

1 **Liu, Y., Cao, X., & Font, X. (2024). Nudge pro-environmental contagion: Residents**
2 **to tourists. *Annals of Tourism Research*, 105, 103738.**

3 **Abstract**

4 Drawing on social contagion theory, nudge theory, and norm activation theory, we study how
5 residents' pro-environmental behaviour may influence tourists' behaviour, helping achieve tourist
6 destination's sustainability collaboratively. Findings from a field study and three scenario
7 experiments confirm that tourists have a stronger intention to behave pro-environmentally in those
8 destinations where residents also display pro-environmental behaviour, and tourists' perceived
9 pro-environmental atmosphere mediates this effect. Furthermore, moral inspiration is found
10 mediating effect between perceived pro-environmental atmosphere and tourists' pro-environmental
11 intentions, while field cognitive style of tourists moderates this effect. These findings expand the
12 social contagion theory's application in tourist destination, contribute to nudge theory on the
13 mechanisms of encouraging pro-environmental behaviours and extend antecedents of personal
14 norm under norm activation theory.

15 **Keywords:** Social contagion, Nudge, Pro-environmental atmosphere, Moral inspiration, Field
16 cognitive style

18 **1. Introduction**

19 Both tourists and residents in destinations profit from and rely on the environment of the places
20 they visit, and where they live (Andereck & Nyaupane, 2011; Han et al., 2017; Lindberg et al.,
21 2021; Mihalic & Kuščer, 2021; Prebensen et al., 2013; Su, Yang, et al., 2022; Volo, 2017; Yang &
22 Chen, 2020; Zheng et al., 2022). Extensive research has been conducted on pro-environmental
23 behaviour among both residents and tourists (Cheng et al., 2017; Gao et al., 2022; M.-T. Lin et al.,
24 2022; Liu et al., 2021; S. Wang et al., 2019). Both residents (Xu & Hu, 2021) and tourists (Han et
25 al., 2017; Ramkissoon, Smith, et al., 2013; C. Wang et al., 2019) are more likely to express pro-
26 environmental behaviour intentions when they perceive the destination's environmental quality to
27 be high. This literature explains how stakeholders need to collaborate to improve the well-being of
28 both destination residents and tourists, however the residents typically have a greater sense of
29 ownership towards the sustainable development of their place of residence, and typically display

1 pro-environmental behaviours before tourists do. While we know that both groups look for cues in
2 their surroundings to help them determine their socially desirable behaviour, we have not studied
3 specifically how tourists may adopt the social norms displayed by residents, or how an overt
4 demonstration of pro-environmental behaviour from these residents can be used to nudge tourists
5 to follow suit.

6 Social contagion theory provides an explanation for such social compliance mechanisms,
7 highlighting how conscious or unconscious exposure to a person's or a group's attitudes or
8 behaviours can influence another person (Angst et al., 2010; Huang, 2010; Plé & Demangeot,
9 2020). Social contagion has been used to explain all types of in-group environment-related
10 behavioural contagion, including deviant behaviours among tourists (Su, Cheng, et al., 2022) and
11 residents (Su et al., 2023), and also pro-environmental behaviours among tourists (Chang Wang et
12 al., 2019; Wu et al., 2022) and residents (Zhu et al., 2021). However, the between-group social
13 contagion effects, in particular how residents' behaviours may influence tourists, are still under-
14 studied. We know little about under which conditions the residents' subsequent behaviours may
15 spill over to tourists (Bichler, 2021; Joppe, 2018; Chang Wang et al., 2019). We study the
16 mechanisms that explain the social contagion effect from pro-environment behaviour of residents
17 to pro-environment behaviour of tourists, and in doing so the study tries to close the loop on social
18 contagion theory in sustainable tourism.

19 Furthermore, we look forward to shed light on an altered angle to explaining social contagion
20 effect, from the perspective differing from social interaction theory (Zhu et al., 2021), social
21 identity theory (Hu et al., 2021) and social learning theory (Liu et al., 2023) those who emphasis
22 on the influence of interaction among individuals. The study hypothesises that making salient to
23 tourists that residents behave in a pro-environmental way, as a background information, may
24 nudge them to follow suit unconsciously.

25 This type of gentle nudge directs tourists to take the right decision while preserving their
26 liberty to act as they choose (Sunstein, 2014; Thaler & Sunstein, 2008). Norm activation theory
27 asserts that this type of nudge can activate one's personal norms and inform their behaviours, if it
28 raises their awareness of the consequences of their actions, or ascribes responsibility of the
29 consequences to their actions (Gao et al., 2016; Liu et al., 2020; Steg et al., 2005; Zhao et al.,
30 2020). Academics found that tourists perceive that their anonymity shields them from contextual

1 pressures to behave more sustainably (Berdychevsky, 2015; Chen et al., 2021). The study tries to
2 break through such shield, by better studying the mechanisms that can modify their behaviour, and
3 in doing so we extend the framework of pro-environmental behaviours' contagion from residents
4 to tourists by developing a framework that combines contagion theory, nudge theory and norm
5 activation theory.

6 We conduct four experiments to test our framework. Study 1 is a field experiment that
7 demonstrates the basic hypothesis of pro-environmental behaviour's contagion from residents to
8 tourists. Studies 2a and 2b test the mediating role of perceived pro-environmental atmosphere in a
9 controlled laboratory condition, confirming the findings of Study 1 with two different types of
10 behaviours and scenarios. Study 3 tests the mediating role of moral inspiration in nudging tourists'
11 pro-environmental behaviour based on the norm activation theory and explores whether field
12 dependence-independence cognitive styles moderate these effects, which validates the findings of
13 Study 2 that tourists derive information from the context of their visited tourist destination.

14 Taken together, these studies provide support for our framework and predictions. We
15 propose that by framing residents' pro-environmental behaviours as a social norm, tourists can be
16 nudged to behave accordingly, in line with norm activation theory, which provides destination
17 management organisation with a managerial strategy to encourage tourists' behaviour (Confente &
18 Scarpi, 2020). We contribute to the current literature by i) providing evidence of social contagion
19 effect between residents and tourists; ii) probing into the potential mechanisms of why the
20 contagion occurs from the perspective of nudge theory; and iii) inquiring how norm activation
21 theory can be used to design and interpret nudges. The results offer destination management
22 organisations tools to promote pro-environmental behaviour amongst tourists.

23 **2. Literature review**

24 **2.1. Contagion of pro-environmental behaviour from residents to tourists**

25 Pro-environmental behaviours are defined as that not harm the environment (Han et al., 2017;
26 Ramkissoon, Graham Smith, et al., 2013; Steg & Vlek, 2009; Stern, 2000; S. Wang et al., 2019).
27 Extensive research has gone into identifying the antecedents of tourist' pro-environmental
28 behaviour, such as their environmental values (Kim & Koo, 2020; Lee et al., 2021; Li & Wu,
29 2020), environmental knowledge (Cheng & Wu, 2014; Gautam, 2020; Li & Wu, 2020), habits

1 (MacInnes et al., 2022), and personal attitudes (Cheng & Wu, 2014; Confente & Scarpi, 2020;
2 Gao et al., 2022; Li & Wu, 2020; C. Wang et al., 2018). Those researches have focused on internal
3 factors, while much of what explains tourists' pro-environmental behaviours behaviour depends
4 on the context, such as the interactions between destination and tourists (Hansen et al., 2023; Peng
5 et al., 2023; C. Wang et al., 2019; C. Wang et al., 2020; W. Wang et al., 2018). Residents are a
6 vital part of destination and share the same space with tourists, however, their behaviours'
7 influence on tourists has gotten sparse attention.

