Who is Saving Whom? Equifinal Paths to a Meaningful Experience Design through Marine Watching Tours

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ABSTRACT

Marine protected areas are luring grounds for visitors who are willing to watch endangered species before they disappear forever. Hereafter, strategies to tackle the challenges of sustaining these fragile areas in one hand, and managing visitors in another are eminent. In this regard, visitor's deportment that benefit self and visiting areas are notably well-researched. Yet, the conventional studies in the tourism-environmental domain often take a reductionist approach towards the complex issue of human behaviour that is criticized for its shortcomings. Therefore, to fill this gap, this dissertation develops and tests a theoretical model, drawing on the complexity theory and emerging concepts, i.e. dualistic-passion paradigm, and mindfulness notion, to predict the potential source of pro-environmental behaviour.

The results indicate the complexity of the antecedents forming pro-environmental behaviour and the existence of contrarian cases that runs counter to the main effect in linear approaches. Therefore, following Fuzzy set Qualitative Comparative Analysis (fsQCA) of a sample from visitors to marine turtles in Cyprus, the study found seven unique causal recipes that lead to a high level of pro-environmental behaviour. Moreover, the study found 2 recipes that lead to low level of pro-environmental behaviour. Following predictive validity of the configural model, implications for theory and practice are presented. Further, guidelines for future research and limitations are discussed.

Keywords: Pro-environmental Behaviour, Mindfulness, Passion, fsQCA, Marine Turtles, North Cyprus

ÖZ

Turizm-çevre ilişkisini inceleyen geleneksel çalışmalar, karmaşık insan davranışı sorununa genellikle indirgemeci bir yaklaşım benimsemesi dolayısı ile eleştirilmektedir. Bu nedenle, bu tez, çevre yanlısı davranışın potansiyel kaynağını tahmin etmek için karmaşıklık teorisi, dualistik tutku paradigması ve farkındalık gibi yeni kavramlardan yararlanarak teorik bir model geliştirmiş ve test etmiştir.

Kıbrıs'ta deniz kaplumbağalarına gelen ziyaretçilerden oluşan bir örneklem ile Bulanık küme Nitel Karşılaştırmalı Analiz (fsQCA) yöntemi kullanılarak, yüksek düzeyde çevre yanlısı davranışlara yol açan yedi özgün nedensel tarif ortaya çıkarılmıştır. Tezin sonunda, uygulama için çıkarımlar ve daha fazla araştırma için öneriler verilmektedir.

Anahtar Kelimeler: Çevre Yanlısı Davranış, Farkındalık, Tutku, fsQCA; Deniz Kaplumbağaları, Kuzey Kıbrıs

To my dearest Liam, Sophia, & Lucas, who inspired it and will not read it.

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INTRODUCTION

1.1 Overview

The continuous growth of the tourism industry is accompanied by changes in tourist demands, from the stereotypical "4S" (sun, sand, sea, and sex) to progressively sophisticated and sustainable types of interpretive tourism, such as marine life tours (Lück, 2016). Rather than being a threat due to a focus on the financial benefits of mass visits, this type of tourism can become an opportunity if the role of individuals is not ignored, as "each person can choose to adopt behaviours that are comparatively better for the environment. These behaviours are called pro-environmental behaviours (PEBs)" (Osbaldiston and Schott, 2012, p. 2).

Engaging marine life tourists in more PEBs is conspicuous for the fact that the habitat of marine turtles is close to the shore, which intersect with many shore activities, like tourism. Moreover, a slow population increase of marine turtles and the current quantity of the endangered species (WWF, 2016), highlights the necessity of education-based strategies for protection of these species. In this regard, Steg and Vlek (2009, 315) challenged scholars to investigate the process and interactions of "cognitive, motivational and structural factors" to understand conditions in which people threaten or improve environmental sustainability. Correspondingly, researchers have focused on identifying the factors that drive desired tourists' deportments, such as their pro-environmental behaviours (PEB), in highly valued ecological areas (Lee

et al., 2019). PEBs do not only pose the least possible harm or alteration to the availability of materials, energy, or the dynamics of environmental ecosystems, but they also benefit the biosphere (Mason et al., 2015; Steg & Vlek, 2009; Stern, 2000).

However, determining the appropriate psychological mechanisms that lead to PEB is challenging due to the intervention of many individual and environmental factors that form them (for a review, refer to Steg & Vlek, 2009). The literature encompasses numerous approaches that depict the behavioural directions of individuals. These approaches include equity theory (Adams, 1963), social identity theory (Tafjel, 1979), cognitive dissonance theory (Festinger, 1957), the theory of normative conduct (Cialdini, Kallgren, & Reno, 1991), the theory of planned behaviour (Ajzen, 1985), and value-belief-norm theory (Stern, Dietz, Abel, Guagnano, & Kalof, 1999), as well as combinations and extensions of these theories (Garay, Font, & Corrons, 2019; Han, Lee, & Kim, 2019; Han, Olya, Cho, & Kim, 2018; Rezapouraghdam et al., 2019). The inherent complexity of PEBs and the complex interactions of many contextual factors result in researchers' scepticism about the sufficiency of any one scientific theory (e.g., the TPB and VBN theory) as a theoretical basis of their proposed PEB conceptual models. In this regard, Kim and Han (2010), and Hsu and Huang (2012) modified the TPB to explain the predictive model of PEB among travelers/visitors. Lee (2009) also extended the TPB to understand the behavioural intentions of online game players. Similarly, Han, Hwang, and Lee (2017) extended the VBN theory to predict the PEBs of cruise passengers. López-Mosquera and Sánchez (2012) went further and merged the TPB and the VBN theory to determine visitors' willingness to pay for park conservation. Han (2015) also merged these two theories to develop a model that predicted the PEBs of green hotel guests. Recently, Kiatkawsin and Han (2017)

combined VBN theory with indicators of expectancy theory to provide a theoretical justification for explaining the PEBs of young travelers. Such modification, extension, and merging of current theories have revealed that these theories are necessary but insufficient for simulating people's PEBs. Evidence of heterogeneity in indicating PEBs not only shows the complexity of this outcome (e.g., Dolnicar and Grun, 2008; Goh, Ritchie, and Wang 2017; Lee 2009; Steg, Bolderdijk, Keizer, and Perlaviciute 2014) but also the necessity of applying a sufficient theory for modelling PEBs (e.g., de Leeuw, Valois, Ajzen, and Schmidt, 2015).

1.2 Problem statement

The complexity of human beings and their behaviours in relation to environmental issues, in addition to the complex nature of tourism, have been largely neglected in the literature (Lezak & Thibodeau, 2016; Olya & Akhshik, 2019; Siegel, Cutter-Mackenzie-Knowles, & Bellert, 2018). Contrariwise to the functions of the real world, researchers have continually broken down the components that shape people's behaviours to gauge visitors' PEB based on linear outcomes (Byrne, 1998; Mackie, 1974; McDonald, 2009). Although such an approach is valuable for detailing the antecedents of PEB, what is unforeseen is that human behaviours are best predicted when outcomes are extracted from non-linear antecedents that are not necessarily the 'sum of the separate effects' (Byrne, 1998, p. 20).

Consequently, conventional studies have prescribed remedies through a reductionism lens. However, taking this approach towards complex issues has shortcomings, such as a false sense of confidence and biased decision-making in predicting complex behaviours (Byrne, 1998; Clark et al., 2017; Macdiarmid, 2014). Therefore,

reductionism leads to a scholastic myopia that overlooks the relational information that exerts from the interaction of various variables.

1.3 Purpose of the study

Based on a review of relevant literature, past studies have focused on investigations of the "net effect" of indicators on pro-environmental behaviour and have failed to explain the complexity of individuals' attitudes and behaviours. Assessing the net effect while the causal interactions are complex will lead to a false sense of confidence that offers misleading results regarding the complex process of decision making (Armstrong, 2012). Studies have thus far overlooked the fact that behaviour will not change until the complex drivers shaping the behaviour reach a certain "tipping point" level (Gladwell, 1996). A straightforward prescription, which disregards the complex interactions of indicators, results in unforeseen consequences that may cost more than the problem itself, let alone solve the problem.

Accordingly, the current study addresses this deficiency and discusses the complex nature of visitors' green behaviour in the context of Alagadi Turtle's Beach, Cyprus.

1.4 Contribution to the current knowledge

By advancing theory and method, this study contributes to the current knowledge of the PEBs of tourists. First, this study applies complexity theory to model the PEBs of tourists, which is a nonlinear and complex process (Kollmuss and Agyeman 2002; Krajhanzl 2010). As Lucas, Brooks, Darnton, and Jones stated, "Socio-psychological models of individual behaviour reveal environment-related behaviours to be complex and non-linear, shaped by multiple antecedent factors applying in different sequences and with different weighting to determine the end behaviour" (2008, 458).

Therefore, the study contributes to the literature on PEB with the paradigm shift associated with the complexity framework to solve this major paradox: 'Can the researcher construct models that achieve accurate prediction of outcomes for individual cases that also are generalizable across all the cases in the sample?' (Woodside, 2018, p. 63). On the other hand, this study contributes to the limited studies focusing on the PEB of visitors to the marine protected areas, specifically habitat of Green Turtles (Chelonia mydas, major in number) and Loggerhead Turtles (Caretta caretta, minor habitats) in their major nesting site of the seashore located in Cyprus (Wright et al., 2012). In this location, the ever-growing demand for leisure activities should involve more responsible behaviour on the part of travellers. Secondly, the study offers practical implications for tourism in marine-protected areas in order to take the appropriate measures to eliminate the adverse impacts of tourism that stemmed from non-responsive human behaviours. Thirdly, mindfulness has been recently found as a potential source of PEB (Barbaro & Pickett, 2016) and despite its growing popularity in tourism and hospitality, there are relatively fewer studies in tourism context which focused on the link between this variable and green behaviour of individuals (Chan, 2018). Fourthly, there is a scarcity of research in tourism that observes the determinants of environmental passion as a predictor of PEB. Finally, the study contributes to both literature and practice, by its state of the art methodology (i.e. Qualitative Comparative Analysis) that is currently thrusting in tourism and hospitality domain (Ferguson, Megehee, & Woodside, 2017; Gannon, Taheri, & Olya, 2020; Olya & Akhshik, 2019; Olya & Gavilyan, 2017; Pappas, 2019).

1.5 Organization of the study

The organization of this paper is as follows. Following the contribution section, the theoretical framework comes before the methodology. Finally, after the data collection procedures and analysis, discussion and implications are presented.

Chapter 2

THEORETICAL BACKGROUND

2.1 Overview

The study applies a coherent set of axioms that form the worldview necessary for the complexity theory: a holism, in theory, model development, and data analysis. This paradigm shift refers to the whole as the most appropriate frame of reference for understanding the drivers of Pro-environmental behaviour (Kollmuss & Agyeman, 2002). Employing complexity theory as a core theory, the current study develops and tests a theoretical model based on two relatively recent strands of research in tourism: the dualistic model of passion (Vallerand et al., 2003) and the mindfulness concept (Langer, 1989). Accordingly, the following combination of the antecedents of PEB is proposed as below.

