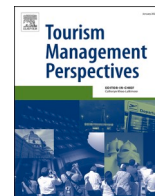




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Influence of tourists' well-being in the post-COVID-19 era: Moderating effect of physical distancing

Jiaojiao Sun^{a,b,1}, Yingzhi Guo^{a,c,*}

^a Postdoctoral Station of Business Administration, Fudan University, 200433 Shanghai, China

^b School of Business, Suzhou University of Science and Technology, 215009 Suzhou, Jiangsu Province, China

^c Department of Tourism, Fudan University, 200433 Shanghai, China

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ABSTRACT

To prevent COVID-19, tourists are required to maintain distance from other people. However, interpersonal contact is a crucial element in tourists' well-being. It is necessary to ask how eliciting both eudaimonic and hedonic well-being will change as a result. The answer is unclear. To address this issue, we used partial least squares equation modeling to examine a city that has efficiently responded to COVID-19. This study expands the influencing model of tourists' well-being by revealing how physical distance moderates the influence of such factors as contact intention, leisure involvement, and flow experience. The study throws light on tourists' psychological recovery and destination management in the post-COVID-19 era.

1. Introduction

Worldwide, the impact of tourism on well-being has aroused great attention in academic circles (Yu, Zhang, & Li, 2019), and it has drawn considerable interest in light of the global spread of COVID-19. Tourism is considered an effective way to conduct interpersonal interactions among people as well as to create trust and positive experiences and rebuild a sense of well-being.

COVID-19 has, however, hampered tourism at the psychological and institutional levels. At the individual level, researchers have demonstrated the impact of fear, panic and perceived risk of COVID-19 (Chen, 2020; Uğur & Akbıyık, 2020) with respect to tourism (Rather, 2021); they have determined that risk aversion induces people to avoid infection risk by observing social distancing (Im, Kim, & Choeh, 2021). At the social level, the World Health Organization (2021) has recommended maintaining 1-m distancing from other people. Research has reported lower viral transmission when physical distancing is maintained at 1 m than with less than that distance, which supports the World Health Organization's recommendation (Chu, Duda, Solo, & Schunemann, 2020).

Generally, interaction in tourism is an important source of well-

being: the closeness of perceived physical distance increases the nearness of social distance (Won, Shriram, & Tamir, 2018). However, with COVID-19, maintaining social distance constitutes a new element; it differs from previous tourism experiences, and the embodied practice of distancing has implications for health and safety. Bae and Chang (2021) reported that "untact" tourism is a kind of health protection behavior that originated with individual recognition of the threats posed by COVID-19. Although it is accepted that social distancing should be maintained during the pandemic, social connectedness should not be weakened (Bergman, Bethell, Gombojav, Hassink, & Stange, 2020).

In line with the above observations, this question emerges: will maintaining distance affect tourists' well-being? Previous studies have examined the factors that affect tourists' well-being. However, no investigations have addressed the variables of physical distance and interpersonal contact in tourism: those are new key factors reflecting people's personal situation as a result of the pandemic. Accordingly, research should address the following questions: how does maintaining physical distance affect the previous status of well-being in tourism with respect to tourists' new mental and behavioral condition? How should tourism destinations maintain tourists' safety without decreasing their well-being?

* Corresponding author at: Postdoctoral Station of Business Administration, Fudan University, 200433 Shanghai, China.

E-mail address: tougaoyouxiang1028@163.com (Y. Guo).

¹ Postal Address: School of Business, Suzhou University of Science and Technology, No.1 Kerui Road, Gaoxin District, 215,009, Suzhou, Jiangsu Province, China

² Postal Address: Room 2018, Guanghua Building, Department of Tourism, Handan Campuses, Fudan University, 200,433, Shanghai, China

In light of the above considerations, the present study applied physical distance as a moderating variable. We investigated Suzhou in China, which is a typical tourist city. At the time of our study, Suzhou had been undergoing recovery from the pandemic for a period of many months; tourism activities were gradually going back to normal under imposed regulation measures and tourists maintaining social distance. We examined how the impact of well-being had changed in the new physical contact mode introduced as a result of COVID-19. In this way, our study aimed to establish the relationship between psychological experience and embodied behavior on the basis of new behavior rules in the post-epidemic era. We measured and analyzed a novel salient variable regarding tourists' well-being with respect to two dimensions of eudaimonic and hedonic well-being. We established a new model based on novel core elements for the well-being mechanism. We have thrown fresh light on aspects related to destination image and marketing management in the post-COVID-19 age.

2. Literature review

2.1. From subjective well-being to eudaimonic and hedonic well-being

The relationship between tourism and well-being has largely been confirmed. Researchers have demonstrated that from different perspectives, tourism activities and experiences exert a significant effect on tourists' well-being (Lee, 2016; Lin, 2012; Uysal, Sirgy, Woo, & Kim, 2016). In previous studies, researchers mainly applied the concept of subjective well-being to examine tourists' well-being (Filep, 2014; Sirgy, Gao, & Young, 2008; Su, Huang, & Chen, 2015; Su, Swanson, & Chen, 2016; Thal & Hudson, 2017). Alternatively, they measured tourists' psychological well-being from positive and negative aspects (Lin, Kerstetter, Nawijn, & Mitas, 2014; Milman, 1998; Nawijn & Fricke, 2013; Pratt, McCabe, & Movono, 2016; Steyn, Saayman, & Nienaber, 2004; Wei & Milman, 2002).

