



Applied Artificial Intelligence

An International Journal

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/uaai20>

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To cite this article: Jianchi Dai, Haiying Chen, Zhiming Zhang, Yi Pan, Shanyi Tan, Shaowei Tian & Huan Zhang (2023) An Interpretable Moderated Mediation Model: How does Punctum Image Influence Tourists' Behavioral Intention?, Applied Artificial Intelligence, 37:1, 2195740, DOI: [10.1080/08839514.2023.2195740](https://doi.org/10.1080/08839514.2023.2195740)

To link to this article: <https://doi.org/10.1080/08839514.2023.2195740>



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An Interpretable Moderated Mediation Model: How does Punctum Image Influence Tourists' Behavioral Intention?

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ABSTRACT

This study aims to investigate the influence of punctum image in destinations on tourists' behavioral intentions. The study proposes the concepts of punctum and studium image based on semiology and uses an interpretable moderated mediation model to examine the effects of punctum image, studium image, flow experience, and human interaction on behavioral intention. The proposed research collected data from 440 tourists who visited a destination and used a structural equation model to analyze the relationships among the variables. The study employed bootstrapping to test the significance of the mediating effects and conducted a moderated mediation analysis to examine the moderating role of human interaction. The findings of the study indicate that punctum image has a positive effect on studium image and behavioral intention. Studium image is found to mediate the relationship between punctum image and behavioral intention. Additionally, the study shows that there are multiple mediations of studium image and flow experience between punctum image and behavioral intention. Finally, the study finds that human interaction plays a moderating role in two of the mediating effects. The results of this research have important theoretical and managerial implications. The study highlights the importance of punctum image in destination branding and suggests that destinations should focus on creating memorable and distinctive images to attract tourists. The study also emphasizes the role of studium image and flow experience in shaping tourists' behavioral intentions, which could help destinations to design more effective marketing strategies. Finally, the study underscores the importance of human interaction in shaping tourists' experiences and suggests that destinations should focus on providing high-quality human interactions to enhance tourists' experiences and satisfaction. The use of an interpretable moderated mediation model in this study enhances the interpretability and practical applicability of the results for decision-makers.


ARTICLE HISTORY

Received 23 December 2022

Revised 1 March 2023

Accepted 22 March 2023

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 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/08839514.2023.2195740>.

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Introduction

The interaction between landscapes and tourism has always been a complex and focused topic (Stoffelen and Vanneste 2015). The compatibility between a destination and its landscapes is important for the effects of tourism. However, some landscapes seem to break this rule, and their images are different from the destination image but still attract numerous tourists. The relationship between the image of particular landscapes and the image of their affiliated destinations could be investigated based on related theoretical perspectives. In most situations, landscapes should be consistent with the theme of a destination that they belong to so that the effects of tourism would be better. However, some landscapes seemed to break the law. Since the establishment of Bailong Ladder in Zhangjiajie National Forest Park, China, in 2002, it has aroused widespread controversy. When it enjoyed great prestige in the world, some scholars argued that such an artificial and industrial landscape broke the original forest ecology (Liu et al. 2021). Similarly, the glass pyramid in front of the Louvre Museum represented modernity. It created a visually attractive contrast to the existing historical Museum (Riza, Doratli, and Fasli 2012). These landscapes were incompatible with the whole destination image but attract numerous tourists. The relationship between the image of particular landscapes and the image of their affiliated destinations could be investigated concerning related theoretical perspectives.

Ferdinand de Saussure, as the originator of semiology, suggested that the theory of linguistic signs should be put in a more general basis theory (Saussure 1964). He proposed the term “semiology”- a science that studies the life of signs within society (Saussure 1964). The thoughts of Saussure caused the rise to prominence of a generalized “structuralism” (Joseph 2001). One of his binary structures had syntagmatic relation and associative relation (Zhao 2016). Syntagmatic relation denotes a combination based on sequential and associative relation referring to connexon in the brain. Such connexons are part of the accumulated store which is the form of the language that takes in an individual’s brain (Saussure 1964). Jakobson (1971) indicated that two aspects of language are combination and selection based on Saussure’s study. Later, the semiologist developed the associative relation (selection) as paradigmatic relation, which denoted the contrasts between the elements which can be replaced with each other (Zhao 2016).

With the development of syntagmatic and paradigmatic relations, Barthes (1980) proposed the two notions, studium, and punctum concerning photographs. Studium makes viewers feel middle emotions, kind of strictly educated emotions (Barthes 1980). Punctum, on the other hand, is the rupture of cultural “normality,” such as the destruction of the daily state (Zhao 2016). It represents the unexpected part of the picture and activates the subjectivity of the viewer (Ventsel 2010). Studium and punctum can be important factors for

which some pictures can move viewers emotionally (Harper 1988). The punctum disturbs the studium in ways that seem violent and wound to producers' intentions and the persons who read the texts (Cockain 2018). Barthes's punctum theory emphasizes that homogeneous media can easily be regarded as cultural norms, and formal media cannot deliver more interpretations (Barthes, 2000). Therefore, a punctum is a component where the paradigmatic relation suddenly widens, giving the component a stronger projection (Zhao 2016).

This study applies the concepts of studium and punctum in the tourism field and proposes studium and punctum images which denote tourists that perceived image toward studium (destination) and punctum (some particular landscapes whose image is different from a destination image) in the destination, respectively.

Research of semiology or semiotics in the tourism field could be divided into two types according to study objects. The first type is visible signs in tourism. Some researchers argued that gaze was constructed through signs (tourist sights), and tourism involved the collection of signs (MacCannell 1976; Urry 2002). Besides, Zhang and Sheng (2017) borrowed triadic relations to study the key person in a tourist destination. The other type of research investigated how invisible signs were formed, for example, the construction of place branding (Sang 2021), narratives of tourist interaction (McCabe and Foster 2006), festival image (Zhang and Wang 2018), and destination image (Hunter 2016). In addition, Brown (1992) argued that the nature of tourism is a form of symbolic consumption. Destination image has been proven to be a pivotal factor in behavioral intention (Stylidis, Belhassen, and Shani 2017). The behavioral intention was also viewed as a dependent variable influenced by destination image (Afshardoost and Eshaghi 2020). However, researchers tended to regard tourist destination as a whole concept, investigating its cognitive image, affective image, and overall images (Stylos et al. 2017; Taghipourian, Yazdani, and Aghaifar 2019), but from a structuralist semiology perspective, the components of destinations were ignored. Specifically, most landscape images are congruent with the destination image, but some landscapes might be different from the destination image. As mentioned above, the Bailong Ladder in Zhangjiajie National Forest Park and the glass pyramid in front of the Louvre Museum are the corresponding practical cases.

