 2016 to April 3rd, 2016). The total response was 179 (*N*=179) individuals, with an unknown response rate. All items were translated into Dutch: items for religion were already translated into Dutch from the original PCBS research, with minor modifications made; attitudes, behaviors and control variables were translated through my personal network, rather than back-to-back translation procedures. There was an over-representation of females (66.3%) and highly educated (Bachelor and Master degrees 61.3%) within the sample.

4.2 Operationalization

Table 1 presents the full list of questions used to operationalize the variables.

Behaviors

E*nvironmental behaviors*, is assessed by measuring three types, *private/consumer behaviors*, *willingness to pay*, and *environmental citizenship*, as posited in Stern (2000). Each type of behaviors was measured by a variety of items: *private behaviors* had 4 items (e.g. *"how often do you avoid buying products from a company that you know might be harming the environment)*, *willingness to pay* had 3 items (e.g. *"I would be willing to pay much higher prices in order to protect the environment"*) and *environmental citizenship* had 8 items (e.g. *"Are you a member of any group whose main aim is to preserve or protect the environment?"*).

All scales were scored (see appendix C for full list of scoring) so that high scores indicated strong endorsement of the concept. Answer categories for *private/consumer behaviors* ranged on a 4 point scale from 'never' to 'always', a 4 point scale ranging from 'strongly disagree' to 'strongly agree' for *willingness to sacrifice*, and 'yes' (1) and 'no' (0) response category for *environmental citizenship* (except for 1 item, *"Some people feel the environmental movement does a great deal of good and strongly support it, others feel the environmental movement does more harm than good and strongly oppose it"* measured on a 4 point scale with answer categories ranging from 'strongly oppose' to 'strongly support'.

Religion

Second Naiveté (high transcendence, high symbolic interpretation) was constructed out of 4 items *(e.g. "The Quran holds a deeper truth which can only be revealed by personal reflection")*; and *Literal Affirmation* (high transcendence, high literal interpretation) was constructed out of 5 items (e.g. *"Even though this goes against modern rationality, I believe Mary truly was a virgin when she gave birth to Jesus")*. Each item was measured using a 7 point Likert scale, with answer categories ranging from '1-completely disagree' to '7-completely agree'. One item "*Despite the high number of injustices Islam has caused people, the original message of the Qur'an remains valuable"* was considered controversial based on initial survey feedback, and was changed to "*despite the injustices caused by some Muslims, the original message of the Qur'an remains valuable". Practices* was constructed out of 7 items (e.g. *"I fast during Ramadan")*. Each item was measured using a 5 point Likert scale, with answer categories ranging from '1-never' to '5-always).

Attitudes

Two attitudes, *Preservationist* and *Utilitarian* were assessed. Both were measured on 12 scales (e.g. *Enjoyment of nature*), each containing 2 items relevant to that scale; each item within the scale represented either a *preservationist* or *utilitarian* statement (e.g. *Enjoyment of nature: "I really enjoy going on trips into the countryside, for example to forests or fields"* and *"I find it very boring being out in the wilderness area"*; preservationist and utilitarian statements respectively). Each item was measured using a 5 point Likert scale with answer categories ranging from '1-completely disagree' to '5-completely agree'.

Control variables

Several control variables considering personal background characteristics were taken into account. *Age* was constructed as a continuous variable. *Education* was measured on a 6-point scale ranging from 1 (VMBO level and lower) to 6 (Masters level and higher). *Income* was measure on a 5-point scale ranging from 1 (lower than €20.000) to 5 (more than €50,000). *Number of children* was measured on a 5-point scale ranging from 1 (1 child) to 4 (3 or more children). *Gender*, *marital status* and *children* were measured respectively by a dummy variable *female*, which was coded 0 (male) and 1 (female), *married,* which was coded 0 (single, divorced, engaged, widowed) and 1 (married) and *children*, which was coded 0 (no) and 1 (yes).

Table 1: Operationalization of Variables

Variable	Question
Religion	The Qur'an holds a deeper truth which can only be revealed by personal reflection
	Allah has been defined for once and for all and therefore is immutable
	Faith turns out to be an illusion when one is confronted with the harshness of life
	The Qur'an is a rough guide in the search for God, and not a historical account
	Even though this goes against modern rationality, Mary truly remained a virgin
	Each statement about God is a result of the time in which it was made
	Even though the Qur'an was written a long time ago, it retains a basic message
	Only the major religious traditions (Islam, Christianity, Judaism) guarantee admittance to God
	The manner in which humans experience God will always be colored by society
	Ultimately, there is only one correct answer to each religious question
	The world of Qur'anic stories is so far removed from us, that it has little relevance
	Science has made a religious understanding of life superfluous
	God grows together with the history of humanity and therefore is changeable
	My ideology is only one possibility among so many others
	Despite the injustices caused by Muslims, the message of the Qur'an remains valuable
	In the end, faith is nothing more than a safety net for human fears
	Faith is an expression of a weak personality
Attitudes	*Scale 01 Enjoyment of nature*
	a. I really like going on trips into the countryside, for example to forests or fields
	b. I think spending time in nature is boring.
	Scale 02 Support for interventionist conservation policies
	a. Governments should control the rate at which raw materials are used to ensure that they last as long as possible.
	b. I am opposed to governments controlling and regulating the way raw

