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Review

Heaven and earth: a systematic review of theories on the relationship between religion and environmental behaviour

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Abstract

Background Accelerating anthropogenic environmental degradation calls for diverse strategies to promote pro-environmental behaviors. Religion, with its potential to motivate such behaviors, has gained attention, exemplified by the rise of eco-theology. However, the theoretical frameworks connecting religion to environmental behavior remain unclear. This systematic review aims to address this gap.

Objective The purpose of this systematic review was to explore the use of theories employed in studying the relationship between religion and environmental behaviour.

Methods Four databases were systematically searched to retrieve articles linking religion to any type of environmental behaviour using a theory.

Results In forty-six articles that met the eligibility criteria, the relationship between religion and environmental behaviour was depicted using 23 theories. These theories could be categorized based on factors that drive action into six metatheories namely Psychological Need, Independent-Self, Independent-Structure, Communal Need, Top-Down, and Interdependent. Environmental behaviours measured various personal behaviours such as green and organic food consumption, use of green products, and recycling and firm-related behaviour measured mainly via corporate social responsibility.

Discussion Since multiple factors, such as situational context, culture, level of religiosity, gender, and family status, moderate the relationship between religion and environmental behaviour, applying an all-encompassing theory to study this relationship is challenging. Furthermore, inconsistencies in measuring religiosity's aspects and religious orientation limited the ability to compare different studies.

Conclusion This review offers a metatheoretical classification of theories linking religion and environmental behavior. It provides a foundation for refining theories to enable leveraging religious values in fostering pro-environmental behavior.

Keywords Environmental behavior · Eco-theology · Behavioral theories

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1 Introduction

The challenges posed by climate change, ecosystem degradation, and biodiversity loss endangering human health, demand urgent coordinated mitigative action [1]. While climatic variation is a natural phenomenon, anthropogenic activity has evidently played a role in environmental degradation observed post industrialization [2, 3]. Sustainable Development Goals (SDGs) were set [5] to guide progress in various areas with a majority of goals linked to climate change mitigation [6]. Progress on these goals, however, has been extremely poor [9].Drastic changes not only at societal and industrial level but also at individual level are required to bring the SDGs on track. What lies at the core of the problem, but also at the heart of the climate change mitigative action, is human behaviour [10]. However, the question of what motivates humans to change their individual and collective behaviour in favour of the environment, has not received the attention it should. Van Valkengoed et al. [11] pointed to the determinants of human environmental behaviour as the target for behaviour change interventions. These determinants included, among other factors, injunctive and descriptive norms, moral concerns, environmental self-identity, signalling motives, and affect [11, 12], which are influenced by human values. A large volume of research has shown the important role values play in shaping human behaviour, including environmental behaviour [13–17]. Hence, reorienting human values can provide the biggest leverage for sustained change in society.

According to Leverage Points Theory [18], the biggest change occurs at the level of mindset out of which other paradigms arise. This tier has the highest transformative power as it influences all other strata of systems and individuals in society. This is the level at which values exert their impact [19]. A step further would be to examine the factors that shape these values. Schwartz & Bilsky [20] claimed that human values were formed in response to three requirements: biological, societal, and interactional. From this, ten core values were identified and placed on a continuum, applicable across different contexts and cultures [21]. Behavioural differences arise from the varying importance assigned to these values [21]. The ranking of these values is contextual and relates to drivers like religion, culture, family, peers and social groups, political and economic context, media and technology, education, and personal factors, such as personal traits and experience as determinants of values [13, 15, 22–26]. Among these factors, religion is of particular interest due to its effect not only at a personal level but also at societal and political levels [27–29], considering that well over 80% of the world population have a religious affiliation, a number that is predicted to increase [30]. In fact, there is an entire discipline dedicated to the study of society and religion, *sociology of religion* [31, 32], which attests to the powerful impact of religion in society. However, less attention has been given to the relationship between religion and environmental behaviour, which has hampered the development of an encompassing religion-focused theory in relation to environmental behaviour.

Relatively recently, interest in seeking the relationship between religion and environment has given birth to eco-theology [33]. Eco-theology has been defined as a form of constructive theology that focuses on the interrelations between religion and nature, sparked by the current environmental crisis [34]. According to Troster [35], is the synthesis of contemporary scientific insights about the natural world with traditional theological concepts, resulting in a new theological paradigm. Although originally Lynn White [33] argued that Western Christianity's anthropocentric worldview contributed significantly to environmental degradation, counterarguments have dominated the eco-theological discipline [30]. Environmental crises have compelled religions to look for or reinterpret their texts even if this topic lies at the periphery of their religion [34–36]. Support for ecology and nature preservation has been depicted in various major religions [34, 37–39]. Thus, engaging religious communities in environmental protection has certainly gained ground internationally.

In academia, the effect of religion on attitudes, intentions, and behaviour impacting the environment has been explored in various contexts [37–41] with mixed results. Nonetheless, a systematic review [42] demonstrated that a majority of the included studies showed religiosity to have a positive influence (85% of 52), rather than negative (10% of 52) or neutral (6% of 52) [39] on sustainable consumption. The inconsistencies in the findings have been pointed out to be due to methodological and theoretical approaches [39] and cultural contexts [42]. However, one of the critical differences may well be in the level of religiosity, defined as the level of adherence to the doctrines and practices dictated by one's religion [36], whose precise measurement can be quite challenging, especially in religiously diverse populations [43]. Furthermore, changed behavioural patterns and increased coverage of the topic of religion and environmental behaviour can be expected in the face of the changes in major religious communities' response to climate change, as witnessed in the last decade. For example, high-level eco-theologically driven organizations and alliances for the environment have formed across the world, such as the Alliance of Religions in Conservation

[44], Youth Climate Action Network [45], Interfaith Rainforest Initiative launched in 2017 [46], UN's Faith for Earth Coalition [47] formed also in 2017 to bring together leaders of various faith communities to contribute to the SDGs by influencing policy, green faith-based organization's investments, operations and assets and to build a knowledge-based support system [48], and multiple grassroots initiatives contributing to the green faith movement [49, 50]. This social and spiritual movement has been claimed to transcend the boundaries of religions with the potential to unite them for environmental sustainability. From a theoretical perspective, however, there is no unifying theory predicting religiously motivated environmental behaviour. Instead, a patchwork of various theories has been used to study this phenomenon.

1.1 Theoretical framework

In reviewing the theories that show the mechanism of action or the pathways that connect religion to environmental behaviour, either religion specifically or values generally could be relevant. However, values entail more than what a religion or religious belief may frame or guide. Likewise, religion can be present in more than just values, such as in materials, like places of worship, and politics, like in hierarchical and institutional structures. Therefore, determining a most appropriate and specific theory for use in formulating the relationship between religion and environmental behaviour requires careful consideration of how to use a selected theory. While some theories depict the effect of religion on human behaviour, such as Bronfenbrenner's Ecological Theory, positioning religion at the micro-, meso-, and exo-systems level [51], others show the effect of values and social norms on behaviour, as in the Theory of Planned Behaviour (TPB) [52], Social Cognitive Theory [53], and Individual-Social-Material model [54].