8 Social contagion theory helps us understand how social interactions or merely exposure
9 shape behaviours through the diffusion and adoption of knowledge, emotions, beliefs, attitudes
10 and/or behaviours of one group of actors (be it individuals, groups or organisations) to others (Plé
11 & Demangeot, 2020). Some research shows that tourists' environment-related behaviours are
12 influenced by exposure to both other tourists (Su, Cheng, et al., 2022) and their tour guides (H.
13 Lin et al., 2022).

14 Much social contagion research focuses on negative, antisocial or deviant behaviours
15 (Dimant, 2019; Plé & Demangeot, 2020; Su, Cheng, et al., 2022; Yokotani & Takano, 2021). Both
16 residents and tourists exhibit a negative contagion or "broken window effect" (Wilson & Kelling,
17 1982), for example residents that perceive that their efforts are futile in face of negative
18 behaviours from tourists show less intention to act in an environmentally friendly way (Zhu et al.,
19 2021). Similarly, tourists engage in deviant behaviours when they feel that the local authorities
20 and residents do not take care of their destination (Su, Cheng, et al., 2022). Instead, this study pays
21 attention to the constructive circle of pro-environmental behaviour starting from residents to
22 tourists.

23 Social contagion research has concentrated on how individuals within the same group
24 influence each other's behaviours. We know that tourists displaying pro-environmental behaviours
25 influence other tourists negatively and positively (Su, Cheng, et al., 2022; Chang Wang et al.,
26 2019) and that residents influence other residents pro-environmentally and anti-environmentally
27 (Su et al., 2023; Zhu et al., 2021). However, we know less about how one social group perceives
28 another as a reference point to inform their own behaviour.

29 The study hypothesises that residents' behaviours would positively influence tourists' pro-
30 environmental behaviours through the contagion of pro-environmental goal. Goal contagion is an

1 automatic adoption and pursuit of goals that others are perceived to strive for (Aarts et al., 2004).
2 Brohmer et al. (2019) suggest that individuals' spontaneous causal inferences about behaviour are
3 intrinsic to their goal contagion and behavioural imitation. That is, causal inferences about others'
4 pro-environmental behaviours regulate one's own pro-environmental goals, which in turn lead to
5 the contagion of goals and motivate tourists' pro-environmental behaviour (Hu et al., 2021). Based
6 on inferences before and current research gap, we propose the following hypothesis:

7 **H1:** Tourists have a stronger intention to behave pro-environmentally in destination where
8 residents display pro-environmental behaviour than in a destination where do not.

9

10 **2.2. Nudging tourists' pro-environmental behaviour by creating a pro-environmental** 11 **atmosphere**

12 Previous research has attempted to explain the influence of residents of a tourist destination on
13 tourists' behaviours through theories of social interaction (Li et al., 2021; H. Lin et al., 2022; W.
14 Wang et al., 2018), for example, by showing how tour guides' humour can influence tourists' pro-
15 environmental behaviour (H. Lin et al., 2022). However, as most residents' pro-environmental
16 behaviours can only be observed by tourists passively, theories based on social interaction might
17 not be the explanation or prediction for a social contagion between residents and tourists.

18 We argue that such contagion will result from subtle nudges, understood as any aspect of the
19 choice architecture that alters people's behaviour in a predictable way without forbidding any
20 options or significantly changing their economic incentives (Thaler & Sunstein, 2008). Contextual
21 priming is a well-established nudge that we argue is appropriate in to study for our purposes,
22 understood as the ability to influence someone's behaviour by the contextual characteristics
23 (Bonini et al., 2018). Tourists display different pro-environmental behaviours according to their
24 context, such as the environmental background (C. Wang et al., 2019), the availability of public
25 environmental facilities (C. Wang et al., 2020), the situational environmental education (Wang et
26 al., 2022), and nudging can be used to amplify the contextual features that can guide tourists to act
27 more responsibly (Kim & Hyun, 2020; Souza-Neto et al., 2022).

28 We also argue that residents' pro-environmental behaviours might generate a pro-
29 environmental atmosphere of the destination that gently nudges tourists' pro-environmental

1 behaviours. The atmosphere conveyed by a tourist destination has been found to have an effect on
2 the tourist experience (Goulding, 2023; Paiva, 2023). The concept of a perceived pro-
3 environmental atmosphere originates from the literature on organisational climate, which defines
4 the shared sense-making of the work environment (Chou, 2014; James et al., 2008). We translate
5 that literature from organizations to destinations, suggesting that there can also be a collective
6 sense-making in a destination when both residents and tourists aim for quality of life and
7 wellbeing, although we acknowledge that they may do so in different ways. Individuals are prone
8 to behave according to the social cues exerted in their environment (Bellou & Andronikidis,
9 2009), and a pro-environmental atmosphere in a tourist destination refers to the perceptions of
10 environmental protection values and practices of destination authorities and residents (S. Wang et
11 al., 2019). Similarly, we propose that tourists can perceive a pro-environmental atmosphere from
12 the social cues created by the display of residents' pro-environmental behaviours (Hu et al., 2021;
13 Qin & Hsu, 2022). The perceived pro-environmental atmosphere created by residents' pro-
14 environmental behaviours can create the contextual conditions that facilitate nudge tourists
15 towards displaying pro-environmental behaviours through contextual priming and without the
16 need for direct social interaction with residents. Hence, we propose:

17 **H₂:** Residents' display of pro-environmental behaviours in the tourist destination has a
18 positive effect on the pro-environmental atmosphere perceived by tourists.

19 **H₃:** The pro-environmental atmosphere perceived by tourists has a positive effect on these
20 tourists' pro-environmental behaviour intentions.

21 **H₄:** The perception of a pro-environmental atmosphere mediates the relationship between
22 residents' display of pro-environmental behaviours and tourists' intentions towards pro-
23 environmental behaviours.

24

25 **2.3. Moral activation: the role of moral inspiration and field cognitive style**

26 The underlying mechanisms behind the positive effect of nudges on tourists' behaviours deserve
27 further attention (Kim & Hyun, 2020; Olya, 2020; Souza-Neto et al., 2022). Norm activation
28 theory points out that pro-social behaviours occur in response to personal norms that are activated
29 when people are both i) aware of harmful consequences to others or to the environment
30 (awareness of consequences) and when ii) they believe they can mitigate these consequences

1 (ascription of responsibility) (Steg et al., 2005). Activated personal norm were widely testified the
2 validity of predicting pro-environmental behaviours, and finding an available strategy to activate
3 tourists' personal norm help the theory apply to the practice. We propose the pro-environmental
4 atmosphere created by residents' pro-environmental behaviours as a possible antecedent to the
5 norm activation theory, which can explain how we can activate tourists' personal norms by giving
6 them a moral inspiration that creates the conditions allowing for residents' pro-environmental
7 behaviours to nudge tourists.

