Empirical Research Article

A Time-lagged Examination of Voluntary and Task-related Green Behavior in the Travel Industry

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Abstract

With climate change continuing to threaten the earth's ecosystems, the travel industry is under increased pressure to adopt green policies. The effective implementation of these policies is largely dependent on employee commitment, but research offering insights into employees' green behavior in the travel industry is sparse. We addressed this gap using the value-belief-norm theory to conceptualize the drivers of employees' task-related and voluntary green behaviors. We examined the impact of values (biospheric, altruistic, and egoistic), beliefs (the new environmental paradigm, awareness of consequences, and ascription of responsibility), and pro-environmental personal norms on these outcomes. Analyzing time-lagged data collected in three waves from 186 hotel employees, we found a positive sequential association of biospheric values with beliefs, norms, and green behaviors. From a theoretical viewpoint, our study grounds hotel employees' green behaviors in a prosocial theory, thereby offering a relatively new yet pertinent explanation of these behaviors.

Keywords

common method bias, green behavior, pro-environmental behavior, time-lagged study, value-belief-norm theory

Introduction

The global hotel industry has been criticized quite vociferously for its depletion of natural resources and its impact on the environment (Bhutto et al., 2021; Lenzen et al., 2018). The International Tourism Partnership (ITP) claims that in order to meet the 2°C temperature rise threshold mandated at COP21, this sector will need to reduce its emissions by a substantial 66% and 90% by 2030 and 2050, respectively (UNFCCC, 2018). In response to such heightened scrutiny, a growing number of hotels have rebranded themselves as "green" and changed their operations accordingly, for example by endeavoring to conserve water and energy (Wisker & Kwiatek, 2019). The effectiveness of such practices depends largely on employees as it falls to them to interpret and effect organizational policies and green practices (Joshua et al., 2023), and it has been found that employees' participation in such policies essentially dictates their success or failure in the hotel industry (Sourvinou & Filimonau, 2018).

This line of thought has led scholars to consider a new construct, *employee green behaviors*, which is distinct from the well-examined and understood concept of pro-environmental behaviors (e.g., Mo et al., 2022; Norton et al., 2015). Employee green behaviors are different from broader pro-environmental behaviors in one key way: where pro-environmental behaviors are primarily voluntary, employee green behaviors are both task-related and voluntary, and they may be embedded into and shaped by organizational policies, or they may be undertaken independently, driven by pro-social motivation (Darvishmotevali & Altinay, 2022; Norton et al., 2015). Therefore, the construct of employee green behaviors provides a more comprehensive and realistic measurement of green behaviors by assessing both voluntary and required behaviors (Norton et al., 2015). Accordingly, we propose two outcome variables: task-related green behaviors and voluntary green behaviors. This distinction helps us to understand the differing contexts

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and outcomes of green behavior enforced by organizational policies and green behavior that is purely discretionary. Our review of past studies indicates that the literature on employee green behaviors is limited, especially when compared with the size of the industrial sector globally, with research only gaining momentum in 2021.

The growing alarm around the climate crisis and the impotence of past efforts to control emissions has led scholars to call for a more nuanced examination of the drivers of employee green behaviors in many sectors, including the travel industry (Mo et al., 2022; Tuan, 2022; Wood et al., 2021). Furthermore, although many hotels have proclaimed their intentions to transition to greener operations, the literature examining hotel employees' pro-environmental behavior is quite limited, with only a few studies having focused on it (e.g., Y. J. Kim et al., 2019), and the literature on hotel employee green behavior as a distinct construct comprising both task-related and voluntary green behavior is even narrower (e.g., Khalid et al., 2022).

Such limited information on the drivers of employee green behavior constitutes a serious gap from both theoretical and practical perspectives. Not only does the dearth of evidence render the literature in this area academically deficient, but it has also offered few solutions to hotels looking to align themselves with the regulatory, economic, and social expectations and requirements for achieving sustainability goals. This gap is even more keenly felt from the perspective of practice, as previous investigations of employees' in-role green performance (Pham et al., 2023) have found evidence that both voluntary and required employee green behaviors can lead to better environmental performance in the sector (e.g., Darvishmotevali & Altinay, 2022; Paillé & Francoeur, 2022). We propose to bridge this gap by empirically examining the antecedents of employees' green behavior, both voluntary and task-related.

Further review has revealed that scholars consider responsible behaviors—including green ones—to be driven by pro-social and moral considerations, suggesting theories such as the value-belief-norm theory (VBN; Stern et al., 1999) as suitable frameworks for capturing the drivers of complex green behaviors. The travel literature in particular exemplifies this view. However, we observe that the sequential framework of VBN has mostly been used to conceptualize tourists' green intentions and behaviors (e.g., Choi et al., 2015; Han, 2015; Kiatkawsin & Han, 2017), and very few past studies have utilized the theory to examine employee behaviors (e.g., green performance; Darvishmotevali & Altinay, 2022). Given VBN's efficacy in explaining green behaviors in a variety of settings and the limited insights specific to employee green behavior, we have grounded our study's conceptualization in this theory to offer novel evidence.

At the same time, the literature indicates that employee engagement in green behavior requires encouragement from the organization and supervisor (e.g., Yusliza et al., 2019). Taking this into account, along with the other complexities of employee green behavior, we suggest that considering the effect of pertinent moderating variables could yield deeper insights into the drivers of such behaviors. In doing so, we respond to recent calls for research examining intervening mechanisms to better explain employee green behaviors (e.g., Mo et al., 2022; Tuan, 2022). In this regard, existing scholarship has highlighted the role of organizational culture and top management support in effectively cultivating and enhancing green behavior among employees (Afsar et al., 2020). Substantial literature on the effect of leadership (e.g., S.-H. Kim et al., 2017) and organizational aspects (Paillé & Mejía-Morelos, 2014) on the environmental behavior of employees also provides strong evidence in favor of considering the aforementioned moderation effects. In addition, drawing upon past findings that suggest that leaders' green behavior may influence and encourage the green behavior of employees (A. Kim et al., 2017), we have conceptualized top management support specifically as *green* top management support. The twin conceptualization of the green organizational factor, in the form of green top management support, and the general organizational factor, in the form of organizational culture, affords a more nuanced explanation of intervening mechanisms than either concept alone could offer.

We summarize our study's objectives through the following three research questions (**RQs**). **RQ1**. What, if any, is the nature of the association between the values, beliefs, and norms of individuals employed in hotels committed to greener operations? **RQ2**. How are norms associated with task-related and voluntary employee green behavior? **RQ3**. How, if at all, do top management support and organizational culture moderate the associations between norms and task-related and voluntary employee green behavior?

Following the VBN framework, we sought to address **RQ1.** by first proposing and testing the association between *values* (i.e., biospheric, altruistic, and egoistic) and *beliefs* (i.e., the new environmental paradigm, awareness of consequences, and ascription of responsibility). Thereafter, we proposed and tested the association between the three beliefs and *norms* (i.e., pro-environmental personal norms). Consistent with the sequential flow of VBN, we responded to **RQ2.** by hypothesizing associations between norms and the dual manifestation of employee green behaviors (i.e., task-related and voluntary). Finally, we responded to **RQ3**. by proposing and testing the moderation effect of top management support and organizational culture on the strength of associations between norms and task-related and voluntary employee green behavior. We used quantitative three-wave, time-lagged data collected through a self-report survey to test the hypothesized associations.

Our study makes three key contributions. First, we provide a novel explanation of employees' green behavior using VBN, which supports a holistic examination of the phenomenon being studied by considering both direct and sequential antecedents. Moreover, by focusing on pro-environmental

behavior in travel settings, we remain aligned with one of the most prevalent topics in travel research (Wang et al., 2022). Second, by considering the potential differences between employees' task-related and voluntary green behaviors, we answer recent calls (e.g., Mo et al., 2022) for a more in-depth examination of employee green behavior. In doing so, we also build upon past research in travel settings where voluntary behaviors have been considered quite important (Dolnicar et al., 2017). Finally, we investigate the moderating roles of top management support and organizational culture, which have remained under-explored so far in the context of hotel employees' green behavior, despite being examined in other settings (e.g., Ilyas et al., 2020). Given the organizational significance of these two variables, our effort to elucidate their moderation effects on sustainable behaviors promises to enrich the literature considerably.

Theoretical Background and Hypotheses Development

Value-Belief-Norm (VBN) Theory

We draw on the VBN theory as the theoretical lens through which we analyze the role of values, beliefs, and norms in driving hotel employees' green behavior (Stern et al., 1999). In its pure state, the VBN model proposes that an individual's behavior in a given context is undergirded by a connecting chain of cognitions relevant to that context (Stern, 2000) and that those cognitions are themselves supported by values (De Groot & Steg, 2009). In the context of green behavior, prior research has identified three primary sets of values that begin the chain: egoistic values, altruistic values, and biospheric values (Stern & Dietz, 1994). These values result in the formation of the individual's ideas and beliefs regarding green behavior (Fransson & Gärling, 1999) and, together with their beliefs, instill a sense of moral obligations, termed norms (Schwartz, 1977), which then guide their green behavior.

