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A meta-analysis of sustainable tourist behavioral intention
and the moderating effects of national culture

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Abstract

This study provides new insights into the factors that shape tourists' sustainable behavioral intention by conducting a meta-analysis based on 95 published studies with 47,425 participants from 38 countries. Building upon the theory of planned behavior and value-belief-norm theory, we propose and show the relevance of distinguishing between characteristics that relate to behavioral constructs (i.e., home behavior), social constructs (i.e., social interactions), environmental values (i.e., pro-environmental/anti-environmental values), and mental constructs (i.e., involvement/awareness, knowledge, perceived behavioral control, attitude) during investigation of sustainable tourist attitude and behavioral intention. We also demonstrate that sustainability antecedents do not necessarily influence behavioral intention directly but that they may have an indirect influence through pro-environmental attitude. We find that particularly social interaction and involvement/awareness drive attitude, while social interaction, attitude, and home behavior drive behavioral intention. In addition, this meta-analysis provides insights into the moderating effects of national culture on the relationships between sustainable antecedents, tourism pro-attitude, and behavioral intention. Investigating all the six national values suggested by Hofstede, we find that 'power distance' and 'individualism' are particularly powerful moderators of these relationships. This research offers several implications to tourist managers and public authorities interested in tourist sustainability attitude and behavioral intention.

Keywords

Meta-analysis, sustainability, tourist behavioral intention, national values

1. Introduction

Sustainable tourism has received increasing attention in tourism and marketing scholarship (Han, 2021; Kim, Lee, and Fairhurst, 2017). Sustainable tourism practices, such as protecting the environment as well as increasing tourists' willingness to pay for sustainable services and products, can serve to meet both public and business interests (Ambec and Lanoie, 2008; Jiang and Kim, 2015; Leonidou and Leonidou, 2011). In order to comprehensively understand sustainable consumption within tourism, the multiple types of decisions that a tourist is required to make while planning and being on holiday should be taken into account (Dellaert et al., 1998). For example, past research has examined tourists' general attitude towards sustainable tourism (Filimonau et al., 2018; Han, McCabe, Wang and Chong, 2018) as well as several travel decisions. These decisions include the choice of destination and accommodation (e.g., Gao and Mattila, 2016; Han, 2015; Han et al., 2011), mode of transport (e.g., Hatzinger and Mazanec, 2007; Hergesell and Dickinger, 2013), and tourists' reported behavior (e.g., Cvelbar et al., 2017; Dolnicar, 2010) or behavioral intentions (e.g., Deenihan and Caulfield, 2015;; Line et al., 2018) during the stay;. A few of the aspects of sustainable tourist decision making have been captured by Gao, Mattila and Lee (2016), who provide the first meta-analytic knowledge regarding tourist behavioral intentions (i.e., visit intention, intention to spread word of mouth, willingness to pay, and willingness to pay a premium) with respect to green hotels and restaurants.

Most studies on sustainable tourism have used 'sustainable behavioral intention' to indicate tourist 'sustainable behavior'; see a mapping of prior research in Appendix E (<https://osf.io/fsj4g/>). While behavioral intention does not necessarily transform into behavior (e.g., Dolnicar, Cvelbar, and Grün, 2019), it can be regarded as a key driver of behavior (Ajzen, 1991; Lin et al., 2022). Observing the many issues of sustainable tourist behavior may be a complicated and resource-demanding task. Research concerned with actual sustainability behavior has therefore often been

limited to investigating just a few issues, such as visits to environmental friendly attractions (McKenna, Williams, and Cooper, 2011), participation in environmentally friendly activities at the destination (Edwards and Griffin, 2013), and purchasing environmentally friendly accommodation (Firth and Hing, 1999). In accordance with such notions, Lin et al. (2022) have recently conducted a meta-analysis of pro-environmental behavioral intention of tourists and hospitality consumers, which includes a broad array of antecedents, including self-efficacy, environmental concern, and environmental awareness, among others.

However, no comprehensive meta-analysis exists to date that covers a broad array of antecedents commonly included in studies of sustainable tourist decision making and at the same time takes into account that sustainability antecedents do not necessarily influence behavioral intention directly but may have an indirect influence through pro-environmental attitude. This is an important distinction and shortcoming since if mediating effects (whether full or partial) occur it means that more insights are gained regarding the mechanism by which one or more antecedents may influence tourist sustainability behavioral intention. In addition, although testing the effects of antecedents on behavioral intention is valuable it has been suggested that emphasizing these relationships without giving attention to possible mediating effects can lead to misleading conclusions (Rucker et al., 2011). Finally, investigating mediating effects is consistent with leading consumer theories, such as the theory of planned behavior (TPB) (Ajzen and Fishbein, 2005) and the goal-directed behavior model (for a review see Han, 2021), which regard (pro-environmental) attitude as a prominent mediator between antecedents and behavior. Moreover, the potential detection of mediating effects provides more opportunities for tourist managers seeking to influence tourists' sustainability behavioral intention as they may then consider influencing behavioral intention directly and/or indirectly.

While tourists' cultural values may be central to their sustainability tourist behavior (e.g., Passafaro, 2020; Minton et al., 2018; Grebitus et al., 2015), virtually all studies on tourism sustainability behavioral intention have been conducted in a single or limited number of countries. Such geographically restricted approaches have prevented prior research from detecting the underlying mechanisms of national culture's influence on tourism behavioral intention based on an investigation of the studies individually, even though prior research highlights the importance of cultural sensitivity in tourism management (Huang and Crotts, 2019; Stamolampros, Dousios, Korfiatis and Symitsi, 2020). A notable exception is the study conducted by Lin et al. (2022), which includes the distinction between individualistic vs. collectivistic national values (e.g., Hofstede and Minkow, 2010). The current research fills these knowledge gaps by conducting a meta-analysis based on the empirical findings of 95 published studies on sustainable tourism behavioral intention, including choice of trip destination, accommodation, travel mode, special visits during the stay, restaurants, and daily expenses, while at the same time taking into account all the six dimensions of national culture suggested by Hofstede and colleagues (e.g., Hofstede and Minkow, 2010; Hofstede, Hofstede, and Minkow, 2010): power distance, individualism, masculinity, uncertainty avoidance, long term orientation, and indulgence. Employing a meta-analysis method enables us to synthesize previous findings in quantitative terms and to identify general effects across the different studies and across the different national values.

In particular, our study makes several important contributions to tourism research. First, we identify the key drivers of tourists' sustainable behavioral intention and their relative importance, which may assist future research in developing and testing conceptual models of tourist sustainable behavioral intention, including other contexts, such as home behaviors. Second, we inform future studies on sustainable tourism related constructs by providing empirical support for distinguishing between the constructs that mainly drive tourists' sustainability attitudes and those that mainly drive

sustainable behavioral intention. Third, we add to literature on sustainable tourism by providing evidence regarding the importance of national values as moderators of relationships between tourists' characteristics and attitude and behavioral intention, respectively. This is especially relevant in sustainable tourism, as studies in this field include samples from diverse global settings with diverse value systems.

The paper is organized as follows. Data collection and coding process is introduced, followed by an overview of the theoretical background for the hypotheses that drive our analysis. Subsequently, the meta-analysis procedure and results are presented in detail. Based on the empirical findings, theoretical contributions and practical implications are then discussed. Finally, the paper concludes with study limitations and avenues for future research.

2. Theoretical Background

Sustainability is a complex concept that may involve environmental, economic, and social dimensions (Conrad and Blackstone, 2021). In this study we focus on the environmental dimension and conceptualize sustainable tourism as behaviors that minimize harm to the environment (Han, 2021). Sustainable tourist behavior and behavioral intention has been intensely studied in terms of choice of sustainable travel modes (Hergesell and Dickinger, 2013; Kim, Yun and Lee, 2014), choice of sustainable vacation sites such as green hotels (Cvelbar, Grün, and Dolnicar, 2017; Gao and Mattila, 2016; Teng, Wu, and Liu, 2015) and choice of sustainable consumption practices, such as water/energy conservation, towel reuse, and waste reduction at the destination (Han and Hyun, 2018; Untaru et al., 2016).

In this meta-analysis study, we propose that cultural values may moderate relationships between tourists' sustainability factors. Specifically, we develop a conceptual model (Figure 1) displaying relationships between a number of exogenous variables (i.e., home behavior, knowledge,

pro-environmental values, anti-environmental values, social interaction, perceived behavioral control (PBC), and involvement/awareness), a mediating variable (i.e., attitude), and an outcome variable (i.e., sustainable tourist behavioral intention).

Together the direct relationships between variables form the baseline part of the model. Because these relationships are well-documented in prior research we do not provide formal hypotheses or research questions on these direct relationships, which are all presented and discussed below. In addition, the conceptual model includes a mediating part (with associated hypotheses) and a moderating part (with associated research question). The mediating and moderating parts add to previous research by investigating (a) whether attitude acts as a full or partial mediating (or none-mediating) variable between exogenous variables and sustainable tourist behavioral intention and whether (b) national values moderate the relationships between exogenous, mediating, and outcome variables as presented in the conceptual model.

