“I’m mindfully green”: Examining the determinants of guest pro-environmental behaviors (PEB) in hotels

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The paper examines the antecedents of Australian hotel consumer pro-environmental behaviors (PEB). The research investigates three forms of hotel guests’ actual (self-reported) PEB: water-saving, energy-saving, and recycling behaviors. This study employs a hotel-customer survey in Australia (n=339). A focus on green mindfulness is an innovative feature of the study. Interestingly, the results show green mindfulness to be the dominant predictor of hotel guests’ PEB, followed by the individual’s green habits at home. The findings address current environmental issues in the hotel industry and extend the literature of tourist sustainability on the actual PEB in a hotel context. Practically, this research contributes insights for hoteliers to understand guests’ PEB so that they can improve their green programs.

Keywords: actual pro-environmental behaviors (PEB); hotel; water-saving; energy-saving; recycling; green mindfulness

Introduction

The hotel industry is a rapid-growing industry and an emerging sector in implementing sustainability policies addressing environmental issues, such as the excessive consumption of energy, water, food, and disposable products (Bohdanowicz, 2006; Chen and Tung, 2014). Many factors influence the actualization of consumer PEB such as the increasing growth of pro-environmentalism among consumers (Kim, Barber, & Kim, 2019). Existing hotel PEB studies vary in explaining the actual PEB since most of them measure consumer PEB using the towel/linen reuse program with various outcomes (positive and negative) (Han, Yu, Lee, & Kim, 2019; Yin, Du, & Chen, 2019). The present study aims to comprehensively explain the antecedents of actual (self-reported) guest PEB in mainstream hotels, including pro-

environmental habits at home, environmental concerns, hotel facilities, and mindfulness, from the consumer's perspective.

The current study shifts the focus from intentions to actual guest PEB in hotels. The tourism literature identifies several antecedents of PEB, including everyday routines (Han and Hyun, 2018; Untaru, Ispas, Candrea, Luca, & Epuran, 2016) and facilities availability (Miller, Merrilees, & Coghlan, 2015). Daily PEB was found in a smaller group of literature influencing PEB in different contexts, such as water conservation behavior (Han and Hyun, 2018; Untaru, et al., 2016). Literature notes that individuals with daily PEB tend to perform similar behaviors in a different context (e.g. at home and on holidays). However, the different attributes outside the home raise an argument that a tourist's locus of control over facilities modifies their destination PEB (Chin, Chin, & Wong, 2018; Miller, et al., 2015). Correspondingly, it advances the potential for hotel facilities to influence guests' PEB.

Cultivated from a Buddhist concept, literature records mindfulness as an activator of positive behavioral change (Kristeller and Wolever, 2010). Kristeller and Wolever (2010) relate mindfulness to the present condition of self-awareness and recognition, enabling individuals to wisely control their behavior in the actual situation. Recent literature also found mindfulness was prominent in general PEB enactment (Amel, Manning, & Scott, 2009; Barbaro and Pickett, 2016), which indicates the potential for mindfulness as to be a trigger of actual hotel guest PEB.

Despite many potential factors of PEB, there is no known study incorporating habits, mindfulness, and environmental concern into a single model. Given the complexity of consumer PEB process and enactment, the current study offers valuable insights into tourism sustainability, concerning the possibility of joint-PEB between guest and hotel management, where management can support guests PEB through the hotel's green attributes. Another

highlight in this paper is the role of green mindfulness in actual (self-reported) PEB, which is of great importance to both consumers and the hotel industry, particularly in shaping hotel PEB policies and increasing consumer PEB in hotels.

Literature review and hypotheses

Intentions versus actual PEB

Pro-environmental studies have focused on the intentions of PEB. For example, Untaru, et al. (2016) show that environmental attitudes and routines influence a consumer's intention to conserve water in the lodging industry. Similarly, Han and Hyun (2018) found that norms strongly influence water conservation and towel reuse intentions in hotels. However, less attention focuses on the actual PEB; given intentions do not always translate to actual behaviors. In a tourist, but non-hotel context, Miller, et al. (2015) investigated actual recycling, transport, energy, and consumption through self-report measures. Among limited actual PEB research in hotels, Dolnicar, Cvelbar, & Grün (2017b), utilized hotel statistics to confirm guests' PEB in their experiment, although the antecedents to PEB were not examined. In summary, the current study shifts the focus from PEB intentions to actual (self-reported) PEB.

Antecedents of hotel guests' PEB

Many hotel PEB studies specifically address water conservation behavior and towel-reuse programs. Research on water conservation behavior tends to refer to guests' direct and indirect usage of the water in a hotel context, e.g. shower and personal wash (direct) and towel and linen-reuse (indirect). In justifying the context, researchers argue that both direct and indirect water conservation programs directly relate to guests' observable behavior,

observable and involve guests' sacrifice of comfort (Cvelbar, Grün, & Dolnicar, 2017; Han and Hyun, 2018). Since the scope of guests' PEB in hotels is not limited to water, a small number of other studies have also included other favorable behaviors, such as energy-saving and recycling (Miao and Wei, 2016; Millar and Baloglu, 2011). Tables 1a and 1b summarize the relevant studies.

[Put Table 1a and 1b near here]

Attitudinal variables such as motives and environmental concerns are mentioned as predictors of PEB. Specifically, past studies found a negative relationship between hedonic motivation and guests' PEB, where hotel guests seek pleasure in their hotel stay (Dolnicar, Cvelbar, & Grün, 2017a; Miao and Wei, 2016). Thus, PEB could be less desirable for guests in the hedonic segment.

On the other hand, several studies using the Theory of Planned Behavior (TPB) model have revealed a positive relationship between environmental concerns and PEB. The favorable outcome of environmental concern includes guests' intention to visit green hotels (Chen and Tung, 2014), willingness to pay for green services (Kim and Han, 2010), intention to conserve water in a lodging context (Untaru, et al., 2016), and intention to perform daily eco-friendly behavior (Han and Yoon, 2015). Although ecological concerns increase the effectiveness of guests' PEB in hotels (Kim and Han, 2010), a contradictory result was found in Dolnicar, et al. (2017a), that guests' environmental concern alone cannot increase guests' PEB in hotels.

Recent studies in sustainable behaviors have started to include habitual factors to predict PEB. Steg and Vlek (2009) find that PEB is habitual and guided by automated

environmental cognitive processes. Next, empirical studies by Untaru, et al. (2016) and Han and Hyun (2018) indicate a significant positive relationship between domestic water conservation routines and the intentions to practice similar behaviors in hotels. These studies clearly suggest that pro-environmental habits in daily life encourage similar behaviors in hotels.