Although destination image has been widely studied, previous research mostly regards the destination as a whole concept and neglects the impact of specific landscape images that are different from the destination image. In this study, we propose the concepts of studium image and punctum image, which denote tourists' perceived images toward the destination and some particular landscapes whose images are different from the destination image, respectively. Our research problem is to investigate whether the punctum image can

influence studium image and tourists' behavioral intention and the paths of this influence.

This study proposes two notions: studium image and punctum image. Specifically, we aim to answer the following research questions:

- (1) Can the punctum image influence the studium image, and how does it do so?
- (2) Can the punctum image influence tourists' behavioral intention, and how does it do so?
- (3) What is the role of flow experience in the relationship between punctum/studium image and behavioral intention?
- (4) Can human interaction moderate the relationship between punctum image and studium image/behavioral intention?

This study attempts to shed light on these problems through a structural equation model. Tourists' perception of destination attributes significantly affects their flow experience (Karasakal and Albayrak 2021). For destination management organizations, understanding how destination image is constructed is also critical to designing meaningful tourist experiences (Lalicic et al. 2021). People's flow experience can explain why people are willing to continue certain behaviors (Csikszentmihalyi 1990). Ding and Hung (2021) and Lu et al. (2021) also proved the positive effect of flow experience on behavioral intention. Therefore, flow experience is set as a mediator between image (both of punctum image and studium image) and behavioral intention. Besides, Saussure (1964) thought of semiology as being part of social psychology, and he made numerous references to social intercourse. This study considers human interaction as a moderator to investigate tourists' interpretation of punctum when others are involved. Theoretically, this study introduces semiology concepts and proposed a set of concepts – punctum image and studium image. More importantly, this study provides a better understanding of tourist destination image, which would provide useful practical implications for stakeholders for destination development.

To the best of our knowledge, this is the first study to apply the concepts of studium and punctum image in the tourism field. We contribute to the literature by proposing a more comprehensive understanding of tourists' destination images and investigating the impact of specific landscape images that are different from the destination image. We also contribute to the literature by examining the mediating effect of flow experience and the moderating effect of human interaction on the relationship between punctum image and behavioral intention. Our

findings could provide useful practical implications for destination management organizations and marketers.

Literature Review

SOR Framework

Stimulus-Organism-Response (SOR) model could be applied to analyze how individuals react to stimuli in the environment by using three steps: Stimulus, Organism, and Response (Zhang and Xu 2019). Stimuli cause organismic reactions, which result in the performance of certain actions, and the organism mediates the impact of a particular stimulus on the response (Flavián, Ibáñez-Sánchez, and Orús 2019). Image is a stimulus from the environment (Yasami, Promsivapallop, and Kannaovakun 2020). The organism produces two main types of internal reactions: cognitive and affective reactions (Zhang, Qi, and Qi 2021). Cognitive reaction refers to the mental responses while affective reaction denotes the emotional responses during the interacting process (Mason and Paggiaro 2012). Besides, flow experience contains cognitive and affective appraisal (Claffey and Brady 2017). It is related to the atmosphere and individuals' behavior and it could be regarded as an organism (Aboubaker Ettis 2017). Besides, the human interaction process is also a process, which signifies that it is accepted as another organism in this research (Barnard and Teasdale 1991). This framework has been applied to the tourism field to explain behavior intention (Yin and Ni 2021). Behavioral intention as tourists' response in this study will be investigated in detail. This research proposes that studium and punctum image (stimuli) could affect tourists' organic response to behavioral intention through the organism-flow experience and human interaction.

Studium Image and Punctum Image

Studium and punctum originated in the photography field, and they have been applied to studies of photography (Singh and Ladsaria 2017). With the development of punctum theory, the two notions appeared in other contexts. 2017) used punctum to explain vulnerable airport images in the tourism context, studium and punctum were used in two types of research: 1) punctum in touring photographs reflects the wound that the "touring self" inevitably invites (Kargupta 2015); 2) punctum landscapes could promote the possibility of tourists' gaze (Lovell 2019). However, studium and punctum, in general, are not explored explicitly in the tourism field. Specifically, how the images of studium and punctum influence tourists have been not studied in detail. This study proposed the implementation of two notions into tourism research, which are studium and punctum images.

Stadium image denotes the image of the whole tourist destination, which is the real destination image. Destination image (called stadium image in this study) can be conceptualized as a set of beliefs, ideas, expectations, impressions, and emotional thoughts produced by tourists (Assaker 2014; Lu, Chi, and Liu 2015). Previous studies have suggested that it is an abstract dimension or higher-order construct comprised of two sub-dimensions (cognitive and affective) (Afshardoost and Eshaghi 2020). On the other hand, Punctum image is a concept developed from punctum and affective image (Ahmad, Naz, and Razzak 2021). It signifies the affective image of some landscapes which is different from the overall destination image (Zhang, Qi, and Qi 2021). Punctum is perceived as an affectively charged vector of the text/image that unsettles the habitual body of the reader/viewer (Fakhrkonandeh 2018). When tourists experience the punctum in destination, they would feel surprised and novel, which helps tourists produce a successful experience and avoid affective fatigue (Poulssohn and Kale 2004; Teichert, Sun, and González-Martel 2021).