2.2 Tourism and marine protected areas

The inter-linkage between people and protected areas is a complex phenomenon. The protected areas are significant in maintaining biodiversity, ensuring wildlife conservation and safety especially for endangered and near endangered species (Whitelaw et al., 2014). However, the difficulty of the communities to finance the management of such areas pushes them to turn to tourism as a means to generate the required funds for achieving their sustainability goals. The complex systems, such as marine protected areas (Lucrezi et al., 2017), usually intended to implement and follow conservation objectives through excluding or controlling the consumptive use of marine resources like fishing and encouraging non-consumptive strategies such as

diving tourism (Fabinyi, 2008). Therefore, understanding the factors, which influence visitors' intentions in such fragile and sensitive environments, are noteworthy for the stakeholders to develop appropriate strategies that not only sustain the environmental wellbeing but also bring about economic sources to achieve sustainable development of the protected areas. On the other hand, it is observed that many tour participants donated to help protect these species (Olya & Akhshik, 2019). Therefore, the development of tourism in the protected areas, if applied correctly, can contribute as a guideline for target marketing to focus on the markets that have high intentions of behaving in a more eco-friendly way. This is in line with the precept of ecological modernization theory that "implies a partnership in which governments, businesses, moderate environmentalists, and scientists cooperate in the restructuring of the capitalist political economy along more environmentally defensible lines" (Giddens, 1998, p. 57). Thus, instead of cancelling turtle tours or fencing the visitors out of marine protected areas for the sake of protection, we can target a segment of the tourism industry that is likely to contribute socially and financially to preserve these valuable marine species. To date, there is paucity of studies on the application of ecological modernization theory in the context of tourism (Olya & Alipour, 2015).

Orams (2002) highlighted the potential of education-based management strategies in conservation of marine species. One of the tenets of interpretive wildlife tourism is to educate visitors regarding the importance of wildlife conservation. Scholars suggest that education and enjoyment of the marine wildlife tourism experience can contribute to the intended pro-environmental behaviour (e.g., Pratt and Suntikul, 2015). An ideal interpretive tour should provide a meaningful experience that increase visitor's awareness about environmental issues which prompts pro-environmental behaviour in

the long term. The objective of such tours is likely to be satisfied, as visitors are willing to acquire more knowledge about wildlife and the sea in general and in a marine wildlife watching tour setting in particular (Lück, 2015). Therefore, studies of the kind can also be instructive for simulating the behaviour of more stakeholders in terms of engaging in more eco-friendly behaviour.

2.3 Pro-environmental behaviour in the tourism context

An extensive loss of wilderness in the last two decades (Watson et al., 2016) along with the temptation to visit endangered species, before they disappear forever, signifies the importance in producing nature-based experiences with a notion of value for visitors and benefit for the visiting areas (Cross, 1989). On the other hands, environmental problems such as loss of biodiversity pose risks to the sustainability of our ecology in general. Nevertheless, plentiful of these problems are ingrained in human collective behaviours (Vlek & Steg, 2007). In the pursuit for the best method of encouraging context-specific behavioural changes, many scholars took a panglossian optimism in pro-environmental behaviour to help reduce the adverse environmental impacts. This approach is noteworthy in the tourism context, as the heterogeneity nature of this industry facilitates designing offerings per capita, which consider characteristics of both the market and the product development approach (Font & Mccabe, 2017). In this regard, the offerings enable the person to turn to "someone" different with a positive change in the characteristics (Pine & Gilmore 1999), whereas visited area grounds this transformation as it provides settings that lead to change, through increased awareness and adaptation of new values and behaviours in individual and societal level (Kottler, 1997; Leed, 1991; Reisinger, 2015).

As such, pro-environmental behaviour (PEB) is undoubtedly best described as a combination of self-interests (e.g., to engage in a healthier mind-set) as well as concerns for the others, such as the next generation, other species, or whole ecological systems (e.g., adoption of behaviour that has less/no harmful consequences for the environment). Consequently, PEB as a tool to enhance environmental sustainability both in natural and urban settings (e.g., Miller, Merrilees, & Coghlan, 2014; Rezapouraghdam et al., 2018; Ramkissoon, Mavondo, & Uysal, 2018) has attracted significant interest in academia (Wu, Font, & Liu, 2020).

In this regards, scholars have scratched the surface to develope linear models to increase environmental behaviours by external factors like, changing the appeal (Dolnicar, Cvelbar, & Grun, 2017; Hughes, Morrison-Saunders, 2002), persuading communication (Shahzalal & Font, 2018), intervening by media (Holbert, Kwak, & Shah, 2003; Wheaton, Ardoin, Hunt, Schuh, Kresse, Menke, & Durham, 2015) or training the interpreters (Ting & Cheng, 2017).

Many scholars, dive deep to attach behavioural change to context such as backpacking in nature (Noy, 2004), volunteerism (Coghlan & Weiler, 2015), and long distance nature walking (Saunders, Laing, & Weiler, 2013). While others, tie them to the psychological qualities of the visitor such as emotions, and beliefs (Kirillova, Lehto, & Cai, 2017).

The efficiency of intervention to adjust the behaviour is believed to increase when they are bundled to appropriate antecedents of the behaviour and also removing barriers of change. Therefore, it is imperative to comprehend the sufficient factors to encourage or hinder pro-environmental behaviour (Steg, & Vlek, 2009). Although the quest to

unravel the antecedents of PEB is complex and still controversial (Miller et al., 2014) the extant literature mainly falls in three categories; 1) roles of the external factors such as surrounding environments and interpreters as means of promoting PEB through intervening in the context 2) study of the antecedents of individuals' internal characteristics to influence their behaviour and 3) researches that focus on PEB as an outcome variable, for instance, the study of Ramkissoon and her colleagues (2013) divided PEB into two-dimensional construct comprised of low-effort PEB and high-effort PEB.

However, despite all the efforts, surprisingly, long-term behavioural changes have been rarely reported in most tourism studies (Kirillova, Lehto, & Cai, 2017). Scholars' claims on context or psychological process as causes of behavioural change divert the focus of most studies on the triggers rather than the outcome. Moreover, the inherent complexity of human behaviour and the complex interactions of many contextual factors result in researchers' scepticism about the fact that these triggers are merely necessary or sufficient for the occurrence of behavioural change.

Nonetheless, the literature relatively disregards the complications associated with the co-creation of experience designs as a whole. That is, studies ignore to consider mechanisms that lead to the long-term behavioural changes with enough touch points during the service delivery (see Smit & Melissen, 2020). In other words, it is less likely that a long-term behavioural change occurs with a small alteration in antecedents (e.g. changing appeal, pre-contact awareness, and normative message). In other words, Lucas, Brooks, Darnton, and Jones stated that "socio-psychological models of individual behaviour reveal environment-related behaviours to be complex and non-

linear, shaped by multiple antecedent factors applying in different sequences and with different weighting to determine the end behaviour" (2008, p. 458).

A long-term behavioural change can best be achieved when the combination of the antecedents shaping the premises of belief reaches a certain tipping point (Gladwell, 2006). At such a level, substantial changes may occur that turn visitors to long-term environmental citizens (Woodside, 2018). In this regard, Wu et al. (2020, p. 9) mentioned that "however, the adoption of PEBs is complicated, with various factors affecting its formation. A focus on the promoting mechanism is far from enough".

2.4 Mindfulness and pro-environmental behaviour

Mindfulness is generally described as having individual's full attention to the events that occur at that same moment, in a non-judgmental or welcoming manner (Marlatt & Kristeller, 1999). This definition implies many aspects within the mindfulness phenomenon, particularly perception of the experience in the present, acceptance of the situation, non-judging and non-reactivity. On the contrary, for Brown and Ryan (2004), mindfulness as a non-dimensional factor that captures the attentiveness of the individual in present moment. They, however, assumed that other dimensions such as acceptance, is the innate feature of mindfulness that is in the capacity to pay full attention.

Hence, the literature widely accepts the dimensionality of mindfulness as uplifted consciousness and as a consideration of the present moment manifested in both behaviour and experience. The five-facets of this construct include a) observing, b) describing, c) acting with awareness, d) non-reactivity to inner experience and e) non-judging the experience (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006).

Describing comprises of the ability to marker internal feelings with words. Observing denotes to the process of noting to both internal and external experiences. Acting with awareness regards to detailing the present activities, and therefore, frequently contrast with automated functioning known as "auto-pilot." Non-judging includes implementing a non-interference viewpoint to opinions and feelings. Non-reactivity contains allowing judgments and emotional state to originate and pass without reacting to them. Accordingly, these factors are trendsetters to fully capture the capacities in studying mindfulness multidimensionality that is approved in theory and research (Wamsler et., al, 2018). The literature emphasizes the importance in distinguishing the dimensions of mindfulness (Dorjee, 2010). Such distinctions are significant to formulate accurate research hypotheses, elucidation of results and comprehension of mindfulness-based intervention strategies vis-à-vis a peculiar situations and demographics (Geiger, Grossman, & Schrader, 2019).

Empirical evidence strongly confirms the importance of mindfulness-based approaches (Chan, 2018). The potential effect of mindfulness on individuals' eco-friendly behaviour has attracted enormous attention in recent years. Different scholars have identified the pivotal role of mindfulness in achieving sustainability (Bahl et al., 2016; Wamsler et al., 2018). Nevertheless, limited research is available about such an association in a tourism context (Chan, 2018). Peculiarly the scarcity of research on this topic directing the travellers' eco-friendly behaviours in marine protected areas seems evident in the literature. The mindfulness augments the experience with the natural environment and regularises behaviours by offering more sustainable choices (Barbaro & Pickett, 2016). Research has documented the pertinent contribution of mindfulness to individuals' pro-environmental behaviours (Barbaro & Pickett, 2016).

Previous literature asserted that individuals' differences in their trait mindfulness are positively associated with their PEB (Panno, Giacomantonio, Carrus, Maricchiolo, Pirchio, & Mannetti, 2018). Although the study was conducted in a non-tourism context, it provides strong evidence that individuals' level of mindfulness can have a potential association with their PEB.

2.5 Environmental passion and pro-environmental behaviour

Environmental passion, on the other hand, is delineated as a positive emotion that leads to one's desire to become involved in pro-active environmental practices (Robertson & Barling, 2013). The dualistic model of passion (Vallerand et al., 2003) implies that one may develop either a harmonious (autonomous internalisation) passion (HP) or an obsessive (controlled internalisation) passion (OP) towards a valued activity. The process of internalization of passion innate a duality, recognized in the literature as controlled or autonomous (Vallerand et., al 2003). This duality generates different forms of passion, i.e. Harmonious passion (HP) that is rooted in the autonomous internalization process, and obsessive passion (OP) that is originated from the internalization process of controlled passion. As a consequence, HP happens when there is no commitment in the activities; conversely, OP occurs when individuals commit themselves to the activities. In fact, scholars put more faith on harmonious passion to encourage more adaptive behaviours compared to obsessive passion. Research reveals the strong significant association of HP and behaviours while there has not been any correlation to support OP and behaviours relationship (Junot et al., 2017).

