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PEOPLE'S (UN)CONCERN ABOUT THE ENVIRONMENT: A DISCUSSION IN LIGHT OF BRAZILIAN AND AMERICAN NATIONAL CULTURES

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ABSTRACT

Objective: This study aimed to examine the possible influence of national cultures on citizens' environmental (un) concerns by comparison American and Brazilian cultures. **Method:** Data on environmental concerns from 2,596 Americans and 1,762 Brazilians were analyzed using statistical correlation and mean comparison tests. **Main results:** The three variables used in this study to measure respondents' environmental values showed statistically significant differences between the two countries. Among them, two indicated that Brazilians are more environmentally engaged than Americans. **Relevance / Originality:** This research suggests specific cultural dimensions potentially associated with environmental issues and highlights the importance of studying environmental values and their specificities across countries so that environmental management policies can be more contextualized, assertive, and compatible with citizens' cultural characteristics in each nation. **Theoretical / Methodological Contributions:** Although the literature substantially explores environmental values, ecological management, and sustainability, these themes are not as frequently examined from a cross-cultural perspective —that is, through an approach considering possible influences of national culture on individual values, attitudes, and behaviors. The present investigation invites future studies predicting pro-environmental behaviors to include cultural variables among other predictors. In practical terms, organizations, public policies, and government programs concerning environmental management are encouraged to consider national cultural characteristics that may deeply act as drivers or obstacles to pro-environmental values, attitudes, and behaviors.

Keywords: Environmental management, Environmental sustainability, Cross-cultural differences, Cross-cultural study, Social study.

(DES)PREOCUPAÇÃO DAS PESSOAS COM O MEIO AMBIENTE: UMA DISCUSSÃO À LUZ DAS CULTURAS NACIONAIS BRASILEIRA E AMERICANA

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RESUMO

Objetivo: Este estudo teve como objetivo refletir sobre a possível influência da cultura nacional dos países na (des)preocupação ambiental de seus cidadãos, a partir de uma comparação entre as culturas americana e brasileira. **Método:** Para tanto, dados relativos à preocupação ambiental de 2.596 americanos e 1.762 brasileiros foram analisados por meio de testes estatísticos de correlação e comparação de médias. **Principais Resultados:** Os resultados indicaram que as três variáveis utilizadas no presente estudo para mensurar os valores ambientais dos respondentes apresentaram diferenças estatisticamente significativas entre os dois países e, dentre elas, duas apontaram os brasileiros como mais ambientalmente engajados que os americanos. **Relevância / Originalidade:** A presente pesquisa sugere a existência de dimensões culturais específicas possivelmente associadas a questões ambientais e ressalta a importância de estudar valores ambientais e suas especificidades entre países, de modo que políticas de gestão ambiental sejam mais contextualizadas, assertivas e compatíveis com as características culturais dos cidadãos em cada país. **Contribuições teóricas / metodológicas:** Valores ambientais, gestão ambiental e sustentabilidade são temas amplamente explorados na literatura; contudo, não o são com a mesma frequência sob uma abordagem transcultural, isto é, considerando as possíveis influências da cultura nacional sobre os valores, atitudes e comportamentos dos indivíduos. A presente investigação constitui um convite para que futuros estudos de predição de comportamentos pró-ambientais considerem variáveis culturais juntamente com outras variáveis preditoras. Em termos práticos, recomenda-se que organizações, políticas públicas e programas governamentais na área de gestão ambiental levem em conta características da cultura nacional que, de forma enraizada, podem atuar como propulsoras ou entraves de valores, atitudes e comportamentos pró-ambientais.

Palavras-chave: Gestão ambiental, Sustentabilidade ambiental, Diferenças transculturais, Estudo transcultural, Estudo social.

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INTRODUCTION

Natural resources are essential for human survival. Given their accelerated degradation, experts, environmentalists, and governmental and non-governmental organizations have discussed the need to promote sustainable standards of pro-environmental values and behaviors among the population (Coelho et al., 2006). Due to the growing concern about environmental issues in society, the volume of academic research on this topic and interest in the subject have been progressively increasing (Athayde & Mota, 2023; Souza & Ribeiro, 2013).

One of the challenges of sustainability is balancing economic, social, and environmental aspects (Feil & Schreiber, 2017). Achieving this balance involves societal choices and decisions, making it essential to develop pro-environmental values and behaviors among citizens. Understanding which factors can affect pro-environmental actions is therefore necessary (De Groot & Steg, 2010). In this sense, the literature has highlighted human values as relevant to understanding pro-environmental behaviors (Campos & Pol, 2010; Coelho et al., 2006). Values are abstract ideals or life goals that reflect what people consider important (Perlaviciute & Steg, 2015). Authors such as Lonnqvist et al. (2013) state that individuals are likely to exhibit behaviors that express their values.

Furthermore, actions that promote access to environmental awareness are essential to combating ecological degradation (Feil & Schreiber, 2017). Jacobi (2003) reinforces this argument by emphasizing that individuals' values need to be stimulated so they become more involved in environmental management.

Considering that a culture's main characteristic is its role as a social model that influences social practices and processes, behaviors can be understood in light of culture (Gallego-Álvarez & Ortas, 2017). The culture of a society can influence and shape the values shared among its members (Kumar et al., 2019). Thus, culture can be used to understand individuals' beliefs and perceptions about sustainability and their propensity to engage in sustainable behaviors (Tata & Prasad, 2015).

From this perspective, Grober (2007) states that sustainable behavior can be linked to the way of thinking rooted in each society's culture. Therefore, considering the relevance of this topic in the Brazilian and international contexts, this study aimed to compare, cross-culturally, two distinct societies — Brazil and the United States — regarding some of the environmental values of their citizens. The following research question guided the study: What are the differences between Brazil and the United States regarding the environmental values of their citizens? Are such differences compatible with the cultural characteristics of these two countries?

Accordingly, the general objective of this study was to analyze differences in citizens' environmental values between Brazil and the United States and to discuss possible differences in light of the national cultures of the two countries. The following specific objectives were established: to formulate hypotheses with theoretical support; to explore correlations between environmental values and sociodemographic characteristics of the participants; to compare the means of variables related to environmental values between Brazil and the United States; and to discuss possible statistically significant differences based on the cultural characteristics of the countries compared and on previous research related to the topic.

It is important to note that the choice of Brazil and the United States for comparison was motivated by the fact that they are considered culturally distinct in several cross-cultural studies (Hofstede Insights, 2023). Strong evidence from the literature has shown that culture can influence individuals' values, attitudes, and behaviors (Andery, 2011; Athayde & Coutinho, 2023; Athayde et al., 2023; Gomes et al., 2016; Motta & Gomes, 2019; Oliveira & Alves, 2015), and this study explores how compatible national cultural characteristics might be with some of the environmental values of individuals in these two countries.