8 The concept of moral inspiration stems from emotion theory, which states that people can be
9 inspired to improve themselves when they feel emotional admiration resulting from a situational
10 appraisal, and as a result they express a psychological state of motivation to behave in a more
11 virtuous manner (Homer, 2021; van de Ven et al., 2018). When people are exposed to a behaviour
12 that they identify as moral, they rely on their morality to make a moral judgment as to how to
13 behave, and their morality also dictates how they subsequently process the emotions caused by
14 engaging in such behaviour (Brady et al., 2020; Brady et al., 2017; Ellemers et al., 2019; Malle,
15 2021; Volo, 2017). Moral inspiration is therefore a motivational state after having the moral
16 emotion of admiration and before acting moral behaviours. Combined with norm activation
17 theory, moral inspiration helps explain why tourists who perceive a pro-environmental atmosphere
18 of the destination as admirable and morally-salient can have their personal norms activated, when
19 they observe an opportunity to feel virtuous resulting from both realising some harmful
20 consequences they might cause, and also achievable means by which they can mitigate these
21 consequences (Homer, 2021; Huang & Labroo, 2019). In this state of moral inspiration, defined as
22 the psychological state held after being inspired by a moral situation (pro-environmental
23 atmosphere), tourists are more likely to behave morally to comply with the social norms of the
24 destination visited.

25 **H₅:** The pro-environmental atmosphere perceived by tourists has a positive effect on their
26 moral inspiration.

27 **H₆:** Tourists' moral inspiration has a positive effect on their pro-environmental behaviours.

28 **H₇:** Moral inspiration held by tourists mediates the relationship between pro-environmental
29 atmosphere perceived by these tourists and their pro-environmental behaviours.

30 However, a nudge is unlikely to always exert a powerful effect on individuals (Entwistle,

1 2021; Mrkva et al., 2021), and we need to better understand the boundary conditions to alter
2 behaviours. The field cognitive styles of individuals in processing information and making
3 decisions affect whether they are more dependent or independent in the “field” or context where
4 such decisions are taken (Evans et al., 2013; Witkin et al., 1971). Field-independent individuals
5 tend to rely on internal cues when processing information and are less influenced by their
6 surroundings, whereas field-dependent individuals are more influenced by external cues (Giancola
7 et al., 2023; Hong et al., 2023; Ke et al., 2023; Pithers, 2002). Those with a field-dependence
8 might be more likely to conform with social cues when taking decisions with an environmental
9 consequence, that is pro-environmental atmosphere, conversely, the atmosphere of the destination
10 might not influence field-independent tourists, who usually make decisions regardless of their
11 environment. Accordingly, the following hypothesis is proposed:

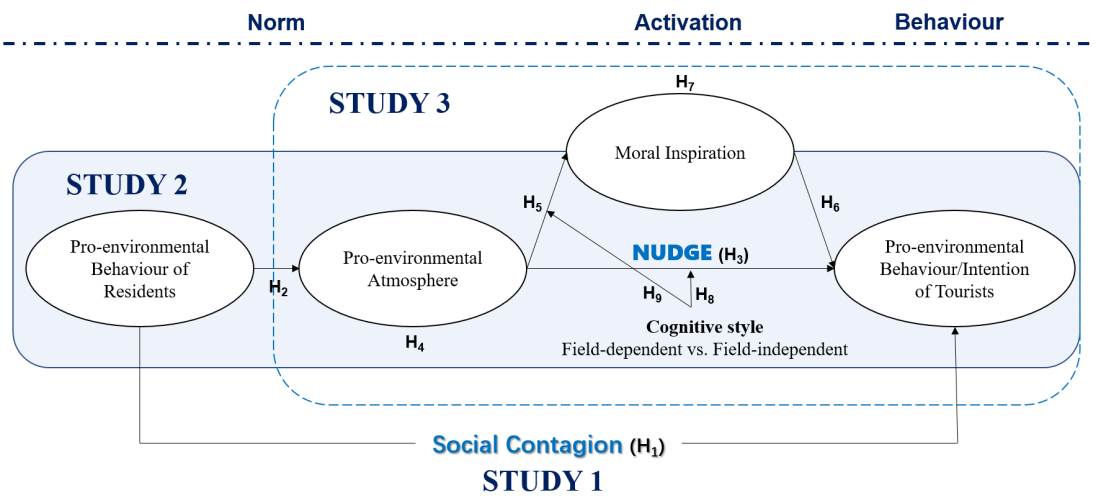
12 **H₈:** The cognitive style of tourists moderates the relationship between their perceived pro-
13 environmental atmosphere and their pro-environmental behaviours. The perceived pro-
14 environmental atmosphere has a positive effect on the pro-environmental behaviours field-
15 dependent tourists, while this effect is absent for tourists who are field-independent.

16 According to norm activation theory, arousing tourists’ moral inspiration depends on making
17 them adopt the moral information present by the environment and realising their responsibility
18 (Confente & Scarpi, 2020; De Groot & Steg, 2009; Gao et al., 2022). Since surroundings have a
19 limited influence on field-independent tourists, pro-environmental messages at a tourist
20 destination with a pro-environmental atmosphere might fail to be transformed to an arousal, and
21 their moral inspiration will not be activated as a result (Kozhevnikov et al., 2014). Instead, field-
22 dependent tourists are more likely to process and be influenced by the moral information implicit
23 in the tourist destination, and when they sense this pro-environmental atmosphere, their moral
24 inspiration arises accordingly. Hence:

25 **H₉:** The cognitive style of tourists moderates the relationship between their pro-
26 environmental atmosphere and moral inspiration. The perceived pro-environmental atmosphere
27 has a positive effect on the moral inspiration of field-dependent tourists, while this effect will be
28 absent for tourists who are field-independent.

29 **3 Overview of the studies**

1 We use one field and three laboratory experiments to test the hypotheses outlined above, as
 2 summarised in Figure 1. The design experiments trail the following logic. First, we shall confirm
 3 the pro-environmental contagion effect from residents to tourists in an actual travel scene firstly
 4 (Study 1). Next, we use this foundation to test whether the pro-environmental behaviour of
 5 residents could shape tourists' perceptions of pro-environmental atmosphere as a nudge strategy to
 6 provoke their intentions to pro-environmental behaviour, using nudge theory (Study 2). Finally,
 7 we use the norm activation theory to explore the underlying mechanism and boundaries of the
 8 nudge effect (Study 3). Specifically, Study 1 develops a field experiment to verify the fundamental
 9 effect of this study (H₁). Study 2 has two sub-studies with different stimuli materials to validate
 10 Study 1 (H₁) and test the role of pro-environmental atmosphere between the pro-environmental
 11 behaviour of residents and tourists (H₂-H₄). Study 3 tests the mediating role of moral inspiration
 12 between pro-environmental atmosphere and pro-environmental behaviour of tourists (H₅-H₇), and
 13 further explores the moderating role of two types of cognitive style (H₈-H₉).



14
 15

Figure1. Research Model

17 **4 Study 1: The pro-environmental contagion effect from residents to**
 18 **tourists**

19 **4.1 Design**

20 Study 1 is a field experiment that tests whether the perceived pro-environmental behaviours of
 21 residents will influence tourists to display pro-environmental behaviours, with a single-factor (pro-
 22 environmental behaviours of resident: presence vs. absence) between-subject experiment design.

