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Model of Binning Behaviour: Assessing cognitive and normative influence in the national park context

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Abstract

There is a lack of research on people's decision-making for pro-environmental binning behaviours while visiting national parks. Understanding the factors that affect visitors' binning behaviour help in managing the environment of nature-based tourist sites. This study considers binning behaviour as a combination of self-interest (i.e. cognitive process) and others' interest/pro-social motives (i.e. normative process). In particular, by considering binning behaviour as a pro-social moral activity, we developed a conceptual model of pro-environmental binning behaviour and acknowledge 'personal norm' as a mediator between attitude, social norms, awareness of consequences, perceived behavioural control, and binning behaviour. We included the cognitive and normative processes related to pro-environmental behaviour and considered their interrelations in the prediction model of visitors' binning behaviour in two culturally different national parks namely Sorkh-e-hesar National Park in Iran and Yanchep National Park in Australia. Using SEM-PLS, we estimated the proposed theoretical framework and compared the path analyses of the two study sites.

Keywords: pro-environmental behaviour, binning behaviour, personal norms, national parks

1. Introduction

National parks have been identified as a natural and cost-effective solution contributing to climate change mitigation and adaptation. Also, ecological and biological resources of the parks have direct economic and social impacts on countries (Mules, 2005; Scholtz, Kruger, &

Saayman, 2015). This is deemed to be highly significant in nature-based tourist destinations such as Australia which enjoys a substantial number of national parks from which many Australian tourism and recreation products are comprised (Esfandiar, Dowling, & Pearce, 2018; Smith, Tuffin, Taplin, Moore, & Tonge, 2014)

As such, non-compliant behaviour of visitors (e.g., littering, feeding animals, venturing off-trail, etc.) at national parks may have negative effects on the resiliency of the parks (Goh, Ritchie, & Wang, 2017). The consequences of these behaviours such as littering may exceed the allocated area influencing humans and animals (Kolodko, Read, & Taj, 2016). For example, plastic trash, aside from an aesthetic problem, can be redistributed to many other places such as oceans ending up in animals' stomachs (Earll, Williams, Simmons, & Tudor, 2000). Fostering people's pro-environmental behaviour (PEB) is viewed as one of the key elements in maintaining these resources. Thus, understanding as to why some visitors act pro-environmentally and others may not, is of essential value to develop effective intervention programs.

However, it has been shown that people's pro-environmental behaviours are not consistent depending on the type of environmental behaviour (e.g. recycling, binning, donation) and a specific situation (e.g. in a protected area, at home) in which they are (Diekmann & Preisendörfer, 2003; Dolnicar, 2010; Poudel & Nyaupane, 2017). Also, an individual's pro-environmental decision may be affected based on whether the action requires more time, money and effort (i.e. high-cost situation) or less time, money and effort (i.e. low-cost situation) (Esfandiar, Pearce, & Dowling, 2019). Based on this assumption, considering pro-environmental behaviour in general rather than in particular will cause some restriction in generalising the results of the pro-environmental behaviour studies.

To resolve this issue, we aim to focus on investigating a specific pro-environmental behaviour in a specific site. More specifically, we chose to examine individuals' binning behaviour as one of the most important pro-environmental low-cost activities in two culturally different national park contexts namely Sorkh-e-hesar National Park in Iran and Yanchep National Park in Australia. In doing so, we reviewed the literature on people' environmental behaviour in tourism, recreation, environmental psychology, human social behaviour to identify the factors associated with an individual's PEB while visiting a national park and develop a model accordingly.

2. The conceptual model: its theoretical basis

Previous literature reveals the struggle of researchers in the development of a number of socio-psychological theories in understanding people's pro-environmental behaviour. However, the widely used theories were Theory of Planned Behaviour (TPB) (Ajzen, 1991), and the Norm-Activation Model (NAM) (Schwartz, 1968, 1977). Although the TPB have been commonly used in explaining individuals' pro-environmental behaviour, it has some limitations. These limitations justified employing an integrated model for explaining individuals' pro-environmental behaviour.