Extending VBN to the Current Context

Prior tourism and hospitality literature has utilized VBN mostly in the context of travelers or tourists (Han, 2015; Passafaro, 2019). In comparison, VBN has never been utilized to understand the pro-environmental intentions and behavior in the context of tourism and hospitality workers/employees. Past scholarship has indicated that employees play the most critical role in the hotel industry's efforts to achieve its green goals (e.g., Sourvinou & Filimonau, 2018). For example, Yeşiltaş et al. (2022) reported that implementing green initiatives in an organization involves a drastic change for employees, such as the optimal utilization of resources in routine activities. Ture and Ganesh (2014) stressed devising a proper mechanism to motivate employees to display green behavior in voluntary activities like conserving water and energy. However, the hospitality literature has not given the required attention to hotel employees in the context of pro-environmental practices (A. Kim et al., 2017). As a result, little information exists in the literature on green employee behavior in the hotel industry (Yeşiltaş et al., 2022). The current study addresses this gap and makes a significant contribution to VBN theory as well. In addition, the current study has applied never-before-used boundary conditions in VBN. The study's findings on the two boundary conditions provide fresh insights into the applicability of VBN in the context of employees. Finally, we also want to highlight that while prior empirical studies around VBN have mostly relied on cross-sectional data, the current study has utilized a time-lagged design, which is another methodological contribution to the theory and prior extended literature.

Drawing upon prior studies that have used VBN, as well as upon extended literature on the green behavior of individuals (Kiatkawsin & Han, 2017; Landon et al., 2018), we attempt to understand the linkages between hotel employees' values, beliefs, and norms that may affect their green behaviors in the workplace. Based on the seminal work within the theory (e.g., Stern & Dietz, 1994), we identify the environment-related values of hotel employees as biospheric, altruistic, and egoistic. Relatively recent studies have also employed these three values in different green contexts (e.g., Han, Yu, & Kim, 2018). Similarly, drawing upon existing evidence (e.g., Chua et al., 2016), we measure the new environmental paradigm, awareness of consequences, and ascription of responsibility as indicators of beliefs. We follow the example of previous work (e.g., Choi et al., 2015) and conceptualize pro-environmental personal norms as our measure of norms.

With regard to the outcome variable, we draw upon the stream of literature that considers employee green behaviors to be a distinct construct, separated from the broader construct of pro-environmental behaviors by a recognition of the divide between required behaviors and voluntary behaviors (e.g., Mo et al., 2022; Norton et al., 2015). Accordingly, we propose two outcome variables: task-related green behaviors and voluntary green behaviors. This separation helps us understand the distinction between green behaviors enforced by employing organizations and green behavior that is carried out purely out of the employees' desire to perform it.

Next, acknowledging the impact of organizational factors on the strength of the association between norms and behaviors (e.g., Afsar et al., 2020), we propose top management support and organizational culture as moderators in this relationship. Because leaders' green behaviors can amplify their employees' (A. Kim et al., 2017), we measured top management support specifically as green top management support. To capture the impact of an overall positive work culture, which can motivate employees to perform their duties more diligently and take the initiative to act beyond defined roles, we measured organizational

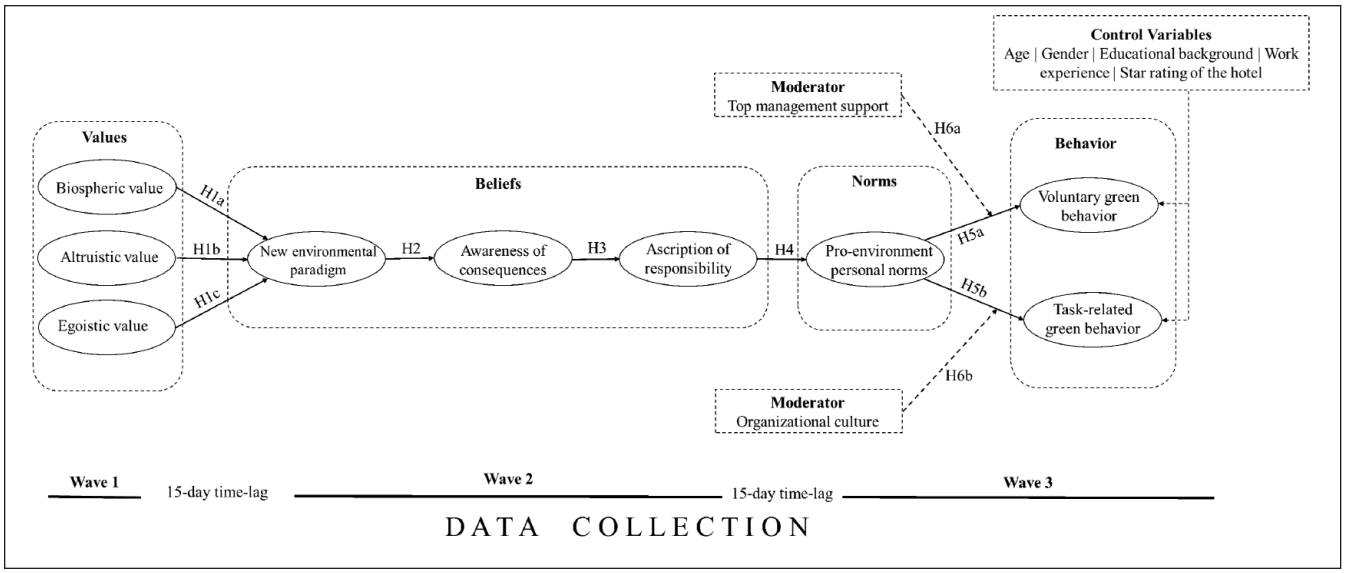

Figure 1. Conceptual model.

culture as a general construct rather than limiting our focus to "green culture."

Finally, in addition to the variables embedded in the VBN framework (Stern et al., 1999) and the two moderating variables, our conceptual model (see Figure 1) also accommodates the confounding influence of five control variables: study participants' age, gender, educational background, work experience in the travel industry, and the employing hotel's star rating. The operational description of all study measures is presented in Table 1.

Hypotheses Development

Values and the New Environmental Paradigm. Values as a notion have been understood to profoundly impact green behavior and intentions (De Groot & Steg, 2009). In this context, we identify three types of values that inform green behavior among hotel employees: biospheric values, altruistic values, and egoistic values. Individuals motivated by biospheric values act sustainably in order to benefit their natural environments (Han, Olya, et al., 2018) and maintain a balance between living and nonliving things to which they ascribe equal importance (Fornara et al., 2016). Similarly, prior studies on the application of VBN to green contexts have found that individuals motivated by these values strongly believe that humans are part of nature (Kiatkawsin & Han, 2017; Sharma & Gupta, 2020). In the VBN setting, this balance is often measured as belief in the new environmental paradigm (Stern et al.,1999). Given the green setting of our study, it is plausible to anticipate a similar association. Hence, we propose the following:

H1a. Employees' biospheric values have a positive association with the new environmental paradigm.

Scholars examining green contexts suggest that individuals driven by altruistic values make decisions only after evaluating the costs and benefits of such decisions to others (Han, 2015; Han, Yu, & Kim, 2018), and so seek to maintain environmental balance out of concern for others' well-being (Han & Hwang, 2016). In other words, altruists believe that natural resources should be used judiciously and with the understanding that everyone in the ecosystem has equal rights to them. Drawing upon prior evidence, we suggest that employees driven by altruistic values will also tend to conserve resources for others in their work setting. Thus, we anticipate that employees who believe in social justice and equitable resource use are likely to be helpful to others and faithful to their friends, and so are quite concerned about the ecological consequences of environmental abuse on their hotels and coworkers. Hence, we hypothesize:

H1b: Employees' altruistic values have a positive association with belief in the new environmental paradigm.

Egoistic values include power and self-interest (Sharma & Gupta, 2020), and prior studies have argued that individuals governed by egoistic values tend to prioritize their interests over others (De Groot & Steg, 2009). As a result, such individuals are not inclined to make pro-environmental decisions as sustainable behaviors do not provide sufficiently direct benefits to the actor (Denley et al., 2020). Extrapolating from these findings, we assume a similar manifestation in the present context and expect that hotel employees who score highly on measures of egoistic values will have no concern for the adverse effect of their hotels' activities on the environment and broader ecosystems. Furthermore, concern for the personal costs of any effort to change such activities is expected to lower employees' investment in the new environmental paradigm. Hence, we propose the following:

Table 1. Description of the VBN-based Study Measures and Operational Descriptions.