Hotel facilities are the external locus of control for guests. Previous studies found the PEB gap between home and holiday contexts reflects minimum tourist's control in the holiday destination (e.g. bin options) (Miller, et al., 2015). This gap thus indicates the notion of facilities availability as a potential factor of actual PEB.

Together, the literature suggests attitudes, habits, and facilities as potential drivers of hotel guests' PEB. However, while PEB covers many types of behavior, recent studies remain narrow in focus, dealing mainly with water conservation-related behaviors. Therefore, the research highlights the need to examine antecedents across various types of hotel guests' PEB.

Mindfulness as a potential PEB antecedent

A few PEB studies consider mindfulness. In health and psychology, mindfulness is found to be effective in changing eating behavior (Kristeller and Wolever, 2010). The general concept of mindfulness in an academic context was pioneered by Langer (1989). General mindfulness involves individual's (1) greater sensitivity to the environment, (2) openness to new information, (3) awareness of multiple perspectives, (4) attentiveness to a distinct environment, and (5) wakefulness in being in the present (Langer and Moldoveanu, 2000). Mindfulness triggers the behavioral change in health and psychology (e.g. Kristeller and Wolever (2010)), as well as in general PEB (e.g. Barbaro and Pickett (2016)). In an

organizational behavior setting, Chen, Chang, Yeh, & Cheng (2015) relates Langer (1989) general mindfulness to the environmental context as “green mindfulness” that covers a reflection toward environmental well-being, to support employee’s green creativity in the electronics industry. Additionally, Bahl et al. (2016) record the positive relationship between mindfulness and environmental well-being.

In the general PEB context, Amel, et al. (2009) define mindfulness as a subset of cognition, emphasizing attention and awareness. Their study measured mindfulness as “acting with awareness” and “observing sensation” factors. Using an individual self-rated green scale, Amel, et al. (2009) found the potential of mindfulness in predicting green behavior, instead of intention, in daily life, such as composting behavior and showering habit. In their multi-phase study, Barbaro and Pickett (2016) demonstrate a positive correlation of mindfulness with frequent engagement in PEB. Their study employed (self-reported) PEB in examining five facets of mindfulness: observing, non-reactivity, describing, non-judging, and acting. In contrast, to Amel, et al. (2009), Barbaro and Pickett (2016) point out “observing” and “non-reactivity” factors of mindfulness as significant predictors of PEB. Both Barbaro and Pickett (2016) and Amel, et al. (2009) conclude mindfulness as the best predictor of PEB. The two considerable studies on mindfulness and PEB, conclude that being mindful increases an individual’s awareness of the environment and thus promotes their PEB. In a hotel setting, mindful guests would likely be more aware of the hotel’s green attributes and hence practice PEB (Barber and Deale, 2014). Although these studies potentially indicate a positive influence of mindfulness on PEB, several aspects of green mindfulness remain unexplored. Hence, among the considerable studies of mindfulness in PEB, this research is one of the first to address green mindfulness in a hotel PEB context.

Hypotheses and model development

From the literature, the antecedents of hotel PEB lead to the literature lead to the following hypotheses and PEB model (Figure 1). The rationale for each hypothesis is elaborated.

The influence of PEB habits at home on similar behaviors in hotels

H1: Pro-environmental habits – (a) recycling, (b) energy-saving, (c) water-saving – at home significantly influence similar actual behaviors in hotels.

Habit is an automatic choice of performing certain behavior regardless of a change in context (Ouellette and Wood, 1998; Steg and Vlek, 2009). Pro-environmental habit is performed in day-to-day life; whereas outside home context, PEB requires more reasoning and consideration (Miller, et al., 2015). Daily pro-environmental habits influence the actual PEB in a holiday situation (Miller, et al., 2015), while Untaru, et al. (2016) and Han and Hyun (2018) demonstrate that daily water conservation contributes to guests' intention to do similar behavior in a hotel. These studies indicate the influence of habit on PEB across contexts. Hence, domestic PEB habit is expected to contribute to the decision to do hotel PEB, across the three forms of PEB.

The influence of hotel green attributes on guests' PEB

H2: The provision of green attributes in the hotel significantly affects customer PEB actualization of (a) recycling and (b) water-saving, and (c) energy-saving in hotels.

Pro-environmental attributes at the destination help tourists perform PEB in a tourism setting (Miller, et al., 2015). Similarly, a hotel's green attributes can facilitate a guest's PEB. For example, general and recyclable rubbish bins in hotels enable guests to put the rubbish in the right bin and support recycling behavior. Other than recycling policies, consumers rate

water and energy conservation attributes as the essential attributes in hotels (Millar, Mayer, & Baloglu, 2012). Consequently, green attributes in hotels to assist guests in actualizing PEB.

Green mindfulness in supporting guests' PEB in hotels

H3: Green mindfulness significantly influences individual PEB in (a) recycling, (b) energy-saving, and (c) water-saving in hotels.

Individuals with green mindfulness possess advanced awareness and sensitivity toward new information and the environment in the present situation (Langer and Moldoveanu, 2000). General mindfulness itself has contributed effectively to positive behavior change, particularly in the context of environmental well-being (Bahl, et al., 2016). Focusing on environmental well-being, green mindfulness partially mediates the relationship between green shared vision and green creativity in an organization (Chen, et al., 2015). In the current study, green mindfulness is defined as “a state of advanced awareness of the individual’s presence, in the context and content of environmental well-being”. Though no previous research on green mindfulness has been conducted in a hotel and tourism setting, it can be posited that an individual with green mindfulness focuses on the impacts and presence of PEB options in hotels, and thus contributes to their actual PEB.

PEB habits in shaping green mindfulness

H4: Green (a) energy- and (b) water-saving, and (c) recycling habits at home significantly influence an individual’s green mindfulness.

Literature in health psychology suggests that mindfulness can be developed through practical exercises, such as in developing mindful eating behavior (Kristeller and Wolever, 2010). Accordingly, individuals performing good eating habits would likely be mindful of

their eating behavior. Applying rationale, it can be proposed that daily PEB practical exercises contribute to the development of green mindfulness that represents a greater understanding of the reasons and benefits behind an individual's PEB. The features of green mindfulness alert individuals to PEB in the current situation. Hence, when PEB becomes habitual in daily life, it is projected to increase the individual's sensitivity to environmental situations across contexts.