With the gradual maturity of research on eudaimonic well-being in psychology, scholars began examining tourists' well-being from the perspective of eudaimonism (Zhang & Bai, 2018). In recent years, research has gradually gone beyond the single concept of well-being and dichotomy of positive and negative aspects: from a deep psychological perspective, tourists' well-being has been categorized into eudaimonic and hedonic well-being (Ahn, Back, & Boger, 2019; Pomfret, 2021; Rahmani, Gnoth, & Mather, 2018). Eudaimonic well-being refers to the following: a fulfilling or meaningful experience and achieving self-perception and personal advancement (Pearce & Lee, 2005); personal growth and functioning (Vada, Prentice, & Hsiao, 2019); purpose and meaning in life (Li & Chan, 2017); and self-realization and self-discovery (Matteucci & Filep, 2017). In a tourism context, eudaimonic well-being is mostly produced in the form of social, volunteer, or slum tourism as well as other forms of tourism that are closely related to the value of life (McCabe & Johnson, 2013; Smith & Diekmann, 2017; Wang, Hou, & Chen, 2020). Hedonic well-being includes mainly positive emotions, such as pleasure and happiness. In tourism, hedonic well-being is reflected in the pursuit of pleasure, such as in leisure activities and relaxing holidays (Smith & Diekmann, 2017).

COVID-19 has affected how eudaimonic and hedonic well-being are achieved through tourism. However, owing to the different formation mechanism in the two types of well-being, their modes and degrees may differ as a result of increased social distancing. Previous studies have examined the influencing factors of tourists' eudaimonic and hedonic well-being (Ahn et al., 2019). However, in the post-pandemic world, research has to determine how the two types of well-being have changed owing to social distancing. Accordingly, the present study analyzed the effects of physical distance on the types of well-being. We aimed to establish the relationship between psychological experience and embodied behavior. Our goal was to establish a new model for eliciting eudaimonic and hedonic well-being in light of COVID-19 by measuring and analyzing new variables for physical distance.

2.2. Behavior change related to well-being in the post-COVID-19 era

Well-being is an important goal of tourism—especially following the outbreak of a pandemic and the subsequent quarantine. Previous studies have revealed people's willingness to travel to improve their well-being in the post-COVID-19 era (Bhalla, Chowdhary, & Ranjan, 2021). Fundamentally, the production mechanism of psychological well-being and experience in tourism is closely related to the destination facilities of the service provider (e.g., Kim, Chua, Lee, Boo, & Han, 2016) as well as to the tourists' activities (Wei & Milman, 2002) and human interactions (Pikkemaat, Bichler, & Peters, 2020). In the post-pandemic era, safety is crucial for destination management (Yen, Tsaur, & Tsai, 2021); keeping social distance has become a basic approach to maintaining individual safety. Against this background, non-interaction has considerably changed tourists' behavior and experience (Zhang, Wang, & Rickly, 2021). COVID-19 control requires maintaining social distance, and it is changing the way people interact (Cudjoe & Kotwal, 2020). Further, the way and degree of social interaction affect subjective well-being (Kim, Lee, & Preis, 2020). Specifically, maintaining physical distance usually leads to further social distancing and distant interpersonal relationships. As a result, social distancing negatively affects well-being (Miao, Zheng, Wen, Jin, & Gan, 2022). With respect to tourism, researchers have observed that negative host-guest interactions were reportedly frequent during the pandemic (Tung, Tse, & Chan, 2021). Thus, it has become an important issue as to how maintaining social distance, based on safety needs, could have psychological consequences.

Previous studies have described the psychological deficiency and needs of people during a pandemic as a result of frustration (Cheung, Takashima, Choi, Yang, & Tung, 2021). Notably, restrictions on human interactions during a pandemic can lead to psychological distress and exert a negative impact on psychological well-being (Yu, Zheng, Su, & Zheng, 2020). Hence, improving well-being through tourism and human interactions is a promising way to fulfill the psychological deficiency and needs caused by a pandemic. One empirical study found that a high level of human interaction promotes well-being in tourism (Yu et al., 2020). However, in the post-pandemic situation, tourists need to maintain safe social distance while achieving contact with hosts. How these paradoxical psychological demands affect tourist behavior demands further examination. Specific to the behavioral level, the following research questions arise: how does maintaining social distance affect tourists' well-being, and does the influence of variables identified in previous studies on well-being change with increased social distancing?