Theory	Measures	Operational description	Key studies
Value	Biospheric values	Refer to the employees' tendency to consider their own actions and those of others in terms of impact on nature	Fornara et al. (2016), Kiatkawsin and Han (2017)
	Altruistic values	Refer to the employees' desire to reduce harm to the environment through their job-related activities so as to conserve resources for others	Han (2015), Han, Yu et al. (2018)
	Egoistic values	Refer to an orientation where employees tend to take actions based on personal rather than collective benefit	De Groot and Steg (2009), Denley et al. (2020)
Belief	New environmental paradigm	Represents employees' beliefs related to maintaining a balance between humans and nature	Dunlap et al. (2000), Stern (2000)
	Awareness of consequences	Represents employees' beliefs that environmental degradation caused by their actions can negatively affect the community	Choi et al. (2015), Zhang et al. (2013)
	Ascription of responsibility	Refers to employees' actions to reduce the adverse environmental consequences of their job-related activities	Choi et al. (2015), Han (2020)
Norm	Pro-environmental personal norms	Refer to employees' perceived moral imperative to protect the environment or avoid certain activities that can cause harm	Joanes (2019)
Behavior	Task-related green behavior	Refers to resource-conserving activities that employees must perform as part of their organizational roles	Norton et al. (2015)
	Voluntary green behavior	Refers to resource-conserving activities not mandated by the organization yet voluntarily undertaken by employees to benefit their hotel and the environment	Norton et al. (2015)
Moderators	Top management support	Refers to the extent to which the top management supports, promotes, and encourages green practices	Wesselink et al., (2017), Yusliza et al. (2019)
	Organizational culture	Refers to the broad values and beliefs of the organization that may impact employee behavior	González-Rodríguez et al., (2019), Subramanian and Suresh (2023)

H1c. Employees' egoistic values have a negative association with belief in the new environmental paradigm

The New Environmental Paradigm and Awareness of Consequences. The new environmental paradigm captures the interconnectedness of human behavior and the biosphere, holding that humanity is a part of nature rather than a separate entity (Dunlap et al., 2000; Stern, 2000). The paradigm is useful in capturing individuals' environmental concerns (Chua et al., 2016), particularly since it is perceived as the propensity and intent to perform eco-friendly actions (Stern, 2000). Once individuals become aware of the negative consequences of their actions, such as ecological damage, exhaustion of energy and other resources, and global warming, they are more likely to alter their behavior in order to mitigate such disruptions to the human–nature balance (Zhang et al., 2013). This indicates that awareness of consequences is an important component of green choices and actions. Unsurprisingly, scholars have also identified a positive relationship between the paradigm and awareness of consequences in different travel contexts (e.g., Denley et al., 2020; Han, 2015). We expect a similar association to unfold in the present context. Hence, we propose the following:

H2. Belief in the new environmental paradigm has a positive association with awareness of consequences.

Awareness of Consequences and Ascription of Responsibility. Awareness of consequences has emerged as a key variable in measuring green choices (Han, 2015). When individuals perceive that their actions can either reduce or intensify negative environmental consequences (Kiatkawsin

& Han, 2017), they demonstrate awareness of these consequences, and when they internalize that awareness, they feel a sense of responsibility to take action to mitigate negative environmental impacts (Stern, 2000). Evidence supporting the link between awareness and responsibility exists in different hospitality contexts, such as green lodging (Choi et al., 2015) and last chance tourism (Denley et al., 2020). A similar association has also been observed in work contexts, where it has been argued that if employees are unaware of the outcomes of their actions, they are less likely to develop a sense of responsibility for them (e.g., Zhang et al., 2013). The existing evidence in different settings provides sufficient grounds to predict the same association in the present context. Hence, we hypothesize:

H3. Awareness of consequences has a positive association with the ascription of responsibility.

Ascription of Responsibility and Pro-environmental Personal Norms. In the context of sustainability, the ascription of responsibility represents one's sense of accountability to minimize detrimental environmental effects by altering one's actions so as to be more sustainable (Choi et al., 2015; Han, 2015). Such responsibility instills a sense of moral commitment, which motivates individuals to be more concerned about how their actions affect the environment (Sharma & Gupta, 2020). More specifically, scholars report a significant association between responsibility and personal norms regarding eco-friendly choices in travel contexts (Choi et al., 2015; Han, 2020). Extrapolating these findings to the present study, we suggest that employees' high ascription to responsibility will trigger a moral imperative to protect the environment, thus discouraging actions that are likely to have a detrimental environmental effect. Hence, we propose the following:

H4: Ascription of responsibility has a positive association with pro-environmental personal norms.

Pro-environmental Personal Norms and Green Behaviors. Personal norms are the rules or standards to which one holds oneself in order to behave in the way one believes is most appropriate (Schwartz & Howard, 1981). In VBN theory, personal norms are a key part of the sequential chain that precedes behaviors (Schwartz & Howard, 1981; Stern et al.,1999). Over the years, scholars have examined and confirmed personal norms as strong motivators of pro-environmental behaviors in different sectors, including the travel industry (e.g., Han, 2015; Joanes, 2019). Personal norms also play a dominant role in sustainable activity in the workplace, motivating employees to conserve resources through their work and exhibit other green behaviors (Ture & Ganesh, 2018). The impact of personal norms can thus be seen to occur in the cases of both voluntary green behavior and task-related green behavior (e.g., Norton et al., 2015). Accordingly, we suggest that employees who feel that they have a moral duty to protect the environment are more likely to behave in eco-friendly ways in order to adhere to their own norms. Such norms may also motivate employees to actively participate in environment-related events to improve their hotels' image, adhere to sustainable policies, and take a personal interest in their hotels' green initiatives. In addition, it may also increase their motivation to participate in environmental events organized at/by their hotels, remain updated about their hotels' environmental initiatives, undertake all mandated environmental actions that contribute positively to their hotels' image, fulfill all sustainability-related duties specified in their job description, and perform assigned tasks at the hotel in environmentally friendly ways. Hence, we posit the following:

H5a: Pro-environmental personal norms are positively associated with employees' voluntary green behavior.
H5b: Pro-environmental personal norms are positively associated with employees' task-related green behavior, such that stronger pro-environmental personal norms predict more frequent task-related green behavior.

Moderation Effects of Top Management Support and Organizational Culture. The impact of leadership behaviors on travel industry employees is well-acknowledged (Prayag et al., 2023). Given the key role of top management support in effecting general policies and ensuring the execution of plans, we propose that green policies will also benefit from such support. This supposition is further supported by prior research. Yusliza et al. (2019) argued that because green activities for sustainable development often require considerable resources and yield no direct financial benefits to the enacting employees, top management support is imperative in ensuring that these initiatives are put into practice at all relevant levels of the organization. Put simply, top management support for green practices can promote good moral values based on ethical responsibility to conserve natural resources for future generations (Jones Christensen et al., 2014). Studies in different settings (e.g., Ilyas et al., 2020) have confirmed the association between top management support and green practices in organizations. Based on this discussion, we speculate that top management support can strengthen the anticipated positive association between sustainability norms and voluntary green behavior. If such a moderating effect is found, it may indicate a route by which hotels can enhance the translation of employees' norms into voluntary green behavior. Hence, we propose the following:

H6a. Top management support positively moderates the association between pro-environmental personal norms and voluntary green behavior.

Organizational culture is a set of abstractions and expectations that guide members' understanding of what constitutes appropriate behavior in the organizational setting (Subramanian & Suresh, 2023). Past studies have examined organizational culture in the context of sustainability and greening, interpreting organizational culture either in a general sense or through the specific lens of green organizational culture (e.g., Subramanian & Suresh, 2023), and confirmed that a supportive organizational culture is essential for implementing sustainability-related initiatives (Richards & Font, 2019). An organization that does not promote sustainability goals through its policies and norms may see lower levels of task-oriented green behavior as employees have little reason or incentive to perform behaviors not in accordance with the broader organizational culture (Jerónimo et al., 2020). Based on these findings, we suggest that a supportive organizational culture can further enhance the green behavior of employees who are already driven by their personal norms to adhere to green work standards, and we believe that investigating this enhancing effect can provide useful information. Understanding the extent of this effect may guide managers in transforming their workplace culture into one that enhances employees' commitment to task-related green behavior. Hence, we propose the following:

> **H6b**. Organizational culture positively moderates the association between pro-environmental personal norms and task-related green behavior.

Control Variables. Past studies examining green behaviors in different contexts have confirmed the need to control for the influence of various socio-demographic variables (e.g., Sharma et al., 2021), and similar conclusions have been drawn regarding employee green behavior, including that of those working in the travel industry. In addition to socio-demographic variables, past studies have noted that business characteristics, employees' job experience, and other work-related variables may also have a confounding effect on outcomes. For instance, Mittal and Dhar (2016) found that tenure in one's current job could impact an employee's green behavior, and Bhutto et al. (2021) showed that the star rating of hotels had a similar effect. Drawing upon the findings of prior studies, we have considered a diverse set of demographic variables as control variables.

Methodology

Research Context

We collected data for analysis from individuals working in upscale hotels of different levels (three-, four-, and five-star) located in the United Kingdom (UK). The hotel industry is under intense pressure from various stakeholders to undertake serious green initiatives (Robin et al., 2017). However, this requires considerable investment, and it has been observed that many hotels are unable to implement green initiatives due to a lack of funds (Robin et al., 2017). On the other hand, other scholars argue that four- and five-star hotels have sufficient funds to invest significantly in environmental initiatives (López-Gamero et al., 2023). In addition, tourism and hospitality scholars have suggested that a hotel's pro-environmental actions depend on its star rating (Fraj et al., 2015). For example, four-star and five-star hotels strongly focus on achieving different aspects of environmental sustainability (Stylos & Vassiliadis, 2015). Based on this extended discussion, it is plausible to assume that three-, four-, and five-star hotels have significant differences in environmental practices compared to lower-star-rated hotels. We have gathered data from not only five-star and four-star hotels, but also from three-star hotels in order to cover a wider range of industry participants. This broader coverage is crucial as the entire industry is facing the challenge of climate change and the need to promote green initiatives.