Environmental concern in affecting green mindfulness

H5: Environmental concern significantly influences green mindfulness.

Mindfulness can be evoked through meditation (Bahl, et al., 2016; Kristeller and Wolever, 2010). In the mindfulness development process, an individual stabilizes their attention, opens their mind in a non-reactive observation, and remains in the present toward the object of concentration (Bahl, et al., 2016). In an environmental context, being mindful involves extra attention and awareness of the environment, including connectedness to nature (Barbaro and Pickett, 2016). Concerns over environmental issues also increase an individual's awareness of the impact of their behavior on environmental well-being (Han and Yoon, 2015; Shin, Im, Jung, & Severt, 2017). When an individual discerns the negative impacts of their behavior on the environment, he/she would be more aware of their present behavior, which would engender green mindfulness.

General mindfulness in affecting green mindfulness

H6: General mindfulness significantly influences green mindfulness.

Openness to new information and greater awareness are among the characteristics of mindfulness (Langer, 1989; Langer and Moldoveanu, 2000). Research in a hotel setting

found that mindful hotel guests are open to environmental messages in hotels (Barber and Deale, 2014). This type of guest also has a higher tendency to develop green mindfulness. Potentially, it can be postulated that guests with general mindfulness will have greater green mindfulness.

[Put Figure 1 near here]

Methodology

The study utilizes a survey targeting hotel customers in Australia to test the hotel consumer PEB model.

Measures

Measurement scales for this study were obtained and adapted from previous literature (Amel, et al., 2009; Barber and Deale, 2014; Manaktola and Jauhari, 2007; Miller, et al., 2015). The self-report scales to measure environmental concern, home habits and actual PEB in hotels are adopted from Miller, et al. (2015). The home habits and hotel PEB questions ask respondents to confirm their day-to-day PEB, as well as the actual PEB in their past hotel stay, such as “I save water” (Miller, et al., 2015), to indicate water-saving behavior. Similar foundations apply to measure the actual hotel PEB. Instead of intention to perform PEB in the next hotel stay (e.g. “The next time I stay at a hotel, I am willing to reuse towels” (Han and Hyun, 2018)), this current research asks guests that had previously stayed in hotels to indicate whether they performed PEB during their stay.

The instrument also aims to measure recycling at home (two items, e.g., “I recycle paper

products”), energy-saving behavior at home (three items, e.g., “I switch off the lights which are not being used”), water-saving behavior at home (two items, e.g., “I use water wisely in my house”), consumer recycling behavior in the hotel (two items, e.g., “I support recycling behavior during my stay in hotel”), consumer energy-saving behavior in the hotel (two items, e.g., “At the hotel, I switch off the lights that are not in use”), consumer water-saving behavior in the hotel (three items, e.g., “I try to save water when showering in the hotel”), general mindfulness (two items, e.g., “When staying at a hotel, I like to feel involved in what is going on around me”), environmental concern (two items, e.g. “I am worried about environmental pollution”), and hotel green attributes (five items, e.g., “The hotel has visible communications about green practices”).

Green mindfulness measure consists of five items, e.g., “When showering in the hotel, I carefully consider the environment”. The items were generated from the existing literature (e.g. Amel, et al. (2009)), supported by hotel consumer focus group discussion results. In the focus group, participants were shown some examples of hotel pro-environmental signs (e.g., towel and linen reuse signs) and they were invited to think of whether they would follow the signs. Most, but not all, participants would like to follow the suggestion on the signs. Participants’ opinions on the signs-compliance have generated valuable insights on green mindfulness. As an example, when shown a water conservation sign, a participant mentioned that “I would like to follow the sign’s suggestion and use water wisely since I think I could save gallons of water that many people can drink from that (amount of water) for several months”. From the participant’s statement, the researchers interpreted that green mindfulness involves an on-the-spot action-reflection to the environmental or others’ well-being prior to taking action. This novel concept of green mindfulness expands the horizon about

mindfulness in the PEB context.

Table 3 shows the items used for measuring the scales. All items use a 5-point Likert scale from strongly disagree (1) to strongly agree (5), plus “not applicable” option. A pilot study involving 66 respondents was conducted and some minor changes were made prior to launching the final survey.

Survey and sample demographics

The paper survey was distributed in hotels, targeting guests who recently checked-out from the hotel. The online survey was distributed through the researcher’s network in social media (Facebook and WhatsApp). Classified (3 to 5-star) hotel users in Australia aged 18 years and older were surveyed. Only participants who had stayed at any classified hotel in Australia in the past 12 months were permitted to fill out the questionnaire. The survey required respondents to answer some validation questions, asking whether the respondent had stayed in a hotel in the past 12 months. These hotel users were asked to reveal the classification and location of the hotel prior to reviewing their latest stay. Approximately 500 potential respondents were invited for the survey via e-mail, social media, and in-person. A total of 347 out of 500 questionnaires was finalized (69% response rate), and 339 were usable for further data analysis. Table 2 presents the demographics of the respondents.

[Insert Table 2 here]

No official population data exist for Australian hotel guests. Nonetheless, a reliable benchmark, Deloitte (2019), suggests that our sample approximately represents the

population. Related studies also reveal a broadly similar demographics mix to the present study (So and King, 2010).

Results

Validity and reliability

Table 3 shows that the relevant scales are reliable using composite reliability. Scales are presented according to the factor loadings. Cronbach's alpha value of all scales ranged as satisfactory to excellent, from 0.65 to 0.93 (Tabachnick and Fidell, 2007). High factor loadings support the evidence of convergent reliability. Discriminant validity for all constructs met Fornell and Larcker (1981) criteria, that the square root of Average Variance Extracted (AVE) is greater than the constructs correlation coefficient.

[Put Table 3 here]

Given the importance of green mindfulness, it is appropriate to elaborate on the newly created concept. Conceptually, mindfulness refers to the state of being conscious, focusing one's awareness on the present moment. Green mindfulness refers to the state of being conscious of the present moment in the hotel and focusing on one's awareness of nature's well-being. Therefore, each item reflects the overall green mindfulness concept. Empirically, the tests in this study show both reliability and validity for the green mindfulness construct.

The normality assumption for the variables was tested by examining data skewness and kurtosis, prior to testing the model. The data met the normality standard according to Byrne (2013).