There is limited number of studies that considered the effect of passion on individuals' PEB. Afsar, Badir and Kiani (2016) found that environmental passion increases

employees' PEB at workplace although their findings were only limited to making no distinction between harmonious passion and obsessive passion. The authors also suggested that future research should include the link between the dualistic model of passion and PEB (Afsar et al., 2016). However, to date, the literature has not considered whether HP or OP is a necessary or sufficient condition to predict pro-environmental behaviours among tourists.

With the current approach, the study fills the gap of limited knowledge about the application of mindfulness and environmental passion in tourism research.

2.6 Mindfulness - environmental passion and pro-environmental behaviour

Mindfulness-based approaches have been acknowledged to be a potential remedy for unsustainable human behaviour (Geiger, Grossman, & Schrader, 2019). Hence, despite its growing popularity in tourism and hospitality, there are relatively fewer studies in the tourism context, which focused on the link between this variable and green behaviour of individuals (Chan, 2018).

It is believed that mindfulness training is linked to higher pro-environmental behaviour (Panno et al., 2018). Mindfulness enhances people' attention and awareness to the present moment and connects them to the environment and consequently promotes their PEB (Barbaro & Pickett, 2016). Previous studies have also asserted the relationship between harmonious passion and mindfulness (Amemiya & Sakairi, 2019; St-Louis et al., 2018) and harmonious passion and environmental behaviour (Gousse-Lessard et al., 2013; Robertson & Barling, 2013). According to evidence in the literature, it seems that mindfulness and environmental passion together can contribute

to individuals' likelihood to participate in PEB. However, these links have been rarely examined by using the complexity framework and Fuzzy set Qualitative Comparative Analysis (fsQCA) to characterise the non-linear antecedents of the outcome variable especially in the case of the marine protected areas.

2.7 Complexity theory and pro-environmental behaviour

Various theories, such as the theory of planned behaviour (TPB; Ajzen 1985) and the value-belief-norm (VBN) theory (Stern, Dietz, Abel, Guagnano, and Kalof 1999), have been employed to provide theoretical support in explaining the behaviour of people toward environmental issues, which is a complex social phenomenon (Moghimehfar and Halpenny 2016; Lezak and Thibodeau 2016). Many scientists have also tried to modify, extend, or merge the relevant theories to present a more pragmatic theory to describe their proposed conceptual models that simulate PEBs (e.g., Han 2014, 2015; Hsu and Huang 2012; Kiatkawsin and Han 2017; Kim and Han 2010; López-Mosquera and Sánchez 2012; Ryu and Jang 2006).

Despite developing these multiple theoretical frameworks, Antimova, Nawijn, and Peeters (2012) introduced PEB in sustainable tourism as a “black-box” and as an under-researched topic that requires more empirical studies that apply innovative methodological and theoretical approaches to conceptualize and validate PEB models (Juvan and Dolnicar 2017; Kiatkawsin and Han 2017; van Riper and Kyle 2014).

A close examination of the literature on pro-environmental behaviour reveals that studies have thus neglected the fact that changes in behaviour, as a non-linear complex system, require an understanding of the causes, consequences, and dynamics of a holistic and interdependent form of modelling. Studies so far overlook the fact that

sustainable change in the behaviour, as a non-linear complex system, requires an understanding of causes, consequences and the dynamics of a holistic and interdependent form of modelling the visitors' transformation. It is less likely that a change in one antecedent alone (e.g., changing appeal, pre-contact awareness, normative message) is sufficient in adopting pro-environmental behaviours. Moreover, the inherent complexity of transformative experiences and the complex interactions of many contextual factors result in researchers' scepticism about the fact that these triggers are merely necessary or sufficient for the occurrence of transformation. For instance, although the nature of a long distance walk in the nature may transform an individual, there are many similar activities or various ways in the same activity that achieve the same result. In a sense, the confluence of varying circumstances may result in the transformation of the visitor. Nevertheless, these circumstances which are sufficient for the transformation to happen are not necessary themselves, as there might be multiple paths towards transformation of the same person. This is in line with the principle of Equifinality that an outcome can be reached by many potential means (Woodside, 2014, 2016). In this regard, Mackie (1965) proposed that causes are at best, INUS conditions, that is, Insufficient [because of the existence of possible various antecedents] but Necessary parts of a condition; which is itself Unnecessary [because of the existence of possible differing conditions] but Sufficient for their impacts on the outcome.

In this regard, Nunkoo and Ramkissoon (2012) asserted that the restrictive conventional methods are one of the major factors leading to such a problem. Armstrong (2012) further discusses these conventional methods to create illusions resulting in bad decision making. As a result, researchers suggest the use of

asymmetrical modelling in solving complex relationships of PEB (Olya & Akhshik, 2019; Ramkissoon, Weiler, & Smith, 2013). Therefore, this study aims to take the turning point from reductionism to holism and hypothesises that the existence of the small, if any, effects on long-term behaviour is due to the absence of a systemic approach that renders output to long-term positive psychological change (see Woodside, 2018).

Consequently, complexity theory effectively explains the confluence of different and sometimes contradictory variables that result in an outcome (Olya & Al-ansi, 2019; Hsiao et al., 2016; Woodside, 2018).

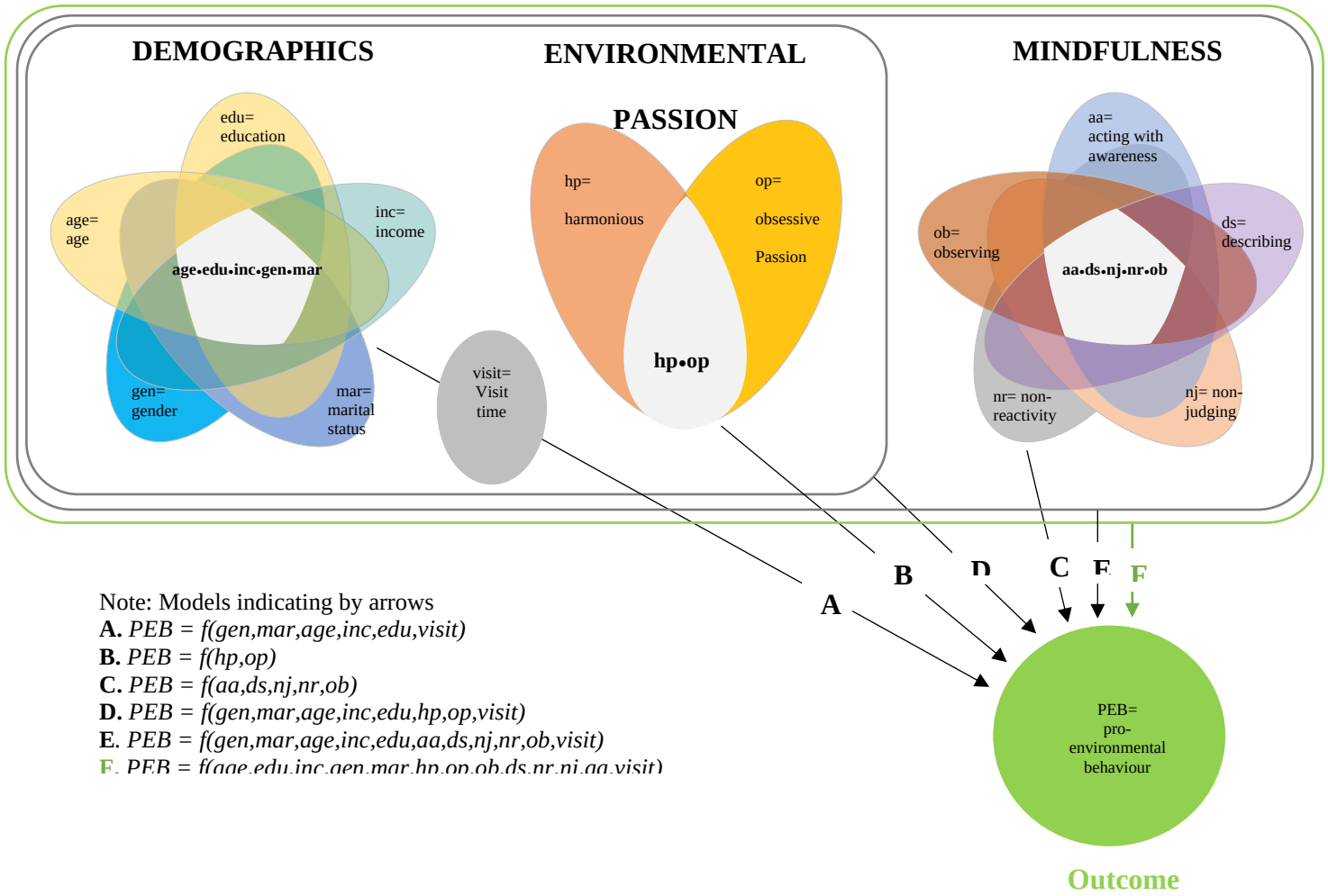
In this regards, the term chaotic behaviour is often entangled with complexity. Therefore, a non-random and chaotic system with many involved agents is a complex system. In a sense, the differentiation of order and disorder amongst the agents adds to the complexity of the system, the term used for this transition is edge of chaos. Therefore, complexity theory evolved from system theory, according to which 'relationships between variables can be non-linear with abrupt switches occurring, so the same "cause" can, in specific circumstances, produce different effects' (Urry, 2005, p. 4). This issue is reflected in the study of Osbaldiston and Schott (2012) who stressed on the complexity of these behaviours and stated that there is no 'silver bullet' that effectively describes pro-environmental behaviour.

On the other hand, the development of interpretive experiences, which involves numerous interacting factors, is a complex phenomenon. Considering the complexity of human behaviour (Ackoff 2005) and interactions of a wide range of PEB indicators, complexity theory well explains the occurrence of heterogeneity and the asymmetric

associations of indicators and PEBs as an outcome (Baggio 2008). Though a clear-cut definition of complexity does not exist and there is no full-fledged theory of complexity (Johnson 2007), this theory, which is rooted in systems theory, is a set of frameworks used for modelling and analysing complex systems. A complex system is a system where the outcome(s) results from multiple interacting and intersecting parts. Moreover, in this system, the outcome of the sum of the parts is not greater but is entirely different from the parts in isolation, and the system loses its essential properties when the parts are considered separately. The parts of a complex system may themselves be systems, and every system may be part of a larger complex system (Ackoff, Ackoff, and Emery 2005; Byrne 2001; Sterman 2000). Complexity theory has been used in many disciplines (e.g., socioeconomics, politics, biology, and health) to explain the dynamic processes of phenomena (e.g., PEBs) given that simple linear equilibrium cannot adequately enlighten "the black-box" of indicators' associations complicated by the complex interactions of a large number of components (Antimova, Nawijn, and Peeters 2012, 10; Baggio 2008; Hsiao et al. 2015; Olya and Al-ansi 2018). This theory is gaining momentum in tourism studies (Pappas, 2019; Olya et al., 2019; Han et al., 2018) and has been deemed as the most appropriate framework to study phenomena as a whole (Hsiao et al., 2016).