1 The study took place at the entrance of the Dujiangyan Irrigation Project Scenic Area in Sichuan,
2 China, chosen for three reasons: i) as a World Natural and Cultural Heritage site and a national
3 AAAAA tourist attraction, it has a large number and variety of visitors, and ii) the behaviour of
4 nearby residents who run accommodation and catering ventures provides the conditions for social
5 contagion. The experiment lasted three hours each morning (a popular time of day for tourists to
6 arrive) over ten weekdays (five days for each condition) in June-July 2022, considering excluding
7 the effect of nature experience, which has been found to affect tourists' intentions towards pro-
8 environmental behaviours fits (Barbaro & Pickett, 2016), and the steady stream of tourists during
9 weekdays. The weather during experiment days was mostly sunny, with an average daily
10 maximum temperature of 30°C(86°F).

11 **4.2 Procedure**

12 We set up a voting station, inviting tourists to participate without knowing that this was a research
13 study or that an experimental manipulation occurred. Participants were told that participation was
14 voluntary and that they could leave at any time. There were no requirements to collect personal
15 information. If they asked for the detail or follow-up about any part of the experiment , we would
16 told the truth of experiment at the end (Johnson & Rowlands, 2012).

17 In the experimental group, where the pro-environmental behaviours of residents were
18 evident, we erected a 1.8*0.8-meter poster encouraging tourists to take part in the “Election of the
19 best eco-warrior of Dujiangyan”, with pictures of ten residents with their corresponding stories of
20 environmental protection (all the residents and related stories are made up) (one part of the poster
21 see Fig.2). The experimenters, acting as local community workers, invited tourists to vote and
22 gave the small gifts prepared for them (e.g., some key chains, headropes and headbands in the
23 shape of a panda). After reading the poster, tourists voted by scanning a QR code to pick two to
24 four out of the ten candidates. After voting, the experimenters gave one gift to each participant as
25 a reward for voting. The experimenters, who were graduate and undergraduate students, told the
26 participants that they at the request of the local tourism administrative commission, and what
27 participation would not have a negative impact on them. Then, a link redirected participants to
28 write down ideas about how to travel environmentally, to measure their pro-environmental
29 behaviour, and a reminder that they could withdraw at any time without any compulsion to write
30 green ideas (Kim & Lee, 2022).

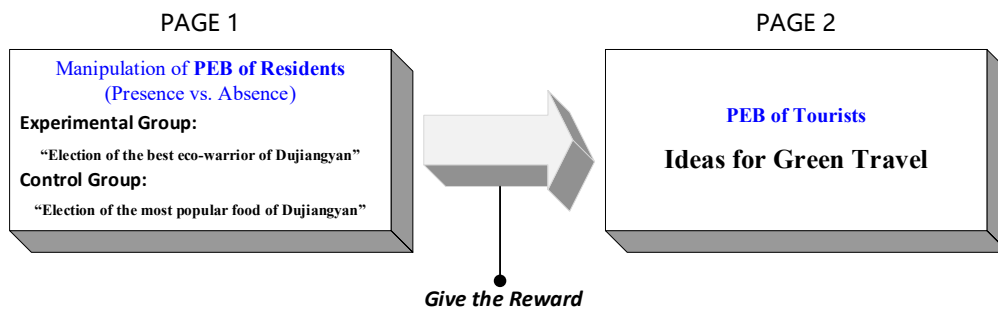
1 The control group was shown a poster of the same size and layout as the experimental group.
 2 The control group poster displayed six famous dishes from Dujiangyan, each accompanied by
 3 short introductions, considering local food is a significant aspect of residents' daily life with which
 4 tourists interact frequently (Savelli et al., 2022) (one part of the poster see Fig.2). Tourists were
 5 invited to vote on their two to three favourite dishes, and after voting, just like for the
 6 experimental group, respondents were redirected to a link to write down their ideas for green
 7 travel voluntarily. The gift prepared for them was given before being asked to write the green
 8 ideas to exclude the influence of an economic incentive, and participants still had the right to
 9 withdraw from the experiment at any time. The procedure of Study 1 and the picture of
 10 experimental scene and gifts see Fig. 3 and Fig. 4, and the complete experimental materials for
 11 Study 1 can be found in the online appendix.




Fig2. Study 1: parts of the posters used in Study 1

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Fig.3 The procedure of Study 

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Fig.4 The pictures of the experimental scene and gifts

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4.3 Results

10 Firstly, we coded the tourists' pro-environmental behaviour, with valid ideas like "travel with my
 11 own water cups" coded as "1", and those who did not write environmental ideas or the content
 12 they wrote down was invalid (e.g., "This place is so beautiful") were coded as "0". In total 455

12

1 tourists participated, 225 for the experimental group and 230 for the control group. The results of
2 the chi-square test show significant differences between the two groups. In the experiment group,
3 76.2% wrote down valid environmental tourism ideas, compared to the control group (37.2%, χ^2
4 (1) = 59.801, $p=.000$), suggesting that tourists are more likely to acknowledge pro-environmental
5 behaviours in the destinations with explicit residents' pro-environmental behaviour, compared to
6 destinations without, which provides initial support for H₁, that is, evidence of residents' pro-
7 environmental behaviours has a positive effect on tourists' pro-environmental behaviour stated
8 intentions.

9

10 **5 Study 2: The mediating effect of perceived pro-environmental** 11 **atmosphere**

12 Study 2 was divided into two sub-studies: Study 2a and Study 2b, to use two different
13 manipulation materials i) to replicate the findings in Study 1 (H₁) using a controlled experiment;
14 and ii) to verify the mediating role of a perceived pro-environmental atmosphere in the effect from
15 residents' to tourists' pro-environmental behaviour (H₂-H₄). Both Studies 2a and 2b adopted a
16 single-factor (pro-environmental behaviours of resident: presence vs. absence) between-subject
17 experiment design.

18 **5.1 Study 2a**

19 5.1.1 Design and procedure

20 Each manipulated material was a combined text and picture about a trip in a virtual destination
21 (see Figures 3 and 4). The materials for the group with residents' pro-environmental behaviours
22 *present* are as follows:

23 *Please imagine that you are traveling in a tourist destination named Destination A.*

24 *Destination A is an attraction for tourists and a home for some residents. While traveling here,*
25 *you have experienced and observed something as below:*

26 *Before you arrived at Destination A, you have booked one night in a B&B running by local*
27 *residents. After ordering, you received a SMS like this: (see Figure. 5 left)*