Structural Equation Modelling (SEM) using AMOS software was carried out to test the hypotheses. Table 4 shows the goodness-of-fit indices, indicating that the model fits the data.

[Put Table 4 here]

[Put Figure 2 here]

As reported in Table 4 and Figure 2, all domestic green habits show significant paths to similar actual PEB in hotels. The *water-saving* at home path presents a strong coefficient ($\beta = 0.88$) in its relationship with *water-saving behavior* in hotels, as well as the path of *energy-saving* at home to *energy-saving behavior* in hotels ($\beta = 0.64$) and *home-hotel recycling behavior* path ($\beta = 0.42$). Hence, **H1a, b, and c are supported**.

Results suggested significant strong paths of *green mindfulness* to *PEB in hotels*. There are strong influences of *green mindfulness* on hotel *water-saving behavior* ($\beta = 0.34$), hotel *energy-saving behavior* ($\beta = 0.47$), and hotel *recycling behavior* ($\beta = 0.49$) Thus, results on *green mindfulness* $\Rightarrow$ *hotel PEB* paths **support H3a, b, and c**.

The *hotel green attributes* $\Rightarrow$ *hotel PEB* paths reveal a significant influence on *recycling behavior* ($\beta = 0.28$) and on *water-saving behavior* in hotels ($\beta = 0.27$). The relationship between *hotel green attributes* $\Rightarrow$ *hotel energy-saving behavior* is shown insignificant. Therefore, **H2a and b are supported**, while **H2c is not supported**.

Results suggest a significant influence of *home PEB habits* on *green mindfulness*. The path of the *energy-saving habit* to *green mindfulness* results in a strong and significant coefficient ($\beta = 0.52$). The *home water-saving habit* also results in a significant influence on *green*

mindfulness ($\beta = 0.14$). The path of *recycling habit* – *green mindfulness*, however, is not significant. Thus, the results of *home PEB habits* $\Rightarrow$ *green mindfulness* paths **support H4a and b** only.

The significant path of *environmental concern* $\Rightarrow$ *green mindfulness* ($\beta = 0.26$) **supports H5**. In addition, the path of *general mindfulness* $\Rightarrow$ *green mindfulness* produces a significant coefficient ($\beta = 0.29$). The result **supports H6**. Table 5 summarizes the hypotheses testing results.

Mediation tests have been undertaken for the green mindfulness variable. The mediation test results showed that green mindfulness partially mediates *energy-saving habit* at home $\rightarrow$ *energy-saving behavior* in hotels (indirect effect $(0.52 \times 0.47) = 0.24$) and *water-saving habit* at home $\rightarrow$ *water-saving behavior* in hotels (indirect effect $(0.14 \times 0.34) = 0.05$). Green mindfulness is not a full mediator between home habits and hotel PEB. However, it is a partial mediator, since indirect habit has a stronger influence on green mindfulness. Hence, habit helps to shape green mindfulness.

[Put Table 5 here]

Discussion

The finding of this research reframes the current concept of PEB in a hotel context in four major ways. The overall new PEB framework thus contributes to the new understanding of: (1) using the actual (self-reported) PEB as a dependent variable, instead of intention to PEB which dominates the prevailing research, (2) the inclusion of three actual forms of PEB, namely recycling, energy-saving, and water-saving behaviors, in contrast to the typical single

form in previous research, (3) the joint pro-environmental actions of both hotel guests and hotel management, in contrast to the results of previous PEB studies, which just focus on the consumers, and (4) the emerging role of green mindfulness, in contrast to the limited consideration of mindfulness as a factor in previous PEB research.

The actual PEB in hotels has evaded most previous research. As the first reframing breakthrough, the current research essentially addresses the actual PEB of hotel guests through self-reporting measures. Results cover the understanding of actual PEB processes that involves a range of attitudes and habits in a comprehensive model, to confirm the actual PEB. Previous research emphasized attitudes as a major explanation of PEB intention. However, the role of attitudes as an antecedent declines with the shift from intention to actual PEB as the dependent variable. Present research reveals that behavioral antecedents, such as habits, and also green mindfulness as quasi-behavior are more important than attitudes to actualize PEB. Green mindfulness emerges as a PEB antecedent, as it comes to the fore with the new emphasis on actual PEB, and guests are “being in the moment” when making their PEB decision. The new emphasis on actual PEB thus increases its significant role in behavioral research.

Secondly, the successful examination of the three forms of PEB in this study – recycling, energy-saving behavior, and water conservation – contributes valuable insights on the wider scope of consumer PEB in hotels. Most prevailing studies on PEB in hotels focus on a single form of PEB: water (direct conservation; towel-linen-reuse). Although guests rate energy-saving and recycling as important (Millar and Baloglu, 2011), these two major forms of PEB are rarely examined. Hence, the explanation of the three forms of PEB in hotels contributes to the new understanding of PEB. Furthermore, findings on the actual water-

conservation, energy-saving, and recycling behaviors in hotels answer Bohdanowicz (2006) in addressing the current environmental issues in the hotel industry.

Thirdly, most hotel PEB research concentrates on the consumer's perspective. Hence, the third breakthrough of the present study answers Dolnicar, et al. (2017a), and extends Miller, et al. (2015) to a hotel context, as this study provides empirical evidence of the joint hotel management-consumer PEB, in terms of green attributes availability. Hotel green attributes facilitate guests' recycling and water-saving behaviors. Findings demonstrate that hotel guests' PEB alone is indeed insufficient to fully account for the actual PEB. This study discovers that hotel management's actual environmental effort – by providing green information, program, and facilities in the hotel – supports the guests' actual PEB (H2). This interesting result hence encourages hotels to be clearer, more inclusive and to engage customers in their PEB programs. Furthermore, this finding advises both hoteliers and consumers to collaborate with actual PEB.

Fourthly, the discovery of the role of green mindfulness as a major trigger of the actual PEB contributes to PEB research. According to the features of general mindfulness (Langer and Moldoveanu, 2000), mindful individuals are “being in the moment”, sensitive to the new information and more aware of the surrounding environment. The “being in the moment” feature thus marks mindfulness as a quasi-behavior. Green mindfulness is a novel concept of the advanced awareness of environmental well-being in the present that drives the decision to execute the actual PEB, beyond mere intention. In line with Barbaro and Pickett (2016), green mindfulness in this study strongly and positively affects individual PEB in hotels. Being mindful of nature, as Barbaro and Pickett (2016) suggest, increases an individual's awareness of nature's well-being. An individual hotel guest reflects on the natural environment in the framework of green mindfulness. Hence, he/she is able to focus

on PEB while being in the (hotel) moment. Results are consistent with Amel, et al. (2009) in the presence of extra attention and awareness in actualizing PEB. In the hotel context, the finding on green mindfulness extends the previous literature, particularly Barber and Deale (2014), in identifying the role of green mindfulness in guest PEB. The current research successfully provides empirical evidence of a major role for green mindfulness in a hotel PEB context and thus expanding the positive role of mindfulness.