Insert Figure 1 about here

2.1. Baseline and mediating models

In line with key theoretical approaches to sustainable tourism (e.g., the theory of reasoned action, the theory of planned behavior, and the goal-directed behavior model), pro-environmental attitude is one of the most prominent mediators of sustainable tourist behavior and behavioral intention (Han, 2021). For example, previous research found that a favorable attitude toward staying at a green hotel positively affects tourists' intentions to choose such a hotel (Han, 2015). It also specified that pro-environmental attitudes have a significant positive impact on the actual choice of green hotels (Teng, Wu, and Liu, 2015), as well as the fact that favorable attitudes toward sustainable brands, labels, and environmental advertisements have a positive impact on sustainable purchasing behavior in rural tourism destinations (Chin, Chin, and Wong, 2018). Furthermore, according to the theory of

planned behavior (Ajzen and Fishbein, 2005), attitude formation is generally the result of behavioral beliefs formed based on experience and knowledge. While tourism research has investigated several exogenous constructs that may be related to tourists' sustainable behavioral intention, the selection of constructs for the present study was guided by several criteria. First of all, they had to be powerful predictors of sustainable tourist behavioral intention, either directly or indirectly through attitude. Second, while the constructs did not need to represent a complete and detailed list of all antecedent labels, they had to exemplify and capture the essence of potential relationships with sustainable behavioral attitude and intentions. We believe that the first and second criteria are fulfilled by the literature review and the obtained results, which suggested several relationships between exogenous constructs and attitude and behavioral intention, respectively, and by the subsequent construct coding process, which did not indicate the occurrence of salient constructs not already captured by the included constructs. Third, their relevance for cross-cultural tourism comparisons had to be well documented by previous research. We believe that this criterion is fulfilled by the discussions in section 2.2. Fourth, the constructs needed to be distinct with clear conceptual definitions. The first part of this criteria was fulfilled as the correlation coefficients between constructs ranged from 0.10 to 0.75, with the vast majority of coefficients being <0.50 , suggesting sufficient discriminant validity (e.g., Rönkkö and Cho, 2022). The second part was fulfilled as all construct coding's were verified and agreed upon by two consumer and tourism research experts (see Methodology section). Fifth, we conducted a latent topic analysis, which suggests that our conceptual model incorporates most aspects of the underlying topics that can be derived from the literature (see Appendix A: <https://osf.io/fsj4g/>). Sixth, a word cloud presentation was developed. The result highlights the focus of the study; that is the focus on the link between tourism and environmental behavior. Consistent with our conceptual model it also highlights that behavioral intention is key in the included studies as are attitudes,

beliefs, values, awareness, social practice, and sustainability/green orientations (see Appendix B: <https://osf.io/fsj4g/>).

Previous research has found that tourists who have experiences with pro-environmental home behaviors are more likely to hold pro-environmental attitudes toward sustainable tourist behavior and enact them at the destination (Han et al., 2010). For example, water conservation in everyday life enhances visitors' intention to preserve water in a lodging context (Untaru et al., 2016). Similarly, tourists who reuse their towels at home are significantly more likely to reuse their towels during a hotel stay (Han and Hyun, 2018). Moreover, having acquired environmental knowledge may lead to more favorable environmental attitudes and increased pro-environmental behavioral intention while on vacation (Cheng and Wu, 2015). Furthermore, previous research also found that individuals' level of knowledge regarding sustainable tourism positively impacts their attitudes toward sustainable tourism, which, in turn, positively impact their intentions of participating in sustainable tourism (Cheng et al., 2018). Such findings are in accordance with research suggesting that consumers generally prefer to act in a way that can be perceived as congruent with their perceived identity and attitude (Belk, 1988). Consequently, in the baseline model we expect that (H1) attitude partially mediates the relationship between sustainable home behavior and sustainable tourist behavioral intention and also that (H2) attitude partially mediates the relationship between sustainability knowledge and sustainable tourist behavioral intention.

Following the value-belief-norm (VBN) theory (Stern, Dietz, Abel, Guagnano, and Kalof 1999), pro-environmental behaviors are positively linked to environmental values, such as biospheric and altruistic values, or environmental views such as those pertaining to the New Ecological Paradigm (NEP), (Olya and Akhshik, 2019). Biospheric values include respecting the earth and living in harmony with other species, altruistic values include helping others, while NEP includes belief in the fact that human interference with nature has negative consequences. In this

vein, previous tourism research has found that individuals who acknowledge the presence of an eco-crisis (versus believing that it has been highly exaggerated) are more likely to be eco-tourists and vice versa (Deng and Li, 2015). Prior research suggests that environmental attitude may have a mediating role in the relationships between sustainability antecedents and behavioral intention. For instance, Lee and Jan (2018) found that biospheric values had a significant positive impact on both pro-environmental attitudes and eco-tourism behavior. Furthermore, tourists with levels of biospheric and altruistic values have also been found to exhibit higher levels of pro-environmental behavioral intentions, whereas tourists with high levels of egoistic values exhibited lower levels of pro-environmental behavioral intentions (Beall et al., 2021; Olya and Akhshik, 2019). Therefore, we expect that (H3) attitude partially mediates the relationship between pro-environmental values and sustainable tourist behavioral intention and also that (H4) attitude partially mediates the relationship between anti-environmental values and sustainable tourist behavioral intention.

Moreover, voluntary acts, such as tourists' pro-environmental consumption, are influenced by individuals' social relationships (Kim, Yun and Lee, 2014). Thus, tourism research acknowledges the importance of pro-environmental social interaction, e.g., engaging in an eco-tourism community, as an antecedent of pro-environmental behavioral intentions at the destination (Li and Jan, 2018). Other social interaction measures include social return, such as the degree to which social media posts of the eco-tourist elicit positive responses, which has been positively associated with eco-tourism intentions (Beall et al., 2021). Similarly, sense of social belonging and embeddedness has been found to have a positive impact on tourists' attitudes toward and participation in voluntary air-travel carbon offsetting programs (Kim, Yun and Lee, 2014). Hence, in the baseline model we expect that (H5) attitude partially mediates the relationship between social interaction and sustainable tourist behavior.

As one of the key constructs of the theory of planned behavior (Ajzen and Fishbein, 2005), which is frequently used to model eco-tourism (Han, 2021), perceived behavioral control (PBC) is expected to have a significant impact on both behavioral intent and actual behavior. PBC is conceptualized as “the perceived ease or difficulty of performing the behavior” (Ajzen, 1991, p. 122). Within the domain of eco-tourism, PBC measures have mainly focused on ability and easiness of performing pro-environmental behaviors or having the knowledge and resources to participate in pro-environmental behaviors (e.g., Han, Hsu and Sheu, 2010; Kim, Yun and Lee, 2014). Notably, PBC has been found to have a significant impact on tourists’ intent to choose a green hotel (Han, 2015; Han, Hsu and Sheu, 2010) or carbon offsetting travel options (Kim, Yun and Lee, 2014). Furthermore, and although not specifically modelled in TPB, PBC has also been found to be positively related to tourists’ pro-environmental attitudes (Kim, Yun and Lee, 2014). Hence, we expect that (H6) attitude partially mediates the relationship between PBC and sustainable tourist behavioral intention.

Finally, awareness of and involvement in environmental agendas – such as acknowledging that individual’s actions matter in the bigger scheme of global environmental challenges – are increasingly recognized as important antecedents of pro-environmental behavioral intention (Klößner, 2013; Han, 2021). Also referred to as personal norm (Schwartz and Howard, 1981), this includes the awareness that certain behaviors are needed, awareness of the consequences of these behaviors, and acknowledgement of responsibility for one’s own actions (Klößner, 2013). In this vein, previous research has found that personal norms in terms of sense of obligation to take pro-environmental action have a significant impact on tourists’ intention to choose eco-friendly cruise options and willingness to sacrifice for example money when doing so (Han, Hwang, and Lee, 2017). Similarly, personal norms that reflect awareness of the importance of being eco-friendly, have been found to have a positive impact on young travelers’ waste reduction and recycling

intentions (Han, Yu, Kim and Kim, 2018). Consequently, in the baseline model we expect that (H7) attitude partially mediates the relationship between involvement/awareness and sustainable tourist behavioral intention.

2.2. Moderation model

Previous research suggests that tourists' sustainable consumption may be influenced by their national culture. For example, broader values and worldviews that tourists are culturally embedded in are suggested to be direct antecedents of specific environmental attitudes that influence their sustainable consumption (e.g., Passafaro 2020). Based on such insights, we explore whether variations in tourists' cultural values may lead to relative differences in the relationships between exogenous constructs and attitude, and behavioral intention, respectively. Specifically, we focus on the six dimensions of national culture suggested by Hofstede and colleagues (e.g., Hofstede and Minkow, 2010; Hofstede, Hofstede, and Minkow, 2010): power distance, individualism, masculinity, uncertainty avoidance, long term orientation, and indulgence. These dimensions refer to enduring values that may likely influence tourists' sustainable consumption.

