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Using persuasive communication to co-create behavioural change – engaging with guests to save resources at tourist accommodation facilities

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ABSTRACT

Unsustainable consumption of energy and water by tourist accommodation will escalate if incremental global tourism growth and business-as-usual approaches continue. Guests use more than half of the energy and water at accommodation facilities and so have a partnership role to play in saving resources. Our study is the first to measure the impact of persuasive communication on guests' resource consumption behaviour (energy and water use) and stay satisfaction. It used an innovative intervention based on interpersonal communication, sequential influence and eco-feedback. Guests' ($n = 759$) consumption of electricity, gas and water was monitored at four fully self-contained cottages using smart meters, over a period of 304 days. An ethnographic study, action research and departure survey examined if pro-environmental persuasion could encourage guests to save resources, how guests responded to the intervention and measured whether pro-environmental persuasion affected guest satisfaction. Results show that guests who received the intervention used significantly fewer resources, 80% claimed they tried to save and their overall satisfaction was not negatively affected, while reasons to save/not save were complex. A resource-saving persuasion model is proposed for further research, practitioners are recommended to install pro-environmental infrastructure, train staff to engage customers, and identify responsible channels for fiscal savings.

Introduction

Sustainability in tourism is becoming more mainstream, but an understanding of how businesses can engage guests to be active partners in reducing resource consumption remains elusive. Tourism is resource-intensive (Gössling et al., 2012), and without intervention, resource consumption may double by 2050 (Gössling & Peeters, 2015). While technology-based efforts to improve efficiency have shown potential for savings (Warren & Becken, in press), in isolation, these efforts are insufficient to make meaningful reductions (Melissen, Koens, Brikman, & Smit, 2016). As approximately half of direct resource consumption is related to guest rooms (City of Melbourne, 2007), involving guests in resource efficiency and conservation programs is critical (Hawkings & Vorster, 2014).

Previous research on guest engagement is limited, owing to hosts' discomfort with raising environmental concerns with their customers (Villarino & Font, 2015). Green hotels commonly do not ask

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guests to conserve resources, perhaps thus contributing to "myopic" sustainable marketing communication (Belz & Peattie, 2009, p. 153). Therefore, new guest engagement approaches that do not compromise the host's reputation need to be explored. Tourism operators need to move beyond one-way communication and develop a dynamic multidimensional process that co-creates experiences in service relationships (Brodie, Hollebeek, Juric, & Ilic, 2011). Thus, the focus is on influencing guest behaviour through interactive persuasion rather than standard pro-environmental messages. Guests may not be able to reduce consumption on their own because they lack specific knowledge of their environmental impacts (Juvan & Dolnicar, 2014; Warren, 2012), and monitoring their consumption is not sufficient to achieve reductions (Melissen et al., 2016). To be successful in conserving resources, guests require specific information, skills and opportunities (Lee & Moscardo, 2005). Earlier research has shown that the majority of guests are willing to receive such support (Warren & Coghlan, 2016).

An engagement approach using multiple steps can become a shared responsibility between hosts and guests (Warren, Gripper, & Claringbould, 2012). Engagement requires stepping beyond sharing green values to jumping forward into a reciprocal arrangement where the accommodation provider can apply "house rules" (Tucker, 2003) and persuasively communicate pro-environment information to help guests apply skills that deliver improved sustainability outcomes. This paper's original contribution reports on the first guest engagement study to measure response to persuasive techniques to save energy and water. The persuasive effort involves the innovative integration of interpersonal communication, and sequential influence including daily eco-feedback, which as a whole facilitates a co-created experience.

Literature review

Resource use in tourist accommodation

The literature on environmental management in tourist accommodation is considerable. Key studies have focused on the implementation of environmental management systems (Chan, 2009), audits and benchmarking (Becken, 2013), technological solutions (Mak, Chan, Li, Lui, & Wong, 2013), corporate and personal values (El Dief & Font, 2012), and economic outcomes resulting from environmental initiatives (Stipanuk, 2001). A few studies mention guest involvement in water and energy saving through the use of key tags (Nikolaou, Vitouladitis, & Tsagarakis, 2012), towel/linen reuse (Nicholls & Kang, 2012), offset opportunities (Levy & Park, 2011), sensor explanation cards (Baloglu & Jones, 2015), and environmental information or charging guests separately for energy (Leslie, 2007). However, in-depth studies of active guest engagement are lacking, despite recognition that effective environmental strategies involve all stakeholders, including guests, working with the hotel's efforts (Hays & Ozretić-Došen, 2014).

One key barrier to involving guests in reducing consumption relates to accommodation providers' scepticism that guests are interested in participating in programs, especially in luxury hotels (Jarvis & Ortega, 2010; Leslie, 2001; Vernon, Essex, Pinder, & Curry, 2003). Instead, providers focus on soft pro-environmental infrastructure which results in small savings without affecting guest satisfaction, such as in-room sensors and energy-efficient TVs (Susskind, 2014). The overall environmental benefits remain low. A more progressive strategy would be to encourage an awareness of consumption patterns through a process similar to mindfulness (Coles, Zschiegner, & Dinan, 2014; Garay & Font, 2013). Mindfulness refers to being in the present, using self-regulation and control to monitor one's thoughts and behaviours (Bishop et al., 2004; Langer & Moldoveanu, 2000), and has been linked to lower materialism (Brown & Kasser, 2005) and reduced ecological impact (Rosenberg, 2004). Barber and Deale (2014) suggested that mindful guests would like eco-feedback that puts them in control of consumption, while Cvelbar, Grün, and Dolnicar (2016) recommend targeting different messages at distinct guest groups, notions explored in more detail in this study.

To date, only seven studies have specifically focused on measuring guests' resource saving – specifically, in relation to towel reuse (Warren & Becken, in press). One of these is a large study ($N =$

2416) that involved interpersonal communication and commitment (Baca-Motes, Brown, Gneezy, Keenan, & Nelson, 2013). At check-in, guests who supported the hotel's environmental ethos (by ticking "YES" on a card) were given a Friends of the Earth pin to wear. Findings showed that these guests were more likely to keep their towel for reuse (80% for a general environmental commitment and 63% for a specific towel-reuse commitment) than those who had not committed (53%). The study successfully demonstrated that commitment-gaining and reciprocation can increase pro-environmental behaviour on a single service aspect. Nevertheless, to save energy and water across a multitude of amenities where resource usage levels are unfamiliar to guests requires an innovative step-jump in hospitality engagement.