	materials are used in order to try and make them last longer.
	Scale 03 Environmental movement activism a. I would like to join and actively participate in an environmentalist group b. I would NOT get involved in an environmentalist organization
	Scale 04 Conservation motivated by anthropocentric concern a. One of the most important reasons to keep lakes and rivers clean is so that people have a place to enjoy water sports. b. We need to keep rivers and lakes clean in order to protect the environment, and NOT as places for people to enjoy water sports.
	Scale 05 Confidence in science and technology a. Modern science will NOT be able to solve our environmental problems. b. Modern science will solve our environmental problems
Attitudes	*Scale 06 Environmental threat* a. Humans are severely abusing the environment b. I do not believe that the environment has been severely abused by humans.
	Scale 07 Altering nature a. I'd prefer a garden that is wild and natural to a well groomed and ordered one. b. I'd much prefer a garden that is well groomed and ordered to a wild and natural one
	Scale 08 Personal conservation behavior a. I am NOT the kind of person who makes efforts to conserve natural resources. b. Whenever possible, I try to save natural resources
	Scale 09 Human dominance over nature a. Human beings were created or evolved to dominate the rest of nature b. I DO NOT believe humans were created or evolved to dominate the

	rest of nature
Attitudes	*Scale 10 Human utilization of nature* a. Protecting peoples' jobs is more important than protecting the environment. b. Protecting the environment is more important than protecting peoples' jobs.
	Scale 11 Ecocentric concern a. It makes me sad to see forests cleared for agriculture b. It does NOT make me sad to see natural environments destroyed.
	Scale 12 Support for population growth policies a. Families should be encouraged to limit themselves to two children or less. b. A married couple should have as many children as they wish, as long as they can adequately provide for them
Environmental Behaviours	*Private Behaviour* *Consumer Behaviour* a. How often do you make a special effort to buy fruits and vegetables grown without pesticides or chemicals; also known as organic fruits and vegetables? b. How often do you make a special effort to buy paper and plastic products that are made from recycled materials? c. How often do you avoid buying products from a company that you know may be harming the environment? d. How often do you make a special effort to buy household chemicals such as detergent and cleaning solutions that are environmentally friendly?
	Public Behaviours *Willingness to Sacrifice* a. I would be willing to pay much higher taxes in order to protect the environment b. I would be willing to accept cuts in my standard of living to protect

Environmental Behaviours	the environment. c. I would be willing to pay much higher prices in order to protect the environment.
	Public Behaviours *Environmental Citizenship* a. Are you a member of any group whose main aim is to preserve or protect the environment? b. In the last twelve months, have you read any newsletters, magazines or other publications written by environmental groups? c. Signed a petition in support of protecting the environment? d. Given money to an environmental group? e. Written a letter or called your member of Congress or another government official to support strong environmental protection? f. Boycotted or avoided buying the products of a company because you felt that company was harming the environment? g. Voted for a candidate in an election at least in part because he or she was in favor of strong environmental protection? h. Some people feel the environmental movement does a great deal of good and strongly support it, others feel the environmental movement does more harm than good and strongly oppose it. Where do you stand? Do you strongly support, somewhat support, somewhat oppose or strongly oppose the environmental movement
Demographics	Gender: Male; Female.
	Marital status: Single; Engaged; Married; Divorced; Widowed.
	Age
	Children: Yes; No.
	Children no: none; 1; 2; 3; 3 or more.
	Educ: VMBO; HAVO; VWO; MBO; HBO; WO; Other
	Income: less than €20,000; equal or greater than €20,000 less than €30,000; equal or greater than €30,000 less than €40,000; equal or greater than €40,000 less than €50,000; equal or greater than €50,000.

4.3 Methodology

This section explains and justifies the various statistical procedures used to test the Islamic Environmentalism Model.

4.3.1 Evaluating Model fit

Firstly a factor analysis will be performed. Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially fewer number of unobserved latent variables. Thus for examples, in section 4.2.2, Second Naiveté is composed of 4 items, Literal Affirmation out of 5 and Practices out of 6 items. If the items group as expected, then Second Naiveté, Literal Affirmation and Practices can be understood as 3 factors of the religion variable.

There were two possible approaches to factor analysis: an exploratory factor analysis and confirmatory factor analysis. The former has normally been used to investigate the underlying factor structure for a set of observed variables without imposing a premeditated structure on the outcome: meaning, we don't define beforehand what structure we are looking for; while the latter allow for testing the hypothesis that a relationship exists between observed variables and underlying constructs: meaning, based on predefined theory, one can beforehand specify an expected pattern and test accordingly.