The comparison between a developed and a developing country was also motivated by the scarcity of studies addressing this topic from a cross-cultural perspective. The literature has extensively explored environmental values, ecological management, and sustainability (De Groot & Steg, 2010; Feil & Schreiber, 2017). However, these topics remain underexplored through a cross-cultural approach, that is, from a perspective that considers the possible influence of national culture on individual values, attitudes, and behaviors.

In this study, three variables represented individuals' environmental values, namely: trust in environmental organizations; participation in environmental organizations; and prioritization of the environment or the economy. These variables were selected because they are the only ones related to this topic available in the World Values Survey (WVS) database, which served as the data source for this investigation and is detailed in the Method section. Furthermore, it is worth noting that recent research has analyzed the same variables to represent environmental values (Athayde & Mota, 2023; Whitburn et al., 2020).

The Brazilian and American national cultures, in turn, were characterized according to five cultural dimensions proposed by Hofstede (2011; Hofstede Insights, 2023): power distance; uncertainty avoidance; individualism versus collectivism; masculinity versus femininity; and long-term orientation versus short-term orientation. These dimensions were chosen because they are the most widely used in cross-cultural research (Vignoles et al., 2016).

It should be noted that, as this is not a predictive study, it does not seek to prove the influence of national culture on the environmental values of Brazilians and Americans. Instead, it aims to discuss possible differences in environmental values based on the cultural characteristics of the two contrasting countries to explore how compatible each country's cultural characteristics are with citizens' values. This research is expected to stimulate further cross-cultural studies on this topic and serve as a reference for future investigations.

Theoretically, this study contributes to the field of knowledge on environmental values, ecological management, and sustainability by shedding light on cultural dimensions not frequently examined in connection with this topic. Given the strong theoretical and empirical evidence in the literature indicating that culture influences individual values, attitudes, and behaviors, cultural dimensions can also be expected to influence pro-environmental values, attitudes, and behaviors. Therefore, these dimensions should not be overlooked. This research invites future studies predicting pro-environmental behaviors to consider cultural variables alongside other predictor variables. Practically, this study encourages organizations, public policies, and government programs in the area of environmental management to consider characteristics of national culture that, in deeply rooted ways, act as drivers or obstacles to pro-environmental values, attitudes, and behaviors among individuals and organizations. Thus, initiatives to raise public and institutional awareness can be culturally contextualized and have a greater likelihood of success.

Addressing environmental values, environmental management, and sustainability while linking these topics with culture is relevant because it remains unclear which cultural dimensions are compatible or incompatible with pro-environmental values, attitudes, and behaviors. Constructing this knowledge is essential for governments (within the scope of national culture) and institutions (within the scope of organizational culture) to strengthen cultural characteristics that encourage environmentally responsible behaviors and to overcome cultural beliefs and values that hinder such behaviors.

In addition to this introductory section, which presents the theme, problem, objectives, and justification, this research comprises three additional parts. The first, concerning the theoretical framework, addresses the interrelations among culture, values, and pro-environmental behaviors, as well as the characteristics of Brazilian and American national cultures, culminating in the formulation of hypotheses and presentation of the theoretical model that supports them. Next, the methodological procedures adopted to achieve the research objectives are presented. Finally, the results are presented and discussed, addressing the theoretical and practical implications of the study, its limitations, and suggestions for further research.

1. THEORETICAL FRAMEWORK

1.1. Interrelations between culture, values, and pro-environmental behaviors

Given that the present study aimed to discuss differences in environmental values between individuals from two countries in light of national culture, it is relevant to first conceptualize the term culture. Defined by Skinner (1953, as cited by Andery, 2011) as the set of social contingencies of a group, culture is part of human behavior, as such behavior is a product of cultural history. "Culture defines society by its capacity to create elements that allow society to recognize itself" (Cesnik & Beltrame, 2005, p. 4).

Cross-cultural psychologists have studied children's behavior in different societies and shown that they learn cultural behavior patterns early in life. For example, Japanese male infants aged 3 to 4 months make more noise than Japanese female infants of the same age, while in the United States, the opposite is true (Hofstede & Bond, 1988).

Cultural practices are a supra-behavioral phenomenon that must be understood to comprehend human behavior (Andery, 2011). Therefore, culture is "an abstract entity that has an indefinite temporality, but that certainly involves behavioral practices and products of these practices — which are behavioral and environmental phenomena — reproduced among individuals and generations" (Andery, 2011, p. 207).

Culture is the most significant influence on many dimensions of human behavior (Soares et al., 2007). Müller (2020) characterizes it as an increasing rate of accumulation of potential and realized behaviors. The culture of a society influences, feeds, and shapes the values shared among its members (Kumar et al., 2019). "The culture of each people presents the elements through which they adapt, react, and enjoy their time, in an aggregated way to their place and due to the intrinsic differences of each group" (Cesnik & Beltrame, 2005, p. 22). National cultures represent complex configurations of values (Soares et al., 2007) and, in the long term, promote virtues oriented toward future rewards, adapting to circumstantial changes. In contrast, in short-term orientation, people emphasize virtues related to the past and present, including respect for traditions, national pride, and fulfillment of social obligations (He & Filimonau, 2020).

Tata and Prasad (2015) argued that national cultural values can influence beliefs and perceptions of sustainability, which motivated this research to discuss differences in environmental values in light of national cultural characteristics. Hence, sustainability values can mediate the relationship between national culture and sustainability practices. National culture guides individual values and behaviors concerning the use of natural resources (Kumar et al., 2019), since "culture, which influences the collaboration and pro-social conduct, can significantly alter the perception of citizens toward the environment" (Kumar et al., 2019, p. 1054).

National culture consists of people's fundamental values about the world around them. It influences their beliefs and perceptions about sustainability and their propensity to engage in sustainable practices (Tata & Prasad, 2015). Several studies have sought to understand how national culture can contribute to pro-environmental behavior. For instance, He and Filimonau (2020) examined the pro-environmental behavior of tourists. Their study provided a better understanding of the role of national culture in shaping pro-environmental attitudes and behavioral intentions.

In a study on consumption, Oliver and Lee (2010) investigated how cultural factors influence intentions to purchase an environmentally friendly product: a hybrid car. They used data from 1,083 American and 783 Korean drivers. According to the authors, consumer behaviors across countries should be understood within a cultural context, since a collective commitment to global sustainability would influence consumer values and behaviors. They found that the predisposition to seek information about "green products" and the perceived social value associated with the consumption of hybrid cars had strong positive relationships with the intention to purchase a hybrid vehicle among consumers in both countries.