To develop a framework for the systematic review at hand, a combination of different theories and models was assembled (Fig. 1). This framework combines three theories and models: a) Bronfenbrenner's Ecological Theory [51], which acknowledges the role of values and beliefs including religion, b) a model showing the scales at which

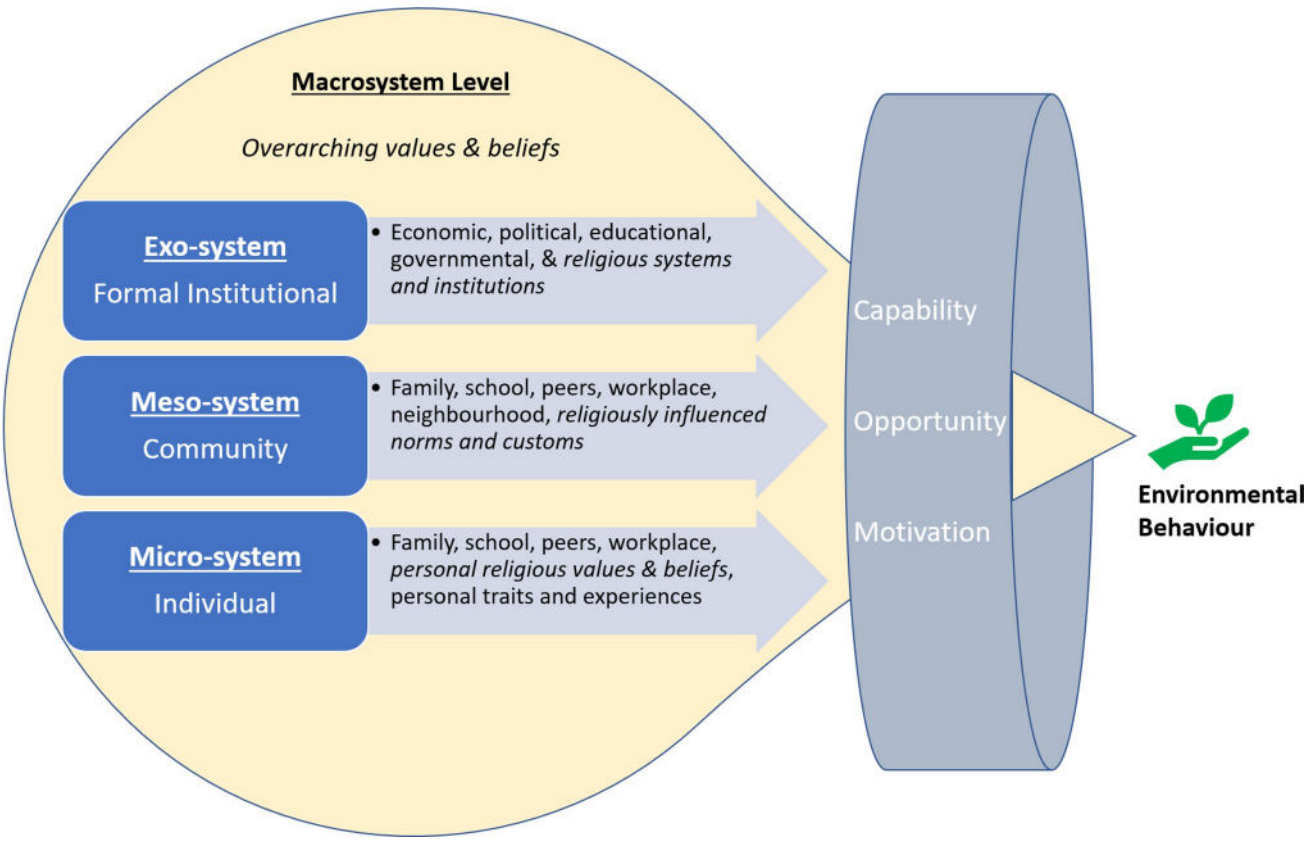

Fig. 1 Conceptual framework adapted from Bronfenbrenner's socioecological theory [51], a model showing the scales at which religious values for sustainability operate [15], and COM-B model for human behaviour [55] for the academic review of articles exploring the relationship between religion and environmental behaviour

religious values influence sustainable behaviour [15], and c) the COM-B model, indicating the factors that drive but also create boundaries for a specific (environmental) behaviour begotten.

The challenge in using a theory that can formulate the relationship between religion and environmental behaviour lies in adapting a behavioural theory to detect or account for the effect of religion in the context of diverse environmental behaviours. Thus, a review of studies that have used theory to connect these two concepts can help identify patterns, gaps, and the effectiveness of different theoretical approaches in understanding this not-well-defined relationship.

The primary goal of this review was to present the use of theories in studies of religion and environmental behaviour. Thus, the aim was to identify the theories used, the environmental behaviours studied in relation to religion, specific religions studied, and how religion as a concept with multiple aspects was included. Additionally, this review aimed at detecting commonalities and differences among the theories used in the studies that have examined the relationship between religion and environmental behaviour. This review did not examine the existence or the strength of the connection between religion and environmental behaviour, as it has been presented previously [42].

2 Methods

A systematic review guided by the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) [56] was undertaken. Some of the common databases used for social science research [57] namely Scopus, Web of Science, Google Scholar, Socindex (EBSCO), Wiley Online Library, EMBASE, and Sage Knowledge were used to retrieve articles using the following search terms: theory, religion, behaviour, environment or ecology or ecotheology, and derivatives of these terms, such as "religio*" or "behavio*". Initial search terms included the names of major religions and those that were deemed connected to environmental behaviour, such as Buddhism, Christianity, Hinduism, Islam, and Judaism. However, this search retrieved over 13 million articles with a large number of irrelevant articles. Different selections of words and exclusion words, such as war, bomb, weapon, HIV, and fertility were used to retrieve more relevant articles. Furthermore, some databases allowed for subject filters which were used to exclude irrelevant article. EMBASE and Sage Knowledge were excluded since the articles retrieved were mainly focused on pharmaceutical studies in the former and books in the latter database. Moreover, the search in ProQuest periodicals produced very few and irrelevant articles, so it was excluded. Only articles available in English language from peer-reviewed journals were retrieved.

Retrieved articles were uploaded onto Rayyan software [58] for screening according to the primary inclusion criteria, which required articles to include a theory in the study design or compared their findings supporting or relating to a theory that can be related to religious beliefs and environmental behaviour. No restrictions were placed on the type of environmental behaviour or the actors. Articles that used intention, attitude, willingness-to-pay, or similar constructs as proxy to environmental behaviour were excluded. Furthermore, articles that included values, ethics, and morals without a link to religion were excluded, as the review specifically focussed on the effect of religion on environmental behaviour, rather than on values unrelated to religion. In the second phase, all references from articles that met the selection criteria were leafed through and potentially relevant articles were screened, which led to inclusion of more articles that met the inclusion criteria (Fig. 2). The search was conducted from January to March 8, 2024.