One main limitation made of TPB is related to its emphasis on rational reasoning and not considering moral obligations (i.e. personal norms) (Lindenberg & Steg, 2007), while numerous researchers have shown the importance of personal norms as a strong predictor in influencing an individual's pro-environmental behaviour (Han, Olya, Kim, & Kim, 2018; W. Han, McCabe, Wang, & Chong, 2018). For example, Brown, Ham, and Hughes (2010) have shown that making personal norms salient through persuasive communication raises the likelihood of visitors picking up litter while in a protected area. Similarly, we argue that the degree to which parks visitors feel a moral obligation towards binning their litter while

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visiting the park (i.e. personal norms) is positively related to their own intentions to act pro-environmentally.

Considering the above discussion, a pro-environmental binning behaviour model, integrating key elements of Ajzen's (1991) TPB and Schwartz's (1968, 1977) NAM is illustrated in Figure 1. Below are the proposed conceptual model and its associated hypotheses.
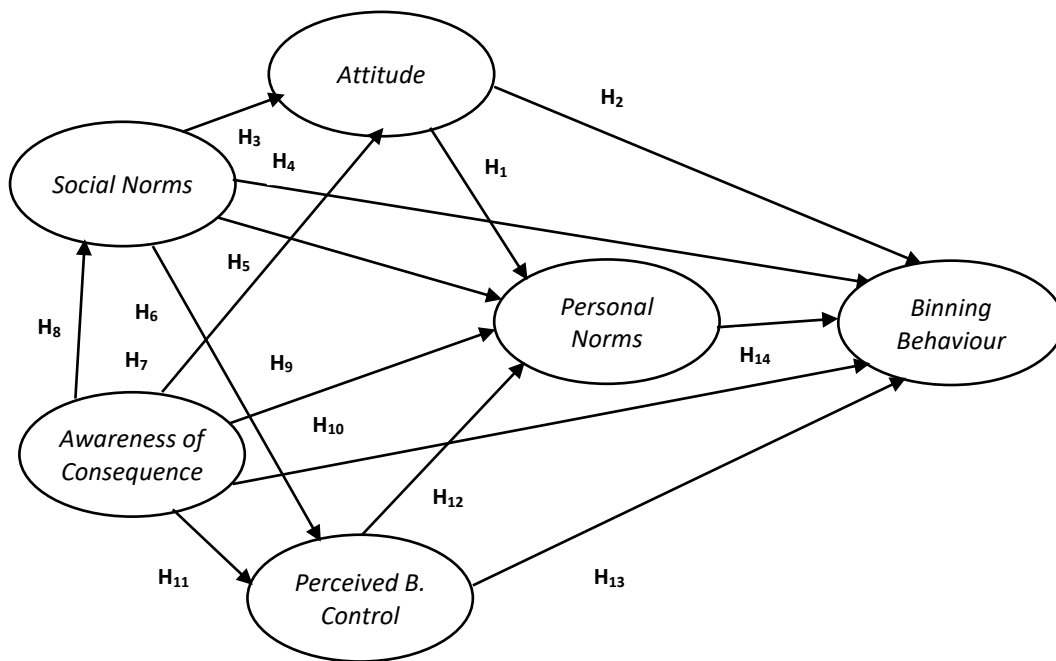
Figure 1. Conceptual research model

3. Research Method

Based on the associated literature and an informal interview, an on-site self-reported questionnaire comprising of 38 items was developed. The 25 of the items are intended to measure the model's six variables, and the remaining items are related to the demographic questions. The purposeful sampling method was employed to reach as many respondents as

possible and gain a better representative sample of visitors to the parks (Esfandiar & Bapiri, 2016; Stone & Stone, 2017). A total of 240 valid questionnaires from visitors of Sorkh-e-hesar National Park in Iran and 219 questionnaires from those of Yanchep National Park in Australia were completed. The proposed hypotheses of the data from both sites were analysed by using SPSS 25 and SmartPLS 3 software (Ringle, Wende, & Becker, 2015).

4. Data analysis and results

To guarantee scale reliability and validity, the adequacy of the measurement model and the structural model of two study sites were evaluated (Sharifi-Tehrani & Esfandiar, 2018). Cronbach's alphas and composite reliability of both data were above the cut-off of 0.7. The statistical significance of the path coefficients and the relevance of the model relationships were measured through the PLSc-SEM algorithm and the bootstrapping process. Table 1 and 2 display the results of the hypothesis testing and structural relationships of data from Sorkh-e-hesar National park (Iran) and Yanchep National Park (Australia) respectively.