3. Hypothesis development

The influencing factors of tourists' well-being constitute an important research area. The macro-examination includes the following: natural environment elements; social and human environment elements; urbanization process elements (Zhang, Wong, Cheng, Yu, & Chen, 2019); and authentic concepts (Chen & Zhou, 2018). In recent years, research adopting a micro-approach has been gradually implemented. Zhang et al. (2019) reported that flow experience and leisure involvement positively affect tourists' well-being. Chen, Zhang, and Zhang (2017) analyzed the connection between contact intention and tourists' well-being.

Deep human connectivity is a key element for tourists' positive inner transformation (Sheldon, 2020). Contact intention positively affects the tourism experience (Chen et al., 2017); the experience of a journey can be intensified by setting intentions. A high level of host-guest contact can produce a more positive experience (Fan, Qiu, Jenkins, & Lau, 2020). From the tourists' perspective, increased social contact between themselves and their hosts indicates that their attitudes toward the hosts and destinations have changed positively (Pizam, Uriely, & Reichel, 2000; Uriely & Reichel, 2000). Carneiro and Eusebio (2015) found that social contact between the two groups produces positive attitudes and

enhances mutual understanding. Further, residents play an important role in destination brand (Zhao, Cui, & Guo, 2022), close contact between hosts and guests can break cultural prejudices and reduce negative emotions to external groups, thereby achieving a more positive tourism experience (Page-Gould, Mendoza-Denton, & Tropp, 2008). However, such trends may differ as a result of COVID-19. If the participants feel under physical threat, they choose not to make contact (Li & Wang, 2020); that is the situation in the pandemic era.

Leisure involvement signifies affective input, motivation, excitement, and other psychological states of a person toward a leisure activity (Pan, Wu, Morrison, Huang, & Huang, 2018). Many studies have reported that leisure involvement exerts a positive impact on flow experience (Chang, 2016; Cheng, Hung, & Chen, 2016; Zhang et al., 2019). Flow experience occurs when individuals feel they act with total involvement (Csikszentmihalyi, 1975). According to the partial mediation model, as well as directly affecting well-being, recreational involvement affects well-being through flow experience (Cheng & Lu, 2015). Leisure involvement has changed as a result of COVID-19. Research has demonstrated the impact of fear arousal due to the pandemic on tourists' revisit intention (Hassan & Soliman, 2021); the fear of COVID-19 has negatively affected tourist-host interactions. Thus, it is questionable whether contact intention (which becomes stronger after a quarantine) exerts an impact on actual tourism behavior. From the above considerations, we construct the following hypotheses:

H1a: Contact intention has a positive impact on leisure involvement.

H1b: Contact intention has a positive impact on flow experience.

Flow experience is a key factor for tourists to achieve well-being. That experience refers to an individual feeling that is achieved through a holistic sensation during total involvement (Csikszentmihalyi, 1975, p. 36); it is considered "the core of leisure experience" (Mannell & Iso-Ahola, 1987). The anxiety and fear produced by COVID-19 have had a great effect on how ordinary people spend their holidays (Magano, Vidal, Sousa, Dinis, & Leite, 2021). Specifically, people's high-risk perceptions have indirectly influenced their participation patterns in tourism and leisure activities—especially in maintaining a safe distance from others (Kim & Kang, 2021); participation is evidently a key factor in tourists' well-being (Wei & Milman, 2002), and leisure activities and involvement are effective in achieving wellness (Kim & Yang, 2021; Luo, Lanlung, Kim, Tang, & Song, 2018). Previously, higher involvement was thought to lead to a deeper flow experience (de Matos, Sá, & Duarte, 2021). However, with recent concerns over personal safety, it is necessary to determine if that still applies: does a higher level of leisure involvement lead to increased unease or a deeper tourism flow experience? The answer to this question is a crucial link with respect to tourists' well-being. Thus, we hypothesize as follows:

H2: Leisure involvement has a positive impact on flow experience.

Flow theory has been widely applied in the study of tourism (Hsu, Wu, Chen, & Chang, 2012). The on-site experience is closely related to the pleasure elements of positive emotions (Filep, 2014). One empirical study based on interviews conducted by Cheng and Lu (2015) demonstrated the positive relationship between flow and overall well-being. Zhang et al. (2019) found that flow experience positively affects people's subjective well-being. Currently, the two dimensions of eudaimonic and hedonic well-being are considered more accurate in describing the well-being in tourism. The former focuses on cognition, the latter on emotion. Thus, the effects of flow experience on tourists' well-being should also be examined in two ways. On one hand, flow experience contains cognitive experience (Ayazlar, 2015), and it is necessary to determine whether eudaimonic well-being is influenced by flow experience. In this regard, we propose H3a. On the other hand, studies have found that flow experience renders people happier (Tsaour, Yen, & Hsiao, 2013); accordingly, we propose H3b:

H3a: Flow experience has a positive impact on eudaimonic well-being.

H3b: Flow experience has a positive impact on hedonic well-being.