The choice to sample employees of upscale hotels was made per the suggestions of previous studies (e.g., Ma et al., 2021) as these hotels are more likely to have initiatives and policies related to green practices (Hsiao & Chuang, 2016). The choice of the UK as the region for data collection was guided by the fact that developed countries such as the UK often have well-defined environmental policies, and the hotels there have been seen to proactively introduce green initiatives (Fraj et al., 2015). In general, the hotel industry in developed nations is actively taking pro-environmental steps, but the UK-based hotel industry holds a distinct identity when it comes to green initiatives, as suggested by recent literature (Tandon et al., 2023). For example, the UK is the first major developed country to pass a law on "net-zero emissions," according to which the country will take serious steps to ensure that greenhouse gas emissions can be reduced to net zero by 2050 (Gov.UK, 2019). Other scholars have noted that the UK-based hotel industry has recently undertaken significant pro-environmental initiatives (D'Souza et al., 2021). Furthermore, the UK-based hotel industry is also taking considerable steps toward implementing green goals for environmental consumption (Assaker et al., 2020) and for reducing its carbon footprints to achieve the UK government's commitment to net-zero emissions (Nimri et al., 2021).

Such an active focus on green operations provides a rich setting for employees to exhibit green behaviors. Insights into hotel employees' behaviors in supportive settings can be quite instructive for hotels in other parts of the world that are still struggling to transform their own operations.

Sample and Data Collection Procedure

We collected data from the identified target group through the popular crowdsourcing platform *Prolific Academic*. Prolific Academic was chosen for this study as prior tourism

and hospitality literature (including studies published in JTR) suggests that online participant platforms provide scholars with easy access to a large population (Kapoor et al., 2022), and Prolific Academic is preferred due to its user-friendliness, prompt response times, and strict recruitment standards (e.g., Tandon et al., 2023). Furthermore, data collected from Prolific Academic is considered more trustworthy than the offline survey panel method as well as online data collection platforms such as Amazon Mechanical Turk (Peer et al., 2022). Owing to the different affordances offered by Prolific Academic, we selected this platform for collecting data over other means.

We specified clear screening criteria in order to recruit respondents with relevant profiles, inviting full-time upper, middle, and junior management or administrative staff and professionals with more than 1 year of experience working in three-, four-, and five-star hotels to participate in the study. To ensure the quality of responses, we incorporated several attention checks into this study, which were formulated according to Prolific Academic's attention and comprehension check policy (Prolific, 2023). This policy suggests two types of attention checks, namely instructional manipulation checks (IMCs) and nonsensical questions. In our study, we first asked participants if "*Earth is flat.*" However, even if participants answered "Yes," they were directed to additional IMCs and non-sensical questions. As an IMC, we told participants, "You will be asked about your favorite color, and you must choose '*blue'* in the next question." In the question, participants were presented with five colors, and they had to pick "*blue.*" Similarly, participants were asked to showcase their agreement with the following statement using a five-point Likert scale: "You travel to work every day on a spacecraft." Participants had to choose "strongly disagree" or "disagree" in order to pass the attention check. The respondents were made aware of the study's objectives and assured that their responses would be anonymous, no identifiable information would be collected, and the confidentiality of the data would be maintained. They were offered compensation as per the platform's policy. Online platforms such as Prolific Academic Ltd. and Amazon Mechanical Turk compensate their panels with monetary incentives depending upon the time spent by the participants. Prior methodological literature suggests that participants of Prolific Academic are not motivated to earn more rewards by giving wrong responses (Peer et al., 2022); on the contrary, the platform provides high-quality data (Douglas et al., 2023). Similarly, Peer et al. (2022) reported that 86% of participants answered correctly and were not swayed by earning more rewards by giving a wrong response or solving an unsolvable problem. Furthermore, Prolific Academic strictly follows clear payment rules, and the researcher can reject payment to a participant if their responses are inappropriate. The participants are also very cautious about registering their responses as a reputation score for every participant is calculated, which is one of the crucial criteria for selecting a participant for a survey (Palan & Schitter, 2018).

We kept the survey open until the planned sample size was reached. Because the data were collected through Prolific Academic, the response rate was not an issue. Based on past studies analyzing employees (e.g., Farooq et al., 2022), we collected the data on different constructs in three time-lagged waves, separated by 15 days each. Prior methodological literature as well as studies published in tourism journals, including JTR, have suggested that time-lagged data collection minimizes the likelihood of common method bias and addresses the problems related to common method variance (e.g., So et al., 2023; Tuan, 2020). In addition, three-wave data collection enables scholars to capture constructs' temporal precedence (Kline, 2015), which can provide insight into the relevant causes of an examined phenomenon, eventually leading to deducing sound, meaningful inferences (Li et al., 2015; So et al., 2023). Past Scholarship has suggested that although there is no set rule for dividing the variables into different waves, the overall design of a three-wave data collection should focus on conveying a precise, in-depth image of a causal process and mechanism (e.g., Chang et al., 2021). Also, scholars have suggested that independent and dependent variables should not be measured simultaneously to avoid potential measurement problems in causal research (MacKinnon et al., 2007). In our case, since we are testing the applicability of the VBN theory, values (V) were measured in Time 1 (wave 1), beliefs (B) were measured in Time 2 (wave 2), and norms (N) and voluntary and task-related green behavior were measured in Time 3 (wave 3).

Further, scholars have underscored the importance of time lag in multi-wave designs as intervals may affect internal validity (Taris & Kompier, 2014). Similarly, Ployhart and Vandenberg (2010) suggest that implementing a time lag enables scholars to capture the causal effect between variables. Although there is no set benchmark to decide the time lag interval in muti-wave designs, considering an employee's green behavior is a stable construct as it is developed over some time; hence, a 15-day time lag is appropriate as a more extended time lag will not make any difference in a stable construct. Prior methodological literature on employee behavior, as well as prior tourism-hospitality studies, have utilized a 2-week time lag (Ampofo et al., 2022; Rasheed et al., 2023).

We used respondents' Prolific IDs as their unique identifiers across all three waves of data collection to ensure that data was collected from the same set of respondents in each wave. In doing so, we observed participant attrition across waves. At T1, we collected 314 responses, of which 52 incomplete or duplicate responses were discarded, leaving us with a total of 262 responses. Then, following the above-specified time interval gap, we invited these 262 respondents to participate in the second wave, and 230 responded. We retained 217 responses from the second wave after removing 13 incomplete sets. Following the same process, we invited these 217 respondents to participate in the third wave and received 199 responses. After comparing the Prolific IDs for

Table 2. Socio-demographic Characteristics of Respondents.

Demographic profile	Frequency ($n = 189$)	Percentage
Gender		
Male	80	43.01
Female	106	56.99
Star rating of hotel		
3-Star	71	38.17
4-Star	87	46.77
5-Star	28	15.05
Age (in years)		
Below 20	22	11.82
21–25	35	18.81
26–30	39	20.96
31–35	36	19.35
36–40	19	10.21
41–45	9	4.83
46–50	12	6.45
51 and above	14	7.52
Qualification		
High school	44	23.65
Bachelor degree	79	42.47
College	42	22.58
Master	17	9.14
Professional degree	4	2.15
Work experience		
Up to 2 years	43	23.11
2–4 years	41	22.04
4–6 years	25	13.44
6–8 years	24	12.90
8–10 years	9	4.83
More than 10 years	43	23.11

complete responses across all the waves and eliminating outliers, we proceeded to analyze 186 responses. This is considered an acceptable sample size given the challenges of collecting data in multiple waves (Barnes et al., 2016). The socio-demographic details of these 186 respondents are presented in Table 2.

Measures

The survey instrument was divided into two parts. The first comprised questions related to respondents' socio-demographic profiles, which included personal and professional details, and the second comprised items measuring the study constructs. These scale items were borrowed and adapted from earlier studies to improve reliability and validity, and all precautions were taken to ensure that the questionnaire was well-aligned with the objectives of our study. To this end, we checked the preliminary questionnaire for content and face validity following past studies. To establish content validity, we invited two professors who specialize in green behaviors in the tourism-hospitality context and psychology to review the questionnaire. In addition, a hotel manager also reviewed the questionnaire. Given the knowledge these experts hold in the context of hotel operations related to green behavior, we valued their input, and their suggestions were incorporated into the survey before proceeding with data collection. The revised survey was pilot-tested with 10 individuals representing the target group of our study to check whether all items were easy to comprehend and communicated the intended meaning. We then made some minor changes in the survey to incorporate their suggestions and feedback. The final instrument measured all items on a five-point Likert-type scale. All measurement items are presented in Table 3.

Data Analysis

We analyzed the collected data using IBM SPSS 27 and AMOS 27. We used covariance-based structural equation modeling (CB-SEM) for our data analysis, specifically time-lagged SEM, in accordance with recent recommendations (e.g., Wu et al., 2021). Recent studies suggest that the choice of CB-SEM is justified so long as the collected data conforms with all four multivariate characteristic requirements (Talwar et al., 2020). Because all constructs are presumed to be reflective (Hassanuddin et al., 2020), we examined the adequacy of correlation between items to confirm the reflective nature of each construct (J. Hair et al., 2014). Finally, we examined the proposed moderation effects using the Hayes PROCESS macro in SPSS.