The empirical finding on H1 indicates positive influences of the actual pro-environmental habits in daily life on guests' performance of corresponding behaviors in hotels, and thus confirms the habitual factor in Steg and Vlek (2009)'s conceptual model. Pro-environmental habit is an actual behavior based on an individual's decision to be eco-friendly. Therefore, regardless of the context – home or hotel – the choice of behavior remains consistent. Results reinforce but also progress previous findings of Untaru, et al. (2016) and Han and Hyun (2018) regarding the role of habit. Results of H1 also support Miller, et al. (2015), that recycling, water, and energy-saving daily habits significantly influence the actual PEB in both tourism and hotel contexts. Interestingly, both Australian studies find recycling habits as the weakest predictor of similar actual PEB, compared to energy and water conservation habits. In Australia, the recycling habit is influenced by the government's waste policy and strictly-controlled recycling services. Therefore, the household recycling habit in the Australian sample is not purely self-initiated, because people attempt to follow the government's regulation.

The present study's result on H4 confirms the power of habits in evolving green mindfulness and support Kristeller and Wolever (2010) within a PEB framework. Individuals' autonomous choice and environmental awareness in practicing daily PEB can advance their green mindfulness. However, Australian recycling habit is not significant in

influencing green mindfulness. The strict government control over household recycling in Australia develops individual awareness of the regulations, instead of their recycling behavior.

The result of H5 indicates the role of attitude toward the environment in evoking green mindfulness. Concern about pollution and environmental destruction encourages individual hotel guests to reflect on the impact of their behavior on environmental well-being. This finding supports and extends Amel, et al. (2009) and Barbaro and Pickett (2016) in explaining the process of mindfulness development in PEB.

The major finding of this current research is that green mindfulness strongly encourages hotel guests to practice PEB in hotels. Although no previous green mindfulness study was found in a hotel context, results of the present study related to H3 are consistent with relevant studies about general mindfulness and PEB (e.g. Amel, et al. (2009), Barber and Deale (2014), Barbaro and Pickett (2016)). This outcome suggests green mindfulness as quasi-behavior, meaning that hotel guests who are mindful of environmental well-being would likely put their rubbish in the right bin, and use water and energy wisely in hotels. Additionally, the current research indicates a positive relationship between general mindfulness and green mindfulness (H6). This finding extends the previous studies of Langer and Moldoveanu (2000) by examining the connection between general mindfulness and green mindfulness. The power of green mindfulness is advantageous in creating interactive sustainable messages for hotel practitioners to invite their guests to participate in their green programs. For example, by inviting guests to reflect on the environment when requesting linen and towels to be changed. Hotels could present the environmental facts and highlight the differences that guests can make by considering the environment and acting accordingly. Those interactive programs would inform the hotel guests' curiosity and increase their green

mindfulness. Adopting the win-win-win environmental communication to trigger green mindfulness could help both hotels and consumers in increasing PEB practices in hotels. This result contributes insights to the development of sustainability policy and campaigns in hotels.

Conclusions

To conclude, the present research reframes hotel guests' PEB in four major ways. Firstly, the current study discovers the joint-PEB process between guests and hotel management. Secondly, this research expands the previous predominantly focus on a single hotel PEB (water – both direct and indirect via towel/linen usage) into three forms of actual PEB (recycling, water usage, and energy conservation). Thirdly, the current study shifts the PEB focus from intentions to the actual (self-reported) PEB, thus increasing the relevance of the research. Finally, and perhaps most importantly, a new concept of green mindfulness emerges as a critical explanation of actual PEB in hotels. This major finding should stimulate future PEB research across the tourism and hospitality spectrum.

Limitations and future research suggestions

This study is not caveat-free. Hotels in this study were self-selected by the respondents. An interesting development would be to deliberately select hotels based on the propensity of their green attributes. The present study is unable, due to considerations, to generate a sample representative of all cities. Given that the population norms are unknown, this study also cannot define the sample representativeness. Hence, additional samples will clarify this issue.

The emerging role of green mindfulness is a prospective major focus of all future PEB studies across various tourism and hospitality contexts, and not purely in hotels. Green

mindfulness is an important potential force in sustainable tourism, generally. Greater emphasis on the actual (self-reported) PEB is required to fulfill this outcome, rather than the intention to PEB.

References

- Amel, E. L., Manning, C. M., & Scott, B. A. (2009). Mindfulness and sustainable behavior: Pondering attention and awareness as means for increasing green behavior. *Ecopsychology*, 1(1), pp. 14-25.
- Bahl, S., Milne, G. R., Ross, S. M., Mick, D. G., Grier, S. A., Chugani, S. K., . . . Boesen-Mariani, S. (2016). Mindfulness: Its Transformative Potential for Consumer, Societal, and Environmental Well-Being. [Article]. *Journal of Public Policy & Marketing*, 35(2), pp. 198-210.
- Barbaro, N., & Pickett, S. M. (2016). Mindfully green: Examining the effect of connectedness to nature on the relationship between mindfulness and engagement in pro-environmental behavior. *Personality and Individual Differences*, 93, pp. 137-142. doi:<http://dx.doi.org/10.1016/j.paid.2015.05.026> Retrieved from <http://www.sciencedirect.com/science/article/pii/S0191886915003657>
- Barber, N. A., & Deale, C. (2014). Tapping Mindfulness to Shape Hotel Guests' Sustainable Behavior. *Cornell Hospitality Quarterly*, 55(1), p 100.
- Bohdanowicz, P. (2006). Environmental awareness and initiatives in the Swedish and Polish hotel industries—survey results. *International Journal of Hospitality Management*, 25(4), pp. 662-682. doi:<http://dx.doi.org/10.1016/j.ijhm.2005.06.006> Retrieved from <http://www.sciencedirect.com/science/article/pii/S0278431905000708>
- Byrne, B. M. (2013). *Structural Equation Modeling With AMOS: Basic Concepts, Applications, and Programming, Second Edition*: Taylor & Francis.
- Chen, M.-F., & Tung, P.-J. (2014). Developing an extended Theory of Planned Behavior model to predict consumers' intention to visit green hotels. *International Journal of Hospitality Management*, 36(0), pp. 221-230. doi:<http://dx.doi.org/10.1016/j.ijhm.2013.09.006> Retrieved from <http://www.sciencedirect.com/science/article/pii/S0278431913001266>
- Chen, Y.-S., Chang, C.-H., Yeh, S.-L., & Cheng, H.-I. (2015). Green shared vision and green creativity: the mediation roles of green mindfulness and green self-efficacy. [journal article]. *Quality & Quantity*, 49(3), pp. 1169-1184. doi:10.1007/s11135-014-0041-8 Retrieved from <http://dx.doi.org/10.1007/s11135-014-0041-8>
- 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), pp. 261-280. doi:10.1080/19368623.2017.1359723 Retrieved from <http://doi.org/10.1080/19368623.2017.1359723>