Table 1. Result of hypothesis testing and structural relationships (Direct effect).

Hypothesis	Path	Path coefficient	t- Statistics[a]	Result
H1	Attitude → Personal norms	0.039	0.675	Rejected
H2	Attitude → Binning behaviour	-0.068	1.141	Rejected
H3	Social norms → Perceived B. control	0.064	0.850	Rejected
H4	Social norms → Personal norms	0.129	2.223[**]	Supported
H5	Social norms → Binning behaviour	0.148	2.182[**]	Supported
H6	Social norms → Attitude	0.316	3.679[***]	Supported
H7	Awareness of C.[a] → Perceived B.[a] control	0.709	8.090[***]	Supported
H8	Awareness of C. → Binning behaviour	0.388	4.191[***]	Supported
H9	Awareness of C. → Personal norms	0.473	5.064[***]	Supported
H10	Awareness of C. → Attitude	0.281	3.303[***]	Supported
H11	Awareness of C. → Social norms	0.494	4.535[***]	Supported
H12	Perceived B. control → Binning behaviour	0.014	0.200	Rejected
H13	Perceived B. control → Personal norms	0.270	3.593[***]	Supported
H14	Personal norms → Binning behaviour	0.411	4.820[***]	Supported

Table 2. Result of hypothesis testing and structural relationships (Direct effect).

Hypothesis	Path	Path coefficient	t- Statistics[a]	Result
H1	Attitude → Personal norms	0.084	1.317	Rejected
H2	Attitude → Binning behaviour	-0.099	1.685	Rejected
H3	Social norms → Perceived B. control	0.613	0.793	Rejected
H4	Social norms → Personal norms	0.089	1.451	Rejected
H5	Social norms → Binning behaviour	0.163	2.360[**]	Supported
H6	Social norms → Attitude	0.340	3.784[***]	Supported
H7	Awareness of C.[a] → Perceived B.[a] control	0.709	8.701[***]	Supported
H8	Awareness of C. → Binning behaviour	0.342	3.405[***]	Supported
H9	Awareness of C. → Personal norms	0.506	4.958[***]	Supported
H10	Awareness of C. → Attitude	0.284	3.198[***]	Supported
H11	Awareness of C. → Social norms	0.495	4.529[***]	Supported
H12	Perceived B. control → Binning behaviour	0.034	0.444	Rejected
H13	Perceived B. control → Personal norms	0.247	3.007[***]	Supported
H14	Personal norms → Binning behaviour	0.453	4.716[***]	Supported

[a] t-values for a two-tailed test, C (consequences) and B (Behavioural)

[**] 1.96 (sig. level=5%)

[***] t-value 2.58 (sig. level=1%) (Hair et al., 2011)

5. Discussion and conclusion

Theory-based integrated frameworks are helpful to understand behavioural antecedents to best foster pro-environmental binning behaviour in a national park context. In this study, an integrated model of binning behaviour developed and tested in two culturally different national park contexts namely Iran and Australia. The SEM-PLS results indicated strong support between the constructs of the proposed model and confirmed integrating norm activation model (i.e. cognitive influence) and theory of planned behaviour (i.e. normative influence) in explaining people's pro-environmental binning behaviour (Han et al., 2018; Steg & Vlek, 2009). Although the path analysis shows the robustness of the model in two study parks, the construct social norms were supported more amongst Iranian visitors than Australian visitors. One assumption could be based on Hofstede's cultural dimensions (Hofstede, 2001), social norms have a stronger effect on collectivist countries (i.e. Iran) than individualist countries (i.e. Australia). As such, Iranian national parks need to take this into consideration that the visitors in SNP are more influenced by their reference groups.

This study also highlights that to understand individuals' pro-environmental behaviour; researchers need to focus on a single specific type of pro-environmental behaviour in a specific context. This will decrease the limitations of generalising the results and helps in establishing more specific effective interventions. As such, further research is needed to focus on other types of pro-environmental behaviour in a national park context. Also, the proposed model needed to be tested in different national park contexts.

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