Included articles were uploaded to MaxQDA software (VERBI Software, 2021) for further data extraction. Each article was assigned the following variables: geographic location of the study, religions included and the aspects measured, type of environmental behaviour studied, theories utilised to provide a framework for the study or to test, and the type and number of participants in the study.

To achieve the secondary goal of the systematic review, the identified theories were examined and classified according to the transdisciplinary metatheories presented by Eyster et al. [63]. These eight meta-theories are differentiated on the basis of what drives human action. This classification helped assess the ways in which the drivers connected to the metatheory assigned to any of the identified theories were connected to religion. It also helped identify dominant and marginal metatheories in the context of religion's potential influence on environmental behaviour. To classify a theory into a corresponding metatheory category, the classification for theories from Eyster et al. [63] was used. If a theory was not in the list of the classified theories in Eyster et al.'s article [63], the theory was matched to the description of metatheories available [63] by one researcher and reviewed by another researcher to ensure the most appropriate metatheory was selected. The classifications are available in Supplement, Table 1. If a theory strongly related to more than one metatheory category, the theory was included in all the corresponding metatheories' categories.

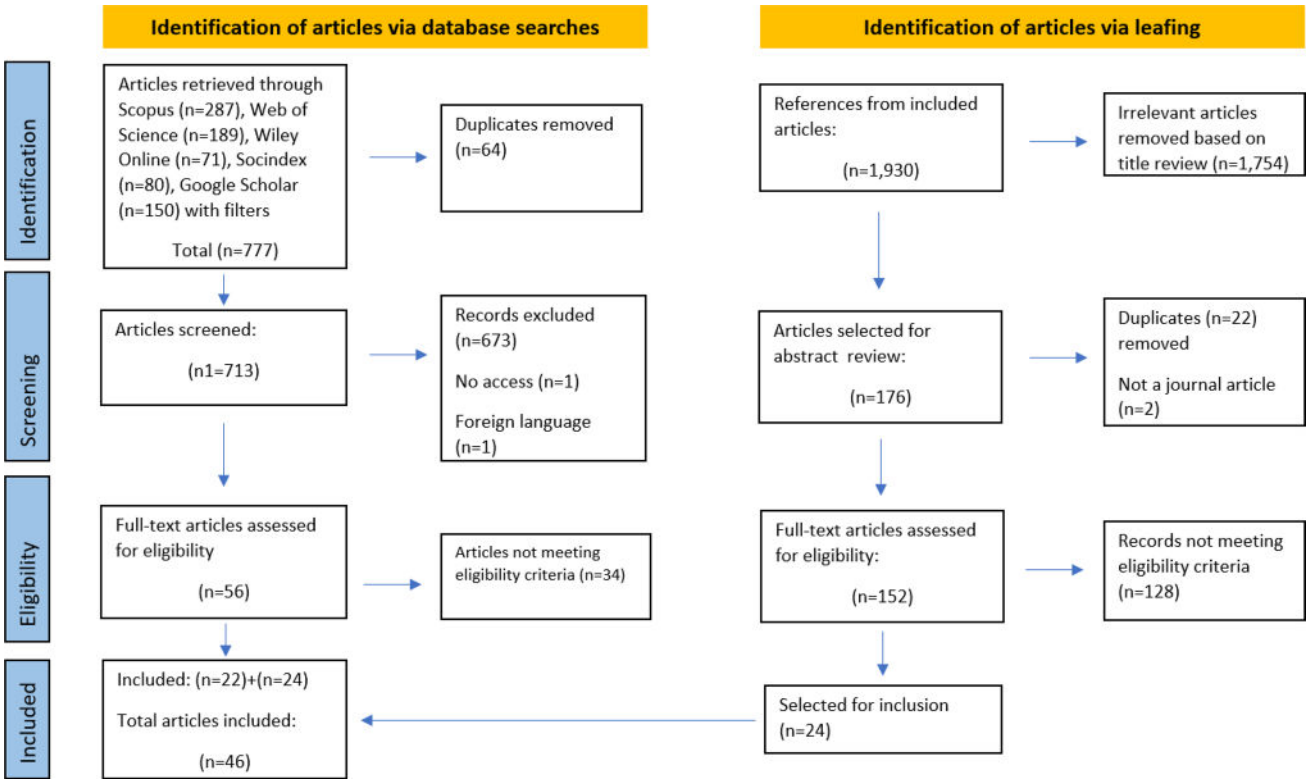

Fig. 2 Process of selecting articles that meet inclusion criteria for the systematic review

3 Results

Out of 2,643 articles screened, 46 met the inclusion criteria (Fig. 2). Three articles included data from 29 [59], 30 [60], and 33 [61] countries, three studies included data from two countries [42, 62, 63], and the rest from within a single country, except for one study that was based on a simulated environment [64]. Figure 3 shows the number of times a country or an area or areas within a country was included in a study. The geographic layout of the studies showed the highest coverage of the topic in the USA with 12 published articles in addition to being included in the three global studies.

The topic of environmental behaviour connected to religion using theories received increasing scientific coverage after 2013. An average of 3.8 articles per year were published in the last 10 years (excluding 2024), compared to 0.4 articles per year in the decade prior to that (2004 to 2013) (Fig. 4).

3.1 Religiosity

To enable comparison across studies, the measurement of religiosity utilised in each study was assessed based on the three categories of *cognitive*, *affective*, and *behavioural religiosity*, whenever adequate information was provided to determine this (Supplement, Table 1). In case of inadequate information, the measures used by the studies' authors were included. The different aspects of religiosity identified [70, 71] included: cognitive, referring to intellectual and knowledge-based aspects of religiosity, affective, referring to emotional and experiential components of religiosity, and behavioural, referring to the outward expressions and practices of religiosity. In addition, the affect aspect can have intrinsic or extrinsic sources. For example, intrinsic affect implies emotions and feelings that are deeply internalized and arise from genuine, personal devotion or commitment to one's faith while extrinsic affect implies emotions that are influenced by external factors, such as social support and acceptance, or other pragmatic benefits from religious participation. The majority of studies on corporate social responsibility assessed the religiosity of businesses through a proxy such as the existence or density of places of worship, such as temples and monasteries. This aspect of religiosity was categorized as *extrinsically affective* supporting social cohesion and group identity.