In essence, the study embraces the complexity of pro-environmental behaviour and employs complexity theory as the foundational philosophy of this research, which leads to an understanding of the patterns that illustrate an in-depth causal relationship between predicting variables and resulting conditions. After all, as a partial cure for our myopic understanding of human behaviour, complexity theory may portray behaviours as a whole that can be foreseen through complex PEB drivers. Hence, the

conceptual model of the study is crafted on the pillars of complexity theory and is represented by Venn diagrams (Figure 1) that formed the interactions by complex antecedents.



Note: Models indicating by arrows

A. *PEB = f(gen,mar,age,inc,edu,visit)*
B. *PEB = f(hp,op)*
C. *PEB = f(aa,ds,nj,nr,ob)*
D. *PEB = f(gen,mar,age,inc,edu,hp,op,visit)*
E. *PEB = f(gen,mar,age,inc,edu,aa,ds,nj,nr,ob,visit)*
F. *PEB = f(age,edu,inc,gen,mar,hp,op,ob,ds,nr,nj,aa,visit)*

Figure 1. Asymmetrical and configurational model of the study

Chapter 3

METHODOLOGY

3.1 Overview

"Different ways of viewing the world shape different ways of researching the world" (Crotty, p 60). A method shapes thinking and theory crafting (Woodside, 2013), and it influences researchers' testing and evaluation (Gigerenzer, 2010). Moreover, "Scientists' tools are not neutral" (Gigerenzer, 1991, p. 19). As experiences are personal (Pine & Gilmore, 1999), traditional methods directed towards tourist groups cannot be adapted directly.

Moreover, using conventional methods to predict the individual behaviours may result in regression fallacy or Simpsons' paradox. These methods would overlook the contrarian cases which are happening in real life. These cases are running counter to a large main effect (Woodside, 2014, 2015, 2016) and to our intuition.

Thus, the proposed study aims to move beyond qualitative and quantitative strategies towards the qualitative comparative analysis (QCA; Buijs, Eshuis, & Byrne, 2009; Byrne, 2009, 2013; Ragin, 1994, 2000, 2008, 2014) which demand an in-depth knowledge of individual cases. QCA, in contrast to the "net effect", makes it possible to assess causation relationships that are highly complex, involving different combinations of intersecting causal conditions that are capable of generating the same outcome, thus solves the major paradox of: "Can the researcher construct models that

achieve accurate prediction of outcomes for individual cases that also are generalizable across all the cases in the sample?" (Woodside , 2018, p. 63).

3.2 Data and procedure

A systematic process is applied to conduct this empirical study in four major phases. In the first phase, after reviewing relevant studies, survey instruments were prepared; thereafter, a letter of permission for data collection was submitted to the management of the Society for Protection of Turtles and Sea Turtle Conservation and Monitoring Project via the Underwater Research and Imaging Center in Eastern Mediterranean University. The interpretive marine turtle tour involves participating in a video-based educational programme and then a guided activity to release baby turtles into the sea. A pilot study of 15 samples from visitors (n = 10) and academicians (n = 5) assured the absence of possible issues related to the questionnaire items and the process (e.g. readability, timing, and the clarity of the questions), which were excluded from the original sample. During the second phase, the research team went to the leading nesting site in Cyprus, the protected area of Alagadi Turtle Beach to collect data in-situ in August 2018 during turtle hatchlings, and ex-situ during January 2019. In approaching the visitors, the aims of the research, confidentiality of respondents' information and also the usage of the data only for academic purposes were ensured. The visitors were informed that they would be contacted via the email address in the near future (detail about the respondents is available in the respondents' profile section). These procedural remedies were essential in order to come up with the method variance issues (Karatepe et al., 2020; Podsakoff et al., 2003).

In line with the study of Forestell and Kaufman (1990), on the third phase, after four months, an email containing the scales about the mindfulness, environmental passion,

and pro-environmental behaviour was sent to the respondents who during the second phase had agreed to participate in the survey. After reminding the research purposes in the email, the participants were requested to rate the scales considering their visit to Alagadi Turtle Beach. To follow the common method bias avoidance instructions in this phase, a cover page was designed to explain the study's purpose and data confidentiality. Moreover, to avoid 'yes/no' responses, reverse coded items implanted throughout the questionnaire (Podsakoff et al., 2003). Finally, the digitalised items were screened to perform data analyses. In this regard, after testing the measurement model, and cross-tabulation analyses using SPSS v. 20 and AMOS, the fsQCA software facilitated the asymmetric approach to measuring the proposed configural model (Ragin, 2014). In other words, in contrast to the 'net effect', which is a realm of quantitative analysis, fsQCA makes it possible to assess causation relationships, which are highly complex and involve different combinations of intersecting causal conditions that are capable of generating the same outcome. The application of this software has gained more attention in recent years, especially in tourism- and travel-related journals (Ferguson, Megehee, and Woodside 2017; Olya and Al-ansi 2018; Olya and Gavilyan 2017; Olya, Khaksar, and Alipour 2017; Papatheodorou and Pappas 2017; Pappas and Papatheodorou 2017; Sukhu, Bilgihan, and Seo 2017). Finally, the generated fsQCA results were evaluated by using the complexity theory's tenets (Woodside, 2014). Following is the thorough explanations of each step.

3.3 Measurement scales

Some well-researched items were derived from relevant literature. Precisely, the dualistic facet of passion was measured based on items adapted from Marsh et al. (2013) and Vallerand et al. (2003). a short form of five-facet mindfulness (24-item short form of the FFMQ (FFMQ-SF24) was adapted from Bohlmeijer et al. (2011) that

is validated and suggested by scholars to be used in multiple occasions (Brady, Kneebone, & Bailey, 2019). Pro-environmental behaviour was gauged using items adapted from Thapa's (2010) and Smith-Sebasto and D'Costa's (1995) that is validated in the study of Su, Huang, and Pearce (2018). All items were measured using a 7-point Likert scale (1- Strongly disagree, 7- Strongly agree). Table 2 provides further details.

3.4 Respondents' profiles

Out of 520 tourists who visited Alagadi Beach in the period of this study, a total number of 438 valid contact information were extracted for the post-contact stage. Accordingly, all the respondents were invited after four months to participate in the second phase of the data collection, of which 332 (75.7%) valid questionnaires were returned after a reminder email that followed the guidelines of McPeake, Bateson, and O'Neill (2014).

The sample included 140 males (42.2%), 191 females (57.5%) and 1 missing data, of which 206 were married (62%) and 126 were single (38%). The majority of the visitors (38%) were middle-aged, i.e. between 50-64 years old, while 31.3% were 30 to 49 years of age, 75 visitors (22.6%) were over the age of 65, and 26 visitors (7.8%) were aged between 18 and 29. The average income of the respondents was between 3,000 and 5,999 USD for 152 visitors (45.8%), while 81 visitors (24.4%) earned an income of 1,000-2,999 USD. Seventy-two respondents (21.7%) reported earning less than 1,000 USD, while 25 (7.5%) earned more than 6,000 USD per month.

Most of the respondents had attended some high school (98 visitors, 29.5%). A total of 95 visitors (28.6%) had an associate's degree, while 64 (19.3%) of the respondents in the sample held a trade/technical or vocational training diploma. 35 (10.5%) of the

respondents had never attended school, 29 (8.7%) of them had a bachelor's degree, and 10 (3%) had earned a higher graduate degree.

Table 1. Respondents' profile *(n=332)*

Characteristics	Frequency	Percentage
Gender		
Male	140	42.2
Female	191	57.5
Missing	1	.3
Age		
18-29	26	7.8
30-49	104	31.3
50-64	127	38.3
Over 65	75	22.6
Education level		
No schooling completed	35	10.5
Some high school	98	29.5
Associate degree/diploma	95	28.6
Trade/technical/Vocational	64	19.3
training	29	8.7
Bachelor's degree	10	3
Graduate and higher degree	1	.3
Missing		
Marital status		
Married	206	62
Single	126	38
Income		
Less than 1000 USD	72	21.7
1000 – 2999 USD	81	24.4
3000 – 5999 USD	152	45.8
More than 6000 USD	25	7.5
Missing	2	.6
Nationality		
British	115	34.6
Cypriot	29	8.7
German	27	8.1
Swedish	22	6.6
Norwegian	21	6.3
Turkish	18	5.4
Others	99	29.8
Missing	1	.3
Total	332	100%

The sample consisted of mostly British visitors (34.6%), followed by Cypriots (8.7%) and Germans (8.1%). Table 1 provides an overview of the sample's demographics.

3.5 Data analyses

A set of rigorous reliability and validity tests validated the psychometric properties of the scale items. Accordingly, Cronbach's alpha and composite reliability (CR) validated the internal consistency of variables. Moreover, an exploratory factor analysis (EFA), using a principal components method with varimax rotation, and confirmatory factor analysis (CFA), using a maximum likelihood estimator, validated the structure of the measurement items (Anderson & Gerbing, 1987; Fornell & Larcker, 1981). Cross-tabulation analyses of the correlated variables (using Cramér's V test) validates the existence of contrarian cases in the data set. Accordingly, the analyses unveil the asymmetric associations among PEB and its indicators, which corroborate the occurrence of heterogeneity concerns associated with pro-environmental behaviour.

Therefore, to further address this heterogeneity, the study pursues configural and non-linear model. Accordingly, a three-phase fsQCA analysis has been applied based on guidelines by Ragin 2014. Firstly, data calibration transformed the crisp data into fuzzy set membership scores. Secondly, the fuzzy truth table was crafted that extracted a list of the possible conditions that led to low/high PEB level. Finally, counterfactual analyses were performed in an attempt to refine conditions and the recipes that provide parameters of fit in fsQCA, which are: consistency and coverage (Ragin, 2014).

Coverage (the relative importance of different paths to an outcome) and consistency (the proportion of observed cases that is consistent with the pattern) are two

probabilistic criteria for selecting consistent and sufficient causal recipes emerging in the fuzzy truth tables. Formulas for calculating the coverage and consistency measure are as follows:

$$\text{Coverage:}(X_i \leq Y_i) = \sum\{min(Xi, Yi)\}/\sum(Yi))$$

$$\text{Consistency: } (X_i \leq Y_i) = \sum\{min(Xi, Yi)\}/\sum(Xi))$$

In these equations, Xi denotes case i's membership score in set X and Yi denotes case i's membership score in the outcome condition (Ragin, 2008). To compare asymmetric with symmetric approaches, "coverage" and "consistency" in configurational modelling are similar to "coefficient of determination" (i.e., r2) and "correlation" in conventional methods, respectively. As recommended by Ragin (2008), 1 and .8 are considered acceptable levels of frequency and consistency measures. This process was repeated for calculating causal algorithms leading to PEBs negation.

Further, the study provides predictive validity by dividing the sample into two subsamples, then, a causal model from subsample 1 was compared with the data of subsample 2 (see Gigerenzer & Brighton, 2009). Consequently, the results of fsQCA were assessed and discussed using the premises of complexity theory. The expression of these results follows.

Chapter 4

RESULTS AND DISCUSSION

4.1 Results of the preliminary tests

The descriptive statistics of the items and the results of EFA are reported in Table 2. The results of EFA are detailed in Table 2. One item from NR was dropped during the EFA due to its low loading. As a result, the items accurately loaded under their measuring construct at an acceptable level ($\lambda > 0.5$). The eigenvalue for all of the constructs was higher than 1.00.