The influence of physical distance on psychological experience has

been identified in psychology and behavioral research (Hu, 2013). This idea can be found in proxemics, the study of how people use and perceive physical space in their interactions with others (Hall, 1963); it investigates the human use of space as an aspect of culture (Hall, 1966, p.1). By applying social and non-social stimuli, Vieira, Pierzchajlo, and Mitchell (2020) examined space intrusions from the perspective of neural correlates. By means of a behavioral experiment, those authors determined the influence of interpersonal space distance on personal experience. Interpersonal contact is a critical element in the tourism experience (Zhang, Liu, & Bai, 2020). COVID-19 is highly infectious during close physical contact among individuals. Thus, people have become cautious of interpersonal distance with strangers: remote interpersonal distance could reflect greater social distance (Li, Zhang, Liu, Kozak, & Wen, 2020; Liberman, Trope, & Stephan, 2007). According to the equilibrium theory, estimated social threat (such as the spread of a disease), as the avoidance force, promotes greater interpersonal distance (Welsch, Wessels, Bernhard, Thönes, & Castell, 2021). COVID-19 has led to the need to minimize physical contact among individuals (Kaushal & Srivastava, 2021). This situation is particularly evident with the tourism experience. Therefore, how physical distance moderates relationships has become a crucial new variable under COVID-19. Accordingly, we hypothesize as follows:

H4a-H4b: Physical distance moderates the influence of contact intention on leisure involvement or flow experience.

H4c: Physical distance moderates the influence of leisure involvement on flow experience.

H4d-H4e: Physical distance moderates the influence of flow experience on eudaimonic or hedonic well-being.

From the above considerations, our conceptual model appears in Fig. 1.

4. Material and methods

4.1. Study case and research method

Compared with rural areas, urban space presents higher risks during a pandemic because of the greater population density and difficulty in maintaining physical distancing in daily life (Jang, Kim, Kim, & Kim, 2021). We conducted our case study in Suzhou (Jiangsu Province), a medium-sized city in the northeastern part of East China. Suzhou is an important city in the Yangtze River Delta and a national scenic tourist city approved by the State Council. The city has a history and culture that go back almost 2500 years. Private gardens in Suzhou and the Suzhou section of the Grand Canal are listed as UNESCO World Heritage Sites.

Suzhou was chosen for the following reasons: First, as a tourist destination, Suzhou's tourism industry has a huge supply scale and potential market. In 2019, Suzhou's total tourism revenue was 275.1 billion yuan (about US\$42.9 billion); that year, it received 136.09 million domestic and foreign visitors (Suzhou Department of Statistics, 2020). Second, Suzhou has actively responded to COVID-19. In 2020, Suzhou received 80.24 million domestic tourists—a year-on-year recovery of 60%; total tourism revenue in 2020 was 64.5% of the figure before the pandemic (Consumer Weekly, 2021). It has become a typical example of the development and recovery of China's tourism market. Third, when the number of tourists in other cities is greatly negatively affected by the epidemic, the large number of tourists in Suzhou can provide a richer data source for the investigation of tourists' psychology and behavior during the epidemic.

From January 28 to March 25, 2021, we conducted a questionnaire survey among tourists in three representative destinations in Suzhou, namely Pingjiang Road (the famous historical street located in Suzhou ancient city), Jinji Lake scenic area (the center of Suzhou's modern culture), and Taihu Lake National Tourism Resort (the typical natural landscape). The sampling method of data collection is convenience sampling. According to Su, Nguyen, Nguyen, and Tran (2020), the

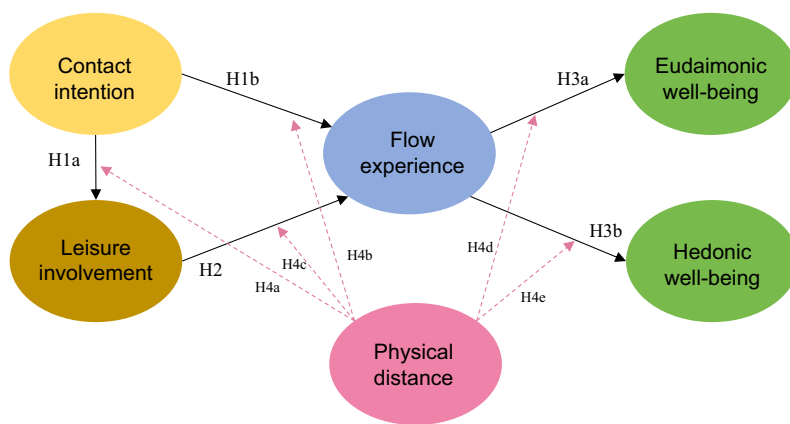


Fig. 1. Conceptual model.

sample size should be at least five times greater than the number of variables; thus, 41 measurement items would require a sample size of at least 205 participants. We collected 272 completed questionnaires; of those, 14 had missing data, unexpected errors, suspicious or irrelevant responses, or they were extreme multivariate outliers, and we deleted them. Thus, we received 258 completed questionnaires that were valid (effective rate, 94.85%), which met the sample size requirement. The proportion of female respondents was higher than that of males; in terms of age, participants aged 26–30 years comprised the largest group; education level was mostly above high school; and the most common monthly income was in the range of 6001–8000 yuan. The demographic profile of the respondents appears in Table 1.