This research uses confirmatory factor analysis since it is based on pre-existing theory and has a clear idea of what relationship each variable has within the total model. The outcome of this exercise is that we will be able to see whether one can replicate the Islamic environmentalism model based on the results received

Furthermore, a goodness of fit analysis will be performed in order to describe how well the model fits the set of observations. The tests used will include Chi-squared test, root mean square of approximation (RMSA), standardized root mean square residual (SMSR), and comparative fit index (CFI). The chi-squared tests indicates the difference between observed and expected covariance matrices; the RMSA is used to avoid issues of sample size by analyzing the discrepancy between hypothesized model and the population covariance matrix. The SMSR is the square root of the discrepancy between the sample covariance matrix and the model covariance matrix.

4.3.2 Regression and Mediation Analysis

In order to investigate the hypothesis as well as the relationships between the variables, this research will use multiple linear regression analyses. Regression analysis is a statistical procedure for estimating relationships between variables, or more specifically the relationship between dependent variable (y) and one or more independent (X) variables. 3 regression equations will be calculated: to study the relationship between behaviors (y) and religion (X); behaviors (y) and attitudes (X); and attitudes (y) and religion (X). This will enable us to investigate the hypotheses.

Mediation testing with regression analysis will also be carried out. Mediation is a hypothesized causal chain in which one variable (religion) influences a second variable (attitudes), that further in turn affect a third variable (behaviors): while this is not reflected in the hypotheses, the Islamic Environmentalism Model contains the assumption that religion and behavior are mediated by attitudes (see figure 4 on pg. 22), and would be interesting to look at given the possibility for analysis.

5. Results

5.1 Overall Model

Table 2 displays the descriptive statistics.

Table 2: Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Control					
Female	179	0.726	0.447	0	1
Married	179	0.464	0.5	0	1
Age	179	31.33	9.586	16	87
Children	179	0.419	0.495	0	1
Children no.	179	0.898	1.232	0	4
Educ	176	4.938	1.091	1	6
Income	179	2.654	1.519	1	5
Independent					
Religion					
sn1[a]	179	5.654	1.587	1	7
sn2	179	6.4	1.269	1	7
sn3	179	5.095	1.901	1	7
sn4	179	6.603	1.057	1	7
la1[b]	179	5.977	1.703	1	7
la2	179	6.095	1.61	1	7
la3	179	3.76	2.269	1	7
la4	179	2.832	1.939	1	7
la5	179	3.285	2.121	1	7
Attitudes					
pres1[c]	179	4.089	0.979	1	5
pres2	179	3.883	1.051	1	5
pres3	179	2.682	1.078	1	5
pres4	179	2.145	1.132	1	5
pres5	179	2.877	1.253	1	5
pres6	179	4.386	0.816	1	5
pres7	179	2.592	1.301	1	5
pres8	179	3.743	1.028	1	5
pres9	179	3.71	1.238	1	5
pres10	179	3.475	1.103	1	5
pres11	179	4.028	1.019	1	5
pres12	179	1.704	1.1	1	5
Util1[d]	179	1.385	0.713	1	5
Util2	179	2.514	1.206	1	5
Util3	179	2.665	1.156	1	5
Util4	179	3.849	1.083	1	5
Util5	179	2.939	1.195	1	5
Util6	179	1.469	0.843	1	5
Util7	179	3.302	1.199	1	5

Util8	179	2.251	1.101	1	5
Util9	179	2.106	1.216	1	5
Util10	179	2.212	1.017	1	5
Util11	179	1.346	0.774	1	5
Util12	179	3.978	1.254	1	5
Dependent *Behaviours*					
privbeh1[e]	179	0.397	0.304	0	1
privbeh2	179	0.355	0.296	0	1
privbeh3	179	0.395	0.292	0	1
privbeh4	179	0.288	0.287	0	1
pubwlgsac1[f]	179	0.521	0.279	0	1
pubwlgsac2	179	0.675	0.239	0	1
pubwlgsac3	179	0.541	0.272	0	1
envcit1[g]	179	0.156	0.364	0	1
envcit2	179	0.525	0.501	0	1
envcit3	179	0.430	0.497	0	1
envcit4	179	0.318	0.467	0	1
envcit5	179	0.028	0.165	0	1
envcit6	179	0.581	0.495	0	1
envcit7	179	0.397	0.491	0	1
envcit8	179	0.746	0.182	0.33	1
Attitudes					
preservationist	179	-5.83e-10	0.574	-1.662	1.321

Note: [a]: Second Naiveté items; [b]: Literal Affirmation items; [c]: Preservationist items; [d]: Utilitarian items; [e]: Private Behaviour – Consumer Behaviour items; [f]: Public Behviour – Willingness to Sacrifice; [g]: Public Bahviour – Environmental Citizenship

5.2 Model fit
Factor Analysis

According to the Islamic Environmentalism Model, religion consists of 3 parts, transcendence, interpretation and practices, meaning there should be 3 factors for religion. Similarly, attitudes should have a 2 factors solution (preservationist and utilitarian attitudes) while behaviors should have a 3 factor solution (for one private and two public behaviors). Such a model was found to have inadequate fit.