Persuasive communication

Persuasive communication, which includes verbal, non-verbal and imagery components (Gass & Seiter, 2014; O'Keefe, 2016; Perloff, 2010), is more sophisticated than the asynchronous (one-way) approach of advertising. It involves "a symbolic process in which communicators try to convince other people to change their attitudes or behaviours regarding an issue through the transmission of a message in an atmosphere of free choice" (Perloff, 2010, p. 12). Persuasion can influence an individual's mental state through steps that seek to change attitudes, which may lead to a change in behaviour (O'Keefe, 2016). Persuasion differs from compliance gaining in that the latter is focused on changing behaviour without necessarily changing attitudes (Gass & Seiter, 2014).

Persuasive communication involves multiple contacts in a dialogue (Perloff, 2010), where perceived trustworthiness and credibility of the communicator can affect the success of influence or compliance techniques (McCroskey & Teven, 1999). As mood and age differences may also influence persuasion because of value differences or topic relevance, successful communicators modify their approach to match the audience (Curtin, 2010; O'Keefe, 2016). A defining factor is the persuasiveness of the communication context. Social situations include subtle cues found in face-to-face meetings (Gass & Seiter, 2014), and they may also be sensitive to direct and indirect messages, depending on culture (Wiseman et al., 1995).

Politeness theory (Brown & Levinson, 1987; Kitamura, 2000) provides a framework to further develop interpersonal communication tactics. Individuals seek to maintain two kinds of face: positive to gain respect and negative when feeling constrained by others. Understanding the politeness threshold for both the communicator and persuadee is essential to encouraging behaviour change. Individuals are less likely to comply with requests if their face is threatened (Gass & Seiter, 2014). Face-threatening acts can occur when a communicator does not care about the persuadee's feelings (Kitamura, 2000).

In situations where we cannot say exactly what we wish, we apply language techniques to convey a message without threatening (Holtgrave, 2008). Techniques include the friendly approach of positive politeness (indicating similarities or expressing appreciation) and a formal approach of negative politeness (by using advice or respecting another's right not to be imposed upon) (Brown & Levinson, 1987; Kitamura, 2000). Politeness tactics could therefore be incorporated into pro-environmental behaviour change strategies at tourist accommodations.

Reciprocation through persuasive social exchange

Like politeness, social exchange offers a powerful persuasive communication situation (Perloff, 2010), which can encourage reciprocation where individuals feel obliged to repay favours, gifts or helpfulness. Exchange relies on the potency of exchangeable items that individuals might possess and the value of these items for others (Callaghan & Shaw, 2002). Social structures enable individuals to employ persuasion as either reciprocal or negotiated exchanges (Cook & Rice, 2006). Reciprocation is "one of the most potent weapons of influence" (Cialdini, 2009, p. 19), as the process of reciprocation generates emotions (Cook & Rice, 2006) that can then contribute to sustained reciprocation. Feelings

of trust can evolve as the exchange continues, increasing the positive affect between the actors and perpetuating the persuasive communication relationship. In the context of behaviour change, reciprocation is an important consequence of social exchange.

Earlier research has identified the importance of negotiated exchange within a hospitality context as a method of control (Lynch, Molz, McIntosh, Lugosi, & Lashley, 2011), for example, in the context of house rules of a smaller accommodation (Tucker, 2003). The question then arises as to whether reciprocal exchange could be a persuasive method for encouraging guests to save resources. Dolnicar and Grün (2008) concluded the best way to encourage visitors to take pro-environmental action was for hosts to ask them to behave as "guests", implying the accepted social protocol of following rules in unfamiliar places. The host–guest relationship offers an "intense social exchange" that could be a focus for tackling sustainability in tourism (Selwyn, 2000, p. 80). The negotiated host–guest exchange may, therefore, be the first step in what could be a positively reinforcing communication beyond passively opting into corporate social responsibility programmes (Levy & Park, 2011).

The medium: interpersonal persuasion

The social exchange framework entails a dynamic communication process that enables communicators to tailor their message to the receiver (Perloff, 2010). To be effective, the persuadee must perceive communicators as credible, conveying both expertise and trustworthiness (O'Keefe, 2016). A proposed third dimension of credibility is goodwill, where communicators convey understanding, empathy and responsiveness (McCroskey & Teven, 1999). Credibility is relevant in the context of hospitality, and is established from expertise of the host with regard to sustainable practices at his/her property (Nikolich& Sparks, 1995) and trust developed with the guest (Wang, Law, Hung, & Guillet, 2014). Hospitality employees who demonstrate expertise and have a relaxed tone improve customers' reciprocity (Kang & Hyun, 2012).

The message approach: sequential influence techniques

*Sequential influence technique*s involve multiple steps that can improve overall persuasiveness (Perloff, 2010). One such technique is *pre-giving* – providing a gift followed by requesting compliance (Gass & Seiter, 2014). The pre-giving approach encourages the persuadee to comply with the communicator's request by stimulating positive emotions like gratitude for the favour or a desire to reciprocate and repay the communicator (Burger, Sanchez, Imberi, & Grande, 2009). In the accommodation context, an established practice is for hosts to use initial guest contact to convey rules within exchange (McIntosh, Lynch, & Sweeney, 2010; Tucker, 2003). Such exchange could apply sequential influence techniques to encourage reciprocal pro-environmental behaviour. These techniques could be enhanced by applying social contact influences that "break the ice" and stimulate commitment (Guéguen et al., 2013; Joule, Bernard, & Halimi-Falkowicz, 2008), for example, through light physical touch (e.g. shaking hands) (Hornik, 1992) or smiling (Vrugt & Vet, 2009). Preparatory methods, like signing an agreement or being advised that the receiver is free to comply with a communicator's request, have been shown to increase commitment (Baca-Motes et al., 2013; Joule et al., 2008).

The message: technical information

To further increase message persuasiveness, the communicator can identify consequences of action, make recommendations and then state a conclusion. In other words, the message needs to be specific as to why the persuadee should take the desired action. Proposing a consequence resulting from an advocated action that is valued by the persuadee is more persuasive than consequences that are not valued (O'Keefe, 2016).

Currently our understanding of how to communicate sustainability to guests is limited. Most tourism businesses have conveyed facts about their sustainability practices rather than presenting

customer-centred experiences (Villarino & Font, 2015). Graphs and technical content in sustainable tourism messages were found to be less appealing than emotional imagery and text (Wehrli et al., 2014), and while social influence may be important, it can be less effective if it raises feelings of guilt (Coulter & Pinto, 1995). The challenge is to frame a host's (technical) resource message in a way that is valued by guests.