For our analysis, we applied partial least squares structural equation modeling (PLS-SEM). PLS-SEM is an analysis technique of structural equation modeling based on regression analysis. Fornell and Bookstein (1982) reported that PLS-SEM offers certain advantages in dealing with complex causality. The main advantages of PLS-SEM include its ability to deal with the following: abnormal data distribution; small samples and tangible shaping indicators of potential variables; exploratory research and theoretical development; and processing highly complex models and category variables (Hair, Sarstedt, Ringle, & Mena, 2012; Ringle, Sarstedt, & Straub, 2012).

4.2. Measures

We used a questionnaire survey method to collect data and applied a Likert seven-point scale. The scores of 1–7 ranged from “very disagree” to “very agree,” and participants chose the score that corresponded to their own experience. The questionnaire comprised six parts, and the questions derived from proven maturity scales (see Appendix A). The first part of the questionnaire involved personal information, such as age, income, gender, and education. The second part covered tourists’ well-being, which we divided into two secondary variables (eudaimonic

Table 1 Demographic profile of respondents.

Group	Percentage (%)	Group	Percentage (%)
Gender		Education	
Male	41.9	High school or under	16.7
Female	58.1	Junior college	22.1
Age		Undergraduate	42.6
≤18	12.0	Graduate and above	18.6
18–25	17.8	Monthly income(RMB)	
26–30	21.3	≤4000	14.7
31–40	11.3	4001–6000	14.7
41–50	13.2	6001–8000	22.9
51–60	14.3	8001–10,000	20.5
≥60	10.1	10,001–12,000	16.7
		≥ 12,001	10.5

and hedonic well-being); that was mainly based on Wang et al. (2020). The third part examined contact intention, for which we referred to Chen et al. (2017). The fourth part dealt with the scale of leisure involvement; it applied the results of McIntyre and Pigram (1992) and Cheng and Lu (2015); it contained three dimensions and 10 items. The fifth part examined flow experience, and it referred to Wu and Liang (2011) and Cater, Albayrak, Caber, and Taylor (2021); it contained three dimensions and nine items. The sixth part covered physical distancing, which was based on the recommendation of the World Health Organization (2021) of maintaining 1-m distance from other people. The question was as follows: “When traveling, do you mostly comply with the rule of keeping a physical distance of 1 meter from others?” The rating scale adopted is the coding (1,0).

5. Results

5.1. Analysis of measurement model

The analysis and estimation procedure with PLS-SEM comprised two steps: one analyzed the reliability and validity of the measurement model; the other tested the path coefficient of the structural model and determined the model’s predictive ability. The analysis assessed whether the variables had reliability and validity. First, it confirmed the appropriateness of each measurement index to explain the research variables. Then, it tested the relationship among the research variables; specifically, it identified the relationship among the research variables with respect to the study hypotheses (Henseler, 2010).

To evaluate the reliability and validity of PLS-SEM, it is necessary to calculate the composite reliability (CR) and average variance extracted (AVE). The CR and Cronbach’s α of potential variables refer to the consistency of items within variables. If the CR and Cronbach’s α of potential variables are high, the observation items under the variables are highly correlated (i.e., they are all measuring the same potential variables). If Cronbach’s α is >0.7, it is considered to have good internal consistency; a CR above 0.7 is considered acceptable. AVE is a measure of the ability of a potential variable to explain all its index items; to prove the feasibility of using the variable, its value must exceed 0.5. Among the questionnaire items, the Cronbach’s α values of potential variables ranged from 0.748 to 0.949; CR values ranged from 0.857 to 0.967. All were >0.7, indicating that the potential variables in this study had good internal consistency. The AVE values of potential variables ranged from 0.664 to 0.913; all were >0.5, indicating that the potential variables of this study had good convergent validity (Fornell & Larcker, 1981) (Table 2).

In estimating discriminant validity, PLS-SEM is mainly tested in three ways (Henseler, 2010). The first is cross-loadings. As evident in Table 3, indicators should load higher on the construct of interest than on any other variable (Thatcher & Perrewe, 2002). The second is the

Table 2
Results for confirmatory factor analyses.