For religion, a 3 factor solution construction was attempted, to signify the factor Transcendence, Interpretation and Practice, without acceptable results. Following this, practices was discarded with, resulting in a 2 factor solution from which 2 factors were extracted, with acceptable results. These were labeled *Second Naiveté* and *Literal*

Affirmation. Second Naiveté signifies a high score on Transcendence and high on Symbolic Interpretation. *Literal Affirmation* signifies a high score on Transcendence and high on Literal interpretation. Factors corresponding to low score on Transcendence and high score on Symbolic interpretation, and low score on Transcendence and high scores on Literal interpretation could not be constructed. This is to be expected, since the sample was almost exclusively Muslim, and therefore the chances of scoring low on transcendence unlikely.

While a CFA was performed for attitudes no separate reliable scale could be constructed based on utilitarian items. Instead, a mean scale labeled preservationist attitudes was created, constructed out of 6 items (Cronbach's α = .66). The implication of this decision is that instead of an independent factor for preservationist and utilitarian attitudes each, we instead create one, factor labeled preservationist; whereby a high score on this scale implies higher preservationist and lower utilitarian attitude, and conversely a low score on this scale implied lower preservationist and higher utilitarian attitude.

For behaviors, first three factors were created through confirmatory factor analysis (CFA): and labeled *Private/ consumer behaviors* (privbeh), *willingness to pay* (pubwlgsac), and *environmental citizenship* (envcit). Following this, a combined second order factor for *environmental behaviors* was created. The reasons for this was that not enough variation was observed within 3 first factor solutions. By combining them, it would still be possible to make judgements based on overall environmental behaviors as opposed to looking at them in isolation.

In final, a better solution for the Islamic Environmentalism Model included a *Religion* variable with a 2 factor solution labeled *Second Naiveté* (high transcendence, high symbolic interpretations) and *Literal Affirmation* (high transcendence, high literal interpretation), an *Attitudes* variable with one factor labeled *Preservationist* and a *Behaviors* variable with a second order factor labeled factor *behavior,* was found to have an acceptable model fit.

Goodness of fit

Using this truncated structure, the model fit of the initial 2-factor model (see table 6 in Appendix D) with likelihood ratio test Chi^2 (98, N=199) = 578.667, p<0.0001), the model does not fit the data as accurately as the saturated model (rule of thumb: shouldn't be significant). Compared to the baseline model: LR Chi^2 (98, N=199) = 1779.618, p<0.0001, my model fits the data significantly better (rule of thumb: should be significant). The

measured of fit are as follows, the RMSEA measure of error is good (RMSEA <.05), namely RMSEA=.047, C.I.(90) =.036-.05, Probability RMSEA <= .05 =0.698 (rule of thumb: 0.05-0.08 acceptable, below 0.05 okay). CFI and TLI (comparative fit indices) indicate that our model fits close to but not well enough CFI=0.867, TFI=0.851; rule of thumb: should be above .90, ideally .95). SRMR = .07 (rule of thumb: should be smaller than .08), verifies there is not much discrepancy between the observed and fitted moments.

5.3 Model relationships

While the results did not yield a working model based directly on this research's original theory, there were a few interesting relationships observed between the dependent and independent variables, as indicated in table 3. This section looks at the results of analysis according to the hypotheses created:

Table 3: Model relationships

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
BEHAVIOURS ON				
SECOND NAIVETE	0.551	0.380	1.451	0.147
LITERAL AFFIRMATION	-0.452	0.271	-1.666	0.096
BEHAVIORS ON				
PRESERVATIONIST	0.522	0.119	4.402	0.000
FEMALE	0.141	0.090	1.560	0.119
MARRIED	0.097	0.102	0.953	0.341
AGE	0.007	0.005	1.493	0.135
CHILDREN	-0.188	0.106	-1.784	0.074
EDUCATION	0.066	0.035	1.873	0.061
INCOME	0.017	0.031	0.532	0.595
PRESERVATIONIST ON				
SECOND NAIVETE	0.499	0.310	1.488	0.148
LITERAL AFFIRMATION	-0.310	0.222	-1.395	0.163

H1a: respondents scoring high on inclusion of transcendence and symbolic interpretation (Second Naiveté) will score high on preservationist and low on utilitarian attitudes.

The results indicate that scoring high on preservationist leads to respondents scoring high, or positively, on Second Naiveté (β=.499; high on inclusion of transcendence and symbolic interpretation)). Since the attitudes variable only has one factor, we could also interpret the negative relationship of preservationist with Literal Affirmation (β=-0.310) to be an

indication that persons scoring low on this (indicating high on utilitarian attitudes) scores negatively with Second Naiveté. However, none of these relationships are statistically significant. Thus, while the relationship demonstrated is that responders scoring high on on inclusion of transcendence and symbolic interpretation. Hypothesis 1a is thus neither accepted nor rejected.

H1b: respondents scoring high on inclusion of transcendence, symbolic interpretation (Second Naiveté) and practices will score highest on preservationist and lowest on utilitarian attitudes.

This research was unable to create a factor that measured practices in any meaningful way. Since the model removed this from analysis hypothesis 1c cannot be tested (See section 5.2)

H2a: respondents scoring high on inclusion of transcendence and literal interpretation (Literal Affirmation) will score high on utilitarian and low on preservationist attitudes.