Fig. 3 Geographic coverage of the studies examining the relationship between religion and environmental behaviour with at least one relevant theory referenced

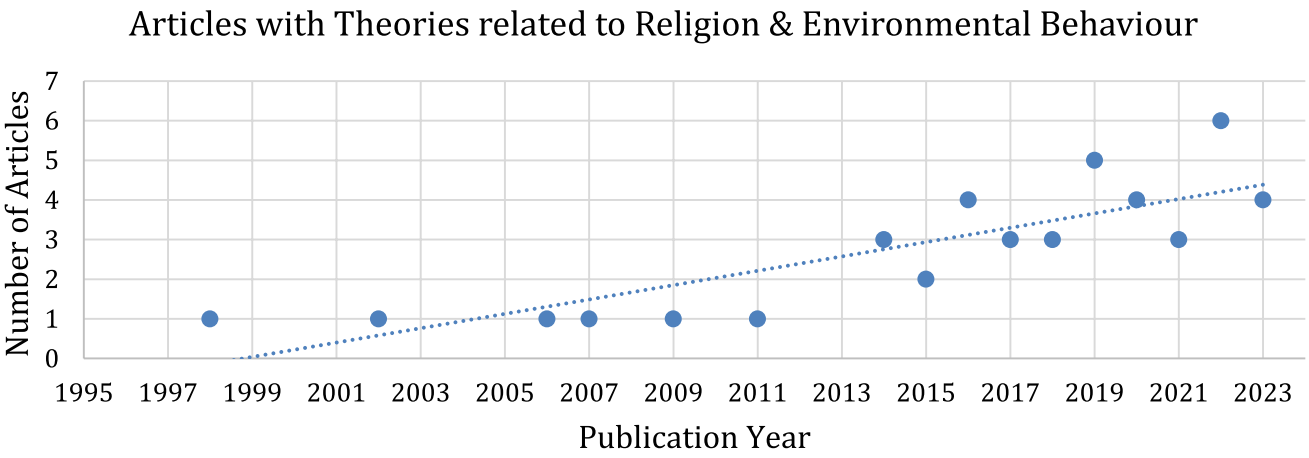

Fig. 4 Temporal coverage of the topic of religion and environmental behaviour with a theoretical approach (up to March 8, 2024)

3.2 Theories

The included articles used a total of 23 theories that were related to religion and environmental behaviour (Supplement, Table 1). Only theories that were used and identified by the articles' authors to connect to environmental behaviour were retained.

Figure 5 depicts the representation of the theories in proportion to the frequency of their use across the 46 studies. If a single article contained more than one relevant theory, each was included as a separate occurrence. Of the eight metatheories identified by Eyster et al. [63], six composed the drive for the 23 theories retrieved in this systematic review. These metatheories included in order of prominence: 1. Psychological Needs; 2. Independent-self; 4. Interdependent, 4. Top-down; 5. Independent-structure; and 5. Communal Needs. The use of theories under each of these metatheories are described below. Additional information about environmental behaviours and measurement of variables in studies are noted with a summary of all the environmental behaviours and religions included in Supplement, Table 1.

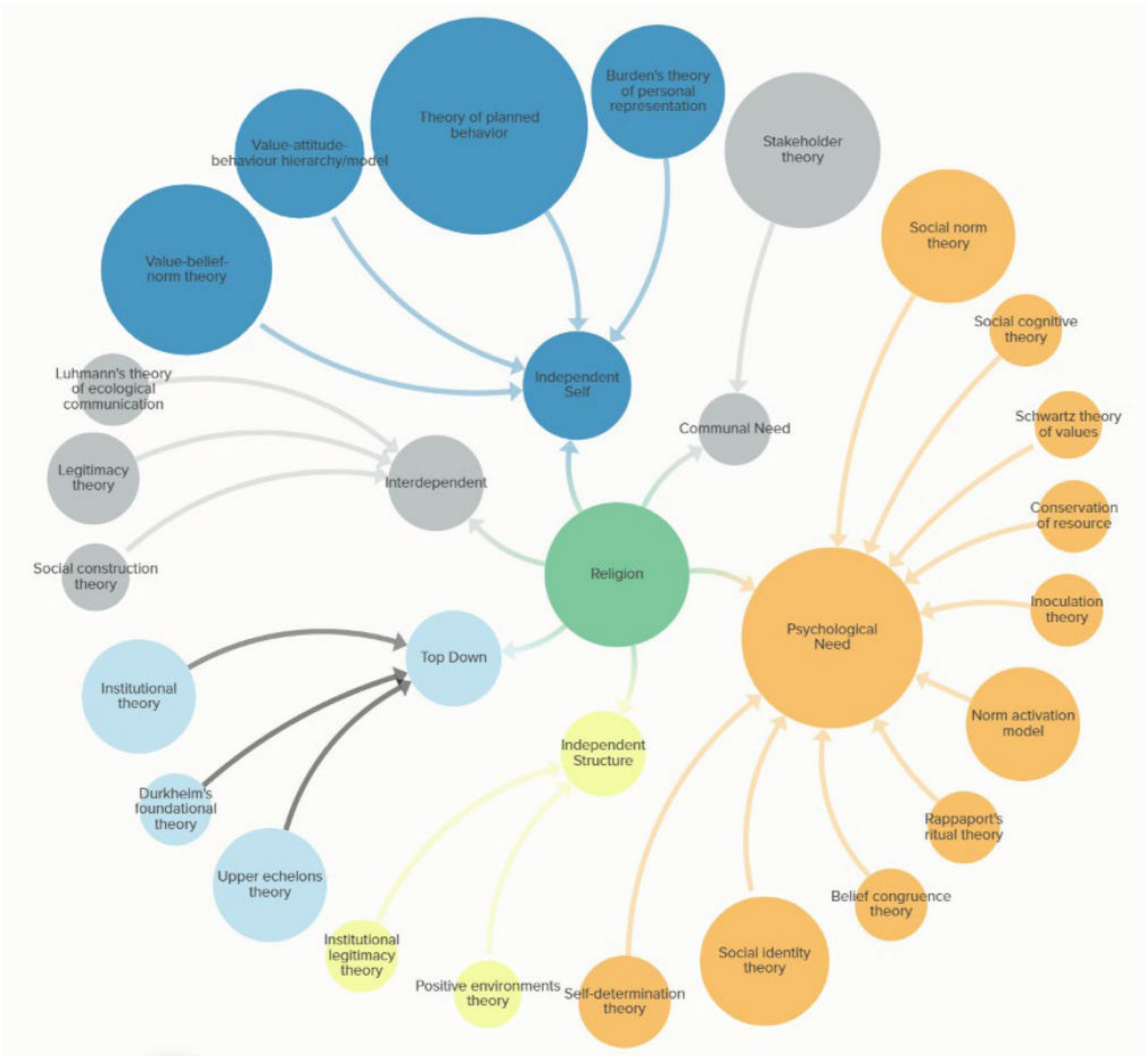

Fig. 5 Theories connecting religion to environmental behaviour in the studies included in this review. The outer circle shows the 23 theories grouped under six categories of meta-theories [63] based on factors that drive behaviour. Sizes of theories' circles are proportional to the frequency of theories used in the articles. Sizes of meta-theories' circles are proportional to the number of theories used within the meta-theory categories