Punctum image could be produced by tourists' attending to details and particularities within a medium (Page 2017). Feature-integration theory suggested that narrowly focused attention was related to bigger discrimination (Treisman and Gormican 1988). Tourists would find the punctum image different from the stadium image when they experience the punctum, but the punctum is a part of the stadium (Alzubaidi et al. 2021). Each part has its function and role required by the nature of the whole (Wertheimer 1980) In the tourism field, some scholars focused on some particular sections and destination images (Behrooz and Hayeri 2022). Amir, Askari, and Dola (2009) focused on the impact of historical building facades on historical districts' image. McKercher (2021) discussed the relationship between destination image and tourism products that are different from destination image (Alzubaidi et al. 2021). However, few researchers paid attention to the relationships between punctum image and stadium image. The research suggests that after getting attached to the punctum in destinations, tourists would produce a punctum image that is distinct from the whole destination image (Cuzzocrea 2021). So, perceived images, punctum images, have an impact on real destination images. The better tourists' perceived image of punctum is, the better stadium image they would have. Therefore, a hypothesis is proposed below:

H1: Punctum image has a positive effect on stadium image.

Flow Experience

Flow experience is an enjoyable status of consciousness when participating in an activity (Csikszentmihalyi 1975). In this state, people would focus on what they are doing, involve in the activity and feel effortless (Pelet, Ettis, and Cowart 2017). Flow experience is a continuous variable with different levels, and it ranges from an absence of flow to a fully intense state of flow (Csikszentmihalyi 1997). Numerous studies quantified and explored its dimensions, such as preference, comfort, richness, control, time distortion, concentration, enjoyment, and so on. (Lu et al. 2021; Zhou 2013). The dimensions varied, but the core of this construct was tourists' high involvement, focus, or immersion (Novak, Hoffman, and Yung 2000).

External factors could influence tourists' perception of the image through their senses and achieve positive personal responses (Agapito, Valle, and Mendes 2014; Baloglu and McCleary 1999). Tourism attraction theory argued that tourist destinations required a concomitant depth of experiences is also required to keep tourists entertained, complement the core experiences offered, and offer memorable experiences (McKercher 2021). Tourists' cognitive and affective appraisals toward their destination were vital components of their immersions (Claffey and Brady 2017). Its image was most relevant to attract tourists and bringing extraordinary experiences to tourists in the destination as studium (Silva, Kastenholz, and Abrantes 2013; Urry 1990). Like the studium image, memorable punctum could also let tourists form an aspect of the tourist flow experience (Wei, Xu, and Xie 2021). The critical reason for forming this relationship was the attribute of punctum – novelty. Experiencing novelty and the appraisal of it was considered intricately connected to the experience of pleasure through flow experience (Skavronskaya, Moyle, and Scott 2020; Skavronskaya et al., 2021). Therefore, during travel, once they experienced the novelty of a punctum attraction and produce an image of such attraction, they might have a flow experience in the whole destination (Ahmad, Naz, and Razzak 2021). Referring to SOR theory, the stimulus was a set of characteristics in the environment which affect individuals' internal states (Tubillejas-Andrés, Cervera-Taulet, and Calderón García 2020). Researchers have examined the relationship between destination attributes and tourists' experience (Karasakal and Albayrak 2021; Toudert and Bringas-Rábago 2016), while few explored the effect of punctum image on flow experience. This study argues that both punctum and studium images could become impressions resulting from tourists' observation, and then impressions could let tourists immerse in the destination so that punctum image and studium image would lead to tourists' flow experience. Both stadium and punctum could have impacts on tourists' flow experience in the destination. Therefore, the following hypotheses are proposed:

H2: Studium image has a positive effect on tourists' flow experience in the destination.

H3: Punctum image has a positive effect on tourists' flow experience in the destination.

Behavioral Intention

Behavioral intention is the expectation of a particular behavior from a certain situation and can be regarded as a possibility of action (Fishbein and Ajzen 1975). In the field of tourism, researchers mainly pay attention to two dimensions: revisit intention and recommendation intention to a tourist destination (Wu and Li 2017). Research has proved that tourists' revisit and recommendation intentions reflect tourists' behavioral intentions and tourist loyalty (Bigné, Sánchez, and Sánchez 2001; Lee, Yoon, and Lee 2007).

Studium image could have an impact on tourists' behavioral intentions. Social information processing theory proposed that individuals shape their behaviors according to their social environment (Salancik and Pfeffer 1978). Sensory marketing theory also argued that sensory stimulation can affect consumers' perception, judgment, and behavior (Krishna 2013). Studium image was likely to favorably influence revisit and recommendation intention (Klenosky and Gitelson 1998). Kim et al. revealed that destination image had a positive effect on tourists' behavioral intentions (Kim, Park, and Kim 2016). SOR theory argued that environmental stimulus causes cognitive and emotional responses to a certain extent, leading to behavioral responses and emotional changes, and this pathway indicates that cognitive and emotional responses play an intermediary and bridge role between stimulus and response. To follow the terms in semiology, this study identifies the destination image as the studium image. Studium image has role-playing in both direct and mediating effects on tourists' behavioral intention to destination. Besides, the article suggested that studium image could positively mediate the effect of punctum image on behavioral intention. Thus, this study proposes the following hypothesis:

H4: Studium image has a positive effect on tourists' behavioral intention to the destination.

H5: Studium image mediates the relationship between punctum image and behavioral intention to the destination.

Some special parts of a destination tend to influence tourists' behavioral intentions. The distribution of stimuli significantly affects consumers' determination, which is one of the ways that spatial distribution influences consumer decision-making (Xie et al. 2021). The theory of emotion activation argued that different stimulus elements would produce different emotions, and then affect behavior (Isen, Daubman, and Nowicki 1987). Researchers have paid attention to the effects of particular touring landscapes or products in destinations on tourists' behavioral intentions (Li and Su 2021; Lu et al. 2021). Nevertheless, few discussed the impacts of landscapes whose images are different from the overall destination image on behavioral intention. This study advocates that after entering a punctum scenery, tourists could feel different emotions and produce a different image, and these products might cause to affect tourists' behavioral intentions. An adverse punctum image could produce a negative behavioral intention, while a positive punctum image would produce a stronger behavioral intention. Therefore, we propose the following hypothesis:

H6: Punctum image has a positive effect on tourists' behavioral intention to the destination.