	FL	Cronbach's Alpha	CR	(AVE)
Contact intention		0.928	0.940	0.664
I would like to talk about the trip with the local residents.	0.780			
I would like to ask the local residents for directions.	0.714			
I would like to take part in sightseeing activities with local residents.	0.844			
I would like to take photos with local residents.	0.871			
I would like to take part in recreational activities with local residents.	0.869			
I would like to exchange contact information with local residents.	0.830			
I would like to exchange gifts with local residents.	0.789			
I would like to talk about family or work with local residents.	0.809			
Leisure involvement 1		0.842	0.894	0.680
City tourism is very important to me.	0.757			
City tourism is very fun activity.	0.843			
City tourism is the activity that makes me feel most satisfied.	0.861			
City tourism can relax me and clear away the pressure of daily life.	0.834			
Leisure involvement 2		0.860	0.915	0.782
When I travel, I can fully express myself.	0.842			
When I see other people travel I can discuss it with them.	0.913			
I feel that travel can help me better understand myself.	0.896			
Leisure involvement 3		0.845	0.907	0.764
I find that my life is closely related to travel.	0.822			
I like to talk about travel with my friends.	0.917			
I have many friends who travel.	0.881			
Leisure involvement		0.867	0.919	0.791
Leisure involvement 1 Attraction	0.929			
Leisure involvement 2 Self-expression	0.851			
Leisure involvement 3 Centrality	0.887			
Flow experience 1		0.748	0.857	0.668
When I travel, I felt completely in control.	0.830			
I felt things were under control when I travel.	0.884			
Travel equipment helped me to control everything.	0.730			
Flow experience 2		0.764	0.864	0.681
I did not think of other things when I travel.	0.766			
I totally concentrated when travelling.	0.874			
I became totally absorbed in travelling.	0.832			
Flow experience 3		0.949	0.967	0.907
Time seemed to pass quickly when travelling.	0.953			
I tended to lose track of time when travelling.	0.960			
Travelling made me feel time passed quickly.	0.944			
Flow experience		0.815	0.891	0.732
Flow experience 1 Control	0.897			
Flow experience 2 Focus Attention	0.885			
Flow experience 3 Time distortion	0.781			

Table 2 (continued)

	FL	Cronbach's Alpha	CR	(AVE)
Eudaimonic well-being		0.903	0.925	0.673
This travel experience helped me become self-determining and independent.	0.796			
This travel experience helped me have warm, satisfying, and trusting relationships with others.	0.795			
This travel experience helped me possess a positive attitude toward myself.	0.855			
This travel experience helped me feel there is meaning to present and past life.	0.813			
This travel experience helped me develop a lot as a person.	0.834			
This travel experience helped me have a sense of mastery and competence in managing the environment.	0.826			
Hedonic well-being.		0.904	0.954	0.913
This travel experience increased my overall life satisfaction.	0.957			
This travel experience contributed to my overall happiness.	0.954			

criterion proposed by [Fornell and Larcker \(1981\)](#): if the measurement model has discriminant validity, the relationship between potential variables should be less than that within corresponding potential variables. Thus, the correlation coefficient matrix between variables is used for testing. If the AVE value of the variable is greater than the square of the correlation coefficient between that variable and other variables, discriminant validity exists. The AVE value is the square of the standardized factor loading of horizontal items under the same potential variable; thus, it is necessary to conduct square root operations in the comparison ([Table 4](#)). Third, according to [Henseler, Ringle, and Sarstedt \(2015\)](#), the Fornell-Larcker criterion and the assessment of cross-loadings are largely unable to detect a lack of discriminant validity because of their low sensitivity. Accordingly, we introduce the HTMT criterion (a comparison of heterotrait-heteromethod correlations and monotrait-heteromethod correlations) to identify a lack of discriminant validity effectively. As shown in [Table 5](#), all values were <0.85, indicating discriminant validity ([Henseler et al., 2015](#)).

5.2. Structural model analysis

After we used confirmatory factor analysis to test the reliability and validity of the measurement model, we further analyzed the structure of the model. We applied the PLS-SEM algorithm to test the fit of the explanatory variables with the prediction from the outcome variables; we selected 5000 samples by bootstrap sampling to calculate the parameters and evaluate the significance of the model coefficients ([Hair & Sarstedt, 2011](#)). We did so because repeated bootstrap sampling is a statistical inference method without a parent number; small samples can also produce good results ([Zhang, Pantula, & Boos, 1991](#)). We calculated the goodness-of-fit (GoF) index proposed by [Tenenhaus, Vinzi, Chatelin, and Lauro \(2005\)](#). The GoF value we obtained was 0.430, which is higher than the standard of 0.36 defined by [Wetzels, Odekerken, and Van \(2009\)](#), indicating a good fit.

In PLS-SEM analysis, R2 is the primary index to evaluate the explanatory power of a model ([Table 6](#)). With leisure involvement, 33.4% could be explained by contact intention; with flow experience, 58.5% could be accounted for by combined contact intention and leisure involvement; with eudaimonic well-being, 53.8% could be explained by flow experience; with hedonic well-being, 56.6% could be accounted for

Table 3
Factor loadings and cross-loadings.