Power distance: Power distance refers to the degree to which people accept that power is distributed unequally (Hofstede, Hofstede, and Minkov, 2010). There is usually a hierarchical structure in cultures with a high power distance index (Pelau and Pop, 2018). On the other hand, cultures with a low power distance index aim to treat everyone equally and inequities are minimized. Maintaining autonomy, civic or social duty for the common welfare of the greater community, social equality, and not showing off are all significant concerns in cultures with low power distances. As a result, environmental friendliness is more likely to be a consumption motive in low-power (vs. high-power) distance civilizations (De Mooij, 2003), suggesting that tourists from such cultures may show more positive sustainability attitudes and behavioral intentions. Also,

tourists from cultures that adhere more to power distance are likely to follow rules and regulations set within their own culture and thus may be less likely to adapt to rules and regulations at tourist destinations. As a result, such tourists may experience more positive relationships between home behavior and attitude and behavioral intention, respectively.

Individualism (individualism/collectivism): Individualism is the extent to which people feel independent and take care primarily of themselves (Hofstede, Hofstede, and Minkov, 2010). People in individualistic societies emphasize personal identity and independence from any social collective (Shao et al., 2013). On the individualistic end of the individualism-collectivism scale, there is a lower proclivity for forming cooperative initiatives within society. Hence, tourists adhering to individualism may attach greater importance to individual constructs (e.g., PBC or attitude) and may therefore experience more positive relationships between such constructs and behavioral intention. On the other hand, tourists adhering to collectivism may find collective constructs (e.g., social interaction) to be more important for guiding their attitude and behavioral intention. Differences may also occur regarding the relationship between attitude and behavior as Lin et al. (2022) found that environmental attitudes show a stronger influence on pro-environmental behavior in collectivistic cultures as compared with individualistic cultures.

Masculinity (masculinity/femininity): Masculinity refers to the degree to which a society values monetary achievement, ambition, heroism, and assertiveness, whereas the feminine end of the scale is associated with caring for others and a high quality of life. In a study of determinants of environmental sustainability Husted (2005) finds that feminine values appear to constitute 'green' or 'sustainable' values. This is consistent with research suggesting that a focus on quality of life and human relationships is linked to higher levels of environmental sustainability (e.g., Bloodhart and Swim, 2020). Specifically, recent findings (Chwialkowska, Bhatti, and Glowik, 2020) suggest that environmental values are likely to have a higher influence on social interactions and a stronger

influence on attitudes toward green sustainable behavior in cultures with a feminine (vs. masculine) orientation.

Uncertainty avoidance: Uncertainty avoidance expresses the degree to which the members of a society feel uncomfortable with or threatened by uncertainty and ambiguity (Hofstede, Hofstede, and Minkov, 2010). Tourists adhering to uncertainty avoidance may generally be more likely to plan activities and use formal guidelines. Prior research suggests that there is a larger inclination for anxiety about future well-being and consequently more environmental worries in high uncertainty avoidance societies (Chwialkowska, Bhatti, and Glowik, 2020; Pezzoli, 1997). As a result, people from these cultures can be expected to be more likely to take the next step and carry out environmental behaviors (Parboteeah et al., 2012) while concurrently also being more inclined to take pro-environmental social interactions into account (Liobikienė, Mandravickaitė, and Bernatoniene, 2016).

Long term orientation: Long-term-oriented cultures emphasize the long term future, rather than acts that are just important in the present or in the short term (Bearden, Money, and Nevins, 2006). Pragmatic societies score high on the long-term orientation dimension, which is also known as 'pragmatic/normative orientation'. Individuals adhering to long-term orientation regard their current acts as a means of effectively preparing for the future. As a result, highly pragmatic cultures are market-driven, with results and achieving goals taking precedence over observing regulations. Societies that are normative or have a short-term orientation are more wary of change and want to keep time-honored customs and practices (Minton et al., 2018). Hence, one might generally expect that as the level of long-term orientation in a society increases, sustainable attitudes and behavioral intentions become more positive. However, tourists with a long-term orientation may be less likely to deviate from established attitudes; unless they believe their current attitude does not fit into the long-term future. As a result, tourists adhering to long term orientation may be less inclined to adapt

to sustainable behavioral intentions as they usually just visit their destination for a rather limited period of time.

Indulgence (indulgence/restraint): Indulgence describes a society's acceptance of human desires. As a result, societies with a high indulgence index are more likely to aim for an enjoyable life, whereas civilizations with a low indulgence index are more inclined to impose and follow social rules (Hofstede, Hofstede, and Minkov, 2010), thus being more prone to display sustainable tourist behaviors.

As an overall research question, we therefore explore as follows:

RQ1: To what extent do power distance, individualism, masculinity, uncertainty avoidance, long term orientation, and indulgence, respectively, moderate the baseline relationships developed in the conceptual model (Figure 1)?

3. Methodology

3.1. Data collection and coding

To generate a valid database for our meta-analysis, we implemented the following procedure in accordance with Cooper (1998). Our first step was to generate suitable keywords for the database search to locate as many relevant studies as possible (see a visual presentation of the process in Appendix C: <https://osf.io/fsj4g/>). Therefore, we created three categories of keywords (i.e., sustainability, tourism, tourist behavior), which were linked to specific keywords by analyzing over 100 titles and abstracts of articles related to the subject of sustainable tourism. The final list of keywords covered 90 items and their variations, such as ecofriend*, touris*, behav* (see Appendix C: <https://osf.io/fsj4g/>) for all keywords used in the final search). In addition to presumably being an empirical study (e.g., including a word like 'correlation'), at least one word from each keyword category (i.e., sustainability, tourism, tourist behavior/attitude) was required to be present in order

to render an article relevant for further investigation. Second, we chose multiple databases (i.e., Business Source Complete, Business Source Premier, GreenFILE, ProQuest, PsycINFO, Scopus, and Web of Science) based on their size and specialization, respectively. The search included all peer-reviewed articles published in scholarly journals that were written in English.

Third, we manually searched the primary tourism research journals as identified in the AJG list (i.e., *Annals of Tourism Research*, *Journal of Travel Research*, and *Tourism Management*) as well as the only journal exclusively dedicated to sustainable tourism research (i.e., *Journal of Sustainable Tourism*) for the period beginning from 2004 to the end of June 2021 to avoid algorithm mistakes in the exclusion of papers from leading journals. Finally, we also manually reviewed the references in papers identified as highly relevant to ensure the comprehensiveness of our literature pool. After removing duplicate records, the search resulted in 4,368 articles. However, due to the rather broad initial search, a large proportion of these articles were only marginally related to studies of sustainable consumption within tourism. Further, many studies that were on topic were based on an empirical approach unsuitable for meta-analysis.

Thus, to narrow down the identified articles to the final meta-data set, we screened the initial pool based on three criteria: (1) the study must be focused on our defined topic area, which means that studies investigating other issues, such as resident's perception of tourists or companies' sustainable management were excluded; (2) the empirical model must contain at least one attitude and/or one behavioral variable as a dependent variable with respect to sustainable tourism, as these are key components of the modelling approaches most often used in this field (e.g., theory of reasoned action, norm activation theory, theory of planned behavior, model of goal-directed behavior, and value-belief-norm theory; for a review see Han, 2021); and (3) all relevant constructs must be based on a validated scale and enable an unambiguous coding. After excluding all studies that did not comply with our requests, our pool comprised of 98 articles. After further analysis, we

identified a few duplicate samples. In order to correctly reflect the sample size and not include the corresponding correlation coefficients twice in the analysis, we merged the studies based on the same samples and treated them as one study. Other papers that contained more than one study were considered separately. Thus, the final sample included 100 samples from 95 articles, covering 47,425 participants in total distributed across 38 countries. Appendix D (see: <https://osf.io/fsj4g/>) displays an overview of the included studies while Appendix E (see: <https://osf.io/fsj4g/>) provides a mapping of prior research.

Afterwards, two of the authors created categories of the constructs (i.e., home behavior, knowledge, pro-environmental/anti-environmental values, social interaction, perceived behavioral control, involvement/awareness, attitudes, behavioral intention, and behavior) based on 15% of the articles (n=14), until the categories became redundant. Examples of phenomena covered by each of these constructs are provided in the theoretical background section. Using this classification, all bivariate relationships from the remaining studies were coded, and correlation values were extracted by one of the authors. All codings and extracted values were then verified by a co-author. This led to a total of 306 estimates for further analysis. If estimates were not reported in the original papers, they were requested to be provided from the corresponding authors. The data were collected in 2020-2021.

4. Results

We used the correlation coefficient r as a measure of effect size, as all studies in the sample were correlational. We conducted random-effects meta-analysis of correlations between the conceptual model exogenous constructs (i.e., sustainable home behavior, sustainability knowledge, pro/anti-environmental values, social interaction, PBC, involvement/awareness) and attitude and behavioral intention, which is the recommended approach for heterogenous studies (e.g., Hunter and Schmidt,

2004; Lipsey and Wilson, 2001). Our meta-analysis was conducted in several steps. First, all reported correlations (i.e., bivariate relationships) were converted to Fisher-transformed correlations and weighted by the number of study cases (Hunter and Schmidt, 2004; Sutton et al., 2000; Arts, Frambach, and Bijmolt, 2012). For studies that included multiple correlations between constructs, a composite correlation was first computed (Schepers and van der Borgh, 2020). Second, formal tests of the homogeneity of pooled effects were conducted in order to identify variation in correlations of each relationship. Third, multivariate relationships between exogenous constructs, attitude, and behavior were examined. Fourth, possible indirect relationships between exogenous constructs, attitude (i.e., mediating variable) and behavioral intention, were investigated. Lastly, possible moderating effects of tourists' national culture were assessed.