Boeve-De Pauw and Van Petegem (2013) examined the effect of environmental values on individual behavior in different cultural contexts. The study analyzed data from 1,833 children aged 10 to 13 from Belgium, Guatemala, and Vietnam. The results showed that children from distinct groups differed in their environmental values and behavior. Furthermore, the results indicated that the effect of environmental values on behavior varied across cultural contexts. The authors noted that these findings have implications, among others, for ecological education initiatives aimed at changing behavior.

Fostering sustainability across nations requires understanding how culture determines human action (Eom et al., 2016). Assuming that increased personal concern for the environment leads to greater pro-environmental action, Eom et al. (2016) tested this assumption across individualistic and collectivistic cultures. In the first study, comparing 47 countries, the authors found that countries varied considerably in the degree to which environmental concern predicted support for pro-environmental action. In the sec-

ond study, they compared individualistic and collectivistic nations and found culture-specific predictors of pro-environmental behavior. Environmental concern predicted environmentally responsible consumer choice among Europeans and Americans, but not among Japanese participants. For Japanese participants, perceived norms regarding environmental behavior predicted pro-environmental decision-making.

Research on resource conservation and general pro-environmental behavior has grown in both developed and developing countries (Li et al., 2019). In a theoretical review, Li et al. (2019) discussed determinants of pro-environmental behavior in resource conservation and recycling from 1987 to 2017, dividing these determinants into two categories: external variables, which encompass factors such as social norms, cost, and convenience, and individual variables, which include demographic and psychological factors (attitudes, social capital, and socioeconomic characteristics). According to the authors, identifying the determinants of pro-environmental behavior is key to formulating more appropriate and effective policies to improve public behavior in protecting the environment.

Through a systematic literature review, Whitburn et al. (2020) discussed the need to understand what motivates environmental behaviors to implement public policies and promote people's pro-environmental behavior. The authors conducted a meta-analysis on the relationship between connection with nature and pro-environmental behavior. The results showed that individuals with a stronger connection with nature tend to engage in several pro-environmental behaviors, including energy and water conservation, pro-environmental activism, and financial support for environmental organizations. As conservation actions are human behaviors, it is vital to understand how social and psychological factors influence them (Whitburn et al., 2020).

In a bibliometric study, Tam and Milfont (2020) discussed why the cultural perspective is relevant in environmental psychology. According to these authors, addressing global environmental problems requires, considering collective interests, which involves recognizing distinct and common behaviors across culturally diverse populations.

Nguyen et al. (2017) investigated the influence of the cultural values of collectivism and consumers' long-term orientation on their intention to purchase environmentally responsible products. They developed a conceptual model linking cultural values to the main determinants of green purchasing behavior. The findings showed that consumers' cultural values of collectivism and long-term orientation facilitate green purchasing behavior.

Feil and Schreiber (2017) argue that the environmental challenge should focus on actions that enhance citizens' access to environmental awareness through intensive educational efforts. Jacobi (2003) reinforced this argument by highlighting that society's irresponsibility is mainly due to a lack of information, environmental awareness, and a deficit of community practices guided by citizen participation and involvement in environmental management.

Since pro-environmental actions are relevant to reducing environmental problems and promoting sustainable development (De Groot & Steg, 2010), Nascimento et al. (2013) pointed out that personal values oriented toward sustainability influence individual decisions. Based on this premisse, Pinheiro et al. (2014) analyzed the relationship between environmental values and ecological behaviors. According to the authors, environmental values are related to the intention to participate in practices that protect the environment.

Understanding the factors that influence pro-environmental actions is necessary. De Groot and Steg (2008) argued that three types of values are relevant in explaining pro-environmental behaviors: egoistic, altruistic, and biospheric values. Individuals guided by egoistic values consider the costs and benefits of environmental behavior for themselves and tend to adopt pro-environmental behavior when the perceived benefits outweigh the perceived costs. Conversely, those guided by altruistic values behave pro-environmentally according to the perceived costs and benefits for others — whether individuals, communities, or nations. Finally, individuals with a biospheric value orientation base their decision to act pro-environmentally primarily on the perceived costs and benefits to the ecosystem and biosphere.

Some studies have also investigated how cultural aspects can shape the environmental performance of organizations. For example, Pinheiro et al. (2021) examined the effect of cultural systems on the disclosure of corporate environmental responsibility by 62

companies in the energy sector across 25 countries. Similar to the present study, they adopted Geert Hofstede's cultural dimensions to characterize national culture. The findings showed that companies disclose more information about environmental responsibility in more individualistic and masculine cultures. Furthermore, companies based in cultures with higher levels of indulgence and long-term orientation tend to have greater environmental disclosure.

Pinheiro et al. (2022) analyzed the influence of cultural values on companies' carbon disclosure, adopting Institutional Theory as the theoretical framework, which posits that the national environment can shape corporate behavior. The findings indicated that companies are discouraged from disclosing carbon information in countries with more hierarchical institutions (high Power Distance). Furthermore, companies disclose less carbon information in more individualistic cultures but disclose more in countries with greater tolerance for cultural diversity.

Finally, Pinheiro et al. (2023) analyzed how national culture affects environmental disclosure in liberal economies. As in the present study, they used the cultural dimensions proposed by Geert Hofstede to characterize national culture. The results highlighted that "power distance," "individualism," and "masculinity" positively influence environmental disclosure. The findings also showed that companies disclose more environmental information in cultures with lower "uncertainty avoidance."

By reviewing previous studies that intertwine cultural characteristics with pro-environmental values, attitudes, and behaviors, it becomes evident that there is no consensus in the literature regarding which cultural dimensions are positively or negatively associated with greater environmental engagement. Moreover, cultural dimensions such as "individualism," are positively associated with environmental issues in some studies and negatively in others. These inconsistencies and contradictions reduce the potential practical benefits of scientific research on the subject, as managers and governments lack clear guidance on which cultural characteristics should be encouraged or discouraged to foster greater environmental engagement among populations and organizations.

After exploring the intersections between values, behaviors, and cultures, the next section focuses on characterizing Brazilian and American national cultures to support hypothesis development and the discussion of empirical results.

1.2. Characteristics of Brazilian and American national cultures

Since this study aimed to compare Brazil and the United States regarding the environmental values of their citizens and to discuss possible differences in light of national culture, five cultural dimensions proposed by Hofstede (2011) are presented below. These dimensions are widely adopted in the international literature to characterize national cultures. The scores of the two countries in each cultural dimension, ranging from 0 to 100, were obtained from the country comparison tool (Hofstede Insights, 2023). The five cultural dimensions considered are "power distance," "uncertainty avoidance," "individualism versus collectivism," "masculinity versus femininity," and "long-term versus short-term orientation". These dimensions are detailed below.