3.2.1 Psychological needs

According to Eyster et al. [63] there are theories that describe how human behaviour is shaped by their psychological needs. The main driving factor for behaviour in these theories is the desire to act in ways that help achieve subjective well-being. The theories used in the studies retrieved in the systematic review that fit this metatheory included: Belief Congruence [72], Conservation of Resource [73], Inoculation [74], Norm Activation [75], Rappaport's Ritual [76], Schwartz' Values [18], Self-Determination [77], Social-Cognitive [78], Social Identity, and Social Norm Theories. The environmental behaviours of individuals consisted of mainly consumption and post-consumption behaviour and behavior of business firms consisted of their operations concerning their impact on the environment. The top three most frequently used theories in this category were Social Identity Theory [79, 80], Norm Activation Model [75], and Self-Determination Theory [77]. What is common about these theories is the concept that acting in accordance with social expectations

fulfils individuals' psychological need. Similarly, theories of Belief Congruence [72], Inoculation [74], and Social Norm [81] include the influence of social norms as an important component of the theory that aims to explain human behaviour. The role of religion could be observed within these theories in self- and/or collective-identity development and hence, shaping human behaviour accordingly. Social Cognitive Theory [78] also includes a social aspect by positing that individuals learn by observing actions and the outcome of actions of others, even though the social pressure to conform is not identified as an explicit factor shaping behaviour in this theory in comparison to Social Norm Theory [81]. Among the theories in this metatheoretical class, Rappaport's Ritual Theory [76] was the only theory that clearly showcased an environmental behaviour ritualized as in the case of Buddhist monks' sanctification of trees to prevent deforestation. In exploring Muslim students' various environmental behaviours such as reduction in water and energy consumption and recycling [46], the authors used the theory of Conservation of Resource [73]. The link to religion was expressed as the conservation of resources being one of the teachings of religion. The authors depicted religious beliefs as moderating the effect of environmental moral education on pro-environmental behaviour and strengthening the moderating effect of psychological empowerment on pro-environmental behaviour.

Only one study [42] used Inoculation Theory [74], a theory that stood apart from others. The theory is only pointed out to explain one of the findings observed in the study of two religions and cultures. Hindus and Christians in both India and USA were surveyed to determine how their environmental behaviours, such as recycling, environmental volunteerism, and purchasing energy-efficient products were affected by their religiosity [42]. One of the findings depicted US-based Hindus to have higher sustainability behaviour and reincarnation beliefs than both India-based Hindus and Christians in both countries. The authors point to this as a way of resisting the majority culture, or religion in this case, through strong attachment to religious beliefs that is Hinduism in the study. The belief in reincarnation, part of Hinduism, was shown to be associated with higher biospheric values and sustainability, which were not significantly different between Christians and Hindus in India. Thus, the inoculation theory did not appear to be at play in the context of India.

In two studies [82, 83], religion was combined with culture. For example, Filimonau et al. [82] described the value of avoiding food waste as stemming from religion that had been passed down from older generations as a traditional moral value. Religious teachings embodied in traditional moral values influenced the behaviour of the contemporary generation in Poland. Similarly, the outcome of achieving groundwater preservation is connected to the activation of religious-based morals promoted in the two pesantren (religious boarding school) communities studied [84]. Awareness of the consequences of behaviour mentioned in relation to Norm Activation Model [84, 85] as drivers of behaviour also relates to the sense of responsibility to respond to societal concerns, which demonstrates social impact on personal behaviour.

In another study [86], religion was shown to influence sustainable consumption by shaping views of God, which aligned with Schwartz Theory of Values. Additionally, it served as an intrinsic motivation that formed humans' internalized attitudes, as discussed in studies that used Self-Determination Theory [87, 88]. Regarding the environmental behaviour of firms, the type of industry appeared to modulate the observed relationship between religious institutions, used as a proxy for societal religiosity, and higher corporate social responsibility ratings. The difference in CSR ratings between firms located in areas with more temples and monasteries compared to those in areas with low density of temples and monasteries was more pronounced within high-polluting industries than within low-polluting industries with higher CSR ratings for firms in areas with higher number of temples and monasteries [88–90].

Social Identity Theory [79] was applied in studies examining religion as a social identity influencing corporate social responsibility behaviors. These included positive effects on reducing wastewater discharge and solid waste emissions [89], promoting the use of products with recycled packaging [88], and a negative effect on individuals' financial ability to pursue water diversification for improved resource management in Kiribati [91].

Conservation of Resource Theory [73, 92] and Rappaport's Ritual theory [76] were used in two studies [46, 67] that showed the direct impact of religion on environmental behaviour. In the first study [46], the concept of caravan of resources from the Conservation of Resource Theory [92] is used to explain the mechanism of how religion embedded in environmental moral education as a resource pool generates psychological empowerment as another resource, motivating pro-environmental behaviour and lifestyles, which helps in conserving environmental resources [46]. Thus, the effect of religious injunctions in relation to environmental resources on environmental behaviour is an example of direct impact of religion on individuals and collectively on society. As expected, the relationship between environmental moral education and pro-environmental behaviour was higher for university students with higher religiosity than for those with lower religiosity [46]. The second article [67] illustrates Rappaport's ritual theory in the context of reforming or transforming religious rituals as a direct means to ward off environmental harm. For example, the tying of a cloth around a tree by a Buddhist monk signalling the sacredness of the tree stove off the prior decision to cut off the tree [67]. The behaviours measured in the first study [46] included reduction in water and energy use and recycling among

others. Thus, the use of this group of theories depicts the direct connection of religion to environmental behaviours at both individual and societal levels.

Thus, some theories such as Belief Congruence [72], Inoculation [74], Conservation of Resource [73], and Schwartz Values [18] were used to show how humans have psychological needs that were fulfilled when internal values, which religion influenced, aligned with behaviour. Many more theories, such as Norm Activation [75], Rappaport's Ritual [76], Self-determination [77], Social Cognitive [78], Social Identity [79], and Social Norm [81] connected religion to societal values that influenced personal or collective behavior.

3.2.2 Independent self

Theories in this category interpret individual behavior as mainly shaped by personal characteristics, which include attitudes, beliefs, traits, values, and worldviews [63]. Thus, this metatheory includes theories that treat the effect of external elements, such as structures, as peripheral to the impact of personal characteristics, being central, to human behaviour. Theories in the studies included in this review that fit the Independent Self metatheory were comprised of: Burden's Theory of Personal Representation [93], TPB [56], Value-Attitude-Behaviour Hierarchy/Model [94], and Value-Belief-Norm theory [95].

TPB was the most frequently used theory compared to theories across the six metatheories listed in this article. TPB [56] posits that attitudes, subjective norms, and perceived behavioural control shape human behaviour. In using the TPB, religion, particularly the intrinsic aspect of religion, was correctly hypothesized to influence attitude or intention, which was shown to have a positive relationship with pro-environmental behaviour [96–98] and pro-environmental behaviour intention [99]. One exception was the study by Hameed et al. [100], where seven questions from another study [101] were used to measure eco-conscious behaviour. Considering that these behavioural questions referred to product purchase and 60% of the respondents were in the low-income category, purchasing power could have been a confounding factor influencing the behaviour. In the study by Chavan & Sharma [96], the use of environmentally friendlier options in performing the ritual of Ganesh idol's submersion in water, which contributed to river water pollution, were explored. The findings showed that those with high intrinsic values, named spiritual values by the authors, corresponded with higher eco-friendly idol submersion practices than those with lower intrinsic religiosity and higher cognitive religiosity, named spiritual beliefs values by the authors. However, the cluster quality measured was only fair, meaning the division among the clusters was not strong and a respondent with high intrinsic religiosity could have low pro-environmental ritual practice. The challenge for the respondents in this study was what some expressed as compromising the traditional ritual of submersion of idols in the river, which contrasted with the less harmful alternatives of re-using and donating the idols. Such a direct compromise in performing a religious ritual was not present in the other studies in this review. Raab et al. [97] added perceived emotional outcomes as a modifying construct to the TPB, moderating the relationship between spirituality/religion and daily disposal routines. Considering that the respondents were residing in camps in Gaza, Palestine, the circumstances may stand in stark contrast to those of other studies, making the results highly context-specific. The variety of the environmental behaviours and the confounding factors influencing each of these behaviours as well as the circumstances surrounding the implementation of the behaviour and how religiosity is measured may have reasonably influenced the results.