Results

Data Screening

We first examined the multivariate characteristics of the data by cleaning it and confirming that it was normally distributed, with all items lying within the prescribed kurtosis and skewness ranges (Tabachnick & Fidell, 2013). In multivariate regression, it is statistically more correct to assess the assumption of normality simultaneously rather than univariately. In line with this consideration, we calculated Mardia's multivariate skewness and kurtosis coefficients, although this test is usually known to perform well only with exceptionally large sample sizes (Seber, 1984). Next, we evaluated the tolerance value and variance inflation factor (VIF) for each construct to verify that both were within the prescribed thresholds, that is, tolerance value > 0.1 and VIF < 5 (Roberts & Thatcher, 2009). All values conformed to the requirements, and so we confirmed that multicollinearity is not a concern in our study. Similarly, the data met the other two multivariate requirements of linearity and homoscedasticity, confirming its suitability for CB-SEM.

Common Method Bias and Social Desirability Bias

Common method bias (CMB) arises from issues in covariance caused by the data collection method rather than any

Table 3. Factor Loadings.

Study measures	Measurement items	Study	
		CFA	SEM
Biospheric values	To what extent are the following concepts important as guiding principles in your life?		
Denley et al. (2020), Landon et al. (2018)	Preventing pollution (conserving natural resources)	0.88	0.88
	Respecting the earth (harmony with other species)	0.94	0.94
	Unity with nature (fitting into nature)	0.89	0.88
	Protecting the environment (preserving nature)	0.91	0.90
	A world of beauty (beauty of nature and the arts)	0.72	0.72
Altruistic values	To what extent are the following concepts important as guiding principles in your life?		
Denley et al. (2020), Landon et al. (2018)	Equality (equal opportunity for all)	0.70	0.83
	Social justice (correcting injustice, caring for others)	0.74	0.85
	Helpfulness (helping others)	0.75	0.71
	Loyalty (being faithful to my friends)	0.83	0.74
	To what extent do you agree with the following statements?		
The new environmental paradigm			
Dunlap et al. (2000), Han (2015)	Hotels are severely abusing environmental resources.	0.79	0.80
	When hotel employees interfere with nature, it often produces disastrous consequences.	0.83	0.82
	If things in the hotel industry continue on their present course, we will soon experience a major ecological catastrophe.	0.88	0.87
Awareness of consequences			
Han (2015), Kiatkawsin and Han (2017)	Hotels generate environmental impact on the neighboring areas and the wider environment.	0.84	0.83
	Hotels cause environmental deterioration (e.g., waste from rooms, restaurants, and other facilities, excessive use of energy/water).	0.79	0.76
Ascription of responsibility			
Han (2015), Kiatkawsin and Han (2017)	I believe that every hotel employee is partly responsible for the environmental problems caused by the hotel industry.	0.88	0.88
	I feel that every hotel employee is jointly responsible for the environmental deterioration caused by the hotel industry.	0.91	0.91
	I feel that every hotel employee is jointly responsible for global warming caused by the hotel industry.	0.92	0.93
	Every hotel employee must take responsibility for the environmental problems caused by hotels.	0.83	0.83
Pro-environmental personal norms			
Han (2015), Stern et al. (1999)	I feel that hotel employees have a moral obligation to protect the environment.	0.88	0.88
	I feel it is important that hotel employees, in general, behave in an eco-friendly manner.	0.83	0.83
	I feel that being part of the hotel, I must make efforts to conserve natural resources to help future generations.	0.90	0.90
	I feel that hotel employees have an obligation to behave in an environmentally friendly way.	0.90	0.90
	I feel that hotel employees have an obligation to act pro-environmentally by choosing eco-friendly activities.	0.89	0.89
Task-related green behavior			
Bissing-Olson et al. (2013), Mo et al. (2022)	I actively participate in environmental events organized in and/or by my hotel.	0.76	0.71
	I stay informed about my hotel's environmental initiatives.	0.80	0.81
	I undertake environmental actions that contribute positively to the image of my hotel.	0.86	0.86
	I fulfill responsibilities specified in my job description at the hotel in environmentally friendly ways.	0.87	0.89
	I perform tasks that are expected of me at the hotel in environmentally friendly ways.	0.88	0.87

(continued)

Table 3. (continued)

Study measures	Measurement items	Study	
		CFA	SEM
Voluntary green behavior			
Bissing-Olson et al. (2013), Nortan et al. (2014)	I attend environment-related events that are not mandatory but help the hotel's image.	0.87	0.86
	I attend information sessions regarding green initiatives that hotel employees are encouraged but not required to attend.	0.85	0.87
	I voluntarily attend and actively participate in green initiative meetings at my hotel.	0.86	0.88
	I take the initiative to act in environmentally friendly ways at the hotel.	0.73	0.65
Top management support			
Ilyas et al. (2020)	Our top managers have well defined the hotel's green policy.	Moderator	
	Our top managers are likely to approve special funds for investment in green practices.		
	Our top managers are willing to invest the resources needed to implement green practices.		
	Our top managers show a positive attitude toward green practices.		
	Our top managers proactively support green practices implementation.		
	Our top managers recognize the importance of green practices.		
Organizational culture			
González-Rodríguez et al. (2019)	My hotel has a family-like atmosphere.	Moderator	
	My hotel considers working as a team important		
	My hotel encourages change and innovation		
	My hotel emphasizes competition and outcome excellence		
	In my hotel, objectives and aims are clearly defined		
	Our employees are encouraged to work as a team, exchange opinions, experiences, and ideas		
	Our management style is characterized by teamwork, consensus, and participation		

study constructs. Because responses were collected from the same set of participants, we acknowledged that CMB could be a threat and thus took two procedural precautions to mitigate the issue at the time of data collection itself. First, we ensured that all the participants in the survey had a consistent understanding of hotel practices and green behavior. Second, we collected data for different variables at different points in time through three distinct waves, separated by a 15-day interval. Past studies have noted that collecting data at intervals can reduce the risk of CMB (Podsakoff et al., 2012; Zhou et al., 2018).

To further confirm that CMB was not an issue, we applied several other tests. First, we used Harman's one-factor test, as suggested by recent studies in the travel industry (Zhou et al., 2018). The test revealed that the highest variance explained by an individual factor was 31.07% (<50%), indicating that none of the factors individually explained the majority of the variance. This confirmed that CMB was not affecting our results. Next, we confirmed that the correlation between latent variables was less than the threshold value of .9 (Bagozzi et al., 1991), indicating the absence of CMB, and applied the common latent method. The value of χ^2/df was found to be 1.52, and without the common latent method, it was 1.58. The difference between the two values is less than 0.2, which further establishes that CMB is not an issue in our results.

Social desirability bias may affect the response of survey participants and so reduce a survey's validity (Nederhof, 1985). To mitigate this issue, we tried to encourage honest responses by assuring complete anonymity and confidentiality of respondents and responses and reiterating that the data would be utilized only for academic purposes. Further, in alignment with recent studies, we clarified that there were no wrong or right responses. To further reduce biased responses, we randomized survey items so that respondents could not easily identify which construct they belonged to.

Measurement Model

In line with Anderson and Gerbing's (1988) recommendation, we employed the maximum likelihood approach for the model estimation to test the proposed hypotheses. We first

Table 4. Validity and Reliability Statistics.

Variable	Mean	*SD*	Cronbach alpha	CR	AVE	MSV	BV	AV	NEP	AC	AR	PPN	TGB	VGB
BV	4.02	0.90	.94	0.94	0.76	0.45	**0.88**							
AV	4.32	0.76	.86	0.84	0.57	0.41	0.64	**0.76**						
NEP	3.23	1.01	.87	0.88	0.70	0.58	0.47	0.29	**0.84**					
AC	3.83	0.85	.80	0.80	0.66	0.58	0.65	0.45	0.76	**0.82**				
AR	2.94	1.11	.94	0.94	0.79	0.25	0.32	0.20	0.50	0.33	**0.89**			
PPN	3.79	0.90	.95	0.95	0.78	0.56	0.67	0.52	0.42	0.53	0.47	**0.88**		
TGB	3.58	0.95	.91	0.92	0.70	0.66	0.59	0.58	0.33	0.44	0.38	0.75	**0.84**	
VGB	2.98	1.09	.89	0.90	0.69	0.66	0.45	0.38	0.38	0.36	0.41	0.64	0.81	**0.83**

Note. The numbers in bold represent the square root of AVE. CR = composite reliability; AVE = average variance explained; MSV = maximum shared squared variance; BV = biospheric values; AV = altruistic values; NEP = new environmental paradigm; AC = awareness of consequences; AR = ascription of responsibility; PPN = pro-environmental personal norms; TGB = task-related green behavior; VGB = voluntary green behavior.

Table 5. Heterotrait–Monotrait Ratio of Correlations.

BV	BV	AV	NEP	AC	AR	PPN	TGB	VGB
AV	.61							
NEP	.47	.29						
AC	.66	.43	.77					
AR	.34	.22	.50	.33				
PPN	.69	.51	.43	.50	.48			
TGB	.59	.56	.32	.43	.40	.76		
VGB	.48	.41	.38	.37	.42	.67	.87	

tested the model's reliability and validity and then conducted a structural path analysis to evaluate the path coefficients for statistical support.