	Contact intention	Leisure involvement	Flow experience	Eudaimonic well-being	Hedonic well-being
Contact intention1	0.780	0.508	0.414	0.357	0.309
Contact Intention2	0.714	0.582	0.544	0.522	0.467
Contact Intention3	0.844	0.519	0.464	0.408	0.348
Contact Intention4	0.871	0.442	0.376	0.310	0.324
Contact Intention5	0.869	0.477	0.381	0.333	0.305
Contact Intention6	0.830	0.411	0.360	0.283	0.233
Contact Intention7	0.789	0.331	0.312	0.234	0.180
Contact Intention8	0.809	0.368	0.326	0.251	0.230
Leisure involvement 1	0.568	0.929	0.708	0.679	0.608
Leisure involvement 2	0.397	0.851	0.705	0.612	0.662
Leisure involvement 3	0.571	0.887	0.618	0.601	0.505
Flow experience 1	0.418	0.615	0.897	0.604	0.666
Flow experience 2	0.435	0.659	0.885	0.659	0.709
Flow experience 3	0.446	0.684	0.781	0.621	0.550
Eudaimonic well-being 1	0.420	0.566	0.582	0.796	0.616
Eudaimonic well-being 2	0.335	0.584	0.638	0.795	0.616
Eudaimonic well-being 3	0.297	0.602	0.602	0.855	0.669
Eudaimonic well-being 4	0.361	0.591	0.599	0.813	0.581
Eudaimonic well-being 5	0.374	0.588	0.579	0.834	0.625
Eudaimonic well-being 6	0.355	0.559	0.607	0.826	0.661
Hedonic well-being 1	0.424	0.652	0.730	0.747	0.957
Hedonic well-being 2	0.312	0.616	0.706	0.716	0.954

Table 4
Discriminant validity: Average variance extracted(AVE).

	Contact intention	Leisure involvement	Flow experience	Eudaimonic well-being	Hedonic well-being
Contact intention	0.815				
Leisure involvement	0.578	0.889			
Flow experience	0.505	0.761	0.856		
Eudaimonic well-being	0.435	0.710	0.734	0.820	
Hedonic well-being	0.387	0.664	0.752	0.766	0.955

Note: The diagonal value is the square root of the average variance extracted (AVE); the lower triangle is the correlation coefficient of the corresponding variable.

Table 5
Analysis of heterotrait-heteromethod ratio of correlations (HTMT).

	Contact intention	Leisure involvement	Flow experience	Eudaimonic well-being	Hedonic well-being
Contact intention					
Leisure involvement	0.619				
Flow experience	0.562	0.819			
Eudaimonic well-being	0.453	0.801	0.832		
Hedonic well-being	0.400	0.751	0.842	0.847	

Table 6
Results for R2 and Q2 values.

	R2	Q2
Leisure Involvement	0.334	0.249
Flow experience	0.585	0.403
Eudaimonic well-being	0.538	0.336
Hedonic well-being	0.566	0.493

by flow experience. Chin, Peterson, and Brown (2008) divided endogenous variables based on R2 into three categories: substantial, moderate, and weak; the corresponding standard values were 0.67, 0.33, and 0.19,

respectively. Thus, the endogenous variables in the present study were all moderate.

On that basis, we applied predictive sample reuse technology (Q2) as a criterion to further determine the stability and fitness of the model. Chin et al. (2008) determined that Q2 higher than 0 could indicate the predictive relevance of a model. We found that the Q2 value ranged from 0.249 to 0.493, indicating the model had cross-validity (Table 6).

The results of the structural equation model test appear in Table 7. H1a was verified (coefficient, 0.578; $P < 0.001$); contact intention had a significant positive impact on leisure involvement. Thus, tourists with high contact intention as a result of COVID-19 could still attain a high degree of leisure involvement. H2 was verified (coefficient, 0.704; $P <$

Table 7
Regression weights among the proposed relationships.

		Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Decision
H1a	Contact intention - > Leisure involvement	0.578	0.052	11.185	0.000	Supported
H1b	Contact intention - > Flow experience	0.099	0.067	1.474	0.141	Not supported
H2	Leisure involvement - > Flow experience	0.704	0.055	12.916	0.000	Supported
H3a	Flow experience - > Eudaimonic well-being	0.734	0.035	20.686	0.000	Supported
H3b	Flow experience - > Hedonic well-being	0.752	0.034	21.964	0.000	Supported

0.001): leisure involvement had a significant positive impact on flow experience. Accordingly, the degree of leisure involvement was still the influencing factor for flow experience in the pandemic. H3a (coefficient, 0.734; $P < 0.001$) and H3b (coefficient, 0.752; $P < 0.001$) were verified: flow experience significantly and positively affected eudaimonic and hedonic well-being.

Our results did not support H1b: there was no significant evidence that contact intention affected flow experience. This finding is not in accordance with the previously reported positive impact of contact on tourism experience (Chen et al., 2017). This outcome indicates that owing to COVID-19, higher contact intention did not significantly lead to a higher degree of flow experience. It could have been that contact intention was constrained by public management or cautious interpersonal interactions during the pandemic, which would have affected the depth of experience.

We analyzed the moderating effect of physical distance as a moderating variable through H4a–H4e (Table 8). In the validation, we used the bias-corrected bootstrapping P values as a criterion to assess whether or not the moderating effect was significant. We found the significant moderating effect of physical distance on 4 paths, and Fig. 2 illustrates the moderation effect in the simple slope graph suggested by Carden, Holtzman, and Strube (2017); Dawson and Richter (2006), and Dawson (2014).