Flow experience has an impact on tourists' behavioral intention. Flow theory argued experiences of enjoyable activities that people participate in at a great cost (Csikszentmihalyi 1992). Participating in these activities is a reward for tourists and could affect behavior intention (Wu and Liang 2011). Affective appraisal theory constructed an "emotional experience-behavior" model which can explain the relationship between flow experience and behavior intention (Tian, Lu, and Powpaka 2015). Kim (2022) proved that customers' flow experience in software would influence future behavioral intention. Lu et al. (2021) found that the flow experience induced by the soundscape in the tourism destination could have an impact on behavioral intention. The organism part of SOR intervenes internal process which takes place between the stimulus and the final actions, causing alterations in people's emotional states (Loureiro 2017). So, flow experiences based on punctum images have considerable impacts. According to the discussions above, this study suggests that the flow experiences resulting from punctum images could encourage tourists' future revisitation and recommendations. Thus, this study proposes the following hypotheses:

H7: Flow experience in the destination has a positive effect on tourists' behavioral intention to the destination.

H8: Flow experience mediates the relationship between punctum image and behavioral intention to the destination.

Multiple Mediating Effects of Studium Image and Flow Experience

SOR theory conceptualized a sequential mechanism wherein stimuli drive internal organismic states, which, for their part, lead to approach or avoidance responses (Talwar et al. 2022). Stimuli in this study are identified as punctum image and studium image. The organism part containing flow experience and behavioral intention is viewed as a response. According to the inferences above, we could conclude that the punctum image could have an impact on the studium image, and then the studium image could further influence the flow experience, which might eventually cause tourists' behavioral intention. These influencing paths demonstrate the possibility of the existence of multiple mediations – studium image and flow experience. Therefore, it could be reasonable to propose the following hypothesis:

H9: Studium image and flow experience play multiple mediating roles between punctum image and behavioral intention to the destination.

Moderating Effect of Human Interaction

Human interaction is a concept that originated from co-creation which is understood as tourist interaction (Campos et al. 2016). Blomstervik et al. (2021) developed the concept and proposed human interaction which refers to tourists' social encounters during their touring processes, including interactions with staff members, travel parties, other tourists, and local people in the destination.

Symbolic interaction theory argued that places are symbolic contexts imbued with meaning which emerges and evolves through ongoing interaction with others and the environment and influences people's behavior (Sütterlin and Siegrist 2014). In the tourism field, researchers tended to link human interaction to attitude using symbolic interaction theory (Yang et al. 2020), proposing that social interaction can produce positive emotions to influence behavioral intention positively (Choo and Petrick 2014). Furthermore, Klaus and Maklan (2011) proposed that social interaction facilitates tourists' experience. Styliadis, Woosnam, and Tasci (2021) proved that resident–tourist interaction could positively influence destination image. This study suggests that human interaction could strengthen tourists'

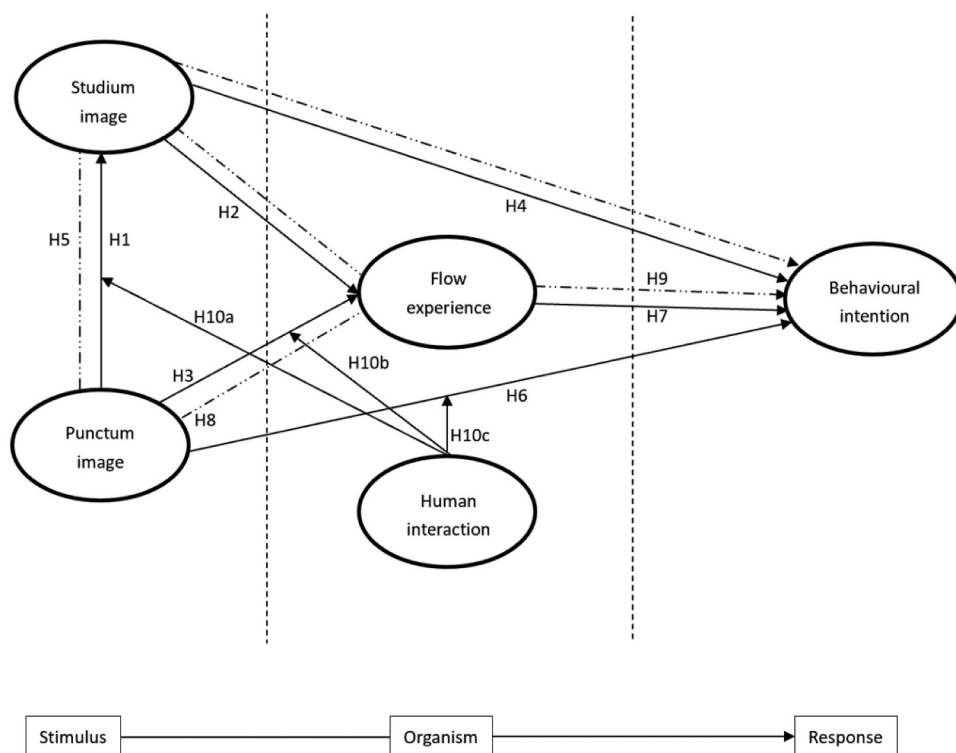


Figure 1. Conceptual framework. Note: → direct or moderating effect; → mediating effect.

understanding of punctum. The relationships between punctum image and studium image, and between flow experience, and behavioral intention would be moderated by human interaction. The following hypotheses are proposed as follows as [Figure 1](#):

H10a- c: Human interaction strengthens the positive effect of punctum image on studium image, flow experience, and behavioral intention.