Currently, guests have no way of learning their resource consumption level in a hotel room. Juvan and Dolnicar (2014) recommended that guests be given metered eco-feedback on their electricity use (as implemented in some accommodation sites, personal communication with manager of Eco-lodge, Chile, 15 June 2015). As how tourists respond to such eco-feedback has not been studied, research is needed to examine whether eco-feedback would result in normalising conservation behaviours (Noel, Schultz, Cialdini, Goldstein, & Griskevicius, 2008) without compromising satisfaction. To contribute to closing this gap, our study aims to measure the impact of persuasive communication on guests' pro-environmental behaviour and their stay satisfaction. We address three research questions:

(1) Can pro-environmental persuasive communication reduce guest resource use?
(2) How do guests respond to sequential influence techniques encouraging them to save resources?
(3) Does pro-environmental persuasive communication (negatively) affect guest satisfaction?

These questions contribute to the understanding of how to improve the sustainability of tourism, and specifically, hospitality, by inviting guests to be active participants in reducing resource consumption through an interpersonal persuasion process that breaks through societal barriers (Melissen et al., 2016).

Methodology

Overview of research design and study site

This section provides a brief summary of the quasi-experimental action-research design (Figure 1). Action research is well suited to problem solving and field-based research, and is emergent and responsive, relying on a reflective process to facilitate an adaptive research design (Zuber-Skerritt, 2012). Through reflection, the participants, and in particular the researcher, can engage in learning, critical analysis and practical improvements of the intervention to achieve the desired outcome. A mixed methods approach involved collecting guest profile data, monitoring electricity, gas and water consumption at each cottage, and using sequential influence techniques as an intervention. Observations, ethnographic methods and a departure survey completed the experiment.

The research had three distinct phases using two types of intervention (Table 1). A baseline of guests' profile and their resource use was maintained throughout. Phase 1 compared Intervention 1 with Control 1 (8 May–15 October 2015). Phase 2 compared the Intervention 1 with Control 2, using an ethnographic study and departure survey (16 October–29 December 2015). Phase 3 compared Intervention 2 with Control 3 and continued with the ethnographic study and departure survey (30 December–7 March 2016). Each of these elements is explained in the subsequent sections.

The site was Crystal Creek Meadows in Kangaroo Valley, New South Wales, Australia. The property has four 4.5-star-rated cottages that provide comprehensive self-catering facilities. Of critical importance to the validity of this research is that while the business holds sustainable tourism certifications, it is not marketed as an eco-resort. Potential customers are attracted by the rural setting, interior comforts, children's activities and day spa services. The hosts live on the property, but the accommodation reception is a separate building away from the main dwelling, and cottages are spread across the 16-acre site to maximise privacy. Guests can choose their level of interaction with the hosts after check-in.
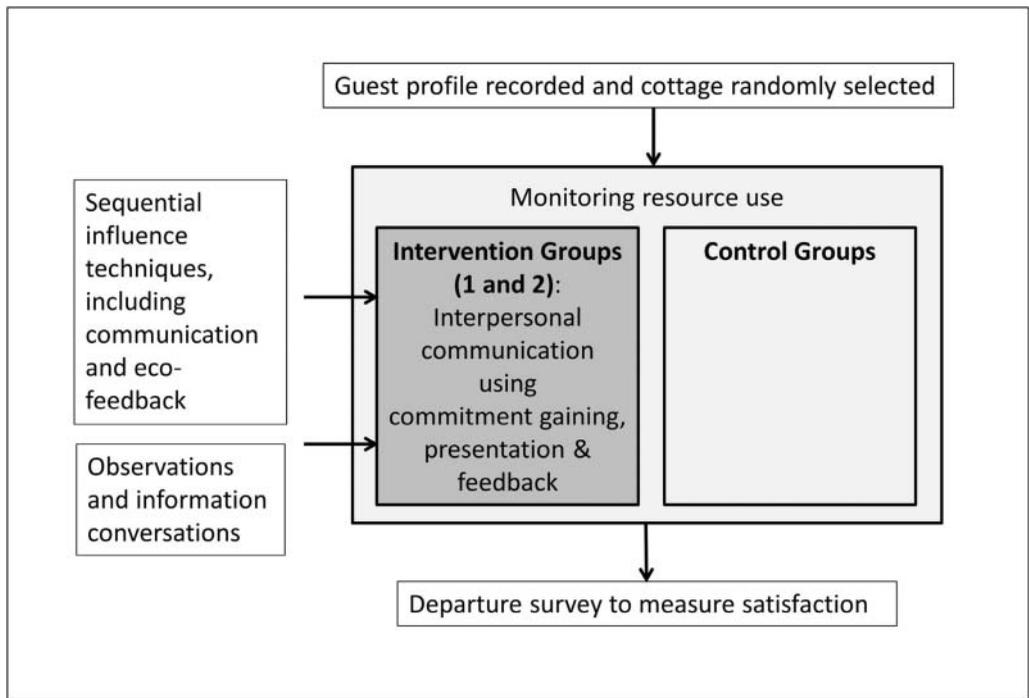
Figure 1. Overview of research design.

Table 1. Research timeline and phases.

Method	Description	Phase 1: Benefit-led					Phase2: Benefit-led with observations			Phase 3: Recommendation-led		
		May 2015	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar 2016
Guest profile	Party size, tariff type, origin											
Monitoring	Cottages' electricity, gas, water use monitored by minute											
Control groups	No persuasive sustainability request											
Intervention groups	Commitment gaining, presentation, daily eco-feedback, occasional assistance											
Ethno-graphic study	Informal conversations, observations field notes, reflective notes											
Departure survey	Self-completion satisfaction survey after checkout											

Shading indicates methods applied to each stage. Change in shading tone indicates different intervention approaches and shows. Phase 1 did not have the ethnographic study or departure survey.

Data collection

Data on guest profiles, resource use, response to the interventions and satisfaction with the accommodation experience were collected across the three different phases.

Guest profiles and resource consumption data

After guests' reservation details were recorded, parties were randomly selected to participate in the intervention or to function as a control. This selection was important to randomise the potential impact of cottage type on resource use patterns. All cottages were monitored using smart meter technology. A total of 302 bookings stayed between 8 May 2015 and 7 March 2016, representing a total of 759 guests (644 adults, 117 children) with an average stay length of 2.3 nights.

Intervention

Two types of intervention were used. Intervention 1 was tested in Phases 1 and 2 ($N = 91$ vs. $N = 139$ bookings in the control group). Intervention 2 was examined in Phase 3 ($N = 28$ in the intervention vs. 44 in the control group). No differences were found between Intervention Groups 1 and 2 and the control groups, in terms of demographic and travel-related variables, providing evidence that the random assignment was effective. The interventions consisted of sequential influence techniques (summarised in the Supplemental Material Table S1, available in the online version of this paper) delivered by the host through (1) verbal commitment-gaining tactics at check-in, (2) presentation in the cottage, (3) encouragement of free-will commitment by asking guests to sign a pledge, and (4) printed daily eco-feedback with personalised messages delivered to the cottage at 07:30 each day.