Power Distance: The first cultural dimension refers to the degree of inequality within a society, meaning that power distribution is inherently unequal. This dimension highlights how less powerful individuals expect and accept such inequality. Therefore, through the power distance dimension, societies ca be compared according to their degree of inequality (Hofstede Insights, 2023).

With a score of 69, Brazil reflects a society that believes hierarchy should be respected and inequalities between people are acceptable. The unequal distribution of power justifies that those with authority have more benefits than those with less power. In Brazilian companies, leaders frequently assumes full responsibility, and symbols of status and power are highly relevant to indicate social position and communicate respect. With a score of 40, the United States has a low level for this cultural dimension. The American premise of "liberty and justice for all" is evidenced by an explicit emphasis on equal rights across society and government (Hofstede Insights, 2023).

Uncertainty avoidance: The second dimension refers to how members of a society interpret uncertainty and unpredictability. It reflects how cultures deal with an uncertain future with greater

or lesser comfort. Societies protect themselves against uncertainty by creating norms and institutions to reduce the anxiety and stress generated by unforeseen events. Brazil scores high on this cultural dimension (76), similar to most Latin American countries. These societies show a strong need for rules and legal systems, with bureaucracy, laws, and regulations playing a significant role in making the world safer. The United States, on the other hand, scores below average on this dimension (46). In the United States, there is broad acceptance of new ideas and innovative products, as well as a willingness to try something new or different. Americans tend to be more tolerant of other's ideas and opinions and value freedom of expression. At the same time, they do not require many rules (Hofstede Insights, 2023).

Individualism versus collectivism: The third dimension concerns how people form social groups. Societies based on individualism tend to promote self-oriented behavior, in which each person looks after themselves and their immediate family. Conversely, collectivist societies rely on loyalty relationships derived from cohesive and united social groups. High scores indicate more individualistic cultures, whereas lower scores reflect more collectivist ones (Hofstede Insights, 2023).

Brazil scores 38 on this dimension, indicating that people tend to belong to strong and cohesive groups — such as extended families, including uncles, aunts, grandparents, and cousins — that continue to protect their members in exchange for loyalty. In business, it is important for Brazilians to build trust and lasting relationships. For example, meetings often begin with general conversations to establish rapport before discussing business matters. With a score of 91, the United States is one of the most individualistic cultures in the world. Individuals are expected to take care of themselves and their families without relying on others' support. In business, workers are expected to be proactive, and decisions are based on merit (Hofstede Insights, 2023).

Masculinity versus femininity: This dimension relates to values shared between the genders in society and to what is considered success, as well as how groups perceive men and women. Societies characterized by "masculinity" tend to emphasize competitiveness and assertiveness, whereas those characterized by "femininity" emphasize collaboration, quality of life, and well-being. In short, societies with high scores reflect "masculinity," while low score reflect "femininity." Brazil has an intermediate score (49) on this dimension. The United States, in turn, has a high score (62), where the idea that people should strive to be the best is prevalent. Consequently, Americans often discuss their victories and successes and believe there is always a way to improve (Hofstede Insights, 2023).

Long-term versus short-term orientation: The fifth dimension concerns how societies perceive and deal with time. In refers to how a society remembers the past, acts in the present, and plans for the future. Societies with low scores on this dimension tend to have a short-term orientation, valuing and maintaining well-established norms, beliefs, and customs. Societies with a long-term orientation (higher scores) tend to view change as natural and as preparation for the future. Brazil has an intermediate score (44) on this cultural dimension, while the United States scores lower (26). Thus, American companies tend to measure performance in the short term, leading individuals to strive for quick results in the workplace (Hofstede Insights, 2023).

Table 1 summarizes the scores of Brazil and the United States across the five dimensions of national culture according to Hofstede (2011).

Table 1. Cultural dimensions of Brazil and the United States.

Cultural dimension	Brazil	United States
Power distance	High (69)	Low (40)
Individualism	Low (38)	High (91)
Masculinity	Intermediate (49)	High (62)
Uncertainty avoidance	High (76)	Intermediate (46)
Long-term orientation	Intermediate (44)	Low (26)

Source: Adapted from Hofstede Insights (2023).

1.3. Study hypotheses

Based on the literature review concerning the relationships among cultures, values, behaviors, and the specific characteristics of Brazilian and American national cultures, two hypotheses were formulated for empirical testing, as detailed in Table 2.

Hypothesis 1 (H1) is supported by the observation that Brazilians' higher long-term orientation and collectivist profile, compared to Americans, may be associated with greater concern for sustainable development and future generations. This would be reflected in higher levels of trust in environmental organizations and greater participation as active members of such organizations.

Hypothesis 2 (H2) is based on the observation that Americans' higher score in the cultural dimension of masculinity, based on assertive and success-oriented values, along with their more individualistic profile, may indicate greater concern with the economy and job creation, even at the expense of environmental degradation. In contrast, Brazilians, due to their lower scores in masculinity and individualism, are characterized by more collaborative values and a stronger focus on quality of life, reflecting greater concern for the environment relative to the economy and job creation.

In summary, this study's theoretical model posits that national culture can influence citizens' environmental values, which in turn may affect pro-environmental behaviors. The theoretical model is illustrated in Figure 1.

2. METHOD

2.1. Sample data

The survey sample included 2,596 Americans and 1,762 Brazilians from the WVS database, a global investigation into changes in individuals' political and sociocultural views. Among other factors, WVS collects socioeconomic and demographic data. The survey is conducted by social scientists at leading uni-

Table 2. Study hypotheses.

Hypothesis	Description	Theoretical basis
H1	Given Brazil's higher score on the cultural dimensions of Long-term orientation and Power distance and lower score on the cultural dimension of Individualism compared to the United States, **we expect Brazilians to trust environmental organizations more and participate more in environmental organizations than Americans**.	• Nguyen et al. (2017), Pinheiro et al. (2021) and Tata and Prasad (2015): Long-term orientation; • He and Filimonau (2020) and Pinheiro et al. (2023): Power distance; • He and Filimonau (2020), Nguyen et al. (2017), Oliver and Lee (2010), Pinheiro et al. (2022) and Tam and Milfont (2020): Individualism.
H2	Due to the United States' higher score on the cultural dimensions of Masculinity and the cultural dimension of Individualism compared to Brazil, **we expect Americans to prioritize the economy over environmental protection and Brazilians to prioritize environmental protection over the economy**.	• Brick et al. (2017), Pinheiro et al. (2021), Pinheiro et al. (2023), and Steg (2016): Masculinity; • He and Filimonau (2020), Nguyen et al. (2017), Oliver and Lee (2010), Pinheiro et al. (2022), and Tam and Milfont (2020): Individualism.

Source: Authors.