Only in one study [99], that also used TPB, an intervention was implemented. In the study religious leaders were asked to promote recycling behaviour in their sermons. Furthermore, information about recycling was visible in the participating places of worship. Although the researchers did not measure the level of religiosity, extrinsic religiosity could be assumed, as the respondents were recruited in officially designated places of worship. In this study, while the baseline questionnaire included measurement of recycling behaviour, the post-intervention questionnaire referred to recycling intention as a proxy for recycling behaviour. Thus, baseline recycling behaviour was compared to recycling intentions post-intervention. Since a measure of behaviour existed at baseline, this study was not excluded from this review.

Some of the environmental behaviours, explored in studies using the theories in the Independent Self metatheory category, such as sustainable work behaviour [102], politician's political activity related to animal welfare [103], purchase of biodegradable bags [98], and idol water immersion ritual [96], were unique. All studies using theories in the Independent Self metatheory explored the environmental behaviours of individuals based on mainly self-reported data except for two studies [41, 104]. In these two studies, selected items from CSR reports of companies in Netherlands and Egypt were examined to determine the effect of intrinsic and extrinsic religiosity of these companies' executives or managers on the selected measures within the CSR reports. Religion was positioned as part of values, as described in the Value-Attitude-Behaviour hierarchy [68, 88, 102, 105]. Regarding the Value-Belief-Norm theory, it should be noted that it was developed

to better explain the underlying drivers of social movements, particularly in the case of environmentalism [95]. However, the behaviours examined in the case of the included studies using this theory had more to do with personal behaviours like the use of recycling and purchasing green products [106], reducing and reusing plastic packaging [107], water and energy consumption [108], and using of products with recycled packaging [88] than with political activism. Only one study [84] using the theory of Value-Belief-Norm examined a community-wide behaviour to conserve groundwater and two more studies included behaviours like donating to environmental organizations [107] and environmental volunteering [109] with potential for larger societal impact, although not political.

3.2.3 Interdependent

This metatheory refers to theories that explain human behaviour as continually influencing and being influenced by a web of values, positions, goals, identities, politics, and so on [63]. Three theories that fit this definition in the studies included were: Legitimacy Theory [110], Lumann's Theory of Ecological Communication [111], and Social Construction Theory [112]. Luhmann's Theory of Ecological Communication was included in only one study [69] in a simulated environment. This study included key factors shaping the use of common resources for grazing animals as an environmental behaviour of ranchers within the framework of how these factors communicate and thus influence one another. Religion was included as one of these factors, although the religio-socio-cultural context was not described. Social Construction Theory was used in the context of religious boarding schools' residents' behaviour to preserve groundwater while attending to environmental hygiene and cleanliness as part of their religious duty [84]. Lastly, Legitimacy Theory [110] was used in the context of firms modifying their operations to gain the acceptance of their stakeholders [65, 113]. Thus measures of CSR were examined for their relationship with religious behaviour [113] and religious affiliation [65]. Thus, the use of these theories in describing the response of firms to their stakeholders' values [65, 113], interaction of various factors influencing the decision-making of agents [69], and collective meaning making leading to collective action [84] all pointed to some way of interdependence of various factors that shaped human and business behaviour.

3.2.4 Top-down

This metatheory includes theories that show the unidirectional effect of large and implicit systemic drivers of human action [63]. Examples of these drivers include economic systems, politics, institutional culture, anthropocentrism, and wealth distribution.

Three theories namely Durkheim's Foundational Theory [114], Institutional Theory [115, 116], and Upper Echelons Theory [117] could be placed in the list of Top-Down metatheory. Durkheim's theoretical contributions have been well recognized in explaining social movements, befitting of environmentalism as a social behaviour connected to morals influenced or even concretely prescribed by religion. This theory was used in the context of environmental civic and political action in the USA [118] where religion was termed as one of the social facts regulating individuals' behaviour as per Durkheim's Foundational Theory. Institutional Theory posits that institutional norms, structures, and policies and rules influence behavior of individuals and firms. In the case of large US firms [113], religiosity of firms were shown to have higher CSR scores, specifically emissions reduction compared to firms that were not identified as religious. County-level religiosity appeared to strengthen this positive association between religiosity and higher CSR scores in both the large US firms study [113] and in US banking sector [119]. In the latter study, authors point to the effect of social norms rather than bank-level management religiosity influencing the issuance of voluntary CSR disclosures of banks in regions with high religiosity. Upper Echelons Theory [117], as in Value-Belief-Norm Theory [95], used in three of the included studies connected political and organizational behaviour to personal values, including religious beliefs of CEOs or managers of firms in Italy [120] and of managers in private enterprises in China [121]. The third study used the Upper Echelons Theory to examine the moderating effect of country-level religiosity on board member diversity of firms and their environmental-social-governance decoupling [64] such as 'green-washing', in 29 countries. Overall the theories in top-down metatheory were used to examine religion's effect emanating from firms, firm leaders, or a geographic area, on indicators that included the company's operations' impact on the environment.

3.2.5 Independent structure

Independent-Structure, as a metatheory, includes theories claiming that human actions are primarily shaped by external factors such as cultural differences, education, learning environments, institutions, infrastructure, and societal structures,

while internal processes and individual characteristics are largely overlooked [63]. Two of the theories in this metatheory that were used in the included studies were Institutional legitimacy Theory and Positive Environments Theory. The first study [122] where institutional legitimacy theory was used, the association between a firm's proximity to religious sites was compared to the firm's CSR index. The authors point out that data on firm managers' religiosity, if it were available, and firm CSR would have been ideally used to measure the association between religiosity and CSR. The choice of theory, in that case, would be expected to be other than Institutional Legitimacy Theory. The other theory in this metatheoretical group was Positive Environments Theory [123] that was used in one study [123] among the included studies. The study presents religion as a contributor to positive environment with church's physical environment being a contributing factor to creating a transcendental positive environment. This was the only study that included a tool for participants to assess the physical attributes of a place of worship or in this case of churches in Mexico. These physical attributes of Churches, referred to as Catholic temples, such as lighting, temperature, ornaments, and façade and the religiosity of the participants including cognitive, affective, and behavioural aspects assessed the transcendental positive environment. Although the theory of Positive Environments would be placed in the independent structure metatheory group, its use in this study [123] included aspects of religiosity of the church attendees, which would be more fitting under a combination of Independent-Self and Independent-Structure metatheories. Nonetheless, the inclusion of the physical environmental elements and institutional structures and processes in the studies match the Independent-Structure metatheory properties.