Two presentation approaches were tested: in Intervention 1, the host focused on the guest's self-benefits by highlighting positive features of the cottage, whilst in Intervention 2, the host directly recommended that guests use the cottages' pro-environmental infrastructure and provided instructions on how to minimise resource consumption.

Ethnographic data/guest response

The ethnographic study (Phases 2 and 3, October–March) involved recording each guest interaction in detailed field notes (200–450 words covering commitment gaining, response to eco-feedback and informal conversations when offering assistance). Interventions 1 and 2 produced 55 guest-party bookings (93% of the total). Source materials were both verbal (speech acts, utterances, overlaps, incompletions in speech and changes in party speaking) and non-verbal communications (silence, gaze) (Krippendorff, 2013) and expressions of positive or negative face as well as examples of positive and negative politeness (Brown & Levinson, 1987). Time spent with guests was 5–20 minutes for commitment gaining/presentation. Additional time was spent with guests on demand (e.g. helping them set their fire). Daily observations were made when the first author delivered eco-feedback sheets and, through 41 analytical memos (110–480 words each), was able to compare all guest parties staying on the property along a timeframe that allowed comparisons across similar weather conditions.

Departure data/guest satisfaction with the accommodation experience

At check-out, guests were asked to complete a survey (one per booking), with 86% completed (Phases 2 and 3, October–March). Afterwards, in informal conversations, guests added to the ethnographic data. A limitation was that not all guests wished to converse at this time, as the rest of their party were often set to leave.

Analysis

Baseline analysis

Booking details were entered into the statistical software package SPSS 23. Resource use was measured in one-minute pulses, recorded for each guest party booking and verified by manual meter

reading. Total consumption rates for each guest stay were measured from 15:00 (check-in time) on their day of arrival to 11:00 (check out time) on their day of departure. To normalise resource use data, the total amounts were then divided by the number of hours for each booking. Cleaning of data resulted in the removal of one outlier from the intervention group who used a very small amount of gas or water during their one-night stay. Data on use of water, gas and electricity were not normally distributed, and a non-parametric test (Mann–Whitney test, Field, 2013) was used to test differences amongst groups.

Ethnographic analysis

As part of the action research approach, the host was both actor (implementing the interventions) and researcher, observing guests at the time of the persuasive communication arguments, observing them during their stay and reflecting on persuasion theory, politeness theory and the concept of hospitality whilst on site. The ethnographic method is well suited to theory development, where theoretical constructs can be compared in the field to develop a deep understanding of the application of the relevant theory in practice (Snow, Morrill, & Andersen, 2003). The researcher noted how his tone, the guests' emotional state upon arrival and their negative face affected message delivery. As this research evolved, the content of the persuasive communication intervention was adapted from guest self-benefits (Intervention 1) to recommending use of pro-environmental infrastructure (Intervention 2). This "enhanced persuasion" was considered important, as the ongoing analysis of guest resource use indicated a ceiling on guests' savings during the first intervention.

Coding of field notes and analytical memos occurred in two ways (Saldana, 2013).The first cycle involved initial coding using NVivo to segment and breakdown the data and compare Interventions 1 and 2, followed by a reinterpretation of conversations and behaviour (Krippendorff, 2013). The second cycle of coding involved focused, axial and finally theoretical coding to find the central theme.

Departure survey analysis

Departing guests were asked to self-assess whether they actively tried to reduce their electricity, gas, water or firewood use. Interventions 1 and 2 participants were further asked whether the daily eco-feedback information added to or detracted from the experience of their stay. In addition, a pre-existing satisfaction scale was used to measure the cognitive, affective and conative aspects of satisfaction (Robinot & Giannelloni, 2010).

Guests were asked (1) "In general, how satisfied are you with the services supplied by the accommodation?" (2) "If a member of my family or a friend was looking for accommodation, I would readily recommend this accommodation?" and (3) "If you had the chance to come back, would you do so?" All three questions used a five-point Likert scale. An overall satisfaction index was created that ranged from 3 (very best) to 15 (very worst) and was then collapsed into three categories (highly satisfied, satisfied, less satisfied) to provide greater sample sizes.

Three further questions specifically assessed guests' perceptions of property attributes, again using a five-point Likert scale: (1) "How well do you think staff understood your specific needs?" (2) "Comparing (property name) with other self-contained accommodation you have stayed at, would you say the quality of services and facilities were (higher/lower)?" and (3) "Considering your overall experience at (property) how would you rate its value for money?" A service attribute index was created using the metric (3 to 15) described above. Again, to overcome issues associated with small sample sizes, respondents were collapsed into three groups. Chi-square tests assessed differences amongst groups.

Table 2. Results of the Mann–Whitney test, comparing resource use across groups.

Resource variable	Significance	Test statistic U	Effect size
Intervention 1			
Electricity per hour	<0.001	8318	0.267
Gas per hour	=0.049	7297	0.123
Water per hour	=0.091	7159	0.111
Intervention 2			
Electricity per hour	<0.001	1910	0.414
Gas per hour	=0.021	1805	0.271
Water per hour	=0.006	1846	0.326

Results

Reducing guest resource use through persuasive communication

Analysis of the resources consumption figures from control groups and the intervention groups shows that pro-environmental persuasive communication can be successful. For the benefit-led Intervention 1 (i.e. Phases 1 and 2), electricity use (median = 207 kWh per hour) was significantly lower than for the control group (median = 255 kWh per hour) (Table 2). The effect size indicates that 26.7% of difference in electricity use between these groups was due to Intervention 1. The differences for gas (Intervention 1 median = 0.016 cubic metre per hour vs. 0.018 cubic metre per hour for the control group) and water use (Intervention 1 median = 14.4 litres per hour vs. 15.1 litres per hour for the control group) were less pronounced. Accordingly, the effect sizes for gas and water were smaller, and for water consumption, the difference between the groups was significant at only the 10% level.

The test results comparing resource use of the recommendation-led Intervention 2 group with the control group during Phase 3 show more pronounced differences. The median electricity use of Intervention 2 guests was 175 kWh per hour versus 251 kWh for the control group. The median gas usage was 0.008 cubic metres per hour versus 0.013 cubic metres for the control group, and the difference in water use was 9.3 litres per hour versus 14.0 litres per hour for the control group. The largest effect was on electricity use per hour, with about 41.4% of difference in consumption being explained by Intervention 2.

The departure survey asked whether guest parties had actively tried to reduce electricity, gas and water use. A Chi-square test (χ^2 [1, 120] = 6.652, p = 0.036) shows that guests in Interventions 1 and 2 were considerably more likely to try to reduce their resource use (80% responded affirmatively) than those in the control group (58.5%).