We examined the factor loadings and removed the items with loadings less than 0.70 as J. F. Hair et al. (2010) recommended. Consequently, all items measuring egoistic values; five items, each measuring the new environmental paradigm and awareness of consequences; two items measuring biospheric values; and one item measuring altruistic values, the ascription of responsibility, and voluntary-task behavior were removed from the model. The egoistic value construct was subsequently dropped entirely from the conceptualized model. The items taken forward are presented in Table 3, along with their associated loadings. The loading values above the recommended cut-off suggest that the items taken forward are good measures of the constructs, thus confirming convergent validity.

Convergent validity was also confirmed by the values of composite reliability (CR) and average variance extracted (AVE), both of which conformed to the recommended values of 0.7 and 0.5, respectively (J. F. Hair et al., 2010). Next, we examined all Cronbach's alpha values, which exceeded the suggested threshold of .7, indicating internal consistency within the instrument used to collect data (Nunnally, 1978). Finally, we established discriminant validity by verifying that the square root of the AVE of each construct was greater than its respective inter-construct correlation. Moreover, the AVE of each construct was more than its maximum shared squared variance (MSV; Fornell & Larcker, 1981; J. F. Hair et al., 2012), further indicating discriminant validity. All of the values discussed above are presented in Table 4. We also assessed discriminant validity via the Heterotrait–Monotrait ratio of correlations (HTMT; Henseler et al., 2015). The results of this test, presented in Table 5, show that HTMT is lower than the recommended threshold of 0.85, confirming discriminant validity. Notably, the assessment of model fit indices also confirmed an acceptable fit ($\chi 2/df = 1.58$, $RMSEA = 0.05$; $TLI = 0.94$; $CFI = 0.95$) (J. Hair et al., 2010).

Structural Model

We used SEM to conduct a path analysis and examine the hypothesized structural relationships (see Figure 2). The fit-indices for all the parameters, along with their recommended values ($\chi 2/df < 3$, $CFI \geq 0.9$, $IFI \geq 0.9$, $TLI \geq 0.9$, $RMSEA < 0.08$) (J. Hair et al., 2010), offer evidence of a good model fit ($\chi 2/df = 2.10$, $CFI = 0.91$ IFI = 0.91 $TLI = 0.90$, $RMSEA = 0.07$).

Next, we evaluated the path coefficients. The results, presented in Figure 2, show support for the following hypotheses: H1a ($\beta = .58$; $p < .001$), H2 ($\beta = .77$; $p < .001$), H3 ($\beta = .57$; $p < .001$), H4 ($\beta = .42$; $p < .001$), H5a ($\beta = .77$; $p < .001$), and H5b ($\beta = .79$; $p < .001$). H1b ($\beta = .04$; $p > .05$) is not supported, and H1c was not tested as all items

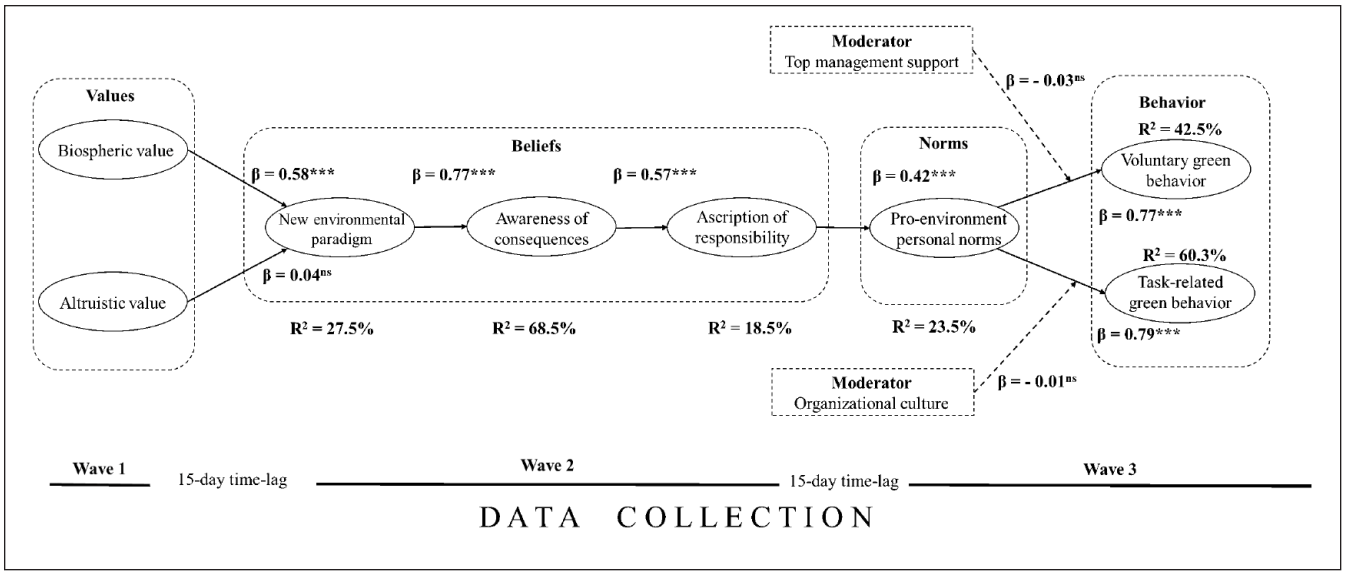

Figure 2. Results of data analysis.

Table 6. Moderating Effect.

Path	β	*t*	*p*	*LLCI*	*ULCI*	Moderation
Top management support						
PPN→VGB	−.03	−0.87	.38	−0.1087	0.0422	No
Organizational culture						
PPN→TGB	−.01	−0.06	.95	−0.0771	0.0720	No

for egoistic values did not have the recommended factor loadings, so the construct itself was dropped. The tested model explained 27.5% of the variance in the new environmental paradigm, 68.5% in awareness of consequences, 18.5% in ascription of responsibility, 23.5% in pro-environmental personal norms, 42.5% in voluntary green behavior, and 60.3% in task-related green behavior.

Moderation Analysis

We used Model 1 in the PROCESS macro to examine the moderation effect of top management support on the association of pro-environmental personal norms with voluntary green behavior (H6a) and the moderation effect of organizational culture on the association between pro-environmental personal norms and task-related green behavior (H6b). The results, presented in Table 6, indicate that neither intervening variable has a detectable moderating influence, and so neither H6a nor H6b is supported.

Discussion

This study examined the role of values, beliefs, and pro-environmental personal norms in driving hotel employees' task-related and voluntary green behaviors by applying the VBN theory. Although the study's findings are based on the data collected from one specific geographical region (i.e., the UK), the findings provide vital insights to any country that wants to take proactive steps for environmental conservation. The UK represents a model example of a government's commitment to a green workforce (IEMA, 2022), motivating employees (e.g., hotel employees in our study) to exhibit task and voluntary green behavior.

The first set of hypotheses proposed to test the effect of biospheric (**H1a**), altruistic (**H1b**), and egoistic (**H1c**) values on belief captured via agreement with the new environmental paradigm. The results offered statistical support for **H1a**, indicating that hotel employees' biospheric values have a positive association with the new environmental paradigm, in line with our expectations based on prior literature (e.g., Han, 2015). This result implies that these values, which create a moral desire to protect the environment by reducing pollution and conserving resources, correlate positively with employees' adverse perception of the abuses of environmental resources perpetrated by the hotel industry. These findings concur with the basic tenets of VBN theory (Stern, 2000), which posits that individuals driven by biospheric values harbor more concern for the environment.

In contrast, **H1b**, which examined the association between altruistic values and the new environmental paradigm, was found to be statistically insignificant. This outcome contradicts our anticipation based on prior evidence in the travel industry literature (e.g., Han, Yu, & Kim, 2018; Kiatkawsin & Han, 2017). However, most prior studies have only examined individual pro-environmental behavior, and so we suppose that the insignificant association of altruistic values with the new environmental paradigm in our study could be due to the fact that altruism is a less prominent mindset in work contexts or that the employees could be disassociating feelings for others from environmental issues arising from work-related decisions.

An alternative explanation for this result can be offered by Stern and Dietz's (1994) suggestion that because both biospheric and altruistic values are influenced by morality, they can be considered under the same category. Extending this line of thinking, it may be possible that hotel employees do not consider biospheric and altruistic values separately, but rather they perceive them as belonging to one shared category. However, this was an earlier theoretical stance among scholars of VBN, and the model has changed substantially since then. The initial model of VBN considered the value clusters as altruistic, egoistic, and traditional (Stern et al.,1999), but De Groot et al. (2007) proposed a distinction between altruistic and biospheric values, after which the original VBN model was amended in order to examine pro-environmental behavior in light of this distinction (Han, 2015; Han, Yu, & Kim, 2018). From this perspective, our finding appears to substantiate the distinction between altruistic and biospheric values as two independent constructs, as the effect of each construct was different. If further studies on employees in the travel industry can replicate this finding, it may prove a valuable insight that can contribute to the theoretical advancement of VBN.