The results indicate that scoring high on preservationist leads to respondents scoring high, or positively, on Second Naiveté. Since the attitudes variable only has one factor, we could also interpret the negative relationship of preservationist with Literal Affirmation to be an indication that persons scoring low on this (indicating high on utilitarian attitudes) scores negatively with Second Naivete and positively with Literal Affirmation. However, none of these relationships are statistically significant. Hypothesis 2a is thus neither accepted nor rejected.

H2b: respondents scoring high on inclusion of transcendence, literal interpretation (Literal Interpretation) and practices will score highest on utilitarian and lowest on preservationist attitudes.

This research was unable to create a factor that measured practices in any meaningful way. Since the model removed this from analysis hypothesis 2bcannot be tested.

H3a: respondents scoring high on pro-environmental behaviours will score high on inclusion of transcendence and symbolic interpretation and high on preservationist and low on utilitarian attitudes.

This was the sole hypothesis with a statistically significant result. It was observed that *Preservationist* attitudes have the only positive and significant relationship with environmental behaviours, when compared to other regressed variables (β=.522, p-2s<.001).

Furthermore, while the relationship between *Environmental behaviours* and *Second Naiveté* (high transcendence and high symbolic interpretation) was positively related, the effect was not found to be significant for a two-tailed t-test.

Hypothesis 3a was thus partially proved: environmental behaviours are positively related to preservationist attitude; or, people scoring high on environmental behaviours will score high on preservationist attitudes.

H3b: respondents scoring highest on pro-environmental behaviours will score highest on inclusion of transcendence, symbolic interpretation and practices, and will score highest on preservationist and lowest on utilitarian attitudes.

This research was unable to create a factor that measured practices in any meaningful way. Since the model removed this from analysis this hypothesis 3b cannot be tested.

H3c: respondents scoring low on pro-environmental behaviours will score high on inclusion of transcendence and literal interpretation and high on utilitarian and low on preservationist attitudes.

The relationship between *Environmental behaviours* and *Literal Affirmation* (high transcendence and high literal interpretation) was found to indeed be negatively related, but insignificant under a two-tailed test, However, under conditions of a one-tailed t-test, *Environmental behaviours* would have a significant negative relationship with *Literal Affirmation.*.

Furthermore, since behaviours and Preservationist attitudes move in the same direction, it could also be inferred that low environmental behaviours leads to low preservationist behaviours. However, this too was found to be non-significant. Hypothesis 3c was thus neither accepted nor rejected.

H3d: respondents scoring lowest on pro-environmental behaviours will score highest on inclusion of transcendence, literal interpretation and practices and highest on utilitarian and lowest on preservationist attitudes.

This research was unable to create a factor that measured practices in any meaningful way. Since the model removed this from analysis hypothesis 3d cannot be tested.

5.4 Mediation

When looking at the mediation results (see table 4), *preservationist attitudes* were found to not have any mediating effect between *environmental behaviours* and *religion*. Given the significant positive relationship between *environmental behaviours* and *preservationist attitudes*, one can surmise that it is not religion, but rather a predisposed preservationist attitude that decides if an individual is prone to environmental behaviours.

Table 4: Mediation model (Total, Total Indirect, Specific Indirect, and Direct Effects)

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
Effects from SECOND NAIVETE to BEHAVIORS				
Total	0.786	0.461	1.705	0.088
Total indirect	0.235	0.138	1.697	0.090
Specific indirect				
BEHAVIORS				
PRESERVATIONIST				
SECOND NAIVETE	0.235	0.138	1.697	0.090
Direct				
BEH				
SECOND NAIVETE	0.551	0.380	1.451	0.147
Effects from LITERAL AFFIRMATION to BEHAVIORS				
Total	-0.614	0.327	-1.878	0.060
Total indirect	-0.162	0.098	-1.647	0.100
Specific indirect				
BEHAVIORS				
PRESERVATIONIST				
LITERAL AFFIRMATION	-0.162	0.098	-1.647	0.100
Direct				
BEHAVIORS				
LITERAL AFFIRMATION	-0.452	0.271	-1.666	0.096

6 Discussion and conclusion

This research set out on an ambitious course, in being one of the first attempts at finding the religious and attitudinal determinants of environmental behaviour of Muslims in the Netherlands. To achieve this, a review of literature was undertaken, and various part of theories drawing from the value-belief-norm theory, the post critical belief scale and environmental attitudes inventory, were grouped into the Islamic Environmentalism Model.

The initial results, though with some interesting findings, were found wanting. Variables or religion, attitudes and behaviours all had to be curtailed in order to fit a working model. This already reduced the ability to derive meaningful results. Furthermore, a number of relationships could not be tested.

Preservationist attitudes though were found to be significantly and positively related to pro-environmental behaviours. Future work in this area should focus on this relationship. In addition, while pro-environmental behaviours were found to be positively related to Second Naiveté and negatively to Literal Affirmation, these relationships were not found to be significant. Lastly, there was no mediation found within the overall model.