28 Participants in the *absent* condition also were asked to read a SMS (see Fig.5 right).

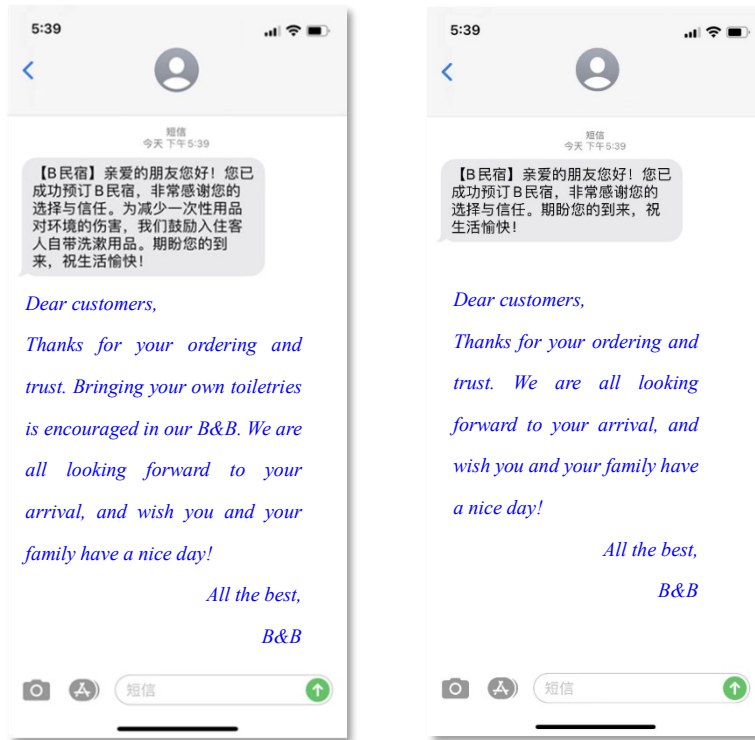


Fig.5 Study 2a: the picture of SMS in two groups

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3

4 Only individuals that had travelled in the previous 12 months were invited to take part in the

5 study. After giving their consent to join this study, the participants were randomly assigned into

6 two groups, and were given time to read the materials. All participants answered a manipulation

7 test question on residents’ pro-environmental behaviour, with one question: “I believe that

8 residents of destination A engage in behaviours that protect the environment”, against a 7-point

9 Likert scale. Next, they completed four questions measuring their perceived pro-environmental

10 atmosphere for four items (Cronbach’s $\alpha=0.966, 0.962$ in Study 2a, 2b), such as “Residents in

11 Destination A are concerned with becoming more environmentally friendly” (Norton et al., 2014),

12 and five items on tourist’s pro-environmental behaviour intention (Cronbach’s $\alpha=0.924, 0.890$ in

13 Study 2a, 2b), such as “I will try to convince partners to protect the environment on Destination

14 A” (Dang et al., 2021; Lee et al., 2021). In addition, we adopted previously tested control

15 variables for environmental awareness (three items) and positive tourism experience (two items),

16 on account that environmental awareness has been found to be a key antecedent of pro-

17 environmental behaviours and positive tourism experience affecting tourists’ pro-environmental

18 behaviour (Chitturi et al., 2008; Despotović et al., 2021; Fu et al., 2020). The participants’ gender,

1 age, and education level data were also collected. Participants gained 1 yuan upon completion of
2 the questionnaire.

3 The sample size required was calculated using G*Power software, with 42 samples per group
4 at effect size=0.8, α err prob=0.05 and test efficacy (Power (1- β err prob))=0.95. We recruited 93
5 participants (49 and 44 per group) from the professional questionnaire experiment platform
6 (credamo.com). There were 32 males and 61 females; with ages 18 to 60 years old but mainly
7 concentrated in the 18–25-year-old bracket (39 people, accounting for 41.9%) and 26–30-year-old
8 bracket (26 people, accounting for 28.0%); and two thirds were undergraduate level education (63
9 people, accounting for 67.7%).

11 5.1.2 Results

12 Forty-nine individuals were assigned to the present group and 44 individuals to the absence of
13 residents' pro-environmental behaviour group. The results of the t-test show that, compared to the
14 group absence of residents' pro-environmental behaviour stimuli ($M_{\text{absence}}=3.32$, $SD=1.552$),
15 tourists exposed to messages about residents' pro-environmental behaviour have higher
16 perceptions of the likelihood of such residents having pro-environmental behaviour ($M_{\text{presence}}=6.27$,
17 $SD=0.811$), $t(63.258)=11.290$, $p=0.000 < 0.001$, indicating a successful residents'
18 pro-environmental behaviour manipulation. A t-test verified the effect from perceived pro-
19 environmental behaviour of residents' to tourists' pro-environmental behaviour intentions, as
20 tourists' intention to engage in pro-environmental behaviour were significantly higher in the
21 present group ($M_{\text{presence}}=6.19$, $SD=0.573$) than in the absent group ($M_{\text{absence}}=5.22$, $SD=0.534$), t
22 (53.693)= 3.969 , $p=0.000 < 0.001$, thus supporting H_1 again.

23 Finally, we used the PROCESS in SPSS, Model 4, Bootstrapping 5000 times at 95%
24 confidence intervals, with residents' pro-environmental behaviour as the independent variable,
25 perceived pro-environmental atmosphere as the mediating variable, and tourists' pro-
26 environmental behaviour as the dependent variable, and environmental awareness and positive
27 tourism experience as the control variables. A regression analysis shows that the perception of
28 residents' pro-environmental behaviour had a significant positive effect on tourists' perceived pro-
29 environmental atmosphere ($\beta=1.619$, $p=0.000 < 0.001$, Model 2), supporting H_2 . Similarly,
30 residents' pro-environmental behaviour had a significant positive effect on tourists' pro-

1 environmental behaviour intentions ($\beta=0.541$, $p=0.004<0.001$, Model 1), supporting H₁ again.
 2 And perceived pro-environmental atmosphere was found a significant positive effect on tourists'
 3 pro-environmental behaviour ($\beta=0.426$, $p=0.000<0.001$, Model 3), which supports H₃. The the
 4 results of indirect effect show a significant mediating effect of pro-environmental atmosphere
 5 (Indirect Effect= 0.690, BootSE=0.222, LLCI=0.299, ULCI=1.170, excluding 0), therefore, H₄
 6 was supported. The results of the regression and mediation effects are shown in the following
 7 tables:

8
 9 Tab. 1 The regression results of Study 2a

	Model 1			Model 2			Model 3		
	Pro-environmental behaviour intention of tourists			Perceived pro-environmental atmosphere			Pro-environmental behaviour intention of tourists		
	B	t	p	B	t	p	B	t	p
Perceived pro-environmental atmosphere							0.426	5.054	0.000
Pro-environmental behaviour intention of residents	0.541	2.931	0.004	1.619	7.886	0.000	-0.149	-0.702	0.485
Environmental awareness	0.226	1.827	0.071	-0.067	-0.486	0.628	0.255	2.321	0.023
Positive tourism experience	0.658	5.784	0.000	0.676	5.344	0.000	0.370	3.194	0.002
R-sq	0.540			0.617			0.644		
F	34.840			47.681			39.723		

10
 11 Tab. 2 The mediation effect results of Study 2a

	Effect	BootSE	BootLLCI	BootULCI
Indirect effect	0.690	0.222	0.299	1.170
Direct effect	-0.149	0.213	-0.572	0.274
Total effect	0.541	0.221	0.174	0.934

12
 13 **5.2 Study 2b**

14 5.2.1 Design and procedure

15 In line with Study 2a, the same combination of graphic and textual materials was used for Study
 16 2b to manipulate residents' pro-environmental behaviour. The scenario for Study 2b is buying a
 17 snack, and the specific material was:

1 *“Imagine that you are travelling to destination A. This destination is not only a tourist*
2 *attraction, but also has people living nearby. While you are travelling here, you buy some snacks*
3 *that locals sell, as shown in the picture below:”*

4 In present group, the picture shows a green and white paper bag with a small but visible label
5 saying “recycled material” containing unidentifiable snacks (see Figures 6 left). The textual
6 material of the absent group was identical to that of the present group, except for the pictures,
7 which were of snacks in plastic bags (see Figures 6 right). Study 2a and Study 2b were distributed
8 simultaneously on Credamo between 11-25 November 2022. The procedures for Study 2a and 2b
9 are identical, except for the materials used to manipulate the residents’ pro-environmental
10 behaviour. Participants who participated in Study 2a were set not to participate in Study 2b. We
11 recruited 90 participants, 47 in the present group and 43 in the absent group; 38 males and 52
12 females; mainly concentrated in 18-25 years old bracket (36 people, accounting for 40.0%), 26-30
13 years old bracket (21 people, accounting for 23.3%) and 31-40 years old bracket (27 people,
14 accounting for 30.0%); with 59 participants having undergraduate level education (accounting for
15 65.6%).