Guest responses to sequential influential techniques

During the course of the intervention, none of the guests rejected the presentation, and none asked for the eco-feedback sheets to be stopped. Two guest parties did not sign the pledge, whilst in some instances, all members of guest party chose to sign.

Using the ethnographic data, the researchers coded and analysed guest responses to the sequential communication, and seven categories emerged. Six of these categories contribute to two key dimensions of resource-saving persuasion: guests' response to interpersonal pro-environmental communications and determinants of their own saving behaviour (Figure 2). The six categories are explained below. The seventh category related to the context.

Interpersonal pro-environmental communications
Commitment gaining. Three factors were important: flexibility, politeness and credibility. Guests arrived in different emotional states, requiring the host to be flexible when applying commitment-

gaining tactics – using personalised approaches during ice-breaking and tailoring the pre-giving message to guests' personal needs. Guest states included being happy, friendly, relaxed, business-like, distant, shy, quiet, tired, unwell and adversely affected by the weather, suggesting that a standardised script would not be sufficient in engaging guests. From the outset, guests demonstrated flexibility and an openness to accept the host. All guests in the Intervention 1 group agreed to be part of the experiment. With Intervention 2, the host first asked "Have you ever stayed in an eco-friendly cottage before?" Four guest parties (Guest 39, 94, 123, 142) said yes, one said "must have" (Guest 36), and the remainder had not stayed in eco-accommodation. All agreed to take the tour of the cottage's resource-saving infrastructure and listen to the host's recommendations on its use. Meanwhile, the ethnographic data collected during check-in and cottage presentation revealed a wide range of non-verbal guest communication, which was interpreted using politeness theory. Guests applied formal negative face the majority of the time during the presentation, and friendly positive face for those already in a happy holiday mood.

The findings confirm that hosts must apply both negative and positive politeness tactics to improve persuasiveness. In the following negative politeness, for example, the host apologised and used common ground with tourists from the UK to improve persuasion.

> **Field Note for Guest 129:** While they read the pledge certificate with Negative Face I said "Sorry you might think this is like selling double glazing." "No there should be more places like this."

Politeness tactics built naturally from the first encounter, where flexibility was applied. In addition, establishing the communicator's credibility, and their business credibility, were important. The host's flexible and polite approach through the early sequences helped build credibility and trustworthiness ("You seem the sort of person one can trust", Guest 28 said and signed).

> **Field Note for Guest 70:** During the cottage tour X asked me to confirm his friend's advice that it was more efficient to have the ceiling fan on all day as it would use less power than to start/stop. (This demonstrated consumer confusion about ways to achieve energy efficiency and made me aware that this guest saw me as a credible host. I corrected his confusion and advised that to save energy fans should only be on when a room is occupied, when the occupant needs a cooling breeze and when required in tandem with an a/c to circulate cooler air.)

However, one guest (Guest 62) asked why the lounge light was on when they arrived, whilst another pointed out that a battery was missing from the gas stove's lighter, requiring matches and leading to environmental waste (Guest 39). They saw these errors as contradicting the presentation, indicating the importance of attention to details to maintain credibility.

Presentation. Components and delivery style of the presentation (Intervention 1 and Intervention 2) affected results. The benefit-led approach, Intervention 1, was well received by guests happy to see the indulgences (e.g. local produce, handmade chocolates and king-size bed) and many accepted the host's presentation (including technical graphs) as part of their holiday experience. Some sat down to listen, occasionally inviting the host to sit with them. Comparing Intervention 1 with 2, the host found that highlighting benefits restricted later communication to provide precise advice to guests to save resources, because the politeness threshold had been set at a lower level of eco-friendly resource consumption.

> **Field Note for Guest 18 (Intervention 1):** X said they hoped "we can still have baths" [she had organised the trip and so may have been worried about how the pitch was coming across to her friends]. I said that of course they could still have baths [to suggest moderation would have been crossing a threshold] but it was about "not wasting." X says "yes I know you are" [she was gauging the situation].

> **Memo 6/1:** The fact that I am making a stronger pitch at the beginning makes me feel I can be more instructional in the eco-feedback sheets, because the first encounter was a recommendation rather than a hospitality one where the customer comes first.

The more technical approach with Intervention 2 permitted the host to keep a negative face at key points during the presentation. This approach was felt to emphasise sincerity and normalise the message as guests expressed a wide range of emotional utterances, which – if the host joined in too far – derailed the conservation. Examples of emotions conveyed by guests indicated they were competitive, fun-loving, humorous, supporting, accepting, assessing, unsure, guilty, and fearful.

Eco-feedback. The host was able to personalise advice, which proved helpful for guests to learn and apply practices, making the eco-feedback a critical turning point in the persuasion sequence for the majority (see Table S1 available in Supplemental Material in the online version of this paper). Some guests were disappointed with their performance and keen to improve, while a small minority appeared to find the advice patronising. These findings highlight the challenge of balancing tone and content. Guest party 142, who displayed strong green values, rejected feedback, as it appeared to make them feel guilty across other lifestyle choices they made.

> **Field Note for Guest 55:** X commented on my pitch saying they were surprised upon arrival, but they found the eco-feedback good "especially this morning" when they were under target. He also mentioned they talked about the impacts of preparing their own dinner in the cottage.

> **Manageress' eco-feedback from departing Guest 130:** The guests said they loved getting reports every day to see how they were doing.

> **Field Note for Guest 60:** X said he found the figures comparing other guests' consumption "like big brother" and did a little grimace.

Saving behaviour

Personal circumstances. Three factors of personal circumstances influenced savings behaviour: needs, values and practicalities. Needs were non-negotiable, as for a number of guests, the ability to save was affected by physiological and safety concerns. Some who claimed to hold environmental values were constrained by their physical need to keep cool or other physical constraints. For others, security fears made them uncomfortable leaving windows open at night with only closed fly screens (Guest 84), with Guest 139 admitting to locking windows in the city and using air-conditioning at night as a consequence. Despite these constraints, several of these guests tried to reduce consumption after listening to the host's advice and achieved savings below targets (Guest 139) or generously donated to the charity box (Guest 22).

Guests' values were a key driving force that affected persuasion outcomes, and the host was able to work flexibly with guests' values to increase persuasion. Those introduced to sustainability at work or those with environmental concerns were open-minded to the intervention, just as those who saw how practicing new behaviours could be applied at home. Most guests examined the technical graphs carefully and with interest. While a few guests readily participated in the intervention, the process of reducing resource use for groups of adults often brought out "team captains" who encouraged others to modify their behaviour.