Nonetheless, these shortcoming seems to stem from the design process and implementation rather than structural flaws. For instance, considerable amount of respondents demonstrated their discomfort with how some questions on religion were worded. This may have biased the results. Furthermore, it can be surmised that since the post critical belief scale was developed for Catholic Christians raised in a secular context, further work will need to look at developing items that can meaningfully capture transcendence and interpretation specifically for Muslims.

Another possible limitation was the small sample size of this study. Fontaine et al (2003) for instance had a sample size of 4,000 compared to the presently almost 180. A model of such complexity and number of variables could reasonably lead one to infer that more respondents are required for relationships to show up. Future studies will have to increase sample size before continuing to changes in the model and/or theory. Furthermore, this sample is biased towards higher educated female Muslims in the Netherlands.

A policy recommendation given present results would be for public actors to focus efforts at targeting environmental messages on those who are already predisposed towards a preservationist environmental attitude. Such messages need not be crouched in religious

imagery in order to stimulate environmental behaviours among Muslims in the Netherlands, thus requiring no changes from the approaches already in use.

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Appendix A – Facebook Groups Contacted

Table 5: Dutch Muslims Facebook groups contacted

Name	Contacted	Replied	Approved	Posted	Total Members
1. **Marokkaanse Grappen&Reality**	Yes	Yes	Yes	Yes	23000
2. **Marokkanen bij elkaar**	Yes	Yes	Yes	Yes	12000
3. **Alle Marokkaanse gekkigheid op een stokje**	Yes	Yes	Yes	Yes	3200
4. **Mgharba 18+**	Yes	Yes	Yes	Yes	26000
5. **Mgharba 18+ (2)**	Yes	Yes	Yes	Yes	5000
6. **De ummah van profeet Mohammed**	Yes	Yes	Yes	Yes	16200
7. **Islam en Kennis voor iedereen**	Yes	Yes	Yes	No	42000
8. **Echte Marokkanen vind je hier**	Yes	Yes	Yes	Yes	17000
9. **Verhalen van de profeet**	Yes	Yes	Yes	Yes	7000
10. **Kennishuys**	Yes	No	No	No	4100
11. **Moslim in belgie en nederland**	No	No	No	No	6000
12. **Dagelijkse tafseer**	Yes	Yes	Yes	Yes	16200
13. **Ppme Amsterdam**	Yes	Yes	Yes	Yes	
14. **Ppme den haag**	Yes	Yes	Yes	Yes	
15. **Dar-al-Ilm**	Yes	Yes	No	No	12000
16. **Wie is Mohammed**	Yes	No	No	No	2100
17. **Stichting INSpraakorgaan Turken in Nederland**	Yes	No	No	No	
18. **Stichting islam en**	Yes	No	No	No	

dialoog					
19. An nisa winkel	Yes	No	No	No	
20. Insan student vereniging	Yes	Yes	Yes	No (weekend)	
21. Al Ghazali Academie	Yes	No	No	No	800
22. Stichting al ighatha	Yes	No	No	No	4000
23. Al tauba boekenwinkel	Yes	No	No	No	2500
24. Islamtv netherlands	DNE	DNE	DNE	DNE	
25. Denk nl	Yes	No	No	No	13000
26. Sunnahtv NL	Yes	No	No	No	18000
27. Basiskennis islam	No	No	No	No	3100
28. De moslim gids	Yes	No	No	No	2700
29. Hart van moslims	Yes	Yes	Yes	Yes	14000
30. Sahih .nl	Yes	No	No	No	1100
31. Citadel van de moslim	Yes	No	No	No	2600
32. Islamitische Studentenvereniging Amsterdam	Yes	Yes	No	No	4000
33. Islamitische activiteiten	Yes	No	No	No	1500
34. Minhaj ul Quran	Yes	No	No	No	1000
35. MashriQ SV	Yes	Yes	Yes	Yes	800
36. Islamitische Weetjes	Yes	No	No	No	44600
37. Islamitische Universiteit Europa	Yes	No	No	No	5600
38. Islamitische Basisschool El Amien 2	Yes	No	No	No	650
39. Islamitische kleding Nana	Yes	No	No	No	3400
40. Islamitische filisofie.. Roots en relevantie	Yes	No	No	No	230
41. Islamitische Pedagogen - &Psychologenpraktijk	Yes	No	No	No	4100
42. Islamitische kinderboeken	Yes	No	No	No	2700
43. Islamitische Psychologische Praktijk	Yes	No	No	No	7700

44. Islamitische Geschiedenis	Yes	No	No	No	2600
45. Islamic University of Rotterdam	Yes	No	No	No	
46. Islamitischekleding.nl	Yes	No	No	No	14600
47. Islamitische Basisschool Al Wafa					
48. Islamitische-boekhandel.nl	Yes	No	No	No	650
49. Islamitische Centrum Imam Malik Leiden	Yes	No	No	No	5000
50. Islamitisch boodschappen	Yes	Yes	No	No	18500
51. Islamitische Boodschappen Nederland	Yes	No	No	No	1600
52. Islamitische Basisschool De Roos	Yes	No	No	No	560
53. Centrum voor Islamitische Theologie	Yes	No	No	No	
54. Islamitsche Winkel Dordrecht	Yes	No	No	No	4400
55. Basiskennis voor Moslims	Yes	Yes	Yes	No	