16



17 Figure 6. Study 2b: pictures of snacks in bags made of recycled material and plastic

18

19 5.2.2 Results

20 The results of the t-test show that compared to the absent group without residents’ pro-
21 environmental behaviour stimuli ($M_{\text{absence}}=2.721$, $SD=1.031$), tourists in the present group have
22 higher perceptions of residents’ pro-environmental behaviour ($M_{\text{presence}}=6.340$, $SD=0.700$),

1 $t(73.046)=19.304, p=0.000<0.001$, indicating a successful manipulation. A t-test verified that
 2 tourists' intention to engage in pro-environmental behaviour was significantly higher in the
 3 present group ($M_{\text{presence}}=6.294, SD=0.443$) than in the absent group ($M_{\text{absence}}=4.958, SD=1.214$),
 4 $t(52.153)=6.811, p=0.000<0.001$, thus supporting H₁.

5 Finally, we used the PROCESS in SPSS, Model 4, Bootstrapping 5000 times at 95%
 6 confidence intervals, with residents' pro-environmental behaviour as the independent variable,
 7 perceived pro-environmental atmosphere as the mediating variable, tourists' pro-environmental
 8 behaviour as the dependent variable, and environmental awareness and positive tourism
 9 experience as the control variables. The regression analysis showed that residents' pro-
 10 environmental behaviour has a significant positive effect on tourists' perceived pro-environmental
 11 atmosphere ($\beta=2.075, p=0.000<0.000$, Model 2), supporting H₂. Similarly, the presence of
 12 residents' pro-environmental behaviour has a significant positive effect on tourists' pro-
 13 environmental behaviour intentions ($\beta=0.499, p=0.027<0.05$, Model 1), supporting H₁ again. The
 14 regression analysis showed that perceived pro-environmental atmosphere had a significant
 15 positive effect on tourists' pro-environmental behaviour ($\beta=0.232, p=0.040<0.05$), which supports
 16 H₃.

17 We found a significant mediating effect of pro-environmental atmosphere (Indirect
 18 Effect=0.481, BootSE=0.276, BootLLCI=0.009, BootULCI=1.091, excluding 0), supporting H₄.
 19 The results of the regression and mediation effects are shown in the following tables:
 20
 21

Tab. 3 The regression results of Study 2b

	Model 1			Model 2			Model 3		
	Pro-environmental behaviour intention of tourists			Perceived pro-environmental atmosphere			Pro-environmental behaviour intention of tourists		
	B	t	p	B	t	p	B	t	p
Perceived pro-environmental atmosphere							0.232	2.087	0.040
Pro-environmental behaviour intention of residents	0.499	2.250	0.027	2.075	9.826	0.000	0.018	0.057	0.955
Environmental awareness	0.243	1.665	0.100	0.063	0.450	0.654	0.229	1.594	0.115
Positive tourism experience	0.425	5.073	0.000	0.584	7.332	0.000	0.289	2.762	0.007

R-sq	0.552	0.852	0.574
F	35.278	165.308	28.578

1

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Tab. 4 The mediation effect results of Study 2b

	Effect	BootSE	BootLLCI	BootULCI
Indirect effect	0.481	0.276	0.009	1.091
Direct effect	0.018	0.317	-0.612	0.648
Total effect	0.499	0.205	0.079	0.883

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In sum, Study 2 further verified H₁, now under laboratory experimental conditions, and through two sub-experiments verified that perceived pro-environmental atmosphere mediates the pathway of positive effects of perceived pro-environmental behaviour of residents on pro-environmental behaviour intentions of tourists (H₂, H₃ and H₄).

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6. Study 3: Mediating effect of moral inspiration and moderating

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effect of field cognitive style

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6.1. Methodology

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Study 3 further explores the specific mechanisms whereby perceived pro-environmental atmosphere nudges tourists' pro-environmental behaviours, examining the mediating role of moral inspiration between perceived pro-environmental atmosphere and these tourists' pro-environmental behaviour (H₅-H₇) and the moderating role of their cognitive styles (H₈ and H₉). This study employed a single-factor (pro-environmental atmosphere: presence vs. absence) between-subject experimental design to assess pro-environmental behaviour. Participants were recruited i) by inviting students from a university in southwest China, and ii) through snowball sampling. The sample size required for the study was calculated using G*Power software, with 26 samples per group at effect size=0.8, α err prob=0.05 and test efficacy (Power (1- β err prob))=0.8. Finally, 191 individuals participated Study 3 from 11 December 2022 to 10 February 2023. Each participant received a reward of 10 CNY.

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Initially, participants completed an embedded figure test to assess their cognitive style, which requires the participant to spot a simple form within a more complex figure, following the procedure described by Evans et al. (2013) and Varela et al. (2017). The test consisted of three parts, of five minutes each. The first section comprised nine questions, to help participants become

1 familiar with rules of embedded figure test, which was not factored into the final score (see Web
2 Appendix). The second and third parts contained ten questions each, with each correct answer
3 worth one point. The total score for each participant was derived by summing the points. Based on
4 the median score (Q. Wang et al., 2020), participants were categorised into those having a field-
5 dependent (M=8.69, SD=1.74) or a field-independent cognitive style (M=14.15, SD=1.76).

6 Next, participants were randomly assigned to two groups (presence vs. absence of pro-
7 environmental atmosphere) and instructed to read the manipulation materials (see Web Appendix)
8 derived from Studies 2a and 2b. Afterwards, participants rated their perceived pro-environmental
9 atmosphere using a 7-point Likert scale. Next, they completed a scale assessing moral inspiration,
10 consisting of four items from Homer (2021) and van de Ven et al. (2018), such as “pro-
11 environmental behaviour of the residents in Destination A remind me to protect the environment”.
12 Finally, their pro-environmental behaviour as tourists, and the control variables (environmental
13 awareness and positive tourism experience) were measured using the same scales as in Study 2.

14

15 **6.2. Results**

16 Participants were assigned to the group without (97) or with (94) pro-environmental
17 atmosphere, and 104 individuals were field-dependent with 87 field-independent individuals.
18 Forty-six field-dependent participants and 51 field-independent participants were assigned to the
19 group without pro-environmental atmosphere, while 58 field-dependent participants and 36 field-
20 independent participants were assigned to the group with pro-environmental atmosphere. The
21 sample consisted of 54 males and 137 females, ranging from 18 to 30 years old and with 96.9% in
22 the 18-25 age group, made up of primarily (167) undergraduate students. A t-test verified the
23 manipulation of perceived pro-environmental atmosphere, as compared to the absent group
24 without pro-environmental atmosphere stimuli ($M_{\text{absence}}=3.28$, $SD=0.989$), tourists in the present
25 group had higher perceptions of pro-environmental atmosphere ($M_{\text{presence}}=6.01$, $SD=1.375$),
26 $t(174.534)=15.802$, $p=0.000<0.001$).