Table 2. Results of EFA, alpha coefficient, and descriptive statistics of scale items

Scale Item		**%of variance** (λ)	**α** (Mean)	**Eigenvalue** (SD)
Obsessive Passion (*Marsh et al., 2013; Vallerand et al., 2003*)		**22.217**	**.914**	**9.109**
OP4	If I could, I would only do environmentally friendly activities.	.850	4.03	1.798
OP3	My environmental activities are the only thing that really turns me on.	.843	4.11	1.825
OP6	I have the impression that my passion toward the environment controls me.	.833	4.11	1.691
OP2	I have almost an obsessive feeling for the environment.	.819	4.05	1.763
OP1	I have difficulties controlling my urge to do environmentally friendly activities.	.797	3.98	1.767
OP5	My environmental activities are so exciting that I sometimes lose control over them.	.776	3.95	1.832
Harmonious Passion (*Marsh et al., 2013; Vallerand et al., 2003*)		**9.690**	**.887**	**3.973**
HP2	The new things that I discover in the environment allow me to appreciate it even more.	.836	4.37	1.362
HP6	Taking care of the environment is in harmony with other things that are part of me.	.822	4.29	1.384
HP4	Helping the environment allows me to live a variety of experiences.	.795	4.27	1.422
HP3	Behaving environmentally friendly reflect the qualities I like about myself.	.793	4.29	1.369
HP5	My environmental activates are well integrated in my life.	.761	4.31	1.406

HP1	My environmentally friendly practices are in harmony with the other activities in my life.	.666	4.24	1.310
Non-judging (*Bohlmeijer et al., 2011*)		**8.458**	**.926**	**3.468**
NJ2 *	I tell myself that I shouldn't be feeling the way I'm feeling	.862	4.46	1.586
NJ4 *	I make judgments about whether my thoughts are good or bad.	.857	4.48	1.588
NJ3 *	I tell myself I shouldn't be thinking the way I'm thinking	.848	4.44	1.537
NJ1 *	I think some of my emotions are bad or inappropriate and I shouldn't feel them	.814	4.43	1.517
NJ5	I disapprove of myself when I have illogical ideas	.784	4.51	1.590
Pro-environmental behaviour (*Smith-Sebasto and D'Costa, 1995; Su et al., 2018; Thapa, 2010*)		**7.627**	**.877**	**3.127**
PEB 3	When I see garbage, tree branches etc., I will put them in the trash bin.	.823	4.99	1.424
PEB 4	If there are environment cleaning activities, I am willing to attend.	.779	5.04	1.339
PEB 2	I report to the destination administration on any environmental pollution or destruction.	.777	5.07	1.284
PEB 5	I try to convince partners to protect the natural environment.	.772	4.86	1.569
PEB 1	I comply with relevant regulations to not destroy the environment.	.755	4.98	1.288
PEB 6	I try to not disrupt the fauna and flora during my visit.	.689	5.23	1.541
Describing (*Bohlmeijer et al., 2011*)		**7.147**	**.905**	**2.930**
DS4	Even when I'm feeling terribly upset, I can find a way to put it into words	.856	4.39	1.463
DS1	I'm good at finding the words to describe my feelings	.845	4.57	1.456
DS2	I can easily put my beliefs, opinions, and expectations into words	.843	4.52	1.400
DS3 *	When I feel something in my body, it's hard for me to find the right words to describe it	.826	4.39	1.439
DS5 *	It's hard for me to find the words to describe what I'm thinking	.693	4.20	1.491
Acting with awareness (*Bohlmeijer et al., 2011*)		**6.004**	**.898**	**2.461**
AA5 *	I find it difficult to stay focused on what's happening in the present moment	.855	4.58	1.751
AA4 *	It seems I am "running on automatic" without much awareness of what I'm doing	.842	4.47	1.677
AA2 *	I rush through activities without being really attentive to them	.825	4.65	1.634
AA1 *	I do jobs or tasks automatically without being aware of what I'm doing	.798	4.43	1.654
AA3 *	I find myself doing things without paying attention	.689	4.36	1.567
Observing (*Bohlmeijer et al., 2011*)		**4.949**	**.862**	**2.029**
OB2	I pay attention to physical experiences, such as the wind in my hair or sun on my face	.852	4.27	1.465
OB1	Generally, I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing	.840	4.45	1.393
OB4	I notice the smells and aromas of things	.824	4.26	1.435

OB3	I notice visual elements in art or nature, such as colours, shapes, textures, or patterns of light and shadow	.794	4.24	1.327
Non-reactivity (*Bohlmeijer et al., 2011*)		**4.649**	**.846**	**1.906**
NR4	I watch my feelings without getting carried away by them	.811	4.15	1.309
NR5	When I have distressing thoughts or images, I don't let myself be carried away by them	.803	4.16	1.252
NR3	When I have distressing thoughts or images, I just notice them and let them go	.796	4.55	1.331
NR2	Usually when I have distressing thoughts or images I can just notice them without reacting	.742	4.47	1.413

Note: λ is factor loading coefficient. α is Cronbach's alpha representing internal consistency (reliability); SD is standard deviation. Kaiser-Meyer-Olkin (KMO) measure with .877 and Bartlett's test of Sphericity of 8633.102 was significant (P<.000). The sources of the scale items are presented in parenthesis. All items gauged by 7-point Likert scale ranging from strongly disagree (1) to strongly agree (7).

The results of Cronbach's alpha coefficient are presented in Table 3 with all alphas greater than the commonly suggested cut-off threshold for reliability (Cortina 1993). Table 3, as well, represents the composite reliability (CR) that are more than the 0.70 cut-off point (Bagozzi & Yi, 1988) which validates the internal consistency of the item scales (Fornell & Larcker, 1981). To confirm EFA result, a CFA has been performed the results of which are presented in table 3. Table 3 presents that all items were loaded adequately under desired factors.

Table 3. Result of CFA, CR, AVE and MSV

	β	**CR**	**AVE**	**MSV**
Acting with awareness		0.899	0.643	0.178
AA1	.801			
AA2	.832			
AA3	.648			
AA4	.866			
AA5	.842			
Describing		0.908	0.667	0.121
DS1	.890			
DS2	.867			
DS3	.843			
DS4	.820			
DS5	.639			
Harmonious passion		0.888	0.570	0.089
HP1	.630			
HP2	.815			
HP3	.769			
HP4	.805			

HP5	.733			
HP6	.764			
Non-judging		0.927	0.718	0.178
NJ1	.844			
NJ2	.856			
NJ3	.869			
NJ4	.874			
NJ5	.791			
Non-reactivity		0.846	0.581	0.121
NR2	.767			
NR3	.843			
NR4	.712			
NR5	.719			
Observing		0.862	0.610	0.114
OB1	.782			
OB2	.803			
OB3	.738			
OB4	.799			
Obsessive passion		0.914	0.640	0.078
OP1	.772			
OP2	.787			
OP3	.828			
OP4	.846			
OP5	.769			
OP6	.796			
Pro-environmental behaviour		0.879	0.548	0.156
PEB1	.693			
PEB2	.708			
PEB3	.797			
PEB4	.770			
PEB5	.791			
PEB6	.675			

Note: β: standardized factor loading; β is significant at the .001 level; AVE: average variance extracted; MSV: maximum shared squared variance; CR: composite reliability

4.2 Results of cross-tabulation analyses

The conventional methods to predict individual behaviours overlook essential information available in a data set. Specifically, these methods do not consider the existence of contrarian cases throughout a sample. Moreover, the traditional approach to data analysis may result in a regression fallacy or Simpson's paradox (see Armstrong, 2011); the contrarian cases run counter to the main effect (Woodside, 2014, 2018) as well as to our intuition. As an example, the results in Table 5 illustrate that 56 individuals (16.86% of the sample) were not acting with awareness but behaved pro-environmentally. Moreover, Table 4 presents negative contrarian cases (68 cases,

20.48%) in which visitors who lacked harmonious passion for the environment behaved pro-environmentally. The results reveal the heterogeneity in indicating PEB and the asymmetric relationships between PEB and its antecedents. Thus, the contrarian cases exist even when the associations between predictors and pro-environmental behaviour are positive, and their effect size is significant.

Table 4. Cross-Tabulation Analysis of Pro-environmental behaviour (PEB) with Harmonious Passion (HP)

HP	**PEB**							
	Strongly disagree	Disagree	More or less disagree	Undecided	More or less agree	Agree	Strongly Agree	Total
Strongly disagree								
Count	0	0	0	2	**2**	**0**	**0**	4
% within PEB	0.0	0.0	0.0	3.3	**1.6**	**0.0**	**0.0**	1.2
% of Total	0.0	0.0	0.0	0.6	**0.6**	**0.0**	**0.0**	1.2
Disagree								
Count	0	2	10	4	**11**	**6**	**1**	34
% within PEB	0.0	14.3	19.2	6.7	**8.9**	**7.5**	**100.0**	10.2
% of Total	0.0	0.6	3.0	1.2	**3.3**	**1.8**	**0.3**	10.2
More or less disagree								
Count	1	3	15	18	**36**	**12**	**0**	85
% within PEB	50.0	21.4	28.8	30.0	**29.3**	**15.0**	**0.0**	25.6
% of Total	0.3	0.9	4.5	5.4	**10.8**	**3.6**	**0.0**	25.6
Undecided								
Count	1	4	17	24	45	21	0	112
% within PEB	50.0	28.6	32.7	40.0	36.6	26.2	0.0	33.7
% of Total	0.3	1.2	5.1	7.2	13.6	6.3	0.0	33.7
More or less agree								
Count	0	3	7	12	22	24	0	68
% within PEB	0.0	21.4	13.5	20.0	17.9	30.0	0.0	20.5
% of Total	0.0	0.9	2.1	3.6	6.6	7.2	0.0	20.5
Agree								
Count	0	2	2	0	7	16	0	27
% within PEB	0.0	14.3	3.8	0.0	5.7	20.0	0.0	8.1
% of Total	0.0	0.6	0.6	0.0	2.1	4.8	0.0	8.1

Strongly Agree								
Count	0	0	1	0	0	1	0	2
% within PEB	0.0	0.0	1.9	0.0	0.0	1.2	0.0	0.6
% of Total	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.6
Total								
Count	2	14	52	60	123	80	1	332
% within PEB	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
% of Total	0.6	4.2	15.7	18.1	37.0	24.1	0.3	100.0

Note: Cramer's V ($\emptyset_c$) = .17, $p < 0.05$; The bold numbers illustrate negative contrarian cases (68 cases, 20.48%) indicating ~HP → PEB.