We did not test **H1c**, which proposed an association between the new environmental paradigm and egoistic values, because the item loadings obtained for egoistic values were below the recommended threshold, and so the construct had to be dropped from the structural model. This outcome is not very surprising. Egotistic values represent self-enhancement motivations primarily focused on power and dominance. Egotistic values have long been debated as antecedents of the new environmental paradigm, with some studies supporting this association (Sharma & Gupta, 2020). However, there are also studies that suggest that egotistic values are not influential in predicting an environmental paradigm (Kiatkawsin & Han, 2017; Landon et al., 2018). We contend that the reason for the insignificant association may be that hotel employees' involvement in green initiatives is not motivated by power and dominance. This is consistent with observations reported in past studies that pro-environment behavior may not be governed by egoistic values since green behavior results from global concerns rather than individualistic gains in the form of power and authority (Landon et al., 2018). However, because the complexities of human behavior may manifest differently in different situations, as Hofstede (1980) suggested, culture can be studied using two dimensions, namely individualism versus collectivism. Tourism and hospitality researchers have utilized these two dimensions of culture to examine the differences in values, beliefs, and norms. For example, collectivist cultures motivate individuals to display green behavior since they give more value to obligations and collective identity. Scholars have also found that specific values, such as biospheric and altruistic values, significantly affect individuals from individualistic or Western cultures (Nordfjærn & Zavareh, 2017). Similarly, individuals from Confucian nations like China and Korea have a cultural mindset to obey social norms; hence, they may display a greater affinity for pro-environmental behavior (C. Lee, 1991). Thus, we suggest that future studies investigate the association of egoistic values with the new environmental paradigm by collecting data from hotel employees in different countries/cultures and contexts to test this finding further.

The next set of hypotheses pertained to associations between beliefs: between the new environmental paradigm and awareness of consequences (**H2**) and between awareness of consequences and the ascription of responsibility (**H3**). Both hypotheses were supported by the data. Confirmation of the positive association proposed by **H2** implies that hotel employees who believe that the actions of hotels and their employees are harming the environment are more aware of the adverse environmental impact of hotels. This finding is aligned with previous research (e.g., Kiatkawsin & Han, 2017). It is worth noting that support for this hypothesis underscores the growing role of the new environmental paradigm as a key variable in conservation psychology and environmental sociology, as noted by past studies (e.g., Cordano et al., 2003). Similarly, support for a positive association between awareness of consequences and ascription of responsibility reinforces the central position of beliefs in pro-environmental behavior/green tendencies. Specifically, the positive association between the two suggests that greater acknowledgment of the environmental impact of their hotels' actions leads hotel employees to place greater responsibility on themselves to mitigate the deterioration of the environment. This finding is also consistent with past evidence (e.g., Denley et al., 2020).

H4 operationalized the belief-norm link in the VBN sequence by proposing a positive association between the ascription of responsibility and pro-environmental personal norms. The result of our statistical analysis also supported this association, as have past studies (e.g., Han, 2015), implying that hotel employees' sense of responsibility for their own role in their hotels' environmentally harmful activities heightens their perception of their moral obligation to protect the environment for the benefit of future generations.

The last two direct paths in our conceptual model represent the key aim of our study, which was to understand how

the sequential effect of the values-belief-norms chain is translated into green behaviors. To this end, we proposed **H5a** (predicting an association between norms and voluntary green behavior) and **H5b** (predicting an association between norms and task-related green behavior). Results indicated support for both hypotheses, as anticipated based on prior findings (e.g., Landon et al., 2018). Support for **H5a** confirms that hotel employees are driven by their pro-environmental personal norms, which manifest as a sense of responsibility to future generations, to go beyond their designated responsibilities and independently make more eco-friendly choices in the performance of their routine activities. Support for a positive association between pro-environmental personal norms and task-related green behavior (**H5b**) implies that their sense of moral obligation to conserve the environment motivates employees to perform the green tasks specified in their job description. Employees' personal norms, therefore, appear to increase their tendency to behave in an environmentally conscious manner at work by adhering to their organizations' green standards and policies.

In addition to the predicted direct value-belief-norm-behavior associations, we anticipated that intervening mechanisms could reveal greater nuance about norm-behavior associations. To this end, we tested the moderation effect of top management support (**H6a**) and organizational culture (**H6b**) on the associations already discussed. Following earlier evidence, we measured top management support as a green construct and organizational culture as a broader variable, but the moderation analysis did not provide support for either proposed moderation effect. We considered the moderation effect of top management support from a green perspective, drawing upon past findings that leaders can set standards for green behavior that employees will emulate through their own actions (A. Kim et al., 2017).

One possible reason for the insignificant moderation effect of top management support could be that this type of support is already captured in task-related requirements, and so employees do not consider it a distinct factor. Another reason could be that employees take top management support as a given, following the belief that green orientation permeates organizations from the top down. Nevertheless, top management support has a strong grounding in organizational behavior literature (e.g., A. Kim et al., 2017), and its influential role should not be dismissed on the basis of a single study. In case the insignificant moderation effect is due to our study's setting, context, or geography, we suggest that future researchers test it in different countries, cultures, and hotels. It may be the case that leaders' behavior impacts employee behavior differently in different contexts, such as in developed versus developing countries.

In contrast with the green orientation of top management support, we considered organizational culture from a more general organizational perspective. The aim was to assess whether an organizational culture promoting a family-like atmosphere interacts with employees' pro-environmental personal norms to enhance their green behaviors. The query was pertinent and well-grounded in past literature (e.g., Paillé & Mejía-Morelos, 2014), and so the insignificant moderation effect is somewhat confusing. Unfortunately, there is no immediate a priori evidence in the travel industry literature to help us make sense of this outcome. It is quite likely that this unexpected outcome is due to the geographical location, which is a developed country. In order to explore this issue in greater depth, we recommend further investigation of the moderating role of organizational culture on hotel employees' green behaviors in various settings.

We speculate that the insignificant moderating role of both proposed moderators could be due to the fact that both voluntary and task-related green behaviors are largely intrinsic, resulting more from an individual's personality than from their external context. Hence, extrinsic factors such as organizational culture and top management support might not strengthen or weaken such behaviors. This argument rests on the observation made in past studies that green behaviors are primarily influenced by one's internal values, beliefs, and personal norms (e.g., Kiatkawsin & Han, 2017).

Study Implications

Theoretical Implications

This study offers four key theoretical contributions. First, it contributes to the advancement of research in the area by examining employees' green behavior in a more nuanced manner. Despite recognizing that motivating employees to exhibit both mandated and voluntary green behaviors can advance the green objectives of hotels, research considering those two types as distinct categories of behavior remains scant and has yet to provide actionable insights. The number of studies available for reference in terms of both theory and practice is quite limited, and so scholars have called for more research in the area (e.g., Mo et al., 2022; Wood et al., 2021). By examining green behaviors in this manner, our study captures finer and closer-to-practice details that have the potential to motivate more incisive and useful research in the area. Our efforts to focus on a relatively under-explored aspect of employee green behavior in a travel setting are also aligned with recent discussions in travel research to develop impactful research in tourism by introducing new ideas. The travel industry is not the only industry to have a high ecological footprint (Ehigiamusoe et al., 2022), yet research exploring various aspects of its role in climate change is deficient (Gao & Zhang, 2023). Our study addresses this deficiency.

Second, our study grounds hotel employees' green behaviors in a prosocial theory, thereby offering a relatively new yet pertinent explanation of these behaviors. Despite the proven efficacy of prosocial theories in pro-environmental and travel settings (e.g., Kiatkawsin & Han, 2017), existing scholarship has not investigated the prosocial drivers of hotel employees' green behaviors in any great detail. Notably, the

sequential model offered by VBN to explicate the antecedents of green behaviors has not been leveraged effectively in this context, implying that the constructs of values, beliefs, and norms have been under-explored. These aspects are critical for understanding pro-environmental/green behavior, which demands a more comprehensive examination of the internal drives and external environments that may impact individuals' green behaviors. Our study addresses this gap by applying VBN to deepen the theoretical grounding of research in this area and bring an influential theory that sets itself apart from seminal consumer behavior theories, such as the theory of planned behavior, by focusing on variables not explained by these other theories (Choi et al., 2015).

Third, our study contributes to the advancement of VBN by extending it to a novel context. So far, studies have used the theoretical lens of VBN in different travel research contexts, such as tourists visiting national parks (Sharma & Gupta, 2020), tourists' intention to engage in pro-environment behavior (Kiatkawsin & Han, 2017), last chance tourism (Denley et al., 2020; Woosnam et al., 2022), and green hotels (Eid et al., 2021; Han, 2015), from the perspective of guests and consumers. Our study affirms VBN's suitability for examining hotel employees' behaviors, and so opens avenues for considering VBN as a suitable theoretical lens in organizational settings. Thus, this study makes pioneering contributions to the hospitality literature by focusing on the human aspect (i.e., hotel employees). In addition, the study demonstrates the adaptability of VBN theory by highlighting its usefulness as a theoretical lens for conceptualizing employee behavior across the hotel industry.

Finally, we answer recent calls in the travel research literature (e.g., Wu et al., 2021) to use time-lagged SEM, which is agreed to accommodate effects and changes over time (e.g., Bosley et al., 2020). This approach, despite being used and validated in the social psychology literature (e.g., R. Lee et al., 2019), has remained under-used in travel research. The additional benefit of collecting data across periods is that it can counter the issue of CMB, which may be a threat to data collected through a single-wave self-report survey. Furthermore, a single-wave self-report survey measuring all constructs simultaneously may also impact the quality of responses by inducing fatigue and leading respondents to feel disengaged. Collecting data in multiple waves provides a safeguard against such issues.