27 A t-test results showed that individuals with pro-environmental atmosphere stimuli have
28 higher intention to engage in pro-environmental behaviour ($M_{\text{presence}}=5.517$, $SD=0.958$), as
29 compared to those individuals without pro-environmental atmosphere stimuli ($M_{\text{presence}}=4.037$,
30 $SD=1.220$), $t(181.287)=9.338$, $p=0.000<0.001$), supporting H3 again.

1 The mediating effect was tested through regression analysis with the control of
2 environmental awareness and positive tourism experience. The regression analysis showed that
3 pro-environmental atmosphere had a significant positive effect on tourists' pro-environmental
4 behaviour ($M_{\text{pro-environmental behaviour of tourist}}=4.77$, $SD=1.324$, $\beta=1.087$, $p=0.000<0.001$, $R^2=0.442$,
5 $F=49.444$), supporting H₃ again. Pro-environmental atmosphere was also found to have a
6 significant positive effect on the moral inspiration perceived by tourists ($M_{\text{moral inspiration}}=4.11$,
7 $SD=1.600$, $\beta=1.891$, $p=0.000<0.001$, $R^2=0.497$, $F=61.522$), supporting H₅. Furthermore, the
8 regression analysis revealed a significant positive effect of moral inspiration on tourists' pro-
9 environmental behaviour ($\beta=0.219$, $p=0.0005<0.001$, $R^2=0.478$, $F=42.537$), supporting H₆.

10 The PROCESS in SPSS was used to examine the mediating effect (Model 4), Bootstrapping
11 5000 times at 95% confidence intervals, with pro-environmental atmosphere as the independent
12 variable, moral inspiration as the mediating variable, pro-environmental behaviour of tourists as
13 the dependent variable, and environmental awareness and positive tourism experience as the
14 control variables. The results showed a significant mediating effect of moral inspiration (Indirect
15 Effect=0.415, BootSE=0.134, BootLLCI=0.168, BootULCI=0.689, excluding 0; Total
16 effect=1.087, BootSE=0.159, BootLLCI=0.774, BootULCI=1.405; Direct effect=0.672,
17 BootSE=0.199, BootLLCI=0.280, BootULCI=1.065), therefore, H₇ was supported.

18 Finally, the moderated mediating effect of field cognitive style was tested using PROCESS
19 in SPSS (Model 8), while controlling for environmental awareness and positive tourism
20 experience. When cognitive style was added to the model, the results revealed a significant
21 positive effect of the interaction between pro-environmental atmosphere and cognitive style on
22 tourists' pro-environmental behaviour (coefficient=-0.888, SE=0.278, $p=0.0016<0.01$, $R^2=0.027$,
23 $F=10.205$). Specifically, the positive effect of pro-environmental atmosphere on tourists' pro-
24 environmental behaviour was observed among field-dependent individuals (coefficient=1.046,
25 SE=0.232, $p=0.000<0.001$), whereas no similar effect was found among field-independent
26 individuals (coefficient=0.158, SE=0.251, $p=0.529>0.05$), supporting H₈. However, the data
27 showed that there is no significant moderating effect between pro-environmental atmosphere and
28 cognitive style on tourists' moral inspiration (coefficient=0.060, SE=0.336, $p=0.858>0.05$,
29 $R^2=0.0001$, $F=0.032$), not supporting H₉.

30 This study examined the mediating role of moral inspiration underlying the nudge from pro-
21

1 environmental atmosphere to tourists' pro-environmental behaviour, uncovering nudging
2 mechanisms (H₅-H₇). The findings also revealed a moderating effect of cognitive style,
3 specifically the field-dependent style, on the relationship between pro-environmental atmosphere
4 and tourist's pro-environmental behaviour. Field-independent individuals did not show a
5 significant intention to adopt pro-environmental behaviour when perceiving a pro-environmental
6 atmosphere, unlike field-dependent individuals who demonstrated a positive effect of pro-
7 environmental atmosphere on their pro-environmental behaviour as tourists. However, the
8 cognitive style did not moderate the relationship between pro-environmental atmosphere and
9 moral inspiration (H₉).

11 **7 Discussion and conclusions**

12 **7.1. Discussion**

13 This research identifies mechanisms for destination management organisations to nudge tourists to
14 adopt pro-environmental behaviours, without having to restrict their freedom of choices, but
15 instead drawing on the knowledge that tourists are more likely express pro-environmental
16 behaviour intentions when they perceive the destination's environmental quality to be high (Han et
17 al., 2017; Ramkissoon, Smith, et al., 2013; C. Wang et al., 2019). We make four contributions.

18 First, a field experiment (Study 1) and two laboratory experiments (Study 2a and 2b) were
19 conducted to confirm the existence of a social contagion effect from residents' to tourists' pro-
20 environmental behaviour. According to social contagion theory, individual's attitudes, knowledge
21 and behaviours may be transmitted to others through observation, leading them to adopt similar
22 attitudes, knowledge or engage in the same behaviours (Hu et al., 2021).

23 Second, awareness that residents engage in pro-environmental behaviour triggers the
24 perception of tourists that a pro-environmental atmosphere exists in the destination, which alters
25 the latter's decision-making context, and therefore contributes to displaying higher pro-
26 environmental behaviour intentions (Aarts et al., 2004; Bonini et al., 2018). We respond to calls to
27 examine the mechanisms underlying the contagion of pro-environmental behaviour from residents
28 to nudge tourists (Souza-Neto et al., 2022), providing evidence that the perception of a
29 destination-wide pro-environmental atmosphere plays a mediating role. We show how nudging

1 can guide individuals to make better decisions in a gentle way without interfering, emphasising
2 the protection of decision autonomy.

3 Thirdly, drawing from literature that shows how contextual conditions influence tourists
4 predisposition to engage in pro-environmental behaviours (Lee et al., 2021; C. Wang et al., 2019;
5 C. Wang et al., 2020; Wang et al., 2022), we show how moral inspiration serves as a potential
6 mechanism through which a destination's perceived pro-environmental atmosphere can promote
7 tourists' pro-environmental behaviour intentions. We delve into the underlying mechanisms that
8 can be used to use residents' pro-environmental behaviour for nudging purposes, and demonstrate
9 the mediating role played by moral inspiration, by manipulating participants' perceptions of the
10 pro-environmental atmosphere. The results reveal that increasing tourists' perceived pro-
11 environmental atmosphere nudges them to respond as having greater pro-environmental behaviour
12 intentions, as a result of stimulating their moral inspiration.

13 Fourth, we show some boundaries of in nudging tourists to express more pro-environmental
14 behaviour intentions. We provide evidence of the nudge effect of pro-environmental atmosphere in
15 changing behavioural intentions of field-dependent individuals typically sensitive to their
16 surroundings when making decisions, but not field-independent individuals. However, the
17 moderating effect of cognitive style in the relationship between pro-environmental atmosphere and
18 moral inspiration was not supported by the data. This may be because the willingness to engage in
19 pro-environmental behaviour does not solely depend on the intensity of perceived moral
20 inspiration but their difference in adopt environmental cues.