- 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), pp. 921-934. doi:10.1080/09669582.2016.1206553 Retrieved from <http://dx.doi.org/10.1080/09669582.2016.1206553>
- Deloitte. (2019). *Tourism and Hotel Market Outlook*.
<https://www2.deloitte.com/au/en/pages/consumer-industrial-products/articles/tourism-hotel-outlook.html>
- Dimara, E., Manganari, E., & Skuras, D. (2017). Don't change my towels please: Factors influencing participation in towel reuse programs. *Tourism Management*, 59, pp. 425-437. doi:<http://dx.doi.org/10.1016/j.tourman.2016.09.003> Retrieved from <http://www.sciencedirect.com/science/article/pii/S0261517716301637>
- Dolnicar, S., Cvelbar, L. K., & Grün, B. (2017a). Do Pro-environmental Appeals Trigger Pro-environmental Behavior in Hotel Guests? *Journal of Travel Research*, p 0047287516678089. doi:10.1177/0047287516678089 Retrieved from <http://journals.sagepub.com/doi/abs/10.1177/0047287516678089>
- Dolnicar, S., Cvelbar, L. K., & Grün, B. (2017b). A Sharing-Based Approach to Enticing Tourists to Behave More Environmentally Friendly. *Journal of Travel Research*, 0(0), p 0047287517746013. doi:10.1177/0047287517746013 Retrieved from <http://journals.sagepub.com/doi/abs/10.1177/0047287517746013>
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), pp. 39-50. doi:10.2307/3151312 Retrieved from <http://www.jstor.org/stable/3151312>
- Goldstein, N., Cialdini, Robert B., & Griskevicius, V. (2008). A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels. *Journal of Consumer Research*, 35(3), pp. 472-482. doi:10.1086/586910 Retrieved from <http://www.jstor.org/stable/10.1086/586910>
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis 6th Edition*.
- Han, H., & Hyun, S. S. (2018). What influences water conservation and towel reuse practices of hotel guests? *Tourism Management*, 64(Supplement C), pp. 87-97. doi:<https://doi.org/10.1016/j.tourman.2017.08.005> Retrieved from <http://www.sciencedirect.com/science/article/pii/S0261517717301814>
- Han, H., & Yoon, H. (2015). Customer retention in the eco-friendly hotel sector: examining the diverse processes of post-purchase decision-making. *Journal of Sustainable Tourism*, 23(7), pp. 1095-1113. doi:10.1080/09669582.2015.1044535 Retrieved from <http://dx.doi.org/10.1080/09669582.2015.1044535>
- Han, H., Yu, J., Lee, J.-S., & Kim, W. (2019). Impact of hotels' sustainability practices on guest attitudinal loyalty: application of loyalty chain stages theory. *Journal of Hospitality Marketing & Management*, 28(8), pp. 905-925. doi:10.1080/19368623.2019.1570896 Retrieved from <https://doi.org/10.1080/19368623.2019.1570896>
- Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, 6(1), pp. 1-55.
- Kim, Y., & Han, H. (2010). Intention to pay conventional-hotel prices at a green hotel – a modification of the theory of planned behavior. *Journal of Sustainable Tourism*,

- 18(8), pp. 997-1014. doi:10.1080/09669582.2010.490300 Retrieved from <http://dx.doi.org/10.1080/09669582.2010.490300>
- Kim, Y. H., Barber, N., & Kim, D.-K. (2019). Sustainability research in the hotel industry: Past, present, and future. *Journal of Hospitality Marketing & Management*, 28(5), pp. 576-620. doi:10.1080/19368623.2019.1533907 Retrieved from <https://doi.org/10.1080/19368623.2019.1533907>
- Kristeller, J. L., & Wolever, R. Q. (2010). Mindfulness-Based Eating Awareness Training for Treating Binge Eating Disorder: The Conceptual Foundation. *Eating Disorders*, 19(1), pp. 49-61. doi:10.1080/10640266.2011.533605 Retrieved from <http://dx.doi.org/10.1080/10640266.2011.533605>
- Langer, E. J. (1989). *Mindfulness*: Addison-Wesley/Addison Wesley Longman.
- Langer, E. J., & Moldoveanu, M. (2000). The Construct of Mindfulness. *Journal of social issues*, 56(1), pp. 1-9. doi:10.1111/0022-4537.00148 Retrieved from <http://dx.doi.org/10.1111/0022-4537.00148>
- Manaktola, K., & Jauhari, V. (2007). Exploring consumer attitude and behaviour towards green practices in the lodging industry in India. *International Journal of Contemporary Hospitality Management*, 19(5), pp. 364-377.
- Mensah, I., & Mensah, R. D. (2013). International Tourists' Environmental Attitude towards Hotels in Accra. *International Journal of Academic Research in Business and Social Sciences*, 3(5), pp. 444-455.
- Miao, L., & Wei, W. (2016). Consumers' Pro-Environmental Behavior and Its Determinants in the Lodging Segment. *Journal of Hospitality & Tourism Research*, 40(3), pp. 319-338. doi:10.1177/1096348013495699 Retrieved from <http://jht.sagepub.com/content/40/3/319.abstract>
- Millar, M., & Baloglu, S. (2011). Hotel Guests' Preferences for Green Guest Room Attributes*. *Cornell Hospitality Quarterly*, 52(3), pp. 302-311.
- Millar, M., Mayer, K. J., & Baloglu, S. (2012). Importance of green hotel attributes to business and leisure travelers. *Journal of Hospitality Marketing & Management*, 21(4), pp. 395-413.
- Miller, D., Merrilees, B., & Coghlan, A. (2015). Sustainable urban tourism: understanding and developing visitor pro-environmental behaviours. *Journal of Sustainable Tourism*, 23(1), pp. 26-46. doi:10.1080/09669582.2014.912219 Retrieved from <http://dx.doi.org/10.1080/09669582.2014.912219>
- Ouellette, J. A., & Wood, W. (1998). Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin*, 124(1), pp. 54-74. doi:10.1037/0033-2909.124.1.54
- Reese, G., Loew, K., & Steffgen, G. (2014). A Towel Less: Social Norms Enhance Pro-Environmental Behavior in Hotels. [Article]. *Journal of Social Psychology*, 154(2), pp. 97-100. doi:10.1080/00224545.2013.855623 Retrieved from <http://libraryproxy.griffith.edu.au/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=94420404&site=ehost-live&scope=site>
- Shang, J., Basil, D. Z., & Wymer, W. (2010). Using social marketing to enhance hotel reuse programs. *Journal of Business Research*, 63(2), pp. 166-172. doi:<https://doi.org/10.1016/j.jbusres.2009.02.012> Retrieved from <http://www.sciencedirect.com/science/article/pii/S0148296309000344>
- Shin, Y. H., Im, J., Jung, S. E., & Severt, K. (2017). Consumers' Willingness to Patronize Locally Sourced Restaurants: The Impact of Environmental Concern,