3.2.6 Communal needs

This metatheory positions social cooperation, rather than survival and subjective well-being, as the core driver of human action [63]. Stakeholder theory [124] was the only theory, used in five studies included in this review, that fit this metatheory. The need for community approval and acceptance shaping the behaviour of businesses lies at the core of stakeholder theory. Two studies [113, 125] were unique in their approach to measuring the link between CSR and religion. The authors measured firm religiosity by assessing the firms' behaviour regarding their compliance with the corresponding religion's principles. The results from this measurement were compared to the reported CSR of the respective firms. Another study [126] using stakeholder theory used a qualitative approach to understand how the environmental components of CSR were perceived and internalized by business school managers in Pakistan. Religion was identified as a construct that provided support for the internalization of environmental practices, which were part of CSR. One study [127] used proximity to Buddhist monasteries as a proxy measurement of religiosity of Chinese firms' stakeholders while another study [65] compared the impact of religion on CSR of firms based on the type and the number of adherents of different religions across 30 countries.

Regarding firms' environmental behaviour measurement, it should be noted that measures mainly relied on various CSR-related indicators, referred to as CSR disclosure, CSR scores or ratings, index of 122 CSR practices, and disclosures regarding reduction of emissions and environmental innovation [65, 90, 113, 119, 127]. Although some studies differentiated or extracted environmental components of CSR, the rest relied on general CSR measures, where only some indicators are relevant to environmental behaviour. Hence, the connection of religiosity to only environmental behaviour could not be precisely determined across all studies. Studies examining personal environmental behaviour relied mainly on self-reported accounts rather than on objectively measured outcomes, which may make the validity of the results prone to biases, such as respondents' memory and social desirability. For example, one study utilized data from a national survey [83], one on a sample of university students to fill out a survey [46], one used a combination of interviews and an online survey [45], and so on. Overall, a majority of the studies showed a positive relationship between religiosity or aspects of religiosity and specific or a range of environmental behaviours.

Overall, theories that were used in the context of examining the relationship between religion and firms' behaviour mainly belonged to independent-structure, interdependent, top-down, and communal needs metatheoretical categories. Theories that dealt with individual behaviour, on the other hand, were concentrated in the two psychological-need and independent-self metatheoretical categories.

4 Discussion

There has been an upward trend in the academic coverage of the topic of religion and environmental behaviour using theoretical frameworks. Interestingly, the number of such articles published since 2014 parallels the issuance of the *Laudato si* encyclical [128] reinforced in 2023 by the apostolic exhortation *Laudate Deum* [129] emphasizing the urgency

of the climate crisis and the need for cultural changes and alliances to combat environmental degradation. Furthermore, the rise of eco-theology as well as increased awareness and experience of environmental degradation in many parts of the world may have encouraged academic investigations of the relationship between religion and environmental behaviour in a more systematic manner by using available theories of human and institutional behaviour.

In this review, the overarching perspective on the most frequently used theories within the Psychological Need and Independent-Self groups highlights the impact of religion on individuals' subjective well-being, with social relationships being an inherent component. The theories also show how individuals' religious beliefs, particularly their intrinsic religiosity, create societal impact. With such continuous reciprocal reinforcement of religious values, acting as a social fact as in Durkheim's Foundational Theory [114], their continuity is strengthened through identity formation and social solidarity [67, 114]. The function of religion at the macrosystem level was captured in business studies using theories, such as Stakeholder, Legitimacy, and Social Norm, which spread across different metatheoretical classifications. The theories in the Independent-Self metatheoretical classification focusing on personal values driving behaviour point to the function of religion at the micro-system level as per the theoretical framework for this review in Fig. 1. Regarding institutional environmental behaviour, the theories used spread across Top-Down, Interdependent, Independent-Structure, Communal Need, and Psychological Need due to the use of Social Norm Theory in one study [127], showing the influence of religion on different factors driving human behaviour. Institutional behaviour influences behaviour at the meso- and exo-system levels.

The theories used in studying institutional environmental behaviour provide a starting framework for studying religion's influence on institutional environmental behaviour through CSR. CSR measurements, however, were not uniform across the studies. If environmental behaviour was not segregated from other CSR components, such as labour force-related indicators, a CSR measurement in its totality cannot be directly translated into environmental behaviour. Furthermore, CSR may not capture all types of environmental behaviour and the results may further be disadvantaged by inaccuracies [130]. Meanwhile, a more focused measurement of aspects of religiosity could provide further insight into the differential impact of aspects of religiosity in relation to CSR or to particular environmental behaviour indicators within CSR. Few studies considered this [104, 119], while others did not [65, 90, 122].

An interesting finding in this review showed the effect of individuals' religiosity at the micro-system level influencing both institutional environmental behaviour at the meso-system and political behaviour at the exo-system level. This influence was demonstrated using theory of Upper Echelons [64, 120, 121]. Extending this personal values' influence to exo-system at the political level was shown in a study of US senators [103] where the authors used Burden's Theory of Personal Representation [93]. In this case, a theory related to explaining a behaviour to meet a psychological need was shown to drive political action with potentially expansive effect at the exo-system level.

The use of theories was integral to the design of a large number of studies or the central theme of the articles [64, 67, 82, 83, 87, 91, 97–100, 103, 105, 108, 111, 119–121], in which case their application was clearly demonstrated. Few studies used theories to describe their findings or as part of their literature search to set the background for their study [45, 46, 118]. For example, Chavan & Sharma [96] fleetingly mention the TPB as a theory that their findings support, stating that human beliefs and values influence the research participants' behaviour. However, the study did not measure knowledge or awareness of respondents about the idols being harmful to environment nor did it measure intentions. The study possibly undermined other factors that influence the behaviour as well, such as the availability and price of idols that polluted water vs. clay ones, used traditionally, that would dissolve in water. Therefore, the examination of the relationship between religion and environmental behaviour in the 46 studies included had wide variation in the extent of theoretical integration.

The direct effect of religion [46, 67, 84] was noted via religious injunctions mandating a behaviour, such as not being wasteful [46] or cleanliness [84] according to Islam or declaring a mountain sacred according to Mi'kimaq's traditional religion [67]. The use of the theories of Rappaport's Ritual theory, norm activation, value-belief-norm, and social construction in two of these studies appear to adequately frame the act of engagement in the environmental behaviours described [67, 84]. Conservation of Resources theory, on the other hand, as used in the study by Begum et al. [46] appeared to have limited application in examining the association between religion and environmental behaviour due to its neglect of social norms.

This effect of religion was, however, reflected well in other theories in the same metatheoretical category of Psychological Need, such as in Social Norms, Schwartz Theory of Values, Social Cognitive and Social Identity Theories. Another theory showing human action driven by psychological need was the Norm Activation Model, which incorporated both personal norms and social norms. Of the three studies [82, 84, 85] that used this theory, only one [84] clearly showed the activation of an environmental behaviour by religion. As pointed by the Putri et al. [84] The setting of this study being in

a religious boarding school made it potentially easier to motivate environmental behaviour possibly since activities were usually assigned to students rather than voluntary in a community setting. A theory from the group of personal belief with societal impact could be easily applied as the ecological initiative to save ground water appeared to have been initiated by the Kyai's, the religious leader of the Islamic boarding school in Indonesia. Thus, theories in the Psychological-Need category were not strictly limited to personal values.