Method

Sample and Data Collection

A pilot study and formal study were conducted through an online platform “Sojump.” Via Sojump, more than 1 million people finished questionnaires per day in several fields, on average, and its sample service is trusted by well-known universities and enterprises, such as Tsinghua University, Alibaba, etc. In the surveying process of the research (November 10th to November 25th), a total of 580 questionnaires were collected. To render respondents a better understanding



Forest park
(Zhangjiajie National Forest Park)



Ancient town
(Old Town of Lijiang)



Punctum in forest park
(The Bailong sky ladder in Zhangjiajie National Forest Park)



Punctum in ancient town
(The bars in Old Town of Lijiang)



Popular science park
(National Crater Geological Park)



Museum
(Louvre Museum)



Punctum in popular science park
(Entertainment facilities in National Crater Geological Park)



Punctum in museum
(The glass pyramid in front of the Louvre Museum)

Figure 2. Sets of pictures about punctum.

of punctum, four sets of pictures showing punctum and studium were exhibited to respondents before they provide answers (Figure 2.). The pictures were selected from internationally well-known destinations, and they represented natural or cultural punctum landscapes and destinations respectively. We then required respondents to recall an impressive travel experience in the last 3 months to finish the questionnaires. Finally, we excluded the filled-out questionnaires if

respondents clicked on “No” in response to the first question “Are you clear about the meaning of punctum?,” as well as the questionnaires containing missing values. In total, the final number of questionnaires (440), which is the sample size, met the minimum requirement of conducting a standard SEM analysis (Jackson 2003).

Survey Instrument

The items contained in each construct were concluded from a comprehensive literature review of image, flow experience, behavioral intention, and human interaction. To ensure the accuracy of the wordings of translating items, the back-translation method was used (Brislin 1976). In addition, the questionnaires were further modified through the pilot study, and the measurement efficacy was examined.

The items for each construct and their origins are shown in Supplementary Material. Items of punctum image referred to the concepts of “novelty” and “affective image” and benefited from Cheng and Lu (2013) and Wang and Hsu (2010). Items for measuring human interaction were inferred from Blomstervik et al. (2021). The measurement items for the stadium image were adapted with six items from Baloglu and McCleary (1999), Stylos et al. (2016), and Su et al. (2020). Flow experience included three items which were inferred from Suh et al. (2017), Wu and Liang (2011), and Zhang, Qi, and Qi (2021). Items of behavioral intention were borrowed from Han, Hsu, and Sheu (2010), Fu et al. (2018), and Zhang, Qi, and Qi (2021). The whole set of items was measured using a 7-point Likert-type scale. The cognitive image dimension of the stadium image was measured ranging from totally unimportant (1) to important (7). The rest of the questions in the questionnaires were measured ranging from strongly disagree (1) to strongly agree (7). In the end, tourists’ demographic characteristics, such as gender, age, education, occupation, and frequency of travel, were analyzed.

Data Analysis

To test the proposed hypothesis and model, this study used the software SPSS 26.0 and Amos 24.0. First, the confirmatory factor analysis (CFA) was conducted to examine the factor structure and test the fit of the measurement model. Then, to examine the interrelationships among the five constructs, we tested the structural model. Finally, PROCESS in SPSS 26.0 was conducted to test the mediation and moderation effects. Bootstrap analyses were conducted by running the serial multiple mediation model 6 through the PROCESS macro (Hayes 2018).

Table 1. Demographic and travel profile.

Demographic and travel profile	Frequency counts	Percentage (%)
Gender		
Male	191	43.4
Female	249	56.6
Age		
≤17	22	5.0
18–28	308	70.0
29–40	63	14.3
41–59	31	7.0
≥60	16	3.6
Education		
Middle school or below	9	2.0
High school	14	3.2
Undergraduate	257	58.4
Masters or above	160	36.4
Occupation		
Worker	2	0.5
Medical staff	8	8.0
Student	244	55.5
Teaching staff	41	9.3
Civil servant	11	2.5
Freelance	10	2.3
Employee	72	16.4
Retiree	19	4.3
Others	33	7.5
Travel frequency		
First time	357	81.1
2–3 times	73	16.6
4–6 times	8	1.8
more than 6 times	2	0.5

Results

Demographic Profile

The demographic and travel profile of the sample is provided in [Table 1](#). It is shown that female respondents (249, 56.6%) were slightly more than male respondents (191, 43.4%). Most respondents were between the age between 18 and 28 (308, 70%). Over half of the travelers (257, 58.4%) had a college or university education, and 36.4% got a master's degree. Among the sample, 244 were from students, which occupied 55.5%, followed by employees (72, 16.4%). Eighty percent of the respondents recalled a touring destination that they had visited only once and then completed the questionnaire.

Test of Common Method Bias (CMB) and Normality

CMB was applied to examine whether the results of surveys are influenced by data sources (respondents), measurement environment, project context, and project characteristics. The results indicated that a single factor explains 42.445% of the variance, which did not exceed 50% (Podsakoff et al. 2003). Hence, CMB satisfied the standard approach. Besides, the normality of the data was also examined. As shown in [Table 2](#), the

Table 2. Reliability and convergent validity test.

Construct	Items	Means	SK	KU	Standardized Factor Loadings	Cronbach's α	AVE	C.R.
PI	PI1	4.57	-0.47	-0.22	0.84	0.93	0.71	0.93
	PI2	4.53	-0.44	-0.30	0.86			
	PI3	4.83	-0.54	-0.31	0.88			
	PI4	5.03	-0.69	0.14	0.77			
	PI5	4.83	-0.58	-0.26	0.86			
SI	SI1	5.08	-0.30	0.32	0.74	0.90	0.59	0.90
	SI2	4.87	-0.07	-0.28	0.74			
	SI3	5.18	-0.21	-0.23	0.83			
	SI4	5.23	-0.34	0.27	0.83			
	SI5	5.13	-0.31	0.40	0.80			
	SI6	5.17	-0.43	0.42	0.66			
FE	FE1	4.67	-0.27	-0.10	0.81	0.89	0.75	0.90
	FE2	4.92	-0.42	0.32	0.96			
	FE3	4.90	-0.40	0.63	0.81			
BI	BI1	4.90	-0.36	0.28	0.88	0.93	0.72	0.93
	BI2	4.73	-0.18	0.01	0.85			
	BI3	5.07	-0.48	0.37	0.84			
	BI4	5.06	-0.41	0.30	0.85			
	BI5	4.82	-0.41	0.07	0.83			
HI	HI1	4.54	-0.46	0.10	0.71	0.90	0.64	0.90
	HI2	4.34	-0.36	-0.21	0.80			
	HI3	4.51	-0.42	-0.21	0.80			
	HI4	4.08	-0.05	-0.27	0.86			
	HI5	4.35	-0.27	-0.09	0.83			

Table 3. Discriminant validity test.