- Environmental Knowledge, and Ecological Behavior. *Journal of Hospitality Marketing & Management*, 26(6), pp. 644-658.
doi:10.1080/19368623.2017.1263821 Retrieved from
<https://doi.org/10.1080/19368623.2017.1263821>
- So, K. K. F., & King, C. (2010). "When experience matters": building and measuring hotel brand equity: The customers' perspective. *International Journal of Contemporary Hospitality Management*, 22(5), pp. 589-608. doi:doi:10.1108/09596111011053765
Retrieved from
<http://www.emeraldinsight.com/doi/abs/10.1108/09596111011053765>
- Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of environmental psychology*, 29(3), pp. 309-317.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics*: Pearson.
- Terrier, L., & Marfaing, B. (2015). Using social norms and commitment to promote pro-environmental behavior among hotel guests. *Journal of environmental psychology*, 44, pp. 10-15. doi:<https://doi.org/10.1016/j.jenvp.2015.09.001> Retrieved from
<http://www.sciencedirect.com/science/article/pii/S027249441530030X>
- 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, pp. 50-59. doi:<http://dx.doi.org/10.1016/j.ijhm.2016.09.001>
Retrieved from
<http://www.sciencedirect.com/science/article/pii/S0278431916301876>
- Yin, C.-Y., Du, F., & Chen, Y. (2019). Types of green practices, hotel price image and consumers' attitudes in China: the mediating role of consumer skepticism. *Journal of Hospitality Marketing & Management*, pp. 1-29.
doi:10.1080/19368623.2019.1640162 Retrieved from
<https://doi.org/10.1080/19368623.2019.1640162>

Table 1a. Relevant literature on guests' intentions and PEB in hotels (water-focused)

Towel, linen, and water-focused studies	
Study	Key findings
Goldstein, Cialdini, & Griskevicius (2008)	Hotel guests are motivated to reuse their towels when they learned that most others have chosen to do so.
Shang, Basil, & Wymer (2010)	Hotel guests are more likely to reuse their towels and linens when they know that hotel savings from the program are donated to charity.
Reese, Loew, & Steffgen (2014)	Towel reuse messages using provincial norms in hotels are more appealing to the hotel guests than standard environmental messages.
Terrier and Marfaing (2015)	Norms and commitment positively impact hotel guests' towel reuse behavior.
Untaru, et al. (2016)	Attitude, subjective norms, and water conservation in everyday life significantly influence consumer intentions to conserve water in a lodging context.
Cvelbar, et al. (2017)	Mostly domestic Slovenian tourists with no children who booked their hotel through an agent had followed the towel reuse program at Bohinj Park Eco Hotel Slovenia.
Dimara, Manganari, & Skuras (2017)	Foreign tourists and customers with previous experience with a towel reuse program show a higher probability to participate in the towel reuse program, compared to Greek domestic tourists and customers without previous towel reuse experience.
Han and Hyun (2018)	Moral and descriptive norms are the most influential factors on guests' intention to participate in hotels' water conservation and towel reuse programs.

Table 1b. Relevant literature on guests' intentions and PEB in hotels (water and others)

Water and other PEB studies		
Study	Key findings	Attribute(s) involved
Manaktola and Jauhari (2007)	Hotel consumers in India favor hotels with green practices, though no willingness to pay extra for green services.	Environmental certification, electricity, recycling, water, chemical reduction.
Millar and Baloglu (2011)	Consumers found green certification as the most influential attribute in U.S. hotels over other attributes.	Recycling, electricity, towel and linen reuse, green certification.
Millar, et al. (2012)	Both leisure and business hotel users have similar positive attitudes on green attributes.	Electricity, packaging reduction, recycling, towel and linen reuse, green certification.
Mensah and Mensah (2013)	International tourists in Ghana have a positive view of the hotel's environmental practices.	Recycling, water, local empowerment, towel and napkins reuse, chemical reduction.
Miao and Wei (2016)	Consumer PEB in hotels includes curtailing, reuse, recycling, green consumption, and conservation, with compromise and reduction.	Personal consumption, recycling, linen reuse, energy-saving, water-saving.
Dolnicar, et al. (2017a)	Hotel guests are not convinced by pro-environmental appeals to perform PEB in the hotel.	Towels, electricity.