Appendix B – Questionnaire

Religion

Post Critical Belief Scale

Second Naiveté

1. (sn1) The Qur'an holds a deeper truth which can only be revealed by personal reflection
2. (sn2) Even though the Qur'an was written a long time ago, it retains a basic message
3. (sn3) Despite the injustices caused by Muslims, the message of the Qur'an remains valuable
4. (sn4) The Qur'an is a rough guide in the search for God, and not a historical account

Literal Affirmation

1. (la1) Allah has been defined for once and for all and therefore is immutable
2. (la2) Even though this goes against modern rationality, Mary truly remained a virgin
3. (la3) I think that Qur'anic stories should be taken literally, as they are written
4. (la4) Only the major religious traditions (Islam, Christianity, Judaism) guarantee admittance to God
5. (la5) Ultimately, there is only one correct answer to each religious question

Literal Disaffirmation

1. Faith turns out to be an illusion when one is confronted with the harshness of life
2. The world of Qur'anic stories is so far removed from us, that it has little relevance
3. Faith is an expression of a weak personality
4. Science has made a religious understanding of life superfluous
5. In the end, faith is nothing more than a safety net for human fears

Reductive Interpretation

1. Each statement about God is a result of the time in which it was made
2. The manner in which humans experience God will always be colored by society
3. God grows together with the history of humanity and therefore is changeable

4. My ideology is only one possibility among so many others

Practices

1. I pray at the mosque
2. I give zakat
3. I fast during Ramadan
4. I fast even when it is not Ramadan
5. I take time out for myself to read, listen or watch topics of a religious nature
6. I read the Quran
7. I pray five times

<u>**Attitudes**</u>

Environmental Attitudes Inventory

Scale 01 Enjoyment of nature

1. Preservationist 1 (pres1) - I really like going on trips into the countryside, for example to forests or fields
2. Utilitarian 1 (util1) - I think spending time in nature is boring.

Scale 02 Support for interventionist conservation policies

1. Preservationist 2 (pres2) - Governments should control the rate at which raw materials are used to ensure that they last as long as possible.
2. Utilitarian 2 (util2) - I am opposed to governments controlling and regulating the way raw materials are used in order to try and make them last longer.

Scale 03 Environmental movement activism

1. Preservationist 3 (pres3) - I would like to join and actively participate in an environmentalist group
2. Utilitarian 3 (util3) - I would NOT get involved in an environmentalist organization

Scale 04 Conservation motivated by anthropocentric concern

1. Preservationist 4 (pres4) - One of the most important reasons to keep lakes and rivers clean is so that people have a place to enjoy water sports.
2. Utilitarian 4 (util4) - We need to keep rivers and lakes clean in order to protect the environment, and NOT as places for people to enjoy water sports.

Scale 05 Confidence in science and technology

1. Preservationist 5 (pres5) - Modern science will NOT be able to solve our environmental problems.
2. Utilitarian 5 (util5) - Modern science will solve our environmental problems

Scale 06 Environmental threat

1. Preservationist 6 (pres6) - Humans are severely abusing the environment
2. Utilitarian 6 (util6) - I do not believe that the environment has been severely abused by humans.

Scale 07 Altering nature

1. Preservationist 7 (pres7) - I'd prefer a garden that is wild and natural to a well groomed and ordered one.
2. Utilitarian 7 (util7) - I'd much prefer a garden that is well groomed and ordered to a wild and natural one

Scale 08 Personal conservation behaviour

1. Preservationist 8 (pres8) - I am NOT the kind of person who makes efforts to conserve natural resources.
2. Utilitarian 8 (util8) - Whenever possible, I try to save natural resources

Scale 09 Human dominance over nature

1. Preservationist 9 (pres9) - Human beings were created or evolved to dominate the rest of nature
2. Utilitarian 9 (util9) - I DO NOT believe humans were created or evolved to dominate the rest of nature

Scale 10 Human utilization of nature

1. Preservationist 10 (pres10) - Protecting peoples' jobs is more important than protecting the environment.
2. Utilitarian 10 (util10) - Protecting the environment is more important than protecting peoples' jobs.

Scale 11 Ecocentric concern

1. Preservationist 11 (pres11) - It makes me sad to see forests cleared for agriculture
2. Utilitarian 11 (util11) - It does NOT make me sad to see natural environments destroyed.

Scale 12 Support for population growth policies

1. Preservationist 12 (pres12) - Families should be encouraged to limit themselves to two children or less.
2. Utilitarian 12 (util12) - A married couple should have as many children as they wish, as long as they can adequately provide for them

Environmental Behaviours

Private Behaviour - Consumer Behaviour

1. (privbeh1) How often do you make a special effort to buy fruits and vegetables grown without pesticides or chemicals; also known as organic fruits and vegetables?
2. (privbeh2) How often do you make a special effort to buy paper and plastic products that are made from recycled materials?
3. (privbeh3) How often do you avoid buying products from a company that you know may be harming the environment?
4. (privbeh4) How often do you make a special effort to buy household chemicals such as detergent and cleaning solutions that are environmentally friendly?