4.1. Bivariate direct relationships

The range of correlations observed, the calculated weighted average correlations, significance tests based upon the Z -statistic, and homogeneity tests (Q) are displayed in Table 1.

Insert Table 1 about here

The effect sizes $r_{\text{weighted average}}$ of the relationships between conceptual model constructs demonstrate that all bivariate relationships were significant ($p < 0.01$) in the expected directions, except for the relationships between anti-environmental values and attitude ($r_{\text{weighted average}} = -0.01$, $Z = -0.19$, $p = 0.85$) and anti-environmental values and behavioral intention ($r_{\text{weighted average}} = 0.08$, $Z = 0.92$, $p = 0.36$), respectively.

To assess the robustness of the relationships between constructs, the homogeneity of the relationships was examined based on Cochran's Q -statistic. A significant Q -value suggests

heterogeneity in a bivariate correlation and warrants search for possible moderators. The Q-values displayed in Table 1 indicate heterogeneity of all relationships. In that respect, previous research suggests that differences in study characteristics may cause differences in reported effects (Sutton et al., 2000; Arts, Frambach, and Bijmolt, 2012). We investigated three potential moderating effects related to contextual and methodological factors: respondents (students vs. other), sampling method (mail/online vs. other), and publication year. A multilevel random effects model was estimated for the reported relationships between the two constructs. The conducted analyses suggest that the results were highly robust across these moderators, as only one moderating effect was detected with attitude showing a higher relationship with behavioral intention for ‘mail/online’ ($r_{\text{weighted average}}=0.66$) than for ‘other’ ($r_{\text{weighted average}}=0.52$) ($Q=4.74$, $p=0.03$) (Table 2).

Insert Table 2 about here

A series of Fisher Z tests were conducted to determine the primary bivariate relationships between constructs and attitude and behavioral intention, respectively. The results of these tests suggested that social interaction and involvement/awareness are key drivers of attitude, and that social interaction, attitude, and home behavior are key drivers of behavioral intention (see Appendix F for the detailed results: <https://osf.io/fsj4g/>). Using Fisher Z tests, we also assessed whether the averaged correlations differ significantly between attitude and behavioral intention. The results suggest that (a) the relationship between home behavior and behavioral intention is stronger than the relationship between home behavior and attitude ($Z_{\text{difference}}=8.14$, $p<0.01$); (b) the relationship between social interaction and behavioral intention is stronger than the relationship between social interaction and attitude ($Z_{\text{difference}}=4.79$, $p<0.01$); (c) the relationship between PBC and behavioral intention is stronger than the relationship between PBC and attitude ($Z_{\text{difference}}=6.97$, $p<0.01$); and

(d) the relationship between involvement/awareness and behavioral intention is stronger than the relationship between involvement/awareness and attitude ($Z_{\text{difference}}=4.75$, $p<0.01$).

4.2. Hypothesized multivariate indirect relationships

The conceptual model and our hypotheses suggest that the exogenous constructs may each affect behavior through attitude. To assess whether attitude may act as a partial, mediating (i.e., indirect relationship) variable a series of multivariate mediating analyses were conducted by employing path analysis. The models were estimated based on the pooled correlation matrix.

An overall, fully saturated model was first specified, in which (a) all exogenous constructs were allowed to correlate, (b) all relationships between exogenous constructs and attitude and behavioral intention, respectively, were specified, and (c) the relationship between attitude and behavioral intention was specified. Since the p -value is not applicable in a fully saturated model, we used the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) to compare the saturated (partial mediating) model with a full mediating model where the exogenous constructs were only allowed to influence behavioral intention through attitude, with lower values of AIC and BIC indicating a better model fit (Lin, Huang, and Weng, 2017; Vrieze 2012). While the individual AIC and BIC values are not interpretable as they are affected by sample size and model complexity, a Δ AIC or Δ BIC of more than two between the two models can be considered significant (Burnham and Anderson, 2004). A difference of 10, or larger, can be considered 'strong evidence' that the model with the lowest AIC or BIC provides the relative best fit to the data (Raftery, 1995). The results of this overall model examination suggest that the fully saturated, partial mediating model approach (AIC=90.00; BIC=90.60) is an improvement over the competing full mediating model approach (AIC=997.77; BIC=998.28).

We employed bias-corrected bootstrapping (5000 samples) to generate a 95% confidence interval around each of the indirect effects, where mediation occurs if the confidence interval excludes zero. The mediation models were specified in a sequential manner to allow for an independent representation of the results. The β -results indicated that home behavior (95% confidence interval [CI] = [0.16, 0.21]), knowledge (95%[CI] = [0.12, 0.22]), pro-environmental values (95%[CI] = [0.16, 0.26]), social interaction (95%[CI] = [0.14, 0.23]), PBC (95%[CI] = [0.13, 0.23]), and involvement/awareness (95%[CI] = [0.15, 0.25]) are significant and indirectly related to behavioral intention through attitude. Partial mediation is obtained since these constructs were all also significant and directly related to behavioral intention with β -values ranging from 0.18 (knowledge) to 0.40 (social interaction), with p -values < 0.01 in all incidents. To conclude, hypotheses H1, H2, H3, H5, H6, and H7 are all supported in the study.

4.3. Research question: Moderating effects of national culture

Meta-regression was utilized to investigate the possible moderating effects of national culture on the relationships found in the conceptual model. Based on the reported nationality of tourists, values for the six dimensions of national culture were adapted from the index provided by Hofstede Insights (2022). Studies that did not unequivocally report tourists' nationality (e.g., studies reporting mixed nationalities) were excluded, rejecting 21 estimated relationships from the analyses. In the meta-regression analyses, the study is the unit of analysis, while the dependent variables are the Fisher-transformed bivariate correlations. The moderating variables were entered as predictors in a sequential manner (Schepers and van der Borgh, 2020) in weighted least squares (WLS) regression models, where each observation was weighted by the inverse of its variance (Verlegh and Steenkamp, 1999; Schepers and van der Borgh, 2020). Table 3 displays the results of the WLS regression models.

Insert Table 3 about here

Power distance: Several moderating effects of power distance were detected. The results illustrate that the effects of home behavior on attitude ($\beta=-0.71, Z=-2.49, p<0.05$) and behavioral intention ($\beta=-0.62, Z=-2.35, p<0.05$) are stronger in low power distance cultures. Moreover, the effects of pro-environmental values ($\beta=-0.27, Z=-2.11, p<0.05$), PBC ($\beta=-0.51, Z=-2.59, p<0.05$), and attitude ($\beta=-0.27, Z=-2.11, p<0.05$) on behavioral intention are stronger in low power distance cultures.

Individualism: Individualism also showed a range of moderating effects. The effect of involvement/awareness on attitude ($\beta=0.42, Z=2.47, p<0.05$), and the effects of pro-environmental values ($\beta=0.25, Z=1.98, p<0.05$) and attitude ($\beta=0.27, Z=2.09, p<0.05$), on behavioral intention were all higher in individualistic cultures.

Masculinity: Pro-environmental values show a higher effect on attitude in masculine cultures ($\beta=0.42, Z=2.17, p<0.05$).

Uncertainty avoidance: Involvement/awareness has a strong impact on attitude ($\beta=0.51, Z=-3.22, p<0.01$) in low uncertainty avoidance cultures.

Long term orientation: The effect of involvement/awareness on attitude ($\beta=-0.40, Z=-2.35, p<0.05$) is stronger in low long term cultures.

Indulgence: Home behavior ($\beta=0.67, Z=2.68, p<0.05$) and attitude ($\beta=0.29, Z=2.30, p<0.05$) both show a higher effect on behavioral intention in high indulgence cultures.

4.4. Summary of results

Several results were obtained in this study, implying that all bivariate relationships were significant in the expected directions, except from the non-significant relationships between anti-environmental

values and attitude and behavioral intention, respectively. It was also found that attitude partially mediated the relationships between home behavior, knowledge, pro-environmental values, social interaction, PBC, and involvement/awareness, respectively, and behavioral intention. Lastly, variations in tourists' cultural values may lead to relative differences in the relationships between home behavior, knowledge, pro-environmental values, social interaction, PBC, and involvement/awareness, respectively, and attitude and behavioral intention.