In both institutional and non-institutional settings, environmental behaviours could be influenced by a large array of factors depending on the type of behaviour and the context under study. Controlling for all potential variables that might moderate the relationship between religion and environmental factors or circumstances under which religious norms supersede or recede other influential factors is challenging. Certain factors were identified and accounted for in various studies that were included in this review. For example, in some studies, personal factors, such as political views, past experiences and sociodemographic information, such as education were included and examined accordingly [65, 88, 99, 108, 109]. However, some studies did not measure one or more of these relevant variables that could modify the effect of religion on environmental behaviour, thus weakening the validity of the findings. For example, there was no report of income data in connection to biodegradable bag use, which had a higher price than that of the commonly used plastic bags in Pakistan [98]. In examining sustainable work behaviour [102], both private and public organizations were included. However, no other characteristics were considered when discussing energy consumption behaviour. When examining various environmental behaviours, such as recycling and reduced driving, environmental activism, and organic and green food consumption an important characteristic of participants that is having children was not controlled [43, 123, 131], which could influence food choices and the availability of time for pro-environmental behaviour. The best approach, thus, appears to be the tailoring of the data to the environmental behaviour under study. Hence, measurement of other potential factors that may have influenced the environmental behaviour measured was a limitation in many studies reviewed. Such confounding factors could relate to the behavioural determinants namely capability and opportunity and not just motivation and psychological framing where religion exerts its impact as observed in the studies included in this review. Future studies should control for such variables that can influence the results or modify the relationship between religiosity and environmental behaviour.

There was a degree of uncertainty in classifying theories in the identified metatheoretical categories since there were theories that could fit in more than one category. For example, Upper Echelon's Theory, identified as Top-Down, can be connected not only to the influence of top executives on organizational outcomes, but also to the impact of personal values, attributes, and cognitive styles of executives shaping their professional behavior. In this case, the theory would be classified as Psychological Need. Since the use of the theory focused on the effect of the executives' attributes and leadership on firms' CSR performance, it was designated as Top Down even though it fails to meet an attribute of Top Down theories, which is about effect of systemic factors influencing individual's behaviour Eyster et al. [63]. This challenge is likely a result of treating firm behaviour in the same way as human behaviour, where both may not be shaped by the same factors. Therefore, precaution should be taken when selecting behavioral theories to assess humans versus firms' environmental behavior. In fact, the TPB [56], classified as an Independent-Self theory, was used in studies of firm behaviour connected to the executives' religiosity [41, 104] associating the firms' behaviour to that of executives.

Focusing on factors that shape human behavior, religion's effect was hypothesized to influence human attitude [41, 97, 98, 100, 104] at the microsystem level, which influenced individuals' behaviour rather than religion influencing individuals' behaviour via its impact on social norms at the macro-, exo-, or meso-system levels. On the other hand, effect of religion on firms' behavior was connected to religion's effect at both the micro- [41, 104, 120], meso- [84, 102, 126], exo- [65, 69, 119, 122] and macro-system levels [69]. Thus, the connection between religion and environmental behaviour as indicated in the framework for this study has been theoretically explored at different systemic levels in society.

Modifying a theory to increase its applicability to the context of studying religion and environmental behaviour was employed in the TPB [97, 99]. Lakhan [99] introduced modifications to the TPB by adding variables such as *past experiences, situational factors, outcomes or consequences,* while Raab et al. [97] included *perceived emotional outcomes* as a modifying variable in the TPB. Thus, theoretical modifications to existing theories can be utilized to study a specific behaviour and religion or an aspect thereof.

Regarding the impact of religion on environmental behaviour, considerable gap in quantitative studies testing the impact of any specific aspect of religiosity on changing or motivating environmental behaviour using a behavioural theory, with only one [99] captured in this review, albeit with no measurement of actual behaviour post-intervention. The potential for mobilizing religious values for environmental behaviour ground in theory has remained underutilized. A majority of the included studies in the present review showed some aspect of a positive relationship between religion and pro-environmental behaviour. Few studies showed no significant relationship between some religions and

environmental behaviour [65, 104] while some showed a negative effect of spiritual and religious beliefs, or cognitive aspect of religiosity, on the use of environmentally-friendly alternatives to performing a religious ritual [96], the use of biodegradable bags [98], investment in water diversification [91], and eco-conscious buying and disposing behaviours [106]. One study [105] showed that religion had both positive and negative effect on wasting food behaviour. Since the focus of this review was not on determining the effect of religion on environmental behaviour, but rather the type of theories used to study this effect, this topic's coverage in this review is inadequate as studies that did not use a theory were excluded. Further research can shed light upon this important driver of behaviour and explore how and to what extent the greening of religions has influenced environmental behaviour since it was last reviewed by Orellano et al. [42]. Furthermore, regarding the identification of relevant theories, there exists the possibility that relevant articles that did not include the key terms used to search the databases or were not included in the four databases searched were excluded. Manually searching the included articles helped in retrieving many relevant articles.

An important point to note is that the measurement of religiosity was inconsistent across the studies, with some measuring only affiliation, presumably the cognitive aspect of religion, and others measuring religious service attendance, which may not capture relevant religious behaviour related to environmental behaviour. These inconsistencies pose a challenge in comparatively examining the impact of religion on environmental behaviour. Future research should ensure the measurement of specific aspects of religiosity to examine their relationship with behaviour. Surprisingly, the Functional Theory of Human Values [132] was not used in any of the studies to determine the function of religious values. This identification of personal and communal *needs* driving human behaviour in this theory is contained within the broader *needs* category of the four metatheories including cognitive, psychological, communal, and economic identified by Eyster et al. [63]. Further research is required to identify pathways connecting aspects of religiosity and environmental behaviour, enabling the enhancement of the latter.

5 Conclusions

This review captured 46 studies that used a total of 23 theories in the context of examining the relationship between various religions and a range of environmental behaviours at individual and institutional levels. A majority of the theories used were in the context of environmental behaviors driven by the psychological needs of individuals. The use of metatheories based on the drivers of human action presented a suitable way of categorizing theories although this may be unsuitable for classifying theories of institutional behaviour. The flexibility regarding the addition of variables to the TPB appeared to have played a role in making it the most frequently used theory across the included studies.

This review classified the theories used in studies exploring the connection between religion and environmental behavior into meta-theories, providing a lens to examine the theoretical landscape of this relationship. This classification can guide future research in selecting, refining, and developing theories to better understand the link between religion and environmental behavior. Additionally, the review highlights the importance of addressing challenges such as inconsistencies in measuring religiosity and the influence of potential confounding factors. Ultimately, the review serves as a foundational resource helping researchers select theories to guide the designing of faith-driven pro-environmental interventions. The metatheory consideration when selecting a particular theory can, thus, facilitate the selection of the most appropriate theories for human behaviour studies and behavioural change interventions.

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