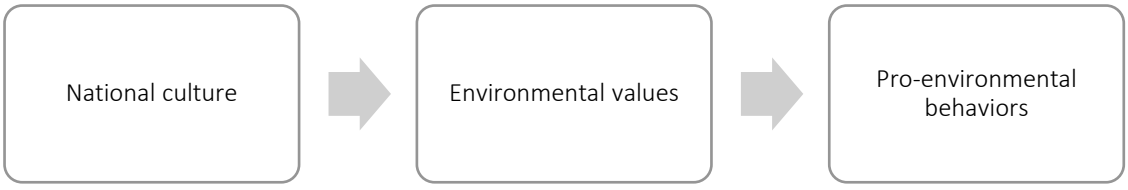

Figure 1. Theoretical model of the study.

versities worldwide, using questionnaires that follow scientific probabilistic sampling procedures. Primary data collection involves face-to-face questionnaires administered in participants' homes, with guaranteed anonymity. Responses are recorded either on paper-and-pen questionnaires or through Computer-Assisted Personal Interviewing (CAPI) (WVS, 2023).

2.2. Data collection and variables

Cross-cultural studies have used WVS variables on topics such as innovation (Athayde & Coutinho, 2023; Athayde & Pereira, 2024; Cáceres-Carrasco et al., 2019), work (Gholipour et al., 2022; Caldeira & Athayde, 2024), and finance (Adams, 2021; Athayde & Rocha, 2021). This study selected the three WVS variables directly related to environmental values, summarized in Table 3. These variables have been used in previous studies (Athayde & Mota, 2023; Aydin et al., 2022; Israel & Levinson, 2004; Whitburn et al., 2020).

Variable Q79 (trust) asked respondents the extent to which they trust environmental organizations on a three-point scale: A great deal; Quite a lot; and Not very much. Variable Q99 (participation) asked whether respondents participate in environmental organizations, also on a three-point scale: I do not belong; Inactive member; and Active member. Variable Q111 (priority) asked respondents to choose between two statements that best reflect their views: Protecting the environment should be a priority, even if it leads to slower economic growth and fewer jobs; and Economic growth and job creation should be a priority, even if the environment suffers some consequences.

2.3. Data analysis

Data were analyzed using the Statistical Package for the Social Sciences software (IBM® SPSS® 20.0). Following Miles and Shevlin (2001) and Tabachnick and Fidell (2001), variables were checked for normal distribution to select the most appropriate statistical tests for correlation and mean comparisons (parametric or nonparametric). Normality was verified using the Kolmogorov-Smirnov and the Shapiro-Wilk tests (Field, 2013). The Levene test was used to assess homogeneity of variances between the two countries.

Descriptive statistics were presented by country to identifying the highest means. Pearson correlation tests were conducted to identify statistically significant correlations between environmental values and respondents' sociodemographic characteristics: gender, age, number of children, education, and income. Correlation tests were applied to extrapolate results from the samples to their respective populations.

Independent-samples Student's t-tests were used to determine variables with statistically significant differences between Brazil and the United States ($p < 0.001$). We applied mean comparison tests (Student's t-test) to extrapolate possible differences between the Brazilian and American samples to their respective populations and not attribute them to chance. Despite non-normal distribution, the Student's t-test was considered appropriate due to the large sample sizes (over 30), which allows robust estimation under non-normality (Field, 2013). Results were then interpreted in light of theory and previous studies on the topic.

3. RESULTS

The Brazilian and American samples comprised a balanced number of men and women. Other sociodemographic characteristics of the respondents, including age, number of children, education, and income, are summarized in Table 4.

Table 3. Study variables.

Variable code in the present study	Variable code in WVS database (wave 7)	Description
Trust	Q79	Respondents' trust in environmental organizations.
Participation	Q99	Respondents' participation in environmental organizations.
Priority	Q111	Respondents' indication of whether the environment or the economy should be treated as a priority.

Source: adapted from WVS (2023).

Table 5 summarizes the characteristics of Brazilian and American respondents regarding environmental values. The Brazilian sample exhibited greater trust in environmental organizations and prioritized the environment over the economy more than the American sample. In contrast, the American sample participated more in environmental organizations than the Brazilian sample.

It is relevant to note that the WVS database presented inverted scales for the variables "trust" and "priority", where lower mean values indicate greater trust in environmental organizations and higher priority for the environment over the economy. This detail was also considered in the analysis of the correlation test results, described below.

Table 6 presents the correlations between environmental values and sociodemographic characteristics of the Brazilian sample.

According to Table 6, a statistically significant correlation ($p \leq 0.05$) was identified between the variables "priority" and "age", indicating that younger respondents in the Brazilian sample prioritize the environment over the economy more than older respondents. This suggests that younger generations of Brazilians may be more environmentally conscious than older generations. However, the magnitude of the correlation coefficient ($r = 0.053$) indicates a weak correlation, according to the reference values proposed by Field (2013).

Table 7 presents the correlations between environmental values and sociodemographic characteristics of the American sample.

In the American sample, statistically significant correlations ($p \leq 0.001$) were identified between "trust" and the variables "gender," "age," "number of children," "education," and "income." These results indicate that female respondents, younger respondents, those with fewer children, higher education, and higher income exhibit greater trust in environmental organizations.

Table 4. Sociodemographic characteristics of the samples.

Sociodemographic variable	**Brazil (*N*= 1,762)**		**United States (*N*= 2,596)**	
Gender (%)	Male 47.4	Female 52.6	Male 48.4	Female 51.6
Age (years)	Mean 42.61		Mean 46.73	
Number of children	Mode 2 children		Mode 2 children	
Education level (%)	Elementary school 40.8		Elementary school 3.0	
	High school 41.7		High school 52.9	
	College 15.8		College 42.8	
Income level (%)	Low 37.5		Low 20.3	
	Middle 50.4		Middle 69.0	
	High 5.3		High 8.2	

Source: authors.

Table 5. Characteristics of samples concerning environmental values.

Variables related to environmental values	**Brazil (*N*= 1,762)**		**United States (*N*= 2,596)**	
	Mean	**Standard-Deviation**	**Mean**	**Standard-Deviation**
Respondents' trust in environmental organizations (Trust)	2.35	0.929	2.44	0.817
Respondents' participation in environmental organizations (Participation)	0.05	0.294	0.25	0.540
Respondents' indication of whether the environment or the economy should be treated as a priority (Priority)	1.38	0.544	1.58	0.659

Source: authors.

Additionally, statistically significant correlations were observed between "participation" and the variables "number of children" ($p \leq 0.001$) and "education" ($p \leq 0.01$), suggesting that respondents with fewer children and higher education levels participate more actively in environmental organizations.