Construct	PI	SI	FE	BI	HI
PI	0.84				
SI	0.52	0.77			
FE	0.35	0.64	0.86		
BI	0.47	0.74	0.65	0.85	
HI	0.45	0.37	0.35	0.38	0.80

Note: The diagonal is the AVE square root of each construct.

skewness values of all items are less than the suggested criteria 2 and the kurtosis values for all items are less than the suggested criteria 7 (Curran, West, and Finch 1996), which indicated that the data met the requirement of normal distribution.

Measurement Model

Through CFA the measurement properties were tested. All the constructs were measured using three to six items. The whole set of items was contained in the structural model. Table 2 shows the goodness-of-fit indices: $\chi^2 = 907.01$, $df = 242$, $\chi^2/df = 3.75$, $IFI = 0.92$, $TLI = 0.91$, $CFI = 0.97$, $RMSEA = 0.08$. The full list of these indices met the recommended cutoff criteria, which indicated that the proposed model was a good fit (Widaman and Thompson 2003).

Cronbach's alpha of each dimension and the overall scale were found to be greater than 0.7, which indicated that the reliability of the scale was good. As for the aspects of validity, the standardized factor loading of each item was

Table 4. Results of structural model analysis.

Hypotheses	Path	Standardized estimate	S.E.	C.R.	Result
H1	PI→SI	0.46***	0.27	8.00	Not Rejected
H2	SI→FE	0.58***	0.09	9.49	Not Rejected
H3	PI→FE	-0.01	0.05	-0.11	Rejected
H4	SI→BI	0.49***	0.09	8.32	Not Rejected
H6	PI→BI	0.10*	0.04	2.24	Not Rejected
H7	FE→BI	0.27***	0.05	5.46	Not Rejected

Note: PI = punctum image; SI = studium image; FE = flow experience; BI = behavioral intention; * $p < .05$; ** $p < .01$; *** $p < .001$.

found to be greater than 0.6, the AVE value of each dimension was greater than 0.5, and the values of C.R. were greater than 0.8, indicating that the convergent effect was good within the constructs and meets the convergent validity standard (Table 2). The correlation coefficients between all constructs were less than the AVE square root of each construct, suggesting that the discriminant validity among all constructs was good (Table 3).

Structural Model

Maximum likelihood (ML) was used to estimate the structural model. The structural model has a good fit: $\chi^2 = 1099.00$, $df = 362$, $\chi^2/df = 3.04$, $IFI = 0.92$, $TLI = 0.91$, $CFI = 0.92$, $RMSEA = 0.07$. Six direct effect hypotheses were estimated. Except for H3, all the direct paths were supported (Table 4).

Specifically, punctum image had a positive impact on studium image and behavioral intention. ($\beta = 0.46$, $p < .001$; $\beta = 0.10$, $p < .05$). Studium image was found to have a positive significant effect on flow experience and behavioral

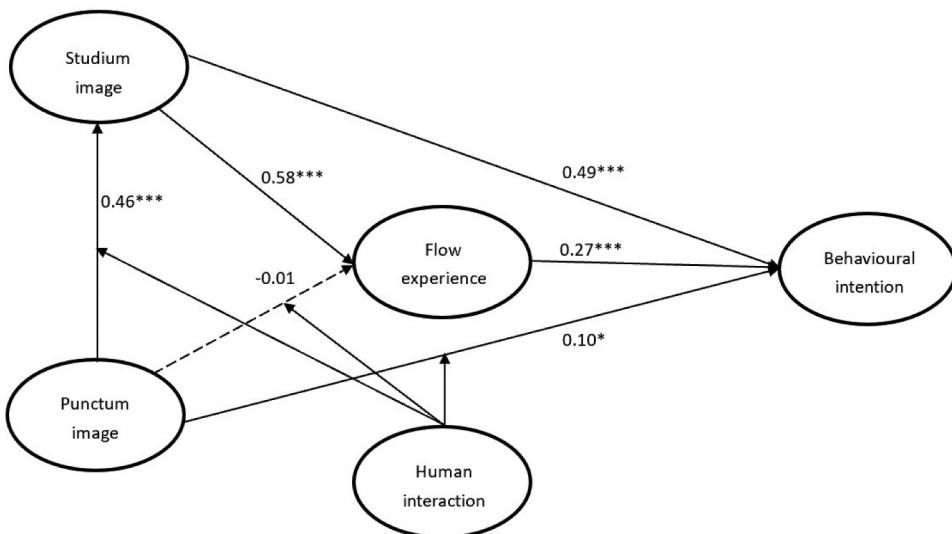


Figure 3. Final structural model. Note: Dotted line indicates an insignificant effect, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5. Tests of mediating effects.

Hypothesis	Indirect effect(s) of X on Y:	Effect	BootSE	BootLLCI	BootULCI
	TOTAL	0.25	0.03	0.19	0.32
H5	Punctum image → Studium image → Behavioural intention	0.18	0.03	0.13	0.24
H8	Punctum image → Flow experience → Behavioural intention	0.01	0.01	-0.01	0.03
H9	Punctum image → Studium image → Flow experience → Behavioural intention	0.06	0.01	0.04	0.09

intention ($\beta = 0.58, p < .001$; $\beta = 0.49, p < .001$). Flow experience can cause a positive effect on behavioral intention significantly ($\beta = 0.27, p < .001$). However, the punctum image failed to influence flow experience ($\beta = -0.01, p = .6270$). [Figure 3](#) shows the results of the structural model test.