5. Discussion

The main objectives of this meta-analysis are (a) to investigate whether the interplay between tourists' characteristics (i.e., home behavior, knowledge, pro-environmental values, anti-environmental values, social interaction, PBC, involvement/awareness) and attitude generally adds to our understanding of sustainable tourist behavioral intention, and (b) to explore whether these relationships are moderated by national culture. The present study differs from the recent study by Lin et al. (2022) and prior studies (e.g., Mattila and Lee, 2016; Klöckner, 2013) in several ways. First, we take into account that sustainability antecedents do not necessarily influence behavioral intention directly but may have an indirect influence through pro-environmental attitude. Second, while Lin et al. explore the moderating effects of two national dimensions (i.e., individualism and collectivism), we investigate all the six dimensions of national culture suggested by Hofstede and colleagues (e.g., Hofstede and Minkow, 2010; Hofstede, Hofstede, and Minkow, 2010) as possible moderators of the relationships developed in the conceptual model (Figure 1). Even though our sample size ($n=95$) is lower than that of Lin et al. ($n=194$) we found this to be an important extension as the results suggest that the inclusion of all six national values provides several important moderating effects of the relationships between tourists' characteristics and attitude and behavioral intention within the area of sustainable tourism. Specifically, the results suggest that

national values ‘power distance’ and ‘individualism’ are the two most powerful moderators, with power distance moderating four relationships and individualism moderating three relationships. Moreover, our study adds significantly to previous research by taking into account that moderating effects may occur between antecedents and behavioral intention both directly and indirectly through attitude. Third, we investigate three potential moderating effects related to both contextual and methodological factors: respondents (students vs. other), sampling method (mail/online vs. other), and publication year and showed that the results were highly robust across these moderators.

Our findings stress the relevance of distinguishing between characteristics that relate to behavioral constructs (i.e., home behavior), social constructs (i.e., social interactions), personal values (i.e., pro-environmental values, anti-environmental values), and mental constructs (i.e., involvement/awareness, knowledge, PBC, attitude) while investigating sustainable tourist behavioral intention. While these constructs (with the exception of anti-environmental values) were significantly related to attitude and sustainable tourist behavioral intention, we found that social interaction and involvement drive attitude, while social interaction, attitude, and home behavior drive behavioral intention. Deviation from normative rules and behaviors tend to be less readily accepted in high power distance cultures (Moon and Sánchez-Rodríguez, 2020; Fernández et al., 2000). However, surprisingly at a first glance, we found that tourists from national cultures characterized by high power distance are less likely to transmit their home behavior into attitude and behavioral intention. On the other hand, we believe that viable explanations for these findings can be suggested. Prior research suggests that high power distance cultures are typically characterized by strong competition among individuals and perhaps stressful ways of living (Han and Heather, 2001). Hence, tourists from such cultures may be more inclined to seek adventure and novelty or variety while travelling (Manrai and Manrai, 2011), and consequently be more eager and likely to deviate from the behavior, norms, and values of their home culture. This might also

explain the reason behind the fact that the relationships between both pro-environmental values and PBC, as well as behavioral intention, were negatively moderated by power distance in our study. Furthermore, these propositions are consistent with theories suggesting that less powerful people may seek to restore the lack of power by purchasing products associated with power (e.g., luxury handbags) (Su et al., 2018); or (as might be indicated by the present results) by distancing themselves from their home behavior and values when acting as tourists in another national culture.

Consistent with our expectations, we found that individualism positively moderated relationships between personal constructs, such as involvement/awareness and attitude and between pro-environmental values and attitude, respectively, and behavioral intention. Along similar lines, past research suggests that people from individualistic cultures tend to be self-motivated and self-reliant, as well as emphasize personal interests and qualities (e.g., Orji and Mandryk, 2014). In addition, we found that (a) masculinity positively moderated the relationship between pro-environmental values and attitude; (b) uncertainty avoidance and long-term orientation both negatively moderated the relationship between involvement/awareness and attitude; and (c) indulgence positively moderated the relationships between home behavior and attitude, as well as behavioral intention. Masculinity is the degree to which a national culture values ambition, heroism, monetary achievement, and assertiveness. Masculine societies tend to have less concern for feelings (Crotts and Erdmann, 2000) and sustainable issues (Chan and Chau, 2021). However, masculine cultures also emphasize individual values (Hofstede Insights, 2022), which may explain the finding that the positive relationship between pro-environmental values and attitude is more prominent in masculine societies. The results suggest that tourists from cultures high in uncertainty avoidance are less likely to show a positive attitude towards sustainable tourist behavioral intention based on high involvement/awareness.

Cultures adhering to high uncertainty avoidance are likely to avoid the ambiguous or unknown, especially regarding important aspects (Hofstede Insights, 2022). Since sustainable behavioral intentions may indeed be seen as ‘new’ or ‘modern’ (Joshi and Rahman, 2015), these tourists may be expected to be less inclined to deviate from an already established more ‘classic’ attitude towards tourist behavioral intentions. Cultures adhering to long term orientation value both the past and the future rather than actions solely significant for their effects in the present or the short term (Bearden, Money, and Nevins, 2006). Hence, tourists adhering to long term orientation may be less likely to deviate from established attitudes unless they believe that their present attitude does not fit into the link between the past and the future. Indulgence is the extent to which people try to control their desires and impulses. Relatively weak control is known as indulgence, whereas relatively strong control is called restraint (Hofstede Insights, 2022). This seems consistent with our findings that imply that tourists high in indulgence are more likely to transmit their home behavior and attitude into their behavioral intentions as tourists.

5.1. Managerial implications

The results of this research offer several implications to tourist managers, public authorities, and politicians.

First, our findings, which imply that social interaction and involvement/awareness in particular drive attitude and that social interaction, attitude, and home behavior in particular drive behavioral intention, are of pivotal importance to tourism managers and authorities. These parties may wish to facilitate or organize social events to encourage tourists to engage in social interactions at their destination, thereby increasing the likelihood of sustainable tourism behavioral intentions.

Second, tourism managers and authorities may seek to persuade tourists from high power distance cultures to not deviate from their home behavior. In addition, these tourists should be

encouraged to bring their pro-environmental beliefs/values with them to their travel destination.

This may be accomplished by information campaigns, emphasizing that ‘as a tourist, you represent your country’ or ‘do not leave behind your sustainable values at home’.

Third, tourists from cultures characterized by individualism are more likely to show positive relationships between involvement/awareness and attitude towards sustainable behavior and to their transform their attitude into sustainable tourist behavioral intentions. The latter relationship also holds true for tourists from cultures adhering to indulgence. Hence, tourist managers may wish to address tourists from such cultures by encouraging their present behavior and perhaps even by showcasing these as ‘role-models’ for the exhibition of sustainable tourism behavior.

Fourth, the relationship between involvement/awareness and attitude tends to be negatively moderated by both uncertainty avoidance and long-term orientation. Hence, tourist managers and authorities may seek to convince tourists adhering to such values that demonstrating a sustainable attitude is beneficial to the destination environment even on a short-term basis, and that this attitude is not accompanied by higher uncertainties or risks.

5.2. Limitations and future research

As with every research, some limitations also apply to this study. It should be noted that the results and conclusions from meta-analyses are always limited by the availability of original studies and their quality. Moreover, while we have done our utmost to define and handle the variables used in this study accurately, variance in the conceptualizations of the variables may still have affected some of the findings. While this research focused on several tourist characteristics (home behavior, involvement/awareness, and attitude, among others), additional characteristics (e.g., self-efficacy, lack of confidence in carrying out sustainable behavior, etc.) may further detail the results.

Although the Hofstede cultural values are widely recognized as indicators of national culture, they

do not consider minority groups within a culture or alternative or supplementary explanations, such as variations in living conditions, national laws and regulations, among other factors. However, since the Hofstede national-level dimensions capture less variance than individual-level values (Schepers and van der Borgh, 2020), we posit that the results of the conducted moderations analyses are likely to be conservative. We suggest that future research further explores possible moderators of the sustainable tourist behavioral intention.