Finally, statistically significant correlations were found between "priority" and the variables "age" ($p \leq 0.001$), "number of children" ($p \leq 0.001$), and "education" ($p \leq 0.01$), indicating that younger respondents with fewer children and higher education prioritize the environment over the economy more in the American sample. The result regarding age may also suggest that younger generations are more environmentally conscious than older generations.

These findings, in both Brazilian and American samples, contrast with the study by Melo et al. (2017), which indicated that older people were more environmentally engaged. Conversely, the American sample's results regarding the number of children are consistent with Almeida et al. (2015), Jacomossi et al. (2014), and Melo et al. (2017), which indicated that individuals with fewer children are more environmentally engaged. Similarly, the results regarding education align with Degasperi and Bonotto (2017) and Santos (2016), which found that higher education levels are associated with greater environmental engagement.

Women were expected to participate more in environmental organizations, trust these organizations more, and prioritize the environment more than men, as previous studies have indicated that women exhibit stronger pro-environmental behavior (Casaló & Escario, 2018; Chan et al., 2019; Hansmann et al., 2020; Liobikienė et al., 2020; Witek & Kuźniar, 2020; Zelezny et al., 2000). In the American sample, the correlation between gender and environmental values was relevant.

Several studies have demonstrated a correlation between education and the importance attributed to the environment (Diamantopoulos et al., 2003; Silva & Bertoldi, 2016; Tristão, 2013). Nguyen et al. (2019) highlight the importance of education in promoting global sustainability, noting its increasing recognition.

Table 6. Correlation matrix for the Brazilian sample.

		Sex	Age	Number of children	Education level	Income level
Trust	Coefficient	0.048	0.035	0.043	-0.001	0.013
	Sig.	0.055	0.160	0.088	0.965	0.613
Participation	Coefficient	-0.021	0.016	-0.016	0.007	0.014
	Sig.	0.386	0.515	0.511	0.783	0.578
Priority	Coefficient	-0.019	0.053*	0.047	-0.025	0.012
	Sig.	0.465	0.041	0.068	0.344	0.660

*Statistically significant result ($p \leq 0.05$).
Source: authors.

Table 7. Correlation matrix for the American sample.

		Sex	Age	Number of children	Education level	Income level
Trust	Coefficient	-0.081**	0.040*	0.056**	-0.103**	-0.080**
	Sig.	0.000	0.042	0.006	0.000	0.000
Participation	Coefficient	-0.012	-0.024	-0.068**	0.049*	0.037
	Sig.	0.555	0.218	0.001	0.013	0.063
Priority	Coefficient	-0.032	0.091**	0.094**	-0.060**	0.007
	Sig.	0.110	0.000	0.000	0.003	0.731

*Statistically significant result ($p \leq 0.05$); **statistically significant result ($p \leq 0.01$).
Source: authors.

In the present study, education was a relevant variable in the American sample.

Some studies indicate that interest in the environment decreases with age (Longo et al. 2017). Hansmann et al. (2020) suggest that the relationship between age, environmental concern, and pro-environmental behaviors remains unclear. Conversely, Witek and Kuźniar (2020) found that younger respondents were not particularly interested in purchasing "green products." In this study, age was a relevant factor for environmental values in both Brazilian and American samples.

Research has also shown that individuals with more children tend to participate more in pro-environmental actions (Fisher et al., 2012; Makki et al., 2015; Nguyen et al., 2019). In contrast, the present study found that, in the American sample, respondents with fewer children exhibited greater environmental engagement.

Regarding income, Nguyen et al. (2019) reported that higher-income individuals were more likely to exhibit sustainable consumption behaviors. Similarly, Witek and Kuźniar (2020) found that better financial situations are associated with increased intention to purchase "green products." In the American sample, income was a relevant variable.

Table 8 presents the results of statistical tests comparing means between Brazil and the United States for environmental variables.

Table 8 indicates a statistically significant difference ($p < 0.001$) for all three environmental value means between Brazil and the United States. Cross-referencing Tables 5 and 8 shows that Brazilians trust environmental organizations more and prioritize the environment over the economy more than Americans, while Americans participate more in environmental organizations.

Considering these results, among the three variables representing environmental values, the Brazilian sample was more environmentally engaged in two of them. It is important to emphasize that the higher environmental engagement of Brazilians compared to Americans is limited to the variables analyzed in this study; results could differ if additional environmental variables from the WVS database were considered.

These findings can be discussed in the context of national culture characteristics. Brazil scores higher (44) than the United States (26) on the "long-term orientation" dimension (Hofstede Insights, 2023), which may be associated with greater environmental concern among Brazilians, reflecting attention to the future. Pinheiro et al. (2021) found that companies in cultures with higher "long-term orientation" tend to have greater environmental disclosure.

The greater environmental engagement of the Brazilian sample may also relate to the cultural dimension of "power distance." According to He and Filimonau (2020), societies with higher "power distance," such as Brazil, exhibit stronger pro-environmental attitudes. Environmental engagement may serve as a status symbol to communicate respect (Hofstede Insights, 2023). Pinheiro et al. (2023) found that "power distance" positively influences environmental disclosure. In contrast, Tata and Prasad (2015) note that social sustainability initiatives are more openly discussed and valued in low "power distance" cultures, such as the United States. Furthermore, Pinheiro et al. (2022) reported that hierarchical institutional structures (high "power distance") may discouraged companies from active carbon disclosure.

Considering the three variables together, it is possible to reflect on the higher environmental engagement of the Brazilian sample compared to the American sample in light of the cultural dimension

Table 8. Comparison test between Brazil and the United States.

Variable	Sig.
Respondents' trust in environmental organizations (Trust)	0.000*
Respondents' participation in environmental organizations (Participation)	0.000*
Respondents' indication of whether the environment or the economy should be treated as a priority (Priority)	0.000*

*Statistically significant result ($p \leq 0.001$).
Source: authors.

of "individualism." Societies based on "individualism," such as the United States, tend to promote behavior restricted to the "I.", where individuals primarily look out for themselves and their families. Collectivist societies, such as Brazil, are based on relationships of loyalty within cohesive and united social groups (Hofstede Insights, 2023). Therefore, the more collectivist profile of Brazilians may contribute to their higher environmental engagement compared to Americans, aiming to achieve well-being for all. Previous studies have shown opposite results. Pinheiro et al. (2021) and Pinheiro et al. (2023) indicate that, in more individualistic cultures, companies disclose more information about environmental responsibility. However, it is important to consider that disclosure of environmental responsibility may not necessarily reflect genuine concern for the environment but may instead serve to promote the organization to society, a practice known as "green marketing." For example, Pinheiro et al. (2022) found that, in more individualistic cultures, companies tend to disclose less information about their carbon emissions.