Mediating Effects Test

The indirect effects of punctum image on behavioral intention, with the mediation of studium image and flow experience, were shown in [Table 5](#). The criterion for testing the mediating effects is that the 95% confidence interval (95% CI) does not include zero (Hayes 2018). The results showed that the total indirect effect of punctum image on behavioral intention was statistically significant (effect = 0.25, 95% CI [0.19,0.32]). The mediating effect of the studium image was significant (effect = 0.18, 95% CI [0.13,0.24]), while the role of flow experience was insignificant (effect = 0.01, 95% CI [-0.01,0.03]). The multiple mediating effects of studium image and flow experience were significant (effect = 0.06, 95% CI [0.04,0.09]).

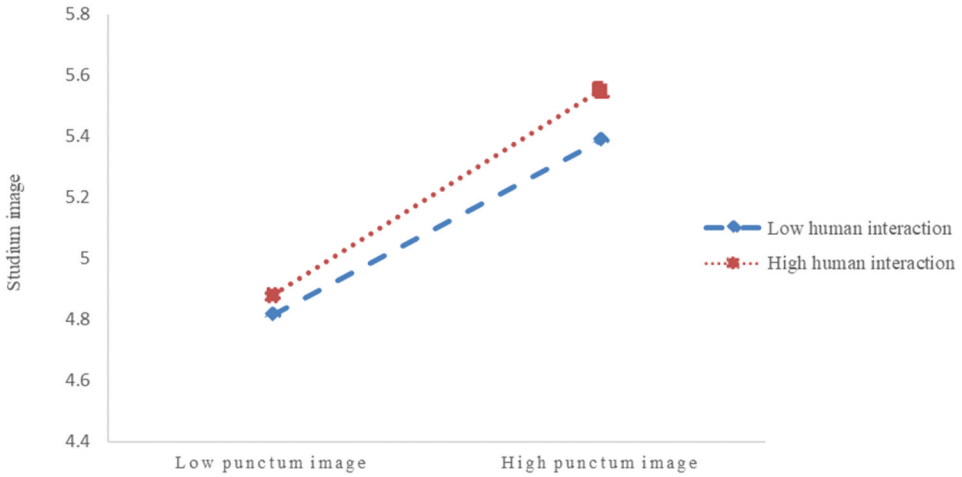
Moderating Effects Test

This study applied SPSS PROCESS macro to test the moderating hypotheses, conducting a 5000-iteration bootstrapping procedure and 95% bias-corrected CI. The built-in Model 8 was chosen to be the model template for moderated mediation test.

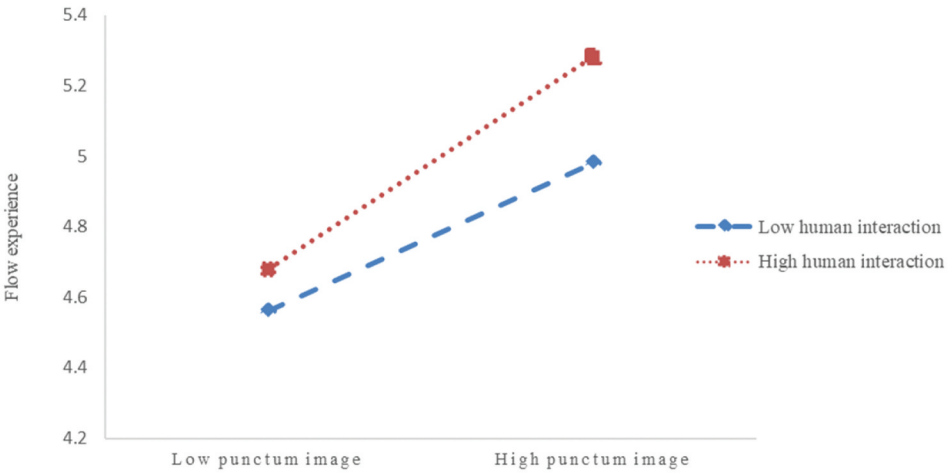
It is shown in [Table 6](#) that human interaction only failed to moderate the relationship between punctum image and behavioral intention. Therefore, H10a and H10b were supported while H10c was rejected.

Table 6. Tests of moderating effects.

Hypothesis	Moderated path	coefficients	standard error	t-value	p-value	LLCI	ULCI
H10a	Punctum image → Studium image	0.05	0.02	2.49	0.01	0.01	0.09
H10b	Punctum image → Flow experience	0.09	0.03	3.26	0.00	0.04	0.15
H10c	Punctum image → Behavioural intention	0.03	0.02	1.38	0.17	-0.01	0.07



(a)



(b)

Figure 4. a. The moderating effect of human interaction on the relationship between punctum image and studium image. b. The moderating effect of human interaction on the relationship between punctum image and flow experience.

Table 7. Tests of moderated mediation effects.

Path	Human interaction	Effect	Boot SE	Boot LLCI	Boot ULCI
PI → SI → BI	M-1SD	0.13	0.03	0.07	0.19
	M	0.16	0.03	0.11	0.22
	M+1SD	0.19	0.04	0.12	0.28
PI → FE → BI	M-1SD	0.03	0.02	-0.01	0.07
	M	0.05	0.02	0.02	0.09
	M+1SD	0.08	0.03	0.03	0.14

Note: PI = punctum image, SI = studium image, FE = flow experience, BI = Behavioral intention.

Figure 4a and 4b show the moderating degree of human interaction in the two relationships.

Moderated mediation results are shown in Table 7. The mediation role of the studium image could be moderated by human interaction. At a high or low level of human interaction, this mediation effect became larger (effect = 0.19, 95% CI: [0.12, 0.28]) or smaller (effect = 0.13, 95% CI: [0.07, 0.19]). The mediation of flow experience could also be moderated by human interaction. At the low level of human interaction, the mediation role of flow experience was insignificant (effect = 0.03, 95% CI: [-0.01, 0.07]). However, when human interaction remained at a high level, the mediation effect became significant (effect = 0.08, 95% CI: [0.03, 0.14]).