> **Field Note:** "Well I won't do very well" said the horse-riding sister. The other two sisters rallied and said "what do you do with your horse manure?" "We pass it on for potting mix." "Well then" they said.

Despite persuasion and infrastructure, guests face practicalities preventing them from saving resources. These include their travel party and the degree they can influence reciprocation, their desire to cook in rather than eat out, and their habits in terms of recharging electronic equipment. Such contexts appeared to pertain particularly to young families and guests from collectivist societies. Observations showed that guests' knowledge of infrastructure affected capacity to save, for example, not being aware that ceiling fans can be used in winter or not being able to use the wood fire. Likewise, some guests applied traditional practicalities to save.

Field Notes for Guests 34 and 24: *"*This will be interesting for this one [looking at X] as she leaves all the lights on" says Guest 34 who smiles and cups his wife's face in his hands.

did try (to save) with water but were less conscious with electricity, we used the bath but all used the same water. (Guest 24)

Persuasion can only be effective within the realm of what is practically feasible for guest parties, as many internal factors also make demands on the guest party's ability to save resources and keep harmony.

Applying "house rules." Overall, guests followed the house rules, even if they did not always agree: "well it's your business" (Guest 7). Many guests were prepared to reciprocate without challenging. In many cases, they felt the experience matched their own values ("We have to save our planet" [Guest 94]), felt obliged to comply with the host's requests, or chose to ignore them:

Field Note for Guest 60: X said they did not save and behaved as usual because it was their holiday.

Adoption, learning and contentment. Observation showed guests followed advice from the eco-feedback sheets. The most obvious adaption was the use of natural ventilation by the intervention groups. Guests from the control group had not received the presentation and were unaware of the techniques and skills, resulting in higher energy use. Several guests responded competitively.

Field Note for Guest 139: Despite their need for air conditioning at night and security fears, I saw their windows open early in the morning (they had been open all night to benefit from lower temperatures). They made an effort to change practices.

Some guests received more than four daily eco-feedback sheets during their longer stay (in a few cases during heatwaves). During this period, the host found guests content and consistently maintaining their resource saving.

Manageress' eco-feedback: Guests 136 told Z that they "found the reports 'interesting'. We were delighted that we 'smashed the record'", but they also felt concerned for others who would have to try and beat their figures.

Some departing guests showed positive emotions that may have helped sustain their reciprocation. While this may have also been positive politeness, they directly expressed interest, joy, pride, amusement and inspiration when talking about the experiment. Only a few instances occurred reflecting guilt or open dislike for the intervention. For example, Guest 36 noted "a tendency to over regimentation" in the departure survey.

Field Notes for Guest 125: "Strongly Disagreed" ticked for feedback information on departure survey; "Because I am aware of such issues and don't need to be reminded on holiday." Yet during the cottage presentation they were very supportive of the programme's principles, however, their eco-feedback showed them their consumption was above target.

Positive guest responses also helped sustain the host's performance throughout the action research study. Just as guests enjoyed recognition that they were consuming resources carefully, so the host felt happy or disappointed with guests' responses and performance. Many guests appeared to change their mental approach towards saving resources, arriving with holiday expectations that did not include intentions of saving, and leaving with an attitude of contentment at having made the effort. As this was by far the majority, the host felt a genuine sense of appreciation from guests.

In addition to the six categories that underpin the two key dimensions, context was found to be critically important. Thus, knowledge of infrastructure and weather are included as additional factors that contribute to sustainable outcomes.

Infrastructure and weather. Guests' responses to infrastructure indicated many actions were standard, common sense (sink vs. dishwasher) or nostalgic (gas kettle). Other items were greeted with good humour (bathroom clock facing the shower) or seen as innovative (toilet with integrated

cistern), and in some cases people wanted to take photographs and expressed an intension to buy. The existence of infrastructure added to the host's credibility.

Extreme weather occurrences (e.g. heat waves), unexpected weather (e.g. cold nights) or weather not prepared for (e.g. rainy days) strongly influenced consumption. On occasion, guests resorted to using energy-intensive infrastructure instead of self-adapting. Feedback and advice were helpful in moderating guest consumption, but only as far as practicalities (and politeness) permit.

> **Field Note for Guest 88:** As I was leaving the cottage X asked for my advice "how would you warm up this cottage?" (outside temperature 21C) I was surprised and said "you could put on more clothes (he was wearing a T shirt and shorts) or put the fire on." They appeared to be afraid to light the wood fire, fearing consequences for their 16-month-old son; 20 minutes later I delivered wood to find X wearing his jumper.

Guest satisfaction

Two indices were used in the departure survey: a satisfaction index and a service attribute index. Satisfaction was generally high for all groups (Table 3). The Intervention 2 group, who received a more technical form of communication, was slightly less satisfied than the two other groups, but the differences were not statistically significant (χ^2 [1, $N = 121$ valid cases] $= 7.076$, $p = 0.132$). Similarly, no statistically significant differences occurred between the three groups for the service attribute index (χ^2 [1, $N = 120$ valid cases] $= 3.550$, $p = 0.470$). The results therefore show that the interventions did not compromise guest satisfaction.

Guests who felt they reduced their resource use were no less satisfied than those who did not try (χ^2 [2, 118] $= 15.102$, $p = 0.128$). Interestingly, when it comes to satisfaction with service attributes, guests who tried to conserve resources appeared to value their stay more than those who did not reduce resource use ((χ^2 [2, 117] $= 22.756$, $p = 0.030$).

To further explore whether actual resource savings affected satisfaction, the quantitative monitoring data were compared with satisfaction levels. No significant differences were found between the satisfaction index or service attribute index scores and resource use (Kruskal–Wallis test for nonparametric data). So, while the median consumption level differed between the sample groups (Mann–Whitney: electricity $p = 0.000$, gas $p = 0.12$, water $p = .006$), their satisfaction rating was not dependent on the amount of resources used.

Finally, the intervention sample was asked whether the daily information sheet with personalised eco-feedback affected their experience. Guests responded that the sheet "strongly added" (24.5%), "tended to add" (49.1%) or was "neutral" (26.4%) to their experience. To overcome small sample size, this variable was collapsed into two responses, namely "added to experience" and "did not add to experience." Guests who believed the sheet added to their experience were also significantly more likely to say they saved resources ((χ^2 [2, 52] $= 17.728$, $p = 0.000$)), and they scored higher on the service attribute index (χ^2 [2, 53] $= 6879$, $p = 0.032$). They had a similar satisfaction index rating (χ^2 [2,

Table 3. Guest satisfaction by group.