Table 5. Cross-Tabulation Analysis of PEB with Acting with Awareness

Acting with awareness	**PEB**							Total
	Strongly disagree	Disagree	More or less disagree	Undecided	More or less agree	Agree	Strongly Agree	
Strongly disagree								
Count	0	1	1	3	**4**	**2**	**0**	11
% within PEB	0.0	7.1	1.9	5.0	**3.3**	**2.5**	**0.0**	3.3
% of Total	0.0	0.3	0.3	0.9	**1.2**	**0.6**	**0.0**	3.3
Disagree								
Count	0	1	10	12	**20**	**5**	**1**	49
% within PEB	0.0	7.1	19.2	20.0	**16.3**	**6.2**	**100.0**	14.8
% of Total	0.0	0.3	3.0	3.6	**6.0**	**1.5**	**0.3**	14.8
More or less disagree								
Count	0	0	15	14	**19**	**5**	**0**	53
% within PEB	0.0	0.0	28.8	23.3	**15.4**	**6.2**	**0.0**	16.0
% of Total	0.0	0.0	4.5	4.2	**5.7**	**1.5**	**0.0**	16.0
Undecided								
Count	0	4	11	15	29	5	0	64
% within PEB	0.0	28.6	21.2	25.0	23.6	6.2	0.0	19.3
% of Total	0.0	1.2	3.3	4.5	8.7	1.5	0.0	19.3
More or less agree								
Count	2	6	10	9	35	28	0	90
% within PEB	100.0	42.9	19.2	15.0	28.5	35.0	0.0	27.1
% of Total	0.6	1.8	3.0	2.7	10.5	8.4	0.0	27.1
Agree								
Count	0	2	4	7	16	34	0	63
% within PEB	0.0	14.3	7.7	11.7	13.0	42.5	0.0	19.0
% of Total	0.0	0.6	1.2	2.1	4.8	10.2	0.0	19.0

Strongly Agree								
Count	0	0	1	0	0	1	0	2
% within PEB	0.0	0.0	1.9	0.0	0.0	1.2	0.0	0.6
% of Total	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.6
Total								
Count	2	14	52	60	123	80	1	332
% within PEB	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
% of Total	0.6	4.2	15.7	18.1	37.0	24.1	0.3	100.0

Note: Cramer's V ($\emptyset_c$) = .207, p < 0.000; The bold numbers illustrate negative contrarian cases (56 cases, 16.86%) indicating ~AA → PEB.

Based on the results in Tables 4 and 5, modelling multiple realities (i.e. configural analysis) is essential to comprehend better the configurations of multiple antecedents that lead to high or low pro-environmental behaviour (Woodside, 2015).

4.3 Results of model testing

The results of the asymmetrical and configural model of the study (Figure 1), depicted as arrows A to F, are outlined in Table 6 and Table 7.

In testing the model of the study, fsQCA enhances the use of Boolean algebra based on the Quine-McCluskey matrix to determine the different causal models that lead to the high/low PEB scores of the visitors.

Consequently, the result of arrow A in Figure 1, which indicates the confluences of the antecedents of demographics [i.e. *PEB = f(gen,mar,age,inc,edu,visit)*], is outlined in Table 6. Four causal recipes (A: M1 - M4) led to a high PEB score (coverage = 0.51, consistency = 0.87). To clarify, A: M1 (~visit*gen*age*~edu) reveals that older female visitors who were poorly educated and had never visited the area achieved a high PEB score. Accordingly, A: M2 (~visit*age*inc*~edu) suggests that wealthy tourists who were first-time visitors, older and poorly educated reported a high PEB score. Further, according to A: M3 (~gen*mar*age*inc*~edu), older, married and rich male visitors who were poorly educated achieved a high PEB score. The recipe A: M4 (~visit*~gen*mar*age*inc) suggests that older, married, and rich males who have not previously visited the protected marine area exert high PEB. The results of this study are in line with the results of previous studies (e.g. Olya & Akhshik, 2019; Olya & Gavilyan, 2017) that older, married, and less educated people have higher intentions of supporting sustainable development and exert high intentions to behave pro-

environmentally. Thus, contrary to the application of conventional linear methods that offer one model for predicting PEB, this state-of-the-art method offers one or more causal recipes for simulating the PEB of the visitors.

Table 6. Configural Models of high and low scores of PEB (model A, B, C and their negations)

Models for predicting high score of PEB	**RC**	**UC**	**C**
A. *PEB = f(gen,mar,age,inc,edu,visit)*			
M1: ~visit*gen*age*~edu	.30	.06	.87
M2: ~visit*age*inc*~edu	.38	.05	.91
M3: ~gen*mar*age*inc*~edu	.12	.04	.90
M4: ~visit*~gen*mar*age*inc	.10	.02	.86
Solution coverage: .51			
Solution consistency: .87			
B. *PEB = f(hp, op)*			
M1: ~op	.56	.14	.89
M2: hp	.72	.30	.90
Solution coverage: .86			
Solution consistency: .87			
C. *PEB = f(aa, ds, nj, nr, ob)*			
M1: ob*ds*nr	.53	.09	.93
M2: nr*nj*aa	.54	.12	.95
M3: ob*ds*nj*aa	.45	.04	.96
M4: ~ob*~ds*~nr*~nj*~aa	.29	.03	.96
Solution coverage: .75			
Solution consistency: .92			
Models for predicting low score of PEB	**RC**	**UC**	**C**
~A. *~PEB = f(gen,mar,age,inc,edu,visit)*			
M1: ~visit*gen*age*~edu	.31	.07	.38
M2: ~visit*age*inc*~edu	.44	.08	.44
M3: ~gen*mar*age*inc*~edu	.17	.05	.52
M4: ~visit*~gen*mar*age*inc	.13	.01	.46
Solution coverage: .59			
Solution consistency: .42			
~B. *~PEB = f(hp, op)*			
M1: ~hp	.81	.11	.55
M2: op	.84	.14	.45
Solution coverage: .95			
Solution consistency: .41			
~C. *~PEB = f(aa, ds, nj, nr, ob)*			
M1: ob*ds*nr*~nj*~aa	.58	.58	.80
Solution coverage: .58			
Solution consistency: .80			

Note: RC = raw coverage; UC = unique coverage; C = consistency; PEB = pro-environmental behaviour; visit = visited time; age = respondents' age; gen= gender; mar = marital status; inc = income; edu = education; ob = observing; ds = describing; nr = non-reactivity ; nj = non-judging; aa = acting with awareness; hp = harmonious passion; op = obsessive passion; ~ = negation; marital status, gender and visited time are dummy variables: 0 indicates: single, men, and first-time visit, while 1 indicates: married, women and second or more time visits.

Moreover, the extant literature suggests further excavation into the question of 'why people do not engage in PEBs' to deeply understand the mechanism of PEB formation (Wu, Font, & Liu, 2020, p.9). Despite the limited evidence in the literature mentioning the reasons and barriers constraining PEBs (Font and Hindley 2017), there are fewer that have theorised and empirically validated the underpinning mechanism of PEB negations. The current research, therefore, advances the existing literature by conceptualising a range of high/low scored antecedents that contributes to the obstacles constraining PEB. In symmetric linear models, a low-score PEB is considered as the exact opposite of a high-score PEB, while fsQCA offers different varying conditions for the negation of PEB (Table 6; ~A: M1- M4).

The result of arrow B in Figure 1 is outlined in Table 6 (B: M1 and M2; ~B: M1 and M2). Two causal recipes for the intersection of the dualistic model of passion [PEB = f(hp, op)] are offered (solution coverage: 0.86; solution consistency: 0.87). Accordingly, B: M1 (~op) suggests that visitors who lack obsessive passion achieve high pro-environmental behaviour (PEB). This finding is certainly a counter-intuitive result that has been misinterpreted in previous studies using structural equation modelling (e.g. Afsar et al., 2016). For example, in line with the results of this study, Junot et al. (2017) found that obsessive passion is negatively related to emotions, an affiliation with nature and environmental behaviours. However, this does not necessarily mean that people who lack obsessive passion do not act pro-environmentally. According to B: M2 (hp), visitors with harmonious passion achieved high scores in pro-environmental behaviours. Conversely, a causal recipe that contains a low level of harmonious passion and high level of obsessive passion (Table 6; ~B: M1 and M2) leads to PEB negation.

The result of arrow C in Figure 1, which is the confluence of the mindfulness facets, is outlined in Table 6 (C: M1 - M4; ~C: M1). Accordingly, four recipes were extracted as the result of fsQCA (solution coverage: 0.75; solution consistency: 0.92). Model C: M1 (ob*ds*nr) suggests that visitors with a high level of observing, describing and non-reactivity to thoughts and feelings exert high score pro-environmental behaviour.

Another recipe that leads to high pro-environmental scores, C: M2 (nr*nj*aa), has a high level of non-reactivity, non-judgmental and acting with awareness. As suggested by C: M3 (ob*ds*nj*aa), visitors with a high perception of observing, describing, non-judging and acting with awareness achieving high pro-environmental behaviour scores. Moreover, as suggested by C: M4 (~ob*~ds*~nr*~nj*~aa), another path towards pro-environmental behaviour involves visitors who scored low on observing, describing, non-reactivity, non-judging and acting with awareness and also exerted a high level of pro-environmental behaviour. The discussion of this path appears in the section on the evaluation of complexity theory. Moreover, one recipe [~C: M1; *~PEB = f(aa, ds, nj, nr, ob)*] achieved the negation of pro-environmental behaviour (~PEB) regarding the facets of mindfulness.

Arrow D represents the combination of demographics, harmonious passion and obsessive passion [*PEB = f(gen,mar,age,inc,edu,hp,op,visit)*]; the fsQCA results are presented in Table 7 for high and low PEB. Five causal recipes are describing sufficient and consistent conditions to predict PEB (solution coverage: 0.39; solution consistency: 0.93). As an example, D: M4 (~visit*gen*op*hp*age*inc*~edu) suggests that first-time visitors who are old, rich females, highly passionate for the environment and less educated achieve high scores of pro-environmental behaviour. Moreover, using a combination of demographics and the dualistic facet of passion, five causal

recipes were explored for PEB negation (solution coverage: 0.31; solution consistency: 0.77).