The focus of this study was tourists' behavioral intentions. As already touched upon, inconsistencies may occur between consumer sustainability attitude and actual behavior and between behavioral intention and actual behavior. These inconsistencies may be caused by several factors, including limited availability of sustainability choices, perceived difficulty in assessing sustainability levels, and unwillingness to spend necessary resources such as time and money, among others (e.g., Joshi and Rahman, 2015). In this light it may be valuable for future research to design studies in which tourists' national values are explicitly modeled to determine whether these values may influence the occurrence of such inconsistencies. It is likely that such research cannot suffice with the methods that have been typically applied in past research on tourist sustainability behavior (i.e., surveys or observational studies) but may turn to other types of methods such as experiments that manipulate a range of antecedents and behavioral barriers. This is also reflected in a mapping of prior research and suggested future research directions which has been developed and is presented in Appendix E (see <https://osf.io/fsj4g/>). In summary, sustainable tourist behavior is an intriguing topic that could be expected to be rapidly evolving in the future due to increased attention to environmental changes and sustainable behavior; and therefore, it represents an area that deserves more attention in future research.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Ajzen, I., & Fishbein, M. (2005). The Influence of Attitudes on Behavior. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The Handbook of Attitudes* (pp. 173–221). Lawrence Erlbaum Associates Publishers.
- Ambec, S., & Lanoie, P. (2008). Does it pay to be green? A systematic overview. *The Academy of Management Perspectives*, 45-62.
- Arts, J. W. C., Frambach, R. T., & Bijmolt, T. H. A. (2012). Generalizations on consumer innovation adoption: A meta-analysis on drivers of intention and behavior. *International Journal of Research in Marketing*, 28, 134-144.
- Beall, J. M., Boley, B. B., Landon, A. C., & Woosnam, K. M. (2021). What drives ecotourism: environmental values or symbolic conspicuous consumption? *Journal of Sustainable Tourism*, 29(8), 1215-1234.
- Bearden, W. O., Money, R. B., & Nevins, J. L. (2006). A Measure of Long-Term Orientation: Development and Validation. *Journal of the Academy of Marketing Science*, 34(3), 456-467.
- Belk, R.W., 1988. Possessions and the extended self. *Journal of Consumer Research*, 15, 139-168.
- Bloodhart, B. & Swim, J.K. (2020). Sustainability and Consumption: What's Gender Go to Do with It? *Journal of Social Issues*, 76(1), 1-13.
- Burnham, K. P. & Anderson, D. R. (2004). Multimodel Inference Understanding AIC and BIC in Model Selection. *Sociological Methods and Research*, 33(2), 261-304.
- Chan, S. H. G. & Chau, K. Y. (2021). Cultural Differences between Asians and Non-Asians affect Buying Attitudes and Purchasing Behaviors towards Green Tourism Products. *Journal of Service Science and Management*, 14(3), 241-261.
- Cheng, T. M. & Homer C. Wu (2015) How do environmental knowledge, environmental sensitivity, and place attachment affect environmentally responsible behavior? An integrated approach for sustainable island tourism, *Journal of Sustainable Tourism*, 23(4), 557-576
- Cheng, J. C. H., Chiang, A. H., Yuan, Y., & Huang, M. Y. (2018). Exploring antecedents of green tourism behaviors: A case study in suburban areas of Taipei, Taiwan. *Sustainability*, 10(6), 1928.
- Chin, C. H., Chin, C. L., & Wong, W. P. M. (2018). The implementation of green marketing tools in rural tourism: the readiness of tourists? *Journal of Hospitality Marketing & Management*, 27(3), 261-280.

- Chwialkowska, A., Bhatti, W.A., & Glowik, M. (2020). The influence of cultural values on pro-environmental behavior. *Journal of Cleaner Production*, 268(September): <https://doi.org/10.1016/j.jclepro.2020.122305>
- Conrad, Z., & Blackstone, N.T. (2021). Identifying the links between consumer food waste, nutrition, and environmental sustainability: a narrative review, *Emerging Science*, 79(3), 301-314.
- Cooper, H. (1998). *Synthesizing research: A guide for literature reviews*. Thousand Oaks, CA: Sage.
- Crotts, J., & Erdmann, P. (2000). Does National Culture Influence Consumers' Evaluation of Travel Services? A Test of Hofstede's Model of Cross-Cultural Differences. *Managing Service Quality: An International Approach*, 10, 410-419.
- Cvelbar, L. K., Grün, B., & Dolnicar, S. (2017). Which hotel guest segments reuse towels? Selling sustainable tourism services through target marketing. *Journal of Sustainable Tourism*, 25(7), 921-934.
- De Mooij, M. (2003), *Consumer Behavior and Culture: Consequences for Global Marketing and Advertising*, India, Sage publications.
- Deenihan, G., & Caulfield, B. (2015). Do tourists value different levels of cycling infrastructure? *Tourism Management*, 46, 92-101.
- Dellaert, B. G., Ettema, D. F., & Lindh, C. (1998). Multi-faceted tourist travel decisions: a constraint-based conceptual framework to describe tourists' sequential choices of travel components. *Tourism Management*, 19(4), 313-320.
- Deng, J. & Li, J. (2015) Self-identification of ecotourists. *Journal of Sustainable Tourism*, 23(2), 255-279.
- Dolnicar, S., Cvelbar, L.K., & Grün, B. (2019). A Sharing-Based Approach to Enticing Tourists to Behave More Environmentally Friendly. *Journal of Travel Research*, 58(2), 241–252.
- Dolnicar, S. (2010). Identifying tourists with smaller environmental footprints. *Journal of Sustainable Tourism*, 18(6), 717-734.
- Edwards D., Griffin T. (2013). Understanding Tourists' Spatial Behaviour: GPS Tracking as an Aid to Sustainable Destination Management. *Journal of Sustainable Tourism* 21(4), 580-595.
- Fernández, I., Carrera, P., Sánchez, F., Paez, D., & Candia, L. (2000). Differences between cultures in emotional verbal and non-verbal reactions. *Psicothema*, 12(Supl.), 83-92.
- Filimonau, V., Matute, J., Mika, M., & Faracik, R. (2018). National culture as a driver of pro-environmental attitudes and behavioral intentions in tourism. *Journal of Sustainable Tourism*, 26(10), 1-22.

- Firth T., Hing N. (1999). Backpacker Hostels and Their Guests: Attitudes and Behaviours Relating to Sustainable Tourism. *Tourism Management* 20(2), 251-254.
- Gao, Y. L., & Mattila, A. S. (2016). The impact of option popularity, social inclusion/exclusion, and self-affirmation on consumers' propensity to choose green hotels. *Journal of Business Ethics*, 136(3), 575-585.
- Gao, Y. L., Mattila, A. S., & Lee, S. (2016). A meta-analysis of behavioral intentions for environment-friendly initiatives in hospitality research. *International Journal of Hospitality Management*, 54, 107-115.
- Han, B., & Heather, J. (2001). Korean Tourists' Characteristics in Guam. *Journal of Photo-Geographers*, 11(1), 69-83.
- Han, H. (2021). Consumer behavior and environmental sustainability in tourism and hospitality: a review of theories, concepts, and latest research. *Journal of Sustainable Tourism*, 29(7), 1021-1042.
- Han, H. (2015). Travelers' pro-environmental behavior in a green lodging context: Converging value-belief-norm theory and the theory of planned behavior. *Tourism Management*, 47, 164-177.
- Han, H., Hsu, L., & Sheu, C. (2010). Application of the theory of planned behavior to green hotel choice: Testing the effect of environmentally friendly activities. *Tourism Management*, 31, 325-334.
- Han, H., Hsu, L. T. J., Lee, J. S., & Sheu, C. (2011). Are lodging customers ready to go green? An examination of attitudes, demographics, and eco-friendly intentions. *International Journal of Hospitality Management*, 30(2), 345-355.
- Han, H., Hwang, J., & Lee, M. J. (2017). The value-belief-emotion-norm model: Investigating customers' eco-friendly behavior. *Journal of Travel & Tourism Marketing*, 34(5), 590-607.
- Han, H., & Hyun, S. S. (2018). What influences water conservation and towel reuse practices of hotel guests? *Tourism Management*, 64, 87-97.
- Han, W., McCabe, S., Wang, Y., & Chong, A. Y. L. (2018). Evaluating user-generated content in social media: an effective approach to encourage greater pro-environmental behavior in tourism? *Journal of Sustainable Tourism*, 26(4), 600-614.
- Han, H., Yu, J., Kim, H. C., & Kim, W. (2018). Impact of social/personal norms and willingness to sacrifice on young vacationers' pro-environmental intentions for waste reduction and recycling. *Journal of Sustainable Tourism*, 26(12), 2117-2133.