	Intervention 1 Oct–Dec	Intervention 2 Jan–Mar	Control Oct–Feb
Satisfaction index			
Highly satisfied	60.0%	60.0%	80.3%
Satisfied	23.3%	16.0%	9.1%
Less satisfied	16.7%	24.0%	10.6%
Attribute satisfaction			
Highly satisfied	34.5%	29.2%	40.3%
Satisfied	34.5%	41.7%	43.3%
Less satisfied	31.0%	29.2%	16.4%
Sample size	$N = 30$	$N = 25$	$N = 66$

53] = 3.585, p = 0.167). Guests may consider eco-friendly features to be secondary factors and they may not have an overall impact on satisfaction (Robinot & Giannelloni, 2010).

Guests who felt the experience was positive wanted to share their experiences with others at departure (after the survey was completed) and might hold conversations, occasionally up to 45 minutes (Guest 86). Overall, none of the guests said the host's presentation was inappropriate.

Discussion

This study investigated how guests can become active partners in driving sustainability in tourism by focusing on whether pro-environmental persuasive communication could lead to resource conservation. It also sought to understand how guests respond to sequential influence that encourages them to save resources and whether saving affects their stay satisfaction. The findings indicate that emphasising the benefits to guests of saving (Intervention 1) and teaching guests how to utilise the available infrastructure to save (Intervention 2) resulted in use of significantly less electricity, gas and water than by the control groups. Overall, guests accepted the sequential influence techniques and satisfaction was not compromised.

Of particular note was the importance of social exchange and reciprocation (a "potent weapon", Cialdini, 2009, p. 19), as pre-giving and detailed explanation led guests to reciprocate the accommodation's efforts. In this study, customers accepted house rules (Tucker, 2003) and behaved as guests within the host's domain (Dolnicar & Grün, 2008). Despite negotiated exchange norms (Cook & Rice, 2006), the host was not challenged by any guest. Host credibility appeared to be established through expertise and trust (e.g. through the eco-feedback). A balance had to be found between establishing expertise through technical information and maintaining guests' interest. The majority of guests were prepared to study the graph and learn about infrastructure, and were impressed or surprised by the scope of technical eco-feedback. The provision of this technical information fostered reciprocation, as Intervention 2 guests saved most.

Understanding the politeness threshold (Brown & Levinson, 1987; Gass & Seiter, 2014) of guest and host appears essential in responding flexibly to the idiosyncratic nature of guests on arrival. An important finding for hospitality providers is that a negative face does not mean a negative view, but that a guest is concentrating on the message. Consequently, applying positive and negative politeness tactics enables the host to protect the guest and the host from losing face (Holtgrave, 2008). Using negative face can build integrity into the host's technical knowledge and encourages guests to focus their attention. Negative politeness helps the host be direct and to be seen as taking seriously any guest concerns, as he/she explains consequences of inaction and recommends a better approach.

Unpacking the process of persuasive communication and identifying thresholds leads to a better understanding of the two-way, interpersonal process of persuasive communication resulting from "spiralling engagement" through multiple and sequential steps of communication. This process and the ensuing model are detailed next.

Spiralling engagement

An important feature of this study was to test a process for engaging guests in resource reduction, using a sequential approach that could be replicated by tourism practitioners. Figure 2 illustrates how more sustainable outcomes can be achieved through a host–guest partnership. The first step is to build empathy by gaining commitment, followed by presenting a pro-environmental infrastructure and savings programme to encourage reciprocation and providing eco-feedback, and finally appreciating guest efforts.

Combined, these steps follow sequentially as communication spirals through the guests' stay using multiple personalised persuasive messages that contribute to a transition in interpersonal contact. The word "multiple" is essential and could help sustainable hospitality communication transition
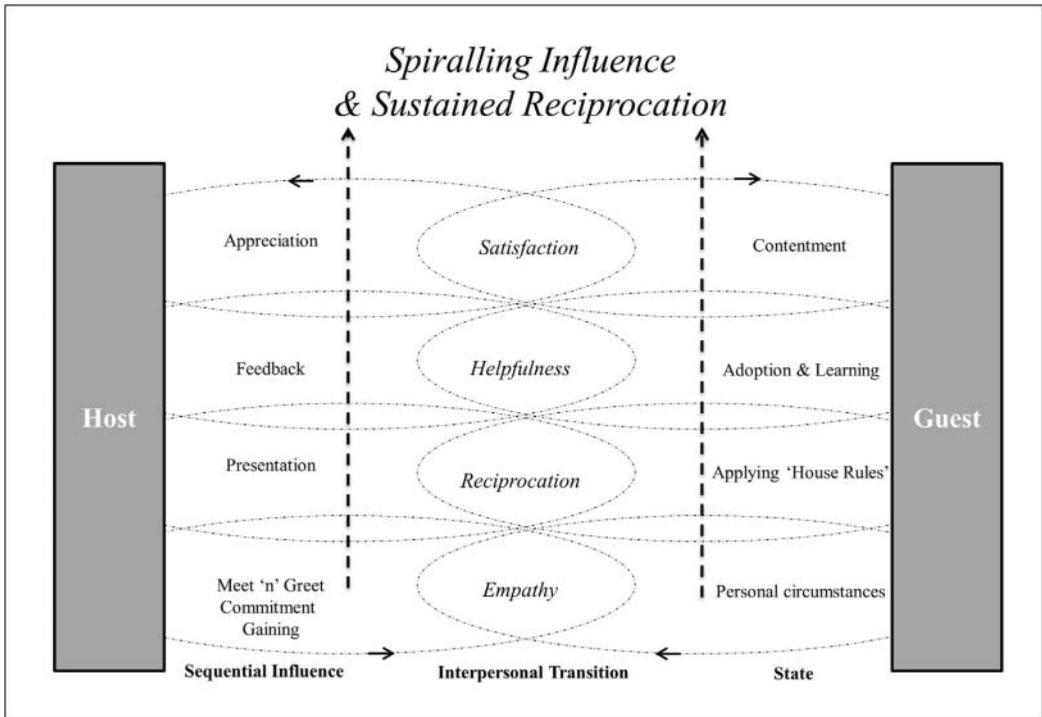
Figure 2. Model of spiralling pro-environmental sequential influence.

from its myopic focus (Belz & Peattie, 2009; Villarino & Font, 2015) to co-created experiences. The dynamic quality of spiralling communication permits guests to evolve as collaborative partners as they gain new knowledge (Juvan & Dolnicar, 2014; Warren, 2012).

The spiralling relationship can mediate the impact of eco-feedback. While the majority of guests in the study who received eco-feedback felt it added to their experience, 25% did not. Nevertheless, overall guests' satisfaction levels were similar between groups, suggesting that while eco-feedback was not welcome by some, overall sequential influence techniques were acceptable, as demonstrated by a similar high rating of staff's understanding of guests' specific needs. To be replicable in other accommodations, guest relations staff would need to be formally trained to deliver persuasion successfully, with infrastructure in place for guests to use.