Discussion and Implications

Theoretical Implications

Previous studies regarded the destination image as a whole concept and analyzed some dimensions of the destination image (Arabadzhyan, Figini, and Vici 2021). A punctum image was first proposed in the article. The proposed punctum and studium images (destination image) were used to distinguish the image of landscapes different from the whole destination image. When the present research investigated the relationship between destination image and behavioral intention, the article mostly focused on punctum image that was not congruent with the whole destination image. Based on this concept, we studied the specific influencing paths between punctum image and tourists' behavioral intentions by using moderating and mediating effects. The findings could enrich the framework of the theory about destination images and refine the theoretical results of the formation mechanism of tourists' behavior intention based on the perception of destination images.

Secondly, when the findings of the conducted research are under consideration, the research suggested that punctum image has a positive impact on studium image. From the perspective of the theory of semiology, the very first finding conformed with Barthes' perspective that punctum could impair or strengthen studium (Barthes 2003). Although punctum and studium have been widely used to analyze text-based signs, such as novels (Adler 2011) and photographs (Ventsel 2010), few studies considered them to be elements of real life. Besides, Semiology allows the integration of signs and people's real-life experiences (Camarero 2011). Furthermore, this study moved one step further and examined the relationship between punctum and studium images, which further expanded the semiology theory to the implementation of tourism.

In addition, the direct effect of punctum image on behavioral intention and the significant mediating effect of studium image indicated that punctum image could strongly affect behavioral intention only when tourists' overall perception of the destination is influenced. This finding also indicated the importance of diversity of products, which was consistent with the perspective suggested by McKercher (2021) who argued that diversity of tourism products was the key to the tourism industry, created an appealing destination, and provided a comprehensive destination experience. Meanwhile, most previous research considered studium image as a mediator between tourists' particular emotional variables about the whole destination (Chew and Jahari 2014; Kim, Park, and Kim 2016) but they ignored the influence of the essence of tourists' image of the inner structure in the destination. This study examined the mediating role of studium image between punctum image and behavioral intention successfully.

Finally, the research explored the moderating role of human interaction in mediating paths. The failed mediating role of flow experience indicated that tourists' symbolic interaction with punctum is not sufficient to produce a flow experience. However, when other people became the object of punctum communication, the impact of punctum image on tourists would be more obvious, and tourists might be more easily immersed in the tourism activities and produce more positive behavioral intention. This finding not only confirmed that leisure activities encompass symbolic aspects of people's behavior (Holbrook and Hirschman 1982) but also was empirically consistent with Wang's arguments that a tourism destination should contain more tourist activities and better tourism experience and plays also as a platform for social psychological interactions (Wang, Liu, and Ma 2008). Therefore, all research questions hypothesized are answered to present the impact of utilizing punctum images in destinations on tourists' behavioral intentions via mediating and moderating attributes.

Managerial Implications

First, attention toward the punctum landscape should be aroused. Tourists may have tourism fatigue during traveling to several destinations (Sun et al. 2020). Punctum is a constructed detail that allows people to focus and get attracted. The findings stated that punctum has a positive effect on the overall image of the destination and revisits intentions and recommendations to others, which indicated the importance of tourists' perceived image toward punctum. Hence, it is highly recommended that destination managers are supposed to design tourist projects or landscapes that lead tourists to experience ornamental forms. Its symbolic meaning is expected to be different from the whole destination so that tourism fatigue might be avoided. In the design of a tourist route, the scattered and orderly distribution of attractive punctum

landscapes should be ensured, so the continuity of the tourists' excitement is assured during tours.

However, although punctum has its novelty, it should comply with the theme of destination. Findings indicated that the sole punctum image failed to influence the flow experience so the mediation effect of the flow experience also failed. On the other hand, the multiple mediations of studium image and flow experience were found to be significant. These findings suggested that the punctum should not be too messy, or tourists would not be able to solidify a unified image perception, otherwise, tourists could not immerse themselves in the destinations, which might not effectively entice tourists to have a positive intention to return and recommend destinations in the future. Noted that the relationship between the punctum and studium images cannot be ignored, as the studium image is found to be the key mediator in the multiple mediations. Therefore, it is highly encouraged to design a suitable punctum image that could have as enough novelty as possible on the one hand but, it could not disturb the destination image on the other hand.

Finally, destination managers ought to provide and increase opportunities for tourists to interact with other tourists, residents, and destination staff. A fulfilling experience emerges from visitors' open minds, hearts, and interactions with people in the destination (Trauer and Ryan 2005). Found that human interaction was considered a positive moderator in the mediating role of studium image and flow experience. Particularly, the mediating role of flow experience could be modulated to be significant, which indicated that the interactive influence of human interaction and punctum image could render tourists a higher sense of experience. In this way, intentions pertinent to future revisitation and recommendations would be highly improved. Hence, destination managers should take measures to generate some slogans, topics, or body gestures to make staffs, residents, and tourists interact with tourists better so that tourists can have a deeper understanding of the punctum landscapes or projects.

Conclusion

This study introduced two notions from semiology – punctum and studium and proposed punctum image and studium image. Besides, the influences of punctum image, studium image, flow experience, and human interaction on tourists' behavioral intention were examined. Punctum image had a positive effect on studium image and behavioral intention. Studium image played a mediating role between punctum image and behavioral intention, while flow experience failed to function as a mediator. Meanwhile, studium image and flow experience could be considered as multiple mediations between punctum image and behavioral intention. It was noteworthy that human interaction functioned as a moderator in two mediating paths. Overall, this research highlighted the role of punctum image in the destination. Punctum

image, studium image, flow experience, and human interaction determined tourists' behavioral intention toward the destination.

Moreover, the limitation of this study needs to be articulated. First, this study did not distinguish the types of destinations. Punctum images may vary in different destinations. Its effect on studium image, flow experience, and behavioral intention could also be unstable in some particular touristic destinations. Second, the construct flow experience might not exist in every touristic context, such as dark tourism. Third, this study only explored the relationships of punctum image, studium image, flow experience, human interaction, and behavioral intention through a quantitative study. Different tourists might construct positive or negative perceptions toward the same punctum. To understand how tourists consider the punctum landscape or projects, qualitative methods such as semi-structured interviews could be applied.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Funding

This research project was funded by the Natural Science Foundation of Hainan Province (721RC518); the National Natural Science Foundation of China (41661111); Hainan graduate innovation research project (Qhys2021-4).

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