Managerial Implications

Our study offers four actionable inferences for travel industry managers, colleges offering travel and tourism courses, and policymakers.

First, our study reveals that the sequence of biospheric values, the new environmental paradigm, awareness of consequences, and ascription of responsibility positively impacts the pro-environmental personal norms of hotel employees, which in turn positively impact their green behaviors at work. Based on these findings, we suggest that hotel operators and senior management should consider employees' intrinsic factors—that is, their values, beliefs, and norms—while drafting the green initiatives and environmental policy guidelines for the internal operations of their hotels. Communication that resonates with the employees' cognitive and affective processes may be received more positively and motivate them to not only perform their tasks more diligently but also go beyond the requirements of their positions and voluntarily exhibit green behaviors that are not enforced by any rules or guidelines.

Second, based on our findings that top management support and organizational culture do not strengthen the association between norms and behaviors, we suggest that instead of overtly engaging with the employees to exhibit green behaviors or simply creating an enabling environment, hoteliers may consider more covert and passive approaches to interact with employees' green values, beliefs, and norms, such that they feel intrinsically motivated to behave pro-environmentally. This focus on intrinsic aspects is further supported by past findings that external motivators have only short-term positive effects on employees' green behaviors (Landon et al., 2018). One potential approach could be asking employees to list some hotel activities that they feel are increasing carbon emissions or wasting resources in a document editable by everyone in the organization. This way, hotels may be able to draw attention to areas for improvement without blaming or scapegoating individuals, thereby calling upon the values, beliefs, and norms of employees to initiate corrective actions within their control. Another approach may be to hold informal meetings soliciting employees' views on green behaviors and supporting the hotel management's need to accomplish green activities in order to create a sense of shared values that further encourage green behavior.

Third, because values, beliefs, and norms drive both task-related and voluntary behavior, we suggest that higher education institutions (HEIs) offering hotel management or related programs targeted to prepare students for employment in this sector should introduce courses on sustainability-related issues, environmental concerns, responsibilities, and personal initiative. Such courses may serve to prepare students for sustainable management by emphasizing sustainability-oriented values and imparting skills that can reduce the value-action gap observed by existing scholarship (e.g., Savelyeva & Douglas, 2017). These courses can be offered as electives, certificates, or internships, as suggested by prior studies (e.g., Drayson et al., 2014). Through this practical inference, we also help clarify the confusion surrounding how, when, and what to teach to embed sustainability into travel and tourism degrees. Furthermore, by offering specific input for the inclusion of sustainability-oriented courses, we also guide HEIs on how they can advance their agenda of alignment with sustainable development goals (SDGs), which is now considered a vital responsibility of the education system across the world.

Finally, from the perspective of policy-making, by clarifying the influential role of employees' values, beliefs, and norms in green behaviors, we may make recommendations for the design of awareness and engagement campaigns that governments may run to promote their citizens' engagement with green initiatives. Specifically, we suggest that instead of running information-based campaigns that attract attention to environmental problems, public campaigns should call upon citizens to take greater ownership of sustainability-oriented actions by using slogans such as "Your green country, your responsibility," "Green your workplace, secure your child's future," and so on. These simple messages are likely to resonate strongly with individuals' values, beliefs, and norms, including those of employees working in different organizations, by invoking two strong sentiments: national pride and love for children.

Limitation and Future Research

Though our study offers valuable insights, it is limited by certain methodological and scope-related limitations. Nevertheless, these limitations may themselves provide insights for future studies to investigate. From a methodology standpoint, we identify four fundamental limitations. First, due to known difficulties associated with multi-wave data collection where respondent attrition across waves is common and unavoidable, the sample size of our study decreased across each wave, leaving us with a relatively small sample of 186 responses. Future studies can avoid this challenge by using data triangulation to expand the sample size and present more robust findings on temporal trends.

Second, our study is based on self-reported data and is therefore susceptible to CMB-related issues. We took all procedural precautions during data collection to safeguard against this issue, and collecting data through multiple waves provided further fortification, as confirmed by statistical tests. In the interest of methodological transparency, it is pertinent to note here that scholars are divided on this concern, with some noting that CMB is not that large an issue in a study with statistically significant results (e.g., Evans, 1985) and others arguing that not all self-reported data is inherently vulnerable to CMB, which in any case may have a trivial effect on such data (e.g., Chan, 2008). Another dimension in this discussion is the belief that using different frequency scales to measure independent and dependent variables may safeguard the data against CMB. In accordance with several recent studies (e.g., Wu et al., 2021), we used same-frequency scales for all constructs. However, we suggest that future researchers incorporate multi-frequency scales in their research designs to further safeguard against CMB.

Third, the study participants are residents of the UK who had pre-existing profiles on Prolific. This self-selection process of participants using Prolific raises concerns about the sample's representativeness. Individuals with no access to internet-enabled devices living in remote areas may not have been adequately represented in the survey. Future studies can simultaneously employ data collection in multiple forms to overcome this issue.

Finally, the study hypotheses were tested by analyzing data collected from a single developed nation, the UK. It is well-known that behaviors, including those of employees, can vary with the state of economic development. Thus, our choice of the UK as the setting for data collection limits the generalizability of our study's findings. Future studies should focus on examining how certain values, beliefs, and norms are more or less prominent in different cultures (e.g., individualistic vs. collective); scholars should also look into cultural and regional differences in the associations between VBN and pro-environmental behaviors. Prior extended literature has discussed the possible nuances in pro-environmental behavior as well as values, beliefs, and norms across different cultures, countries, regions, and contexts. For example, scholars have observed significant differences in pro-environmental behavior based on cultures (Sheng et al., 2019), regions (e.g., urban vs. rural areas; Gökşen et al., 2002), and collectivism versus individualism (Mi et al., 2020). Similarly, scholars have found differences between developing and developed countries regarding green initiatives implemented by the hotel industry (S. -H. Kim et al., 2017). Nevertheless, our conceptual model provides a starting point from which future researchers can conduct replication and comparative studies by collecting data from different countries to test our model.

From the perspective of scope, we identify two fundamental limitations in our study. First, we incorporated only two moderators, top management support and organizational culture, as potential influences on the role of individual differences in affecting the strength of association between norms and green behaviors. However, past studies suggest that including certain barriers when measuring green behavior can be more insightful (Choi et al., 2015; Stern, 2000). We suggest that future researchers consider barriers such as lack of willingness to make sacrifices (e.g., Talwar et al., 2023) as potential moderators while examining employee green behaviors. Second, we based our conceptual model on a single theoretical lens. Human behavior is a complex phenomenon, particularly in the case of pro-environmental and green behaviors, which require the constant balancing of self-interest and broader community interest. In such a situation, psychological and prosocial perspectives could provide a deeper understanding of employees' green behaviors. We therefore recommend further research to broaden the theoretical framework proposed in our study by combining VBN theory with a motivational theory, such as self-determination theory (Deci & Ryan, 1985) or incentive theory (Killeen, 1982) to examine the antecedents of employees' green behavior. Incentivizing green behaviors has been discussed in travel settings (Line et al., 2017) but not to the desired extent.

Conclusion

Concern for the environment and an increase in awareness of conservation issues have motivated the travel industry to operate in a greener manner. However, in order to execute meaningful change, the buy-in and continued effort of employees in the sector are essential. Existing scholarship has put forth in no uncertain terms that employees can "make or break" their organizations' efforts by contributing to the proper interpretation and implementation of green policies and standards (e.g., Farooq et al., 2022; Joshua et al., 2023). Despite this, past studies have noted that the drivers of employees' green behaviors, both task-related and voluntary, are not well-researched in the travel industry (Mo et al., 2022; Tuan, 2022). Noting the gap in research and the suitability of VBN to provide a useful explanation of drivers of green behaviors, we undertook the current study to examine the voluntary and task-related green behaviors of hotel employees using VBN. Additionally, in an attempt to include organizational aspects that are known to impact employee behaviors in different contexts, we examined the potential moderating effect of top management support and organizational culture. We chose to measure top management support as a solely green construct and organizational culture as a more general variable in order to develop a more nuanced understanding of their effects. We collected data to test the hypothesized associations through a three-wave, time-lagged survey of hotel employees in the UK.

We formalized our research aims and objectives through three research questions. Our first question, **RQ1**, proposed to examine the nature of associations between the values, beliefs, and norms of hotel employees. The results of our study suggested that biospheric values (representing one of the three value types we examined, the others being altruistic and egotistic), the new environmental paradigm, awareness of consequences, and ascription of responsibility (all three representing beliefs), and pro-environmental personal norms are positively associated in that particular sequential order. Thus, biospheric values are positively related to the new environmental paradigm, which is positively related to awareness of consequences, which is in turn positively related to the ascription of responsibility, which is positively related to norms. This completes the VBN chain. **RQ2** queried the association between norms and green behaviors, and our findings suggest that personal norms positively relate to task-related and voluntary green behavior such that stronger personal norms predict more frequent green behavior. Finally, the results of the analysis undertaken to respond to **RQ3**, which pertained to the moderation effects of top management support and organizational culture on the association of norms and green behaviors, indicated no such influence. Taken together, these results offer implications for researchers, hotel managers, and policymakers.

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