Public Behaviours - Willingness to Sacrifice

1. (pubwlgsac1) I would be willing to pay much higher taxes in order to protect the environment

2. (pubwlgsac2) I would be willing to accept cuts in my standard of living to protect the environment.

3. (pubwlgsac3) I would be willing to pay much higher prices in order to protect the environment.

Public Behaviours - Environmental Citizenship

1. (envcit1) Are you a member of any group whose main aim is to preserve or protect the environment?

2. (envcit2) In the last twelve months, have you read any newsletters, magazines or other publications written by environmental groups?

3. (envcit3) Signed a petition in support of protecting the environment?

4. (envcit4) Given money to an environmental group?

5. (envcit5) Written a letter or called your member of Congress or another government official to support strong environmental protection?

6. (envcit6) Boycotted or avoided buying the products of a company because you felt that company was harming the environment?

7. (envcit7) Voted for a candidate in an election at least in part because he or she was in favor of strong environmental protection?

8. (envcit8) Some people feel the environmental movement does a great deal of good and strongly support it, others feel the environmental movement does more harm than good and strongly oppose it.

Where do you stand? Do you strongly support, somewhat support, somewhat oppose or strongly oppose the environmental movement?

Appendix C – Scale Scoring

All scales were scored so that high scores indicated strong endorsement of the concept.

Religion

PCBS

Each item was measured using a 7 point Likert scale.

Answer categories ranged from: '1-completely disagree', to '2', to '3', to '4-nuetral', to '5', to '6', and to '7-completely agree'

Practices

Each item was measured using a 5 point Likert scale.

Answer categories ranged from '1-never', to '2-seldom', to '3-sometimes', to '4-often', and to '5-always'.

Attitudes

Each item was measured using a 5 point Likert scale.

Answer categories ranged from '1-completely disagree', to '2', to '3-nuetral', to '4', and to '5-completely agree'.

Behaviours

Private Behaviour – Consumer Behaviour

Each item was measured using a 4 point Likert scale.

Answer categories ranged from '1-never', to '2-sometimes', to '3-often', and to '4-always'

Public Behaviour – Willingness to Sacrifice

Each item was measured using a 4 point Likert scale.

Answer categories ranged from '1-strongly disagree', to '2-somewhat disagree', to '3-somewhat agree', and to '4-strongly agree'.

Public Behaviour – Environmental Citizenship

Each item was measured using a dummy (1,0) scale, except for 1 item, *"Some people feel the environmental movement does a great deal of good and strongly support it, others feel the environmental movement does more harm than good and strongly oppose it"*, which was measured on a 4 point Likert scale

Answer categories ranged from '1-yes' to '0-no', except for 1 item, *"Some people feel the environmental movement does a great deal of good and strongly support it, others feel the environmental movement does more harm than good and strongly oppose it"*, whose answer categories ranged from '1-strongly oppose', to '2-somewhat oppose', to '3-somewhat support', and to '4-strongly support'.

Demographics

Age

This item was measured as a continuous variable.

The answer category ranged from '1-100'.

Education

This item was measured on a 6-point Likert scale

The answer category ranged from '1-VMBO level and lower', to '2-HAVO', to '3-VWO', to '4-MBO', to '5-HBO, to '6-WO and higher'.

Income

This item was measured on a 5-point scale.

The answer category ranged from '1-lower than €20.000', to '2- equal or greater than €20,000', and less than €30,000'; to '3-equal or greater than €30,000 and less than €40,000', to '4-equal or greater than €40,000 less than €50,000', to '5-more than €50,000'.

Children

This item was measured using a dummy variable.

The answer category ranged from '1-yes' to '0-no'.

Number of children

This item was measured on a 4-point Likert scale.

The answer categories ranged from '1-1 child', to '2-2 children', to '3-3 children', and to '4-3 or more children'.

Gender

This item was measured using a dummy variable.

The answer category ranged from '1-female' to '0-male'.

Marital status

This item was measured using a dummy variable.

The answer category ranged from '1-married' to '0-single, engaged, divorced or widowed'.

Appendix D – Model Fit

Table 6: Model fit information

Number of Free Parameters	98
Loglikelihood	
H0 Value	-5671.825
H1 Value	-5382.491
Information Criteria	
Akaike (AIC)	11539.650
Bayesian (BIC)	11861.404
Sample-Size Adjusted BIC	11550.945
(n* =(n+2)/24)	
Chi-Square Test of Model Fit	
Value	578.667
Degrees of Freedom	402
P-Value	0.0000
RMSEA (Root Mean Square Error Of Approximation)	
Estimate	0.047
90 Percent C.I.	0.038 0.056
Probability RMSEA <= .05	0.698
CFI/TLI	
CFI	0.867
TLI	0.851
Chi-Square Test of Model Fit for the Baseline Model	
Value	1779.618
Degree of Freedom	450
P-Value	0.0000
SRMR (Standardized Root Mean Square Residual)	
Value	0.070