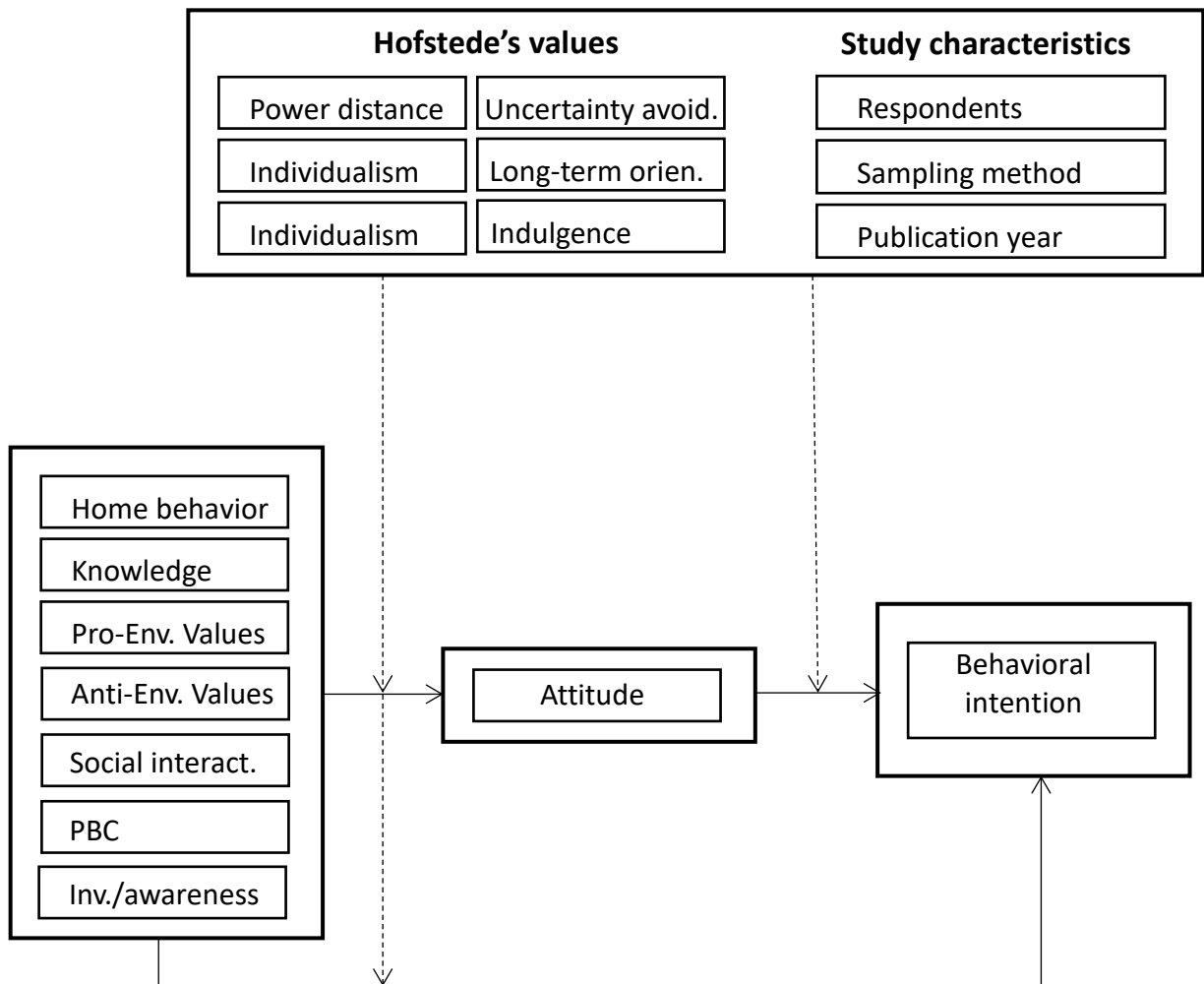
- Hatzinger, R., & Mazanec, J. A. (2007). Measuring the part worth of the mode of transport in a trip package: An extended Bradley–Terry model for paired-comparison conjoint data. *Journal of Business Research*, 60(12), 1290-1302.
- Hergesell, A., & Dickinger, A. (2013). Environmentally friendly holiday transport mode choices among students: the role of price, time and convenience. *Journal of Sustainable Tourism*, 21(4), 596-613.
- Hofstede, G., Hofstede, G. J., & Minkov, M. (2010), *Cultures and Organizations: Software of the Mind*, 3rd ed. New York: McGraw-Hill Education.
- Hofstede, G., & Minkov, M. (2010). Long- versus Shortterm Orientation: New Perspectives. *Asia Pacific Business Review*, 16(4), 493-504.
- Hofstede Insights (2022). Country Comparison. <https://www.hofstede-insights.com/country-comparison/> (accessed February 2022).
- Huang, S. S., & Crotts, J. (2019). Relationships Between Hofstede's Cultural Dimensions and Tourist Satisfaction: A Cross-Country Cross-Sample Examination. *Tourism Management*, 72, 232-241.
- Hunter, J. E., & Schmidt, F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings*. Newbury Park: Sage Publications.
- Husted, B.W. (2005). Culture and Ecology: A Cross-National Study of the Determinants of Environmental Sustainability. *Management International Review*, 45(3), 349-371
- Jiang, Y., & Kim, Y. (2015). Developing multi-dimensional green value: Extending social exchange theory to explore customers' purchase intention in green hotels—evidence from Korea. *International Journal of Contemporary Hospitality Management*, 27(2), 308-334.
- Joshi, Y. & Rahman, Z. (2015). Factors Affecting Green Purchase Behavior and Future Research Directions. *International Strategic Management Review*, 3(1-2), 128-143.
- Kim, S. H., Lee, K., & Fairhurst, A. (2017). The review of “green” research in hospitality, 2000-2014: Current trends and future research directions. *International Journal of Contemporary Hospitality Management*, 29(1), 226-247.
- Kim, Y., Yun, S., & Lee, J. (2014). Can companies induce sustainable consumption? The impact of knowledge and social embeddedness on airline sustainability programs in the US. *Sustainability*, 6(6), 3338-3356.
- Klößner, C. A. (2013). A comprehensive model of the psychology of environmental behavior—A meta-analysis. *Global environmental change*, 23(5), 1028-1038.
- Lee, T. H., & Jan, F. H. (2018). Ecotourism behavior of nature-based tourists: An integrative framework. *Journal of Travel Research*, 57(6), 792-810.

- Leonidou, C. N., & Leonidou, L. C. (2011). Research into environmental marketing/management: a bibliographic analysis. *European Journal of Marketing*, 45(1/2), 68-103.
- Lin, M-T (Brian), Zhu, D., Liu, Cl., and Kim P.B. (2022), A meta-analysis of antecedents of pro-environmental behavioral intention of tourists and hospitality consumers, *Tourism Management*, 93, <https://doi.org/10.1016/j.tourman.2022.104566>.
- Lin, L. C., Huang, P. H., & Weng, L. J. (2017). Selecting Path Models in SEM: A Comparison of Model Selection Criteria. *Structural Equation Modeling: A Multidisciplinary Journal*, 24, 855-869.
- Line, N. D., Hanks, L., & Miao, L. (2018). Image matters: incentivizing green tourism behavior. *Journal of Travel Research*, 57(3), 296-309.
- Liobikienė, G., Mandravickaitė, J., & Bernatienė, J. (2016). Theory of planned behavior approach to understand the green purchasing behavior in the EU: A cross-cultural study, *Ecological Economics*, 125(May), 38-46
- Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. London: Sage.
- Manrai, L., & Manrai, A. (2011). Hofstede's cultural dimensions and tourists' behaviors: A review and conceptual framework. *Journal of Economics, Finance and Administrative Science*, 16(31), 23-48.
- McKenna J., Williams A. T., Cooper J. A. G. (2011). "Blue Flag or Red Herring: Do Beach Awards Encourage the Public to Visit Beaches?" *Tourism Management* 32(3), 576-588.
- Minton, E.A., Spielmann, N., Kahle, L.R., Kim, C-H. (2018). The subjective norms of sustainable consumption: A cross-cultural exploration, *Journal of Business Research*, 82(January), 400-408,
- Moon, C. & Sánchez-Rodríguez, Á. (2020). Cultural influences on normative reactions to incivility: comparing individuals from South Korea and Spain. *International Journal of Conflict Management*, 32(2), 292-314.
- Olya, H. G., & Akhshik, A. (2019). Tackling the complexity of the pro-environmental behavior intentions of visitors to turtle sites. *Journal of Travel Research*, 58(2), 313-332.
- Orji, R. & Mandryk, R. L. (2014). Developing culturally relevant design guidelines for encouraging healthy eating behavior. *International Journal of Human-Computer Studies*, 72, 207-223.
- Parboteeah, K.P., Addae, H.M., & Cullen, J.B. (2012). Propensity to support sustainability initiatives: a cross-national model. *Journal of Business Ethics*, 105(1), 403-413.
- Passafaro, P. (2020). Attitudes and tourists' sustainable behavior: An overview of the literature and discussion of some theoretical and methodological issues. *Journal of Travel research*, 59(4), 579-601.

- Pelau, C. & Pop, N.A. (2018). Implications for the energy policy derived from the relation between the cultural dimensions of Hofstede's model and the consumption of renewable energies, *Energy Policy*, 118(July), 160-168.
- Pezzoli, K. (1997). Sustainable Development: A Transdisciplinary Overview of the Literature, *Journal of Environmental Planning and Management*, 40(5), 549-574.
- Raftery, A. E. (1995). Bayesian Model Selection in Social Research. *Sociological Methodology*, 25, 111-163.
- Rönkkö, M., & Cho, E. (2022). An Updated Guideline for Assessing Discriminant Validity. *Organizational Research Methods*, 25(1), 6–14.
- Rucker, D.D., Preacher, K.J., Tormala, Z.L., & Petty, R.E. (2011). Mediation Analysis in Social Psychology: Current Practices and New Recommendations. *Social and Personality Psychology Compass*, 5/6, 359-371.
- Schepers, J. J. L. & van der Borgh, M. (2020). A Meta-Analysis of Frontline Employees' Role Behavior and the Moderating Effects of National Culture. *Journal of Service Research*, 23(3), 255-280.
- Schwartz, S. H. & Howard, J. A. (1981). A normative decision-making model of altruism. In J. P. Rushton, & R. M. Sorrentino (Eds.), *Altruism and helping behavior* (pp. 89–211). Lawrence Erlbaum, Hillsdale, NJ.
- Shao, R., Rupp, D. E., Skarlicki, D. P., & Jones, K. S. (2013). Employee Justice across Cultures: A Meta-analytic Review. *Journal of Management*, 39(1), 263-301.
- Stern, P. C. T., Dietz, T. D., & Abel, G. A. Guagnano, and L. Kalof (1999). A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism. *Human Ecology Review*, 6(2), 81–97.
- Stamolampros, P., Dousios, D., Korfiatis, N., & Symitsi, E. (2020). The Joint Effect of Consumer and Service Providers' Culture on Online Service Evaluations: A Response Surface Analysis. *Tourism Management*, 78, 104057, 1-18.
- Su, N., Min, C., Chen, M. H., & Swanger, N. (2018). Cultural Characteristics and Tourist Shopping Spending. *Journal of Hospitality & Tourism Research*, 42(8), 1210-1231
- Sutton, A. J., Abrams, K. R., Jones, D. R., Sheldon, T. A., & Song, F. (2000). *Methods for meta-analysis in medical research*. Chichester: Wiley.
- Teng, Y. M., Wu, K. S., & Liu, H. H. (2015). Integrating altruism and the theory of planned behavior to predict patronage intention of a green hotel. *Journal of Hospitality & Tourism Research*, 39(3), 299-315.