21 We believe that the design of Study 3, in which everyone was forced to pay attention to the
22 environmental cue "pro-environmental atmosphere", may have superseded innate differences in
23 contextual awareness between the two field cognitive styles to capture environmental information,
24 triggering the need to show moral inspiration in members of both groups. Furthermore, the
25 moderating effect in the relationship between pro-environmental atmosphere and these tourists'
26 pro-environmental behaviour suggests that residents' pro-environmental behaviour, besides
27 providing moral information, contains other information that may contribute to nudging tourists,
28 for example, social norm information. Field-independent individuals tend to make decisions based
29 on their own judgments and are not easily influenced by others, so they may be less influenced by
30 norms. Therefore, they may show weaker tendencies for pro-environmental behaviour, and moral

1 inspiration may not mediate the effect in the same way for this group.

2

3 **7.2. Theoretical contributions**

4 Firstly, this paper helps close the research gap on pro-environmental contagion in a tourism
5 context. Previous research has paid attention to the social contagion effect of sustainability-related
6 behaviours in tourism, especially focusing on the effect among tourists and residents, including
7 such as the contagion of i) deviant behaviour (Su, Cheng, et al., 2022) and pro-environmental
8 behaviour (Li & Wu, 2020; Chang Wang et al., 2019) among tourists, and ii) deviant behaviour
9 (Su et al., 2023) and pro-environmental behaviour contagion among residents (Zhu et al., 2021).
10 However, these studies have paid little attention to the effect from residents to tourists. This study
11 explores and testifies a pro-environmental contagion effect from residents to tourists, helping fill
12 the research gap of how social contagion theory can be used to promote sustainable tourism.

13 Secondly, this study proposes and validates using the pro-environmental atmosphere created
14 by residents as a nudge strategy to facilitate tourists' pro-environmental behaviour. Previous
15 research on tourists' pro-environmental behaviour had studied the influence of personal factors
16 (Chan et al., 2014; Halder et al., 2020), experiences (Ramkissoon, Smith, et al., 2013; C. Wang et
17 al., 2019; Wang et al., 2022), human-place relationships (He et al., 2018; C. Wang et al., 2020),
18 and interpersonal interactions (Li et al., 2021; H. Lin et al., 2022) in influencing pro-
19 environmental behaviours. Instead, we argue that tourists can be nudged more subtly by creating
20 the conditions of pro-environmental atmosphere from residents' behaviours, which brings a fresh
21 attempt to sustainable tourism management from the perspective of nudge theory (Aarts et al.,
22 2004; Brohmer et al., 2019).

23 Thirdly, this study expands research on nudging by explaining additional mechanisms not
24 seen in previous works (Kim & Hyun, 2020; Olya, 2020; Souza-Neto et al., 2022). We show how
25 residents' pro-environmental behaviour can serve as a nudging mechanism to promote tourists'
26 pro-environmental behaviour with the outlines of norm activation theory, verifying the influence
27 of residents' pro-environmental behaviour on the activation of tourists' personal norms.

28 Finally, this study introduces personality trait variable that can help explain the behaviour of
29 tourists. We argue that travel is a field-dependent experience, and the cognitive style of field-
30 dependence and independence sways individuals' perception of surroundings (Chapelle & Green,

1 1992; Pithers, 2002; Q. Wang et al., 2020). Consequently, we identify that tourists' field cognitive
2 style is a boundary of nudge effect, showing how nudging is a powerful strategy for field-
3 dependent individuals to make environmentally and socially responsible decisions, but has a
4 weaker effect for field-independent individuals.

6 **7.3. Managerial implications**

7 The paper highlights the role of residents in promoting tourists' pro-environmental behaviour,
8 bringing an accessible strategy to sustainable tourism management with half the work but twice the
9 effect.

10 Making residents' behaviour and effort visible is vital, and tourists want to see residents'
11 efforts (Dolnicar et al., 2019). Hence, destination management organisations can choose to hold
12 environment-related activities or competitions for residents, and display related information, such
13 as posters in places where tourists gather, such as tourism information centres and scenic resting
14 places. Destination management organisations can also use online information channels, for
15 example, posting them on the official tourism social accounts of the destination. Holding or even
16 inviting visitors to participate in pro-environmental activities organised by local residents might
17 help as well. And for the destinations and cities who have urban walking tour or other tours that
18 require attention to the surroundings, residents' behaviour might have stronger effect on tourists,
19 especially for field-dependent tourists.

21 **7.4. Limitations and future research**

22 Figure 7 summarises the aspects of social contagion between tourists and residents, showing both
23 the elements that were tested in this study as well as those that can be examined by other
24 researchers. Two particular aspects may be fruitful: the pro-environmental behaviour from tourists
25 to residents and deviant behaviour contagion from residents to tourists and in turn.

26 Additionally, there are multiple opportunities to study mechanisms through which a
27 destination management organisation can making salient to tourists that residents engage in pro-
28 environmental behaviours. While the mechanisms we selected were framed from a nudge theory
29 perspective, other mediating variables can provide further insights, for example studying how an
30 emotional perspective can show that empathy generates social contagion from tourists towards

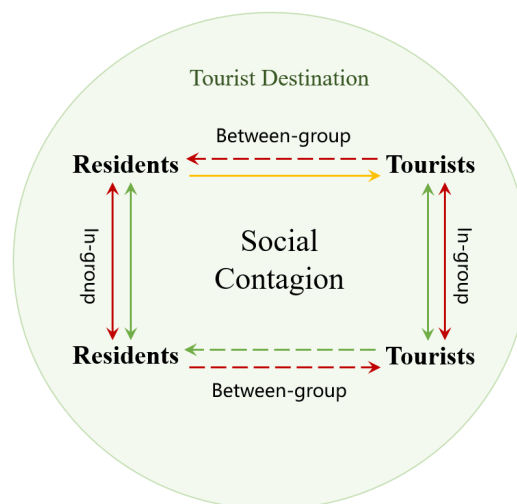
1 residents (Hu et al., 2021).

2 Furthermore, as we found that a pro-environmental atmosphere affects tourists' behaviours,
3 future research could explore other potential atmosphere types and their influence (Goulding,
4 2023).

5 Moreover, this study brought field cognitive style into tourism, and the field cognitive style
6 of individuals might have potential power to help understand the impact from destinations on
7 tourists or residents, owing to its explanation about people's information adoption style from
8 surroundings and dependence of tourism on environment.

9 In addition, future studies can test how social contagion varies for different types of pro-
10 environmental behaviour due to the social influence created by the destinations, linked to the level
11 of effort/difficulty required by tourists (Wu et al., 2020).

12 Finally, as although this paper has obtained some behavioural data from real tourists in real
13 situations, there are gaps in our knowledge about how environmental behavioural intentions and
14 real behaviour.



15 **Note:** 1) Green solid arrows represent pro-environmental contagion that has been studied;
16 2) Green dotted arrows represent pro-environmental contagion that has not been studied;
17 3) Red solid arrows represent deviant contagion that has been studied;
18 4) Red dotted arrows represent deviant contagion that has not been studied;
19 5) Yellow solid arrow represents pro-environmental contagion from residents to tourists that this article
20 researched.

21 **Fig. 7** The research loop of social contagion in the context of tourist destination

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