Table 7. Configural Models of high and low scores of PEB with all the antecedents (model D, E, F and their negations)

Models for predicting high score of PEB	**RC**	**UC**	**C**
D. *PEB = f(gen,mar,age,inc,edu,hp,op,visit)*			
M1: ~visit*gen*~op*~hp*age*inc*~edu	.14	.00	.94
M2: gen*mar*~op*~hp*age*inc*~edu	.14	.05	.94
M3: ~visit*gen*mar*op*hp*age*~inc	.10	.03	.92
M4: ~visit*gen*op*hp*age*inc*~edu	.21	.01	.96
M5: ~visit*mar*op*hp*age*inc*~edu	.23	.07	.97
Solution coverage: .39			
Solution consistency: .93			
~D. *~PEB = f(gen,mar,age,inc,edu,hp,op,visit)*			
M1: ~visit*gen*~age*~inc*edu*hp*~op	.13	.01	.86
M2: gen*mar*~age*~inc*edu*hp*~op	.13	.05	.85
M3: ~visit*gen*mar*age*inc*edu*~hp	.10	.00	.72
M4: ~visit*gen*age*inc*edu*hp*~op	.16	.01	.77
M5: ~visit*mar*age*inc*edu*hp*~op	.18	.08	.76
Solution coverage: .31			
Solution consistency: .77			
E. *PEB = f(gen,mar,age,inc,edu,aa,ds,nj,nr,ob,visit)*			
M1: ~visit*mar*~ob*ds*nr*nj*aa*age*inc*~edu	.13	.03	.98
M2: ~visit*gen*mar*ob*ds*nj*aa*age*inc*~edu	.11	.02	.98
M3: ~visit*gen*ob*ds*nr*nj*aa*age*inc*~edu	.12	.03	.97
M4: ~visit*gen*mar*~ob*~ds*nr*nj*~aa*age*~inc*~edu	.05	.00	.95
M5: visit*gen*mar*ob*~ds*nr*~nj*~aa*age*inc*~edu	.03	.00	.94
M6: ~visit*~gen*mar*ob*~ds*nr*nj*aa*age*inc*~edu	.04	.00	1
M7: visit*gen*mar*ob*ds*nr*nj*~aa*age*inc*~edu	.03	.00	.98
M8: ~visit*gen*mar*ob*ds*nr*nj*aa*age*~inc*edu	.05	.00	.97
M9: visit*~gen*mar*ob*~ds*nr*nj*aa*age*inc*edu	.01	.01	1
Solution coverage: .30			
Solution consistency: .97			
~E. *~PEB = f(gen,mar,age,inc,edu,aa,ds,nj,nr,ob,visit)*			
M1: ~visit*gen*mar*~ob*~ds*nr*nj*~aa*age*~inc*~edu	.12	.12	.87
M2: visit*gen*mar*ob*~ds*nr*~nj*~aa*age*inc*~edu	.06	.06	.80
Solution coverage: .18			
Solution consistency: .84			
F. *PEB = f(age,edu,inc,gen,mar,hp,op,ob,ds,nr,nj,aa,visit)*			
M1: ~visit*mar*~ob*ds*nr*nj*aa*op*hp*age*inc*~edu	.13	.03	.99
M2: ~visit*gen*mar*ob*ds*nj*aa*op*hp*age*inc*~edu	.10	.02	.98
M3: ~visit*gen*ob*ds*nr*nj*aa*op*hp*age*inc*~edu	.11	.03	.98
M4: visit*gen*mar*ob*ds*nr*nj*~aa*~op*~hp*age*inc*~edu	.03	.03	.98
M5: ~visit*~gen*mar*ob*~ds*nr*nj*aa*op*hp*age*inc*~edu	.04	.00	1
M6: ~visit*gen*mar*ob*ds*nr*nj*aa*op*hp*age*~inc*edu	.05	.01	.97
M7: visit*~gen*mar*ob*~ds*nr*nj*aa*op*hp*age*inc*edu	.01	.01	1
Solution coverage: .27			
Solution consistency: .98			
~F. *~PEB = f(age,edu,inc,gen,mar,hp,op,ob,ds,nr,nj,aa,visit)*			

M1: ~visit*gen*mar*ob*ds*nr*nj*aa*op*hp*age*inc*edu	.09	.09	.78
M2: visit*~gender*mar*ob*~ds*nr*nj*aa*op*hp*age*inc*edu	.03	.03	.77
Solution coverage: .13			
Solution consistency: .78			

Note: RC = raw coverage; UC = unique coverage; C = consistency; PEB = pro-environmental behaviour; visit = visited time; age = respondents' age; gen= gender; mar = marital status; inc = income; edu = education; ob = observing; ds = describing; nr = non-reactivity ; nj = non-judging; aa = acting with awareness; hp = harmonious passion; op = obsessive passion; ~ = negation; marital status, gender and visited time are dummy variables: 0 indicates: single, men, and first-time visit, while 1 indicates: married, women and second or more time visits.

Arrow E represents a combination of demographics and five facets of mindfulness [*PEB = f(gen,mar,age,inc,edu,aa,ds,nj,nr,ob,visit)*]. Accordingly, the fsQCA results are represented in Table 7. (E and ~E). Accordingly, there are nine causal recipes describing conditions that lead to high pro-environmental behaviour (solution coverage: 0.30; solution consistency: 0.97). As an example, E: M3 (~visit*gen*ob*ds*nr*nj*aa*age*inc*~edu) suggests that older, rich, male visitors who are less educated and obtain high scores on observing, describing, non-reactivity, non-judging and acting with awareness exercised high pro-environmental behaviours. Conversely, the combination of demographics and the facets of mindfulness associated with the negation of pro-environmental behaviour results in two causal recipes, the details of which are illustrated in Table 7 (~E.M1-M2).

The expansion of more causal recipes in the configural model elucidates the innate complexity of pro-environmental behaviour as well as the complex interactions of the antecedents. Considering all of the possible configurations in the study (i.e. demographics, dual facets of passion, five facets of mindfulness) to predict PEB, seven causal recipes explain the conditions in which marine turtle visitors have behaved pro-environmentally (Table 7; F: M1–M7). For example, F: M4 (visit*gen*mar*ob*ds*nr*nj*~aa*~op*~hp*age*inc*~edu) shows that rich, older, married females who had experienced the turtle-watching tour, achieved high scores

on observing, describing, non-reacting and non-judging but lacked any passion for environment behaved in a more environmentally friendly way.

Based on the fsQCA results for the negation of PEB with all of the antecedents, two causal recipes explained the low scores associated with visitors' pro-environmental behaviour (solution coverage: 0.13; solution consistency: 0.78), the details of which are presented in Table 7 (~F: M1 and M2). A thorough evaluation of the complexity of PEB is provided in the complexity theory evaluation subsection.

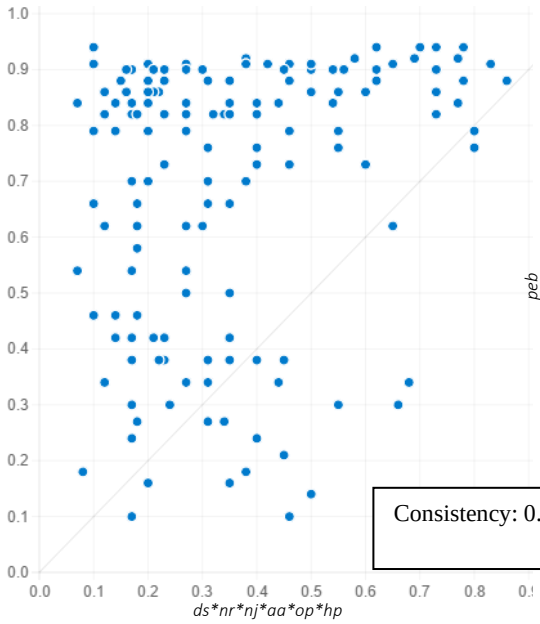
4.4 Predictive validity

As the complexity increases, the forecasting power of the model decreases (Zellner, 2001). Researchers have tended to ignore the ex-ante estimation of a model or if not, have been misled by the illusion of 'fit implies accuracy' (Armstrong, 2011; Gigerenzer & Brighton, 2009). As a solution, predictive validity tests are suggested to answer the question of 'Does the study predict future outcomes?' (Woodside, 2018; Armstrong, 2011; Woodside, 2016; Fergusen, Megehee, & Woodside, 2018; Gigerenzer & Brighton, 2009).

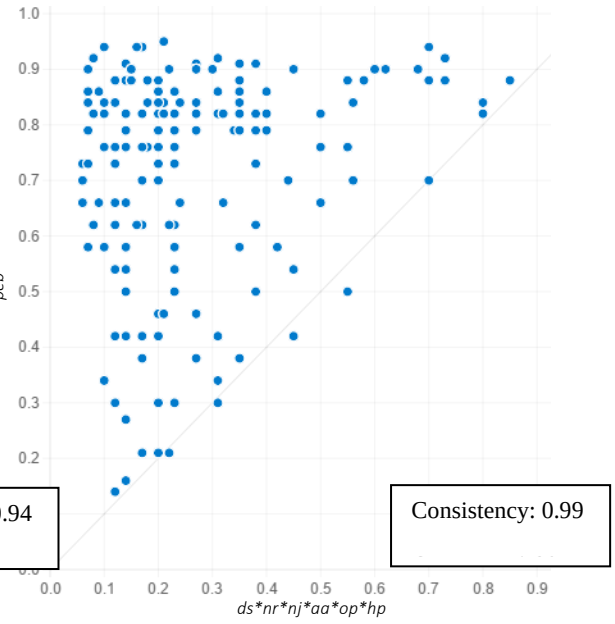
Hence, the result of the predictive validity of the model is presented in Figure 2. Firstly, the sample has been split into a subsample and a holdout sample. Using the model of the study, *PEB = f(ds*nr*nj*aa*op*hp),* the fuzzy XY plot has been displayed with the complex antecedents on the X-axis and PEB on the Y-axis (consistency= 0.94; coverage = 0.48). In the next step involving the holdout sample, the same model has been tested to draw an XY plot in order to provide evidence of the predictive validity of the model (consistency = 0.99; coverage = 0.39).

Model from Subsample I	Raw coverage	Unique coverage	Consistency
PEB = *f(ds*nr*nj*aa*op*hp)*	0.48	0.48	0.94

Test of model with subsample I



Test of model with subsample II



Note: The fuzzy XY plot unveils the asymmetric relationship of the causal model and provides the predictive validity.

Figure 2. Evidence of predictive validity

4.5 Complexity theory evaluation

This study developed and tested a model using complexity theory and its tenets (Woodside, 2017). Complexity theory provides patterns that illustrate an in-depth comprehension of the relationship between predicting variables and resulting conditions. Thus, complexity theory can predict visitors' environmental behaviours. According to the assumptions of complexity theory (Woodside, 2014), a single independent variable is rarely sufficient for the prediction of the desired outcome (Tenet 1). Alternatively, a complex recipe describes high or low PEB scores (Tenet 2: The recipe principle). In this research, a combination of the studied variables (F: M7: visit*~gen*mar*ob*~ds*nr*nj*aa*op*hp*age*inc*edu) resulted in the high PEB scores of the visitors (see Table 7). Thus, although education may be a necessary

condition in this recipe (F: M7) to achieve high PEB, it is insufficient in describing or predicting PEB solely.

Accordingly, a model that sufficiently achieves the outcome is not necessary, as there are other paths to reach the same result (Tenet 3: Equifinality principle). As presented in tables 6 and 7, there are multiple paths to achieve high pro-environmental behaviour scores.

The fsQCA results provide evidence that the rejected outcome is unique and not the mirror opposite of the same recipe (Tenet 4: The causal asymmetry principle). As presented in Tables 6 and 7, the causal recipes for a low PEB scores (~A, ~B, ~C, ~D, and ~F) are unique and are not the mirror opposites of their acceptable causal models for PEB (A, B, C, D and F).

Based on the assumptions of complexity theory, an antecedent (e.g. harmonious passion) can contribute both positively and negatively to predicting the outcome, depending on the presence or absence of the other ingredients in the recipes (Tenet 5). In this study, both the presence and the absence of harmonious passion have contributed to high PEB scores (Table 7; F: M4 and M5).

Accordingly, the study provides evidence of the sixth tenant by illustrating an XY plot (Figure 2). For a high PEB score, a given recipe is relevant for some, but not all cases and the coverage is less than 1.00.