- Untaru, E. N., Ispas, A., Candrea, A. N., Luca, M., & Epuran, G. (2016). Predictors of individuals' intention to conserve water in a lodging context: The application of an extended theory of reasoned action. *International Journal of Hospitality Management*, 59, 50-59.
- Verlegh, P. W. J. & Steenkamp, J. B. E. M. (1999). A review and meta-analysis of country-of-origin research. *Journal of Economic Psychology*, 20, 521-546.
- Vrieze, S. I. (2012). Model selection and psychological theory: A discussion of the differences between Akaike information criterion (AIC) and the Bayesian information criterion (BIC). *Psychological Methods*, 17(2), 228-243.

Figure 1 Conceptual Model



—— Direct/mediating effects
 Moderating effects

Table 1. Correlations of tourist characteristics with attitude and behavior

Dependent variable	Attitude					Behavioral intention ^b				
	<i>Q</i>	Range of correlations	Weighted average correlation	Significance <i>p</i> -value [z-statistics]	Cumulative N ^a	<i>Q</i>	Range of correlations	Weighted average correlation	Significance <i>p</i> -value [z-statistics]	Cumulative N ^a
Home behavior	65.65**	.06/.56	.35 [.24; .47]	<.01 [6.02]	2864 (8)	196.61**	.11/.91	.51 [.38; .65]	<.01 [7.40]	4207 (11)
Knowledge	138.13**	-.01/.56	.32 [.18; .46]	<.01 [4.45]	3749 (9)	260.30**	-.06/.62	.35 [.19; .50]	<.01 [4.47]	4659 (11)
Pro-environmental values	564.28**	.16/.95	.43 [.36; .51]	<.01 [9.88]	11016 (25)	350.91**	.21/.70	.44 [.39; .49]	<.01 [16.33]	15674 (33)
Anti-environmental values	148.96**	-.37/.24	-.01[-.06; .13]	.85 [-.19]	3390 (9)	407.56**	-.45/.46	.08 [-.09; .25]	.36 [.92]	5672 (11)
Social interaction	36.56**	.34/.73	.48 [.19; .78]	<.01 [3.22]	1763 (3)	73.75**	.26/.79	.58 [.43; .74]	<.01 [7.43]	3592 (5)
Perceived behavioral control (PBC)	363.62**	.12/.77	.37 [.35; .39]	<.01 [9.67]	10177 (22)	295.19**	.14/.71	.45 [.38; .52]	<.01 [12.36]	10807 (23)
Involvement/awareness	632.31**	.18/.79	.46 [.38; .53]	<.01 [12.38]	15963 (33)	961.10**	-.10/.98	.48 [.41; .56]	<.01 [12.46]	19430 (40)
Attitude	<i>na</i>	<i>na</i>	<i>Na</i>	<i>na</i>	<i>na</i>	2126.46**	-0.05/1.36	.57 [.50; .64]	<.01 [16.33]	30768 (63)

Notes

^aCombined sample size available for each set of correlations with number of identified relations in parentheses.

^b'Behavioral intention' includes both 'behavioral intention' and 'behavior' due to an insufficient number of observations related to 'behavior'.

Q=Degree of heterogeneity; **significant on the .01 level.

Na. Not applicable

Table 2. Results of moderation analyses between study characteristics and attitude and behavior

	Moderators: Study characteristics								
	Respondents			Sampling method			Publication year		
	Students	Other	<i>Q</i>	Mail/online	Other	<i>Q</i>	Early	Recently ^a	<i>Q</i>
<i>Dependent variable:</i>									
<i>Attitude</i>									
Home behavior	.56	.32	2.29	.28	.43	1.87	.28	.43	1.87
Knowledge	.55	.29	1.35	.37	.31	.13	.22	.40	1.98
Pro-environmental values	<i>na</i>		<i>na</i>	.50	.44	.31	.48	.46	.02
Anti-environmental values	-.09	-.01	.11	.06	-.07	.76	.03	-.03	.14
Social interaction	<i>na</i>		<i>na</i>	<i>na</i>		<i>na</i>	<i>na</i>		<i>na</i>
Perceived behavioral control (PBC)	.63	.40	1.36	.45	.39	.42	.42	.41	.02
Involvement/awareness	.39	.45	.07	.49	.40	1.88	.48	.40	1.59
<i>Dependent variable:</i>									
<i>Behavioral intention^b</i>									
Home behavior	.36	.55	1.02	.58	.47	.55	.60	.44	1.37
Knowledge	.40	.34	.04	.39	.34	.07	.30	.38	.24
Pro-environmental values	.38	.45	.53	.42	.46	.80	.43	.45	.09
Anti-environmental values	.12	.07	.02	.15	-.05	1.13	.15	.04	.39
Social interaction	<i>na</i>		<i>na</i>	<i>na</i>		<i>na</i>	<i>na</i>		<i>na</i>
Perceived behavioral control (PBC)	.52	.44	.51	.46	.45	.02	.45	.46	.01
Involvement/awareness	.55	.47	.28	.54	.44	1.81	.49	.47	.05
Attitude	.49	.58	.68	.66	.52	4.74*	.59	.56	.29

Notes

Coefficients in bold are statistically different.

*Significant on the .05 level.

^aMedian split (pooled sample) created the 'early' vs. 'recently' levels of publication year.

^b'Behavioral intention' includes both 'behavioral intention' and 'behavior' due to an insufficient number of observations related to 'behavior'.

Na. Not applicable. (No meaningful values for *Q* can be calculated as not enough variation was found due to an insufficient number of observations across groups).

Table 3. The moderating influence of tourists' national culture

<i>Dependent variable:</i>	Cumulative N ^a	<u>Power distance</u>		<u>Individualism</u>		<u>Masculinity</u>		<u>Uncertainty avoidance</u>		<u>Long term orientation</u>		<u>Indulgence</u>	
		β	Z	β	Z	β	Z	β	Z	β	Z	β	Z
<i>Attitude</i>													
Home behavior	2864 (8)	-.71	-2.49*	-.01	-.03	-.06	-.14	-.03	-.07	.32	.83	.27	.69
Knowledge	3749 (9)	-.34	-.94	.18	.49	.13	.36	-.08	-.21	-.05	-.13	.26	.72
Pro-environmental values	10670 (25)	-.34	-1.63	-.03	-.15	.42	2.17*	-.06	-.30	.14	.65	.23	1.10
Anti-environmental values	3278 (9)	-.04	-.09	.28	.71	.48	1.34	-.04	-.09	.21	.52	.03	.07
Social interaction	1763 (3)	<i>na</i>		<i>na</i>		<i>na</i>		<i>na</i>		<i>na</i>		<i>na</i>	
Perceived behavioral control (PBC)	10065 (21)	.03	.11	.07	.32	.07	.33	-.12	-.54	-.11	-.48	-.07	-.31
Involvement/awareness	15584 (31)	-.34	-1.94	.42	2.47*	.19	1.03	-.51	-3.22**	-.40	-2.35*	.30	1.72
<i>Dependent variable:</i>													
<i>Behavioral intention^b</i>													
Home behavior	4207 (11)	-.62	-2.35*	.48	1.65	.40	1.33	-.51	-1.77	-.21	-.66	.67	2.68*
Knowledge	4659 (11)	-.29	-.92	-.02	-.06	-.30	-.95	.49	1.68	.16	.49	.18	.54
Pro-environmental values	14764 (29)	-.27	-2.11*	.25	1.98*	.06	.43	-.02	-.13	-.16	-1.23	.30	2.35*
Anti-environmental values	5560 (10)	-.48	-1.55	.39	1.12	.51	1.70	-.42	-1.30	-.14	-.39	.38	1.17
Social interaction	3592 (5)	.19	.34	-.56	-1.16	-.68	-1.92	-.25	-.46	.59	1.27	-.18	-.32
Perceived behavioral control (PBC)	10435 (20)	-.51	-2.59*	.14	.62	-.29	-1.29	.23	1.04	-.17	-.76	.27	1.21
Involvement/awareness	18817 (34)	-.14	-.86	.12	.69	-.13	-.77	-.27	-1.64	-.06	-.38	.08	.46
Attitude	27591 (59)	-.27	-2.11*	.27	2.09*	.06	.45	-.02	-.17	-.18	-1.34	.29	2.30*

Notes

^aCombined sample size available for each set of relationships with number of identified relations in parentheses.

^b'Behavioral intention' includes both 'behavioral intention' and 'behavior' due to an insufficient number of observations related to 'behavior'.

**Significant on the .01 level; *significant on the .05 level.

Na. Not applicable. (No meaningful values for β can be calculated as not enough variation was found).