Table 2. Sample demographics (n=339)

Hotel location			
<i>Brisbane</i>	28.0%	<i>Gold Coast</i>	11.8%
<i>Sydney</i>	17.7%	<i>Others</i>	26.3%
<i>Melbourne</i>	16.2%		
Customer stay frequency			
<i>Once</i>	62.5%	<i>4 times</i>	1.2%
<i>Twice</i>	16.2%	<i>5 times</i>	4.4%
<i>Thrice</i>	7.4%	<i>More than 5 times</i>	8.3%
Age			
<i>18-24</i>	20.4%	<i>35-60</i>	34.8%
<i>25-29</i>	24.5%	<i>60 or older</i>	5.9%
<i>30-34</i>	14.5%		
Gender			
<i>Male</i>	29.8%	<i>Female</i>	70.2%
Education			
<i>Some high school</i>	10.9%	<i>Postgraduate degree</i>	36.6%
<i>Bachelor degree or equivalent</i>	52.5%		
Occupational status			
<i>Employed</i>	61.1%	<i>Unemployed</i>	1.5%
<i>Retired</i>	2.1%	<i>Student</i>	35.4%
Home country			
<i>Australia</i>	76.7%	<i>Sri Lanka</i>	1.5%
<i>Indonesia</i>	9.4%	<i>USA</i>	1.5%
<i>South Africa</i>	1.5%	<i>Others</i>	9.4%
Travel purpose			
<i>Leisure</i>	60.8%	<i>Business and leisure</i>	23.0%
<i>Business</i>	16.2%		

Table 3. Scales validity and reliability (n=339).

Variable Items	Factor Loading	AVE	Cronbach's Alpha
<u>Home Green Habit (Miller, et al., 2015)</u>			
<i>Recycling</i>		0.90	0.89
I recycle paper products.	0.95		
I recycle plastic and glass.	0.95		
<i>Energy</i>		0.59	0.65
I use energy-efficient lighting.	0.81		
I switch off the lights which are not being used.	0.76		
I use air conditioners moderately rather than to extreme temperatures.	0.74		
<i>Water</i>		0.89	0.88
I save water when showering.	0.94		
I use water wisely in my house.	0.94		
<u>Actual PEB in Hotel (Miller, et al., 2015)</u>			
<i>Recycling</i>		0.89	0.87
In the hotel, where possible, I carefully sort my waste into either recycling or rubbish.	0.94		
I support recycling behavior during my stay in the hotel.	0.94		
<i>Energy</i>		0.81	0.77
At the hotel, I switch off the lights that are not in use.	0.90		
I use air conditioners in my hotel room moderately rather than to extreme temperatures.	0.90		
<i>Water</i>		0.71	0.78
I use water wisely during my stay at the hotel.	0.94		
I try to save water when showering in the hotel.	0.92		
I follow the signs about reusing bed linen and towels in the hotel.	0.63		
<u>Mindfulness (Amel, et al., 2009; Barber and Deale, 2014)</u>			
<i>General Mindfulness</i>		0.75	0.67
When staying at a hotel, I like to feel involved in what is going on around me.	0.87		
When staying at a hotel, I like to feel in control of what is going on around me.	0.87		
<i>Green Mindfulness</i>		0.80	0.82
For getting my linen changed, I reflect on the environment.	0.87		
For getting my towels changed, I reflect on the environment.	0.85		
When showering in the hotel, I carefully consider the environment.	0.78		
When leaving the hotel room, I am mindful of turning off the power.	0.70		
When throwing out my rubbish, I am mindful of where to put it.	0.61		
<u>Environmental Concern (Miller, et al., 2015)</u>		0.94	0.93
I am concerned about the amount of environmental destruction.	0.97		
I am worried about environmental pollution.	0.97		
<u>Hotel Green Attributes (Manaktola and Jauhari, 2007)</u>		0.66	0.87
The hotel participates in environmental partnerships or certification.	0.86		
The hotel provides environmentally friendly products (i.e., low toxicity, organic or locally grown/made).	0.83		
The hotel has energy-saving light bulbs in all rooms.	0.81		
The hotel establishes an active recycling program for materials in all sections.	0.80		
The hotel has visible communications about green practices.	0.77		

Table 4. Structural model assessment

Linkages	Coefficients	t-values
H1a Home – Recycling → Hotel – Recycling	$\beta = 0.42^*$	$t = 5.76$
H1b Home – Energy → Hotel – Energy	$\beta = 0.64^*$	$t = 6.18$
H1c Home – Water → Hotel – Water	$\beta = 0.88^*$	$t = 13.74$
H2a Hotel green attributes → Hotel – Recycling	$\beta = 0.28^*$	$t = 3.62$
H2b Hotel green attributes → Hotel – Water	$\beta = 0.27^*$	$t = 4.42$
H2c Hotel green attributes → Hotel – Energy	Insignificant	
H3a Green mindfulness → Hotel – Recycling	$\beta = 0.49^*$	$t = 4.86$
H3b Green mindfulness → Hotel – Energy	$\beta = 0.47^*$	$t = 6.20$
H3c Green mindfulness → Hotel – Water	$\beta = 0.34^*$	$t = 5.21$
H4a Home – Energy → Green mindfulness	$\beta = 0.52^*$	$t = 4.67$
H4b Home – Water → Green mindfulness	$\beta = 0.14^*$	$t = 3.07$
H4c Home – Recycling → Green mindfulness	Insignificant	
H5 Environmental concern → Green mindfulness	$\beta = 0.26^*$	$t = 5.29$
H6 General mindfulness → Green mindfulness	$\beta = 0.29^*$	$t = 3.96$
Fit indices	Suggested value	Model fit indices
χ^2		389.09
df		134
χ^2/df	≤ 2 to ≥ 5	2.90
RMSEA	≤ 0.08	0.07
CFI	≥ 0.90	0.94
GFI	≥ 0.90	0.90
SRMR	≤ 0.08	0.06

Note: * $p < 0.01$; Suggested values were based on Hair, Black, Babin, Anderson, & Tatham (2006), and Hu and Bentler (1999).

Table 5. PEB in hotels model hypotheses testing results

Hypotheses	Statement	Supported/Not Supported
H1a, b, c	Pro-environmental habits – (a) recycling, (b) energy-saving, (c) water-saving – at home significantly influence similar actual behaviors in hotels.	Supported
H2a, b, c	The provision of green attributes in the hotel significantly affects customer PEB actualization of (a) recycling and (b) water-saving, and (c) energy-saving in hotels.	H2a, b supported; H2c not supported
H3a, b, c	Green mindfulness significantly influences individual PEB of (a) recycling, (b) energy-saving, and (c) water-saving in hotels.	Supported
H4a, b, c	Green (a) energy- and (b) water-saving, and (c) recycling habits at home significantly influence an individual's green mindfulness.	H4a, b supported; H4c not supported
H5	Environmental concern significantly influences green mindfulness.	Supported
H6	General mindfulness significantly influences green mindfulness.	Supported

Figure 1. The proposed home-hotel individual green behavior model

Note: *p<0.01

Figure 2. Consumer PEB in hotels model