The greater trust of Brazilian respondents in environmental organizations compared to Americans can be discussed in light of the cultural dimension of "uncertainty avoidance." Brazil scores high on this dimension (76), as do most Latin American countries, while the United States scores lower (46) (Hofstede Insights, 2023). Societies with high "uncertainty avoidance," such as Brazil, demonstrate a strong need for rules and legal systems, with bureaucracy, laws, and institutions playing a key role in making the world safer. Consequently, the Brazilian sample's greater trust in environmental institutions is consistent with this cultural profile. Conversely, findings from Pinheiro et al. (2023) suggest that, in cultures with lower "uncertainty avoidance," companies disclose more environmental information.

Despite trusting environmental organizations less, American respondents were more environmentally active than Brazilians, participating more in such organizations. This result can be interpreted in light of the cultural dimension of "masculinity." The United States has a high score in this dimension (69), while Brazil scores lower (49) (Hofstede Insights, 2023). Masculine societies, such as the United States, tend to have more assertive values, which may encourage direct environmental engagement through active participation in organizations. According to Pinheiro et al. (2021) and Pinheiro et al. (2023), companies in more masculine cultures disclose more information about environmental responsibility.

Brick et al. (2017) argue that individuals perform more pro-environmental behaviors when their actions are visible to others, a perspective shared by Steg (2016), who notes that people are more likely to choose pro-environmental products when their status motives are activated, particularly when these options are more expensive and choices are made publicly.

The cultural dimension of "masculinity" can also explain why the American sample prioritizes the economy over the environment. Masculine societies, such as the United States, emphasize competitive values and measure success in economic and material terms. In contrast, feminine societies, such as Brazil, tend to emphasize collaborative values focused on quality of life (Hofstede Insights, 2023), which may lead Brazilians to prioritize the environment even if it entails slower economic growth or reduced employment.

According to H1 posited that Brazilians would trust environmental organizations more and participate more in them, due to a lower score in "individualism" and a higher score in "long-term orientation." H1 can be considered partially confirmed: Brazilian respondents trust environmental organizations more than Americans, but American respondents participate more in them.

Tam and Milfont (2020) argue that addressing global environmental problems requires consideration of collective interests, as a collective commitment to sustainability ca effective influence values and behaviors (Oliver & Lee, 2010). Nguyen et al. (2017), found that collectivist cultural values facilitate green purchasing behavior, while He and Filimonau (2020) demonstrated a negative effect of "individualism" on pro-environmental attitudes.

Conversely, Eom et al. (2016) showed that as national-level "individualism" increases, the association between environmental concern and behavioral intentions strengthens. Tam and Chan (2017) also noted that the concern-behavior association is greater in societies with higher "individualism."

Nguyen et al. (2017) further demonstrated that "long-term orientation" influences environmental attitudes. Tata and Prasad (2015) note that sustainability is inherently long-term oriented, and managers in such cultures are more likely to forgo immediate benefits to achieve environmental protection for future generations.

Societies with a long-term orientation emphasize the importance of future benefits over immediate gratification. In contrast, short-term-oriented cultures value immediate rewards. It follows that people in these cultures may prefer immediate economic gains over future environmental benefits. Short-term-oriented cultures, with their focus on the present, are likely to hold beliefs about the drawbacks of sustainability, as the costs of sustainable practices are often immediate, whereas the benefits may only be realized in the future (Nguyen et al., 2017). These characteristics were confirmed in the present investigation.

Sustainable development addresses two opposing objectives: the economic system and the broader ecology (Feil & Schreiber, 2017). Cox et al. (2011) demonstrated that culture is associated with a nation's ability to co-manage economic concerns while preserving its environment. Their study suggested that, although developing nations may initially prioritize economic growth over environmental protection, as these nations achieve greater economic stability, a shift in cultural values may occur, leading to a focus on balancing economic prosperity with ecological sustainability.

Regarding the "priority" variable in this study, Brazilian respondents demonstrated a tendency to prioritize the environment over the economy, which can be explained in terms of the "uncertainty avoidance" dimension. This cultural dimension reflects the extent to which individuals seek to protect themselves from unforeseen events to reduce the discomfort of an uncertain future. This dimension measures the degree of uneasiness of individuals regarding unknown situations (Hofstede Insights, 2023). In countries such as Brazil, which score highly on this dimension, there is a strong need to establish rules and laws to create a safer environment. Consequently, it was expected that Brazilian respondents would prioritize the environment, as observed.

Regarding the "trust" variable, companies can contribute to fostering a culture of sustainable consumption (Oliveira et al., 2016). Some authors emphasize the importance of environmental organizations in raising awareness and promoting responses to environmental challenges (Fossaluza et al., 2021; Oliveira et al., 2016; Peng et al., 2021; Silva & Siena, 2014). According to the "masculinity" dimension, societies with lower scores, such as Brazil, tend toward "femininity," favoring collaborative values and emphasizing quality of life.

Therefore, according to H2, given the higher score of the United States in the cultural dimensions of "masculinity" and "individualism" compared to Brazil, it was expected that Americans would prioritize the economy over environmental protection, whereas Brazilians would prioritize environmental protection over the economy. This hypothesis can be considered confirmed. Tata and Prasad (2015) support this result, stating that cultures with high "femininity" values emphasize nurturing, affiliation, helping, and quality of life. Such cultures are more likely to recognize the importance of initiatives that promote environmental sustainability and societal benefit.

4. THEORETICAL IMPLICATIONS

The general objective of this study was to analyze differences between Brazil and the United States regarding the environmental values of their citizens and to discuss these differences in light of the national cultural characteristics of the two countries. The differences observed were consistent with some characteristics of the national cultures of the contrasting countries based on Hofstede's cultural dimensions (Hofstede, 2011), highlighting the importance of addressing this topic from a cross-cultural perspective, which is not commonly explored in the literature.

The guiding research question was: What are the differences between Brazil and the United States regarding the environmental values of their citizens? Given strong theoretical and empirical evidence indicating the influence of culture on individual values, attitudes, and behaviors, it was hypothesized that cultural dimensions would also influence pro-environmental values and behaviors. The variables used in

this study to measure environmental values showed statistically significant differences between Brazil and the United States. Among the three variables analyzed, two indicated that Brazilians are more environmentally engaged than Americans.

The theoretical novelty of this research lies in specifying that Brazilians trust environmental organizations more and consider the environment more important than the economy when compared to Americans. Conversely, Americans participate more in environmental organizations than Brazilians. Thais suggests that, in the ecological domain, Brazilians stand out in terms of values — what they consider important — while Americans stand out in terms of practice — behavioral engagement. At this point, it is worth considering whether environmental engagement is driven by values or behavior. Although this discussion is beyond the scope of the present study, it is relevant to reflect on the need for pro-environmental values to translate into pro-environmental behaviors.