Some guests demonstrated mindfulness by focusing their attention on consumption and controlling their practices. However, motivations were complex (e.g. environmental concerns, competitiveness, complying with social norms), as were their reasons for not being able to save, indicating the need for more research on constraints to guests' engagement. The focus of this study was on the interaction between host and guests, but further study should examine the application of character strengths and mindful consumption.

There appeared to be no link between how much guests consumed and their stay satisfaction. This study also showed that consumption is highly contextual. Both intervention and control groups were subject to factors such as outside temperature, water temperature in the property's water storage tank, or daylight savings. Future research might explore in greater detail how these factors moderate resource consumption and satisfaction. Importantly, for this study and its focus on guest engagement, the flexibility of the intervention and messages allowed the host to take advantage of these contextual variables and incorporate them into his persuasive communication.
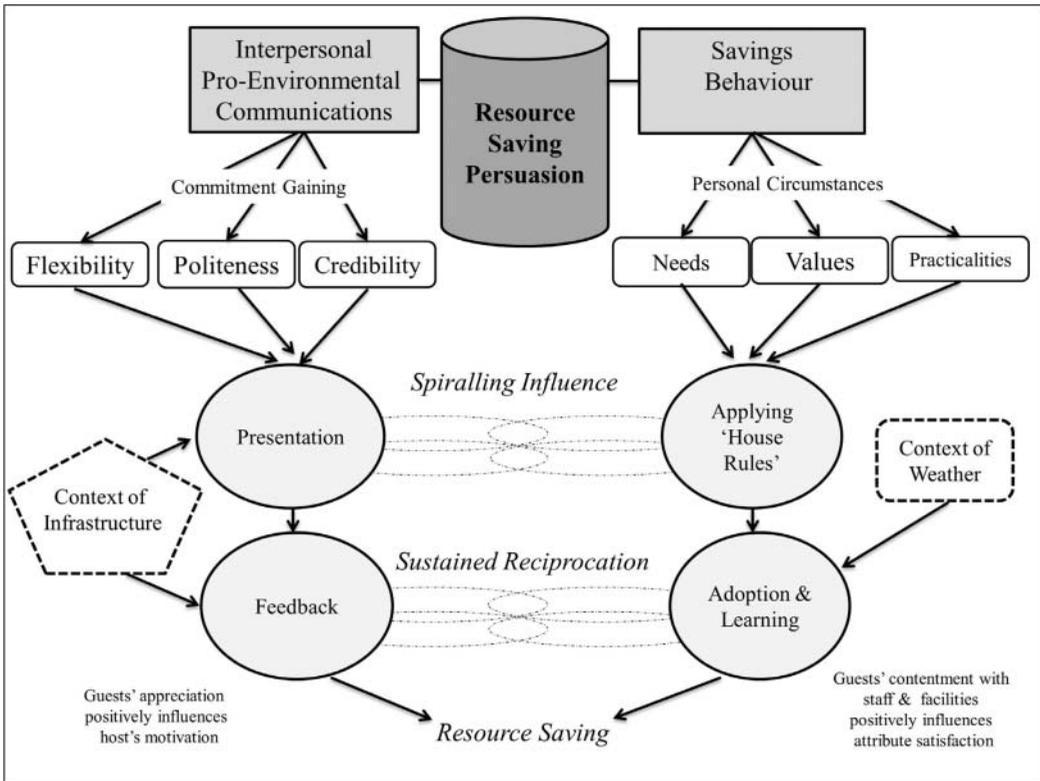
Figure 3. An extended theory of resource-saving persuasion.

A model of resource-saving persuasion

This study contributes to sustainable tourist accommodation development by proposing a conceptual model as a basis for future research to test and progress our understanding of reducing guest resource use (Figure 3). *Resource-saving persuasion* stimulates sustained guest efforts to conserve resources. Through a combination of *interpersonal pro-environmental communication* and *saving behaviour*, guests are influenced to conserve by reducing consumption. Interpersonal pro-environmental communication applies commitment-gaining steps that require hosts to employ a high degree of flexibility to their persuasive communication and judge suitable positive and negative politeness tactics to respect different guest groups' needs. The host must also be conversant with the pro-environmental infrastructure and the fiscal use of resource savings. Presentation and eco-feedback strongly link to the site's infrastructure and are conveyed as helpful tips multiple times during guests' stay.

Guests' saving behaviours are mediated by the personal circumstances of their needs, values and practicalities. To help adjust their message, practitioners could identify guests' specific needs and practicalities at the time of booking and find opportunities for guests to share their values during their stay. Provided the host has demonstrated empathy by being flexible and polite, and is seen as credible, guests can be persuaded to apply house rules. Sustained reciprocation depends on the quality of the eco-feedback and the advice to use pro-environmental infrastructure, especially in extreme weather conditions.

Comprehensive infrastructure and helpful advice can increase guests' appreciation and efforts to save, which also sustains the host's motivation. Positive feedback reinforces good performance. The model developed here could be applied by accommodation providers with suitable pro-

environmental infrastructure. However, to accommodate face-saving acts, providers may need to train their staff to use a flexible format rather than a standardised speech.

The proposed model requires further testing at other accommodation types and in other environments. However, this study does represent consumption by different guest types during four seasons, thus providing a robust starting point for further study.

Conclusion

This study is the first to measure guest resource-saving behaviour as a response to sequential influence techniques and the effect of resource-saving persuasion on guest satisfaction at tourist accommodation. Findings show that guests who received this innovative intervention used significantly less resources. Guests who received specific saving recommendations conserved the most.

Using commitment-gaining steps, a presentation, eco-feedback and advice, the host requested that guests save resources. Guests reciprocated and 80% claimed to try to save resources. Understanding both guests' and host's face-saving threshold was found to be an important politeness aspect for delivering the communication and maintaining guest satisfaction. Eco-feedback is essential to motivate guests, but it must be part of a holistic multiple communications. Reasons to save/not save were remarkably complex.

A preliminary model of resource-saving persuasion is proposed for further research. Tourism professionals should ensure they have adequate pro-environmental infrastructure for guests to use as alternatives to high resource-using systems. Also required is comprehensive staff training that facilitates multiple guest contact. Furthermore, local destination beneficiaries could be identified for the fiscal results of resource saving. Such an approach could "unblock" (Melissen et al., 2016) the societal tangle that restricts sustainable tourism accommodation and normalise partnership between hosts and guests.

Disclosure statement

No potential conflict of interest was reported by the authors.

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