These results are aligned with the predictions of Kollmuss and Agyeman (2002) and confirm the complexity of the individuals' PEB. Thus, overly simplistic linear models

should be avoided (Siegel et al., 2018), and PEB has to be modelled using configural causal modelling such as fsQCA and complexity theory to consider solutions outside of a single framework.

Chapter 5

CONCLUSION

5.1 Major findings

Human behaviour is believed to be significantly related to the environmental problems, (Akhshik et al., in press; Alipour et al., 2020; Oskamp, 2000; Stern, 1992). Therefore researchers, especially in social science, have studied environmental issues from a psychological and behavioural perspective (Oskamp, 2000) as adopting environmentally sound behaviours results in sustainable benefits for the society and the surrounding environment (Bramwell et al. 2017). However, the conceptualisation of PEBs as a complex phenomenon demand innovative theoretical and methodological approaches (Kiatkawsin & Han, 2017). Therefore, this study is a response to a long call to address the complexity of pro-environmental behaviour (Osbaldiston & Schott, 2012; Olya & Akhshik, 2019; Kullmoss & Agyeman, 2002). The empirical study provides insights into the application of complexity theory in the causal modelling of PEB using mindfulness and passion notions. This study advances our understanding of pro-environmental behaviour with its use of state of the art set-theoretic approach to identify different paths that emerge from the interpretive turtle-watching/releasing experience. In this regard, the existence of contrarian cases necessitates the use of approaches beyond the conventional restrictive methods, thus, in line with the theory of complexity, the complex intersecting drivers of pro-environmental behaviour that have non-linear associations are explained. However, the complex interactions of many contextual and psychological factors as triggers of PEB emphasise on the fact

that these drivers are merely necessary or sufficient for the occurrence of pro-environmental behaviours. In other words, PEB as an outcome can be achieved through the confluence of different antecedents—specifically, when these combinations reach a certain tipping point level at which substantial changes occur that transform the visitors into long-term environmental citizens (Gladwell, 2006).

On the other hand, the convergence of environmental passion and mindfulness provides an unprecedented approach that has rarely been applied in the tourism and hospitality field through which the behaviours of individuals during their visits to the protected site can lead to more responsible behaviours in the long term.

The study found seven unique causal recipes that lead to a high level of PEB, including a dualistic model of passion, facets of mindfulness and demographic data (Table 6; F: M1-M7). Therefore, the heterogeneous nature of these recipes addresses significant gaps in theory and practice. In this regard, it is of the utmost importance for the tourism stakeholders to understand the underpinning patterns shaping visitors' high and low pro-environment behaviour scores, especially in sensitive ecological destinations.

5.2 Implications

5.2.1 Theoretical implications

The study contributes to theory by enlightening the configurations of causal asymmetric relationships that cannot be revealed with simplistic linear models that ignore the interaction effects of other variables. Linear symmetrical models may reach to unrealistic conclusions that disregard essential data in the dataset. The results enrich the complexity theory with the recipes leading to pro-environmental behaviours. The majority of the studies, so far, in predicting PEB area are limited to linear asymmetrical relationships between the predictors and outcome variables; conversely, this study

suggests multiple recipes from the confluence of the different variables in shaping visitors' PEB (Table 7; F: M1-M7). The study further investigates the negations of PEB to deepen our knowledge of the mechanisms of PEB (Wu, Font, & Liu, 2020). Theoretical contributions of the study lie in the hearth of a paradigm shift from reductionism to holism in interpreting the literature, modelling and data analysis.

Moreover, the facets of mindfulness and dualistic model of environmental passion as drivers of PEB have been rarely reported in tourism literature (Barbaro & Pickett, 2016; Chan, 2018). The results of the study fill the gap by finding significant contribution to the literature of tourism and environmental studies by reporting that mindfulness and environmental passion together as sufficient predictors of visitors' PEB. Finally, the accumulation of findings of studies of the kind could transcend our worldview towards defining 'sustainable service'.

5.2.2 Practical implications

The results of the study would signify the importance of the innate heterogeneity in the experience design. Therefore, tourism service providers can design experiences per capita that transform visitors' behaviours in the long term. Moreover, the findings of this study facilitate the creation of positive and negative personas as a tool in visitor management, particularly in the protected areas. Experience designers may also use the same approach to maintain enough touching points in an experience to turn visitors into long-term environmental citizens (See Smit & Melissen, 2020).

On the other hand, the results could also be used as an action plan for the target marketing of such sensitive sites. These sites could use marketing or demarketing strategies based on the demographic segmentation, as a combination of demographics, fits the high or low level of pro-environmental behaviour as fsQCA explores. For

instance, destination marketers can focus on older, married, and less educated visitors as emerged segment who behave more pro-environmentally. Moreover, the results of the study can be applied to calibrate the characteristics of the activities on the site and focus on the visitors with specific demography. Furthermore, the findings aid the service providers to prevent the conditions that harm the habitat of endangered species.

5.3 Future studies and limitations

The study was limited to PEB as the only outcome. However, fsQCA is capable of predicting the configuration of outcomes. For this reason, future studies should measure the PEB using actual consumption patterns. The findings in this study are limited to visitors of one marine protected area located in Cyprus with a restricting carrying capacity policy on visitors' number. Consequently, more empirical studies of other protected areas, wildlife tours and other settings are suggested to warrant the generalisation of this study. We have proposed components of the dualistic model of passion, the facets of mindfulness and demographic information to craft the causal configural model. The study measures combinations of individuals' harmonious and obsessive passion to promote PEB, rather than distinguishing passion in different phases of the visit (i.e. pre-visit, visit, and post-visit), however individuals may experience harmonious passion in one phase and obsessive passion in another, that can be a path for future study. Also, further study needs to focus on passion and mindfulness as an outcome to identify their antecedents in various cultures. Moreover, according to complexity theory (Tenet 3: equifinality principle), it is possible to reach to the same outcome from different configurations (e.g. environmental orientations and systemic knowledge and attitudes) to simulate PEB. Accordingly, future studies are encouraged to use different antecedents to find necessary and sufficient conditions leading to these behaviours. Moreover, future studies may consider the role of

nationality and cultural background in forming these bahaviours. Additionally, this study investigates the demand-side of the marine turtle tour. Further research might consider other stakeholders (e.g. tour planners, government, or NGOs) involve in human-animal interactions.

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APPENDIX

Questionnaire

Dear participant;

You are invited to participate in a survey intending to understand your general attitudes and behaviours while visiting the turtle site in Alagadi Beach. This survey is being conducted as part of a research study conducted in Eastern Mediterranean University, Tourism Research Center. While participation in this survey is voluntarily, your contribution may produce valuable information for better understanding of tourists behaviour in turtle nesting sites for the future planning of this protected area.

Responses will be kept completely **anonymous** and the survey will take approximately 10 minutes to complete.

Thank you for your precious time.

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Part I. Please indicate your level of engagement with each of these statements with the following options*: (1) Never True to (7) Always True.*

Statement	**Never True (1)**	**Very rarely True (2)**	**Not often True (3)**	**Sometimes True, sometime not true (4)**	**often True (5)**	**Very often True (6)**	**Always True (7)**
1.Generally, I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing							
2.I pay attention to physical experiences, such as the wind in my hair or sun on my face							
3.I notice visual elements in art or nature, such as colours, shapes, textures, or patterns of light and shadow							
4.I notice the smells and aromas of things							
5.when I have distressing thoughts or images, I feel calm soon after							
6.Usually when I have distressing thoughts or images I can just notice them without reacting							
7.When I have distressing thoughts or images, I just notice them and let them go							
8.I watch my feelings without getting carried away by them							
9.When I have distressing thoughts or images, I don't let myself be carried away by them							
10. I do jobs or tasks automatically without being aware of what I'm doing							
11. I rush through activities without							

being really attentive to them							
12. I find myself doing things without paying attention							
13. It seems I am “running on automatic” without much awareness of what I’m doing							
14. I find it difficult to stay focused on what’s happening in the present moment							
15. I’m good at finding the words to describe my feelings							
16. I can easily put my beliefs, opinions, and expectations into words							
17. When I feel something in my body, it’s hard for me to find the right words to describe it							
18. Even when I’m feeling terribly upset, I can find a way to put it into words							
19. It’s hard for me to find the words to describe what I’m thinking							
20. I think some of my emotions are bad or inappropriate and I shouldn’t feel them							
21. I tell myself that I shouldn’t be feeling the way I’m feeling							
22. I tell myself I shouldn’t be thinking the way I’m thinking							
23. I make judgments about whether my thoughts are good or bad.							
24. I disapprove of myself when I have illogical ideas							

Part II. Please indicate your level of agreement or disagreement with each of these statements by following options: ***1 (Strongly disagree) to 7 (Strongly agree)***

Statement	**Strongly disagree (1)**	**Disagree (2)**	**More or less disagree (3)**	**Undecided (4)**	**More or less agree (5)**	**Agree (6)**	**Strongly Agree (7)**
1. My environmentally friendly practices are in harmony with the other activities in my life.							
2. The new things that I discover in the environment allow me to appreciate it even more.							
3. Behaving environmentally friendly reflect the qualities I like about myself.							
4. Helping the environment allows me to live a variety of experiences.							
5. My environmental activates are well integrated in my life.							
6. Taking care of the environment is in harmony with other things that are part of me.							
7. I have difficulties controlling my urge to do environmentally friendly activities.							
8. I have almost an obsessive feeling for the environment.							
9. My environmental activities are the only thing that really turns me on.							

10. If I could, I would only do environmentally friendly activities.							
11. My environmental activities are so exciting that I sometimes lose control over them.							
12. I have the impression that my passion toward the environment controls me.							

Part III. Please indicate your level of agreement or disagreement with each of these statements by indicating *(1) strongly disagree to (7) strongly agree.*

Statement	**Strongly disagree (1)**	**Disagree (2)**	**More or less disagree (3)**	**Undecided (4)**	**More or less agree (5)**	**Agree (6)**	**Strongly Agree (7)**
1. I comply with relevant regulations to not destroy the environment.							
2. I report to the destination administration any environmental pollution or destruction.							
3. When I see garbage, tree branches, I will put them in the trash bin.							
4. If there are environment cleaning activities, I am willing to attend.							
5. I try to convince partners to protect the natural environment.							
6. I try to not disrupt the fauna and flora during my vacation.							

Part IV. Demographic information

1. Have you visited turtles-watching programme before?

□ *No* □ *Yes. How many times? ……..*

2. Please specify your age

□ Under 18 □ 18-29 □ 30-49 □ 50-64
□ Over 65

3. Please specify your gender?

□ Male □ Female

4. What is your nationality? ……

5. What is your average monthly income?

□ Less than 1000 USD
□ 1000 – 2999 USD
□ 3000 – 5999 USD
□ More than 6000 USD

6. What is your marital status?

□ Single
□ Married or domestic partnership

7. What is the highest degree or level of school you have completed? If currently enrolled, highest degree received.

□ No schooling completed
□ Some high school
□ Associate degree / diploma or the equivalent
□ Trade/technical/vocational training
□ Bachelor's degree
□ Master's and higher degree