Another guiding question was: Are the observed differences in environmental values between Brazil and the United States compatible with the cultural characteristics of these two countries? Examining intersections among environmental values, ecological management, sustainability, and culture is relevant because it remains unclear which cultural dimensions are (in)compatible with pro-environmental values, attitudes, and behaviors. Hence, another theoretical implication of this study is the identification of specific cultural dimensions that are (in)compatible with pro-environmental values and behaviors.

Among the five cultural dimensions proposed by Geert Hofstede (Hofstede, 2011) analyzed in this study, four dimensions appear more directly associated with pro-environmental values and behaviors: individualism, masculinity, uncertainty avoidance, and long-term orientation. The theoretical implications are:

- "Individualism" is negatively associated with prioritizing the environment over the economy because it relies on a worldview centered on the "self" rather than the collective. Thus, the higher level of "individualism" among Americans compared to Brazilians may lead them to prioritize the economy over the environment;
- "Masculinity" is negatively associated with prioritizing the environment over the economy and positively associated with participation in environmental organizations. The opposite of "masculinity" ("femininity") emphasizes quality of life and well-being, which may lead, for example, Brazilians to prioritize the environment over the economy. Conversely, "masculinity" emphasizes assertiveness and pragmatism, which may lead Americans to translate environmental values into action by participating more in environmental organizations;
- "Uncertainty avoidance" is positively associated with trust in environmental organizations. Societies with high "uncertainty avoidance," such as Brazil, value institutions, rules, laws, and procedures to mitigate an uncertain future. The higher level of "uncertainty avoidance" among Brazilians compared to Americans may lead them to place greater trust in environmental institutions;
- "Long-term orientation" is positively associated with prioritizing the environment over the economy. The higher index of this dimension among Brazilians compared to Americans may encourage them to consider future environmental sustainability, sacrificing immediate benefits to achieve ecological protection for future generations.

5. PRACTICAL IMPLICATIONS

This research sheds light on the cultural perspective of environmental issues. Understanding culture is crucial to addressing global environmental problems (Coelho et al., 2006). A thorough understanding of the variables related to environmental values and their specificities across countries is essential so that scientific studies can support ecological management policies that are more contextualized, assertive, and compatible with citizens' cultural characteristics in each nation. Innovative environmental policies, technology development, and community mobilization are fundamental to creating more sustainable societies. Such achievements depend on understanding cultural particularities. Identifying and understanding cultural variation in the factors that drive pro-environmental action is relevant to designing effective sustainability strategies and pro-environmental campaigns (Eom et al., 2016).

In a time of increasing internationalization, a growing number of multinational companies, and a global exchange not only of products but also of people, this research highlights the importance of studying environmental values and their specificities among individuals of different nationalities. Addressing global environmental problems requires a mindset that considers collective responsibilities and interests, which inevitably entails identifying common and distinct factors of action in culturally diverse populations (Tam & Milfont, 2020).

This study concludes that environmental values have significant relationships with cultural dimensions at the national level that cannot be overlooked. Citizens are more likely to accept ecological initiatives and policies that foster such favorable cultural dimensions (Kumar et al., 2019). Developing such knowledge is essential for governments, within the scope of national culture, and institutions, within the scope of organizational culture, to encourage environmentally responsible behaviors and dismantle cultural beliefs and values that hinder such behaviors.

In practical terms, this research encourages organizations, public policies, and government programs in environmental management to consider characteristics of national culture that act, in deep-rooted ways, as drivers or obstacles to individuals' and organizations' pro-environmental values, attitudes, and behaviors. Thus, initiatives aimed at raising public and institutional awareness will be culturally contextualized and more likely to succeed.

Although the cultural dimension of individualism presents advantages in fostering innovation and entrepreneurship at individual, organizational, and national levels, given its association with proactivity, it must be balanced with collectivism to effectively address environmental issues. This practical implication suggests that cultural dimensions may or may not be beneficial depending on the aspect of life analyzed. Therefore, cultural values should be fostered or discouraged in a contextualized manner. In environmental terms, individualism should be discouraged.

Since the cultural dimension of "masculinity" emphasizes assertiveness and pragmatism, it can be beneficial in encouraging individuals and organizations to translate pro-environmental values into practice (behavioral level). However, it is also relevant to consider that its opposite, "femininity," emphasizes well-being and quality of life, which, in theory, align with ecological concern. Thus, in environmental terms, "femininity" should be fostered for its focus on collective well-being, while also ensuring that pro-environmental values are converted into pro-environmental practices.

Finally, among the cultural dimensions associated with pro-environmental values, attitudes, and behaviors, long-term orientation appears to be the one most in need of encouragement at the individual, organizational, and national levels. Systemic problems such as increasing environmental degradation naturally demand long-term actions insulated from the influence of short political mandates. Immediacy (low long-term orientation) is incompatible with ecological challenges, which require sustained, long-term solutions. Therefore, in environmental terms, long-term orientation must be encouraged.

6. STUDY LIMITATIONS AND FUTURE RESEARCH

This study was limited to analyzing the possible relationships between environmental values and cultural characteristics and suggests that future studies should consider other types of variables (e.g., economic, personal, and psychographic) that may also be relevant for explaining environmental behavior. Although several international studies have attempted to explain ecological behavior, there are still many gaps in this field of knowledge within the Brazilian context. Another limitation of the research, previously highlighted, is that only three variables were analyzed because they were the only ones in the WVS database directly related to environmental values. This means the results could differ if more or other variables were included.

The findings suggested compatibility between cultural dimensions and environmental values. Future studies aiming to predict pro-environmental behaviors using statistical techniques such as multiple linear regression or structural equation modeling should consider cultural variables alongside other predictor variables. Further investigations are also encouraged to compare Brazil with culturally distinct countries as well as those with similar cultures, such as other Latin

American nations. Understanding why and when people engage in pro-environmental behaviors remains an urgent task for social scientists. In this regard, future research should examine how personal and social factors jointly influence people's engagement in environmental protection across different sociocultural contexts.

It is also important to further investigate the relationship between the cultural dimension of "masculinity" and pro-environmental values and behaviors. The results of this study indicated that "masculinity" is negatively associated with prioritizing the environment over the economy and positively associated with participation in environmental organizations. This suggests that "masculinity" may simultaneously hinder pro-environmental values and foster pro-environmental behaviors. In this scenario, should organizations and governments encourage or discourage it? Future studies could help clarify this apparent ambiguity. Finally, further research may adopt alternative models of national culture beyond Geert Hofstede's cultural dimensions model, such as the cultural dimensions of the Global Leadership and Organizational Behavior Effectiveness (GLOBE) model, which includes a slightly greater number of cultural dimensions, despite some overlaps.

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