The influence of contact intention on leisure involvement was moderated by physical distance. When tourists had to maintain physical distance during COVID-19, the influence of individual contact intention on actual leisure involvement was reduced: the coefficient decreased to 0.511. The influence of leisure involvement on flow experience was moderated by physical distance. The influence coefficient of leisure involvement on flow experience increased to 0.790 with close physical distance; it decreased to 0.677 with far physical distance. The influence of flow experience on eudaimonic and hedonic well-being was moderated by physical distance. The influence of flow experience on well-being increased with close physical distance; it decreased with far physical distance. From the above findings, we constructed the structural model results presented in Fig. 3.

6. Discussion and conclusions

6.1. Theoretical conclusions and discussions

This study analyzed elements related to physical distance with respect to pandemic prevention and control. Im et al. (2021) found that visitors tend to take minimal risks while consuming tourism products even without a pandemic situation. Thus, we believe our findings are significant for destination management. We observed that physical distance moderated the influence of contact intention on leisure participation and the effect of flow experience on both eudaimonic and hedonic well-being. However, we found no significant evidence that

Table 8
Moderating effects among the proposed relationships.

		Path Coefficients Original (close physical distance)	Path Coefficients Original (far physical distance)
H4a	Contact intention - > Leisure involvement	0.725***	0.511***
H4b	Contact intention - > Flow experience	0.044	0.110
H4c	Leisure involvement - > Flow experience	0.790***	0.677***
H4d	Flow experience - > Eudaimonic well-being	0.793***	0.715***
H4e	Flow experience - > Hedonic well-being	0.803***	0.735***

Note: *** $P < 0.001$.

contact intention positively affected flow experience; this finding could be attributed to the special circumstances of the pandemic.

First, the most novel contribution of this study relates to the moderating role of physical distance on the influence of flow experience on eudaimonic and hedonic well-being. The effect of flow experience on well-being increased with close physical distance; it decreased with far physical distance. Well-being in tourism is commonly studied in terms of subjective well-being. However, well-being is more than a single-dimension concept of preference satisfaction (Li & Chan, 2017): it contains different levels of experience outcome. Thus, in tourism, researchers distinguish between eudaimonic and hedonic well-being (Li & Chan, 2017; Matteucci & Filep, 2017; Pearce & Lee, 2005; Vada et al., 2019). The present study has further demonstrated the effect of flow experience on the two types of well-being as well as the moderating effect of physical distance with those two types.

Second, this study verified that despite the impact of the outbreak, tourists' contact intention still positively affected leisure involvement and that leisure involvement positively affected flow experience. This conclusion is in line with previous findings about the general circumstances with tourism: contact intention affects the degree of involvement (Chen et al., 2017); leisure involvement positively affects flow experience (Cheng et al., 2016; Zhang et al., 2019). This result highlights that even with strict epidemic prevention and control, willingness for contact remains a salient factor for leisure involvement; the degree of leisure involvement is still closely related to the degree of tourism flow experience.

Third, we found, however, that physical distance did exert a moderating effect on the influence of contact intention on leisure participation and the influence of leisure involvement on flow experience. With greater physical distance, the impact of the degree of individual contact intention on actual leisure involvement was reduced; the influence of leisure involvement on flow experience decreased. In conjunction with the previously identified relationship between leisure involvement and flow experience (Cheng et al., 2016; Zhang et al., 2019), this finding accounts for the physical and mental factors related to social distancing at the behavioral level.

Fourth, unlike with previous studies related to an epidemic situation, we found no significant evidence that contact intention positively affected flow experience. This result does not uphold the positive effect of contact between tourism hosts and guests identified in previous research (Chen et al., 2017). Thus, with COVID-19, greater contact intention does not necessarily lead to a higher degree of flow experience: the intention may be constrained by public management or cautious interpersonal interactions out of fear and risk perceptions, thereby affecting the depth of experience.

Fifth, we observed that flow experience positively affected eudaimonic and hedonic well-being. Previous studies have reported the direct impact of contact intention and leisure involvement on subjective well-being (Lin, Chen, & Kuo, 2014; Sirgy, 2019); however, it was unclear how contact intention operated in a two-dimension framework, which more precisely reflects tourists' well-being. Thus, by focusing on two types of tourists' well-being, we were able to analyze the two-stage impact of contact intention and leisure involvement on flow experience as well as of flow experience on well-being. Earlier research investigated the impact of flow experience on satisfaction (Kim & Thapa, 2018). It was found that satisfaction affects subjective well-being (He, Su, & Swanson, 2020; Tan, Sim, Chai, & Beck, 2020). The present study demonstrated that flow experience had a direct positive effect on both eudaimonic and hedonic well-being.

6.2. Practical implications

COVID-19 has led to changes in tourists' contact intention: for active and passive reasons, tourists maintain social distancing, which has led to changes in leisure involvement. Previous barrier-free interactions between hosts and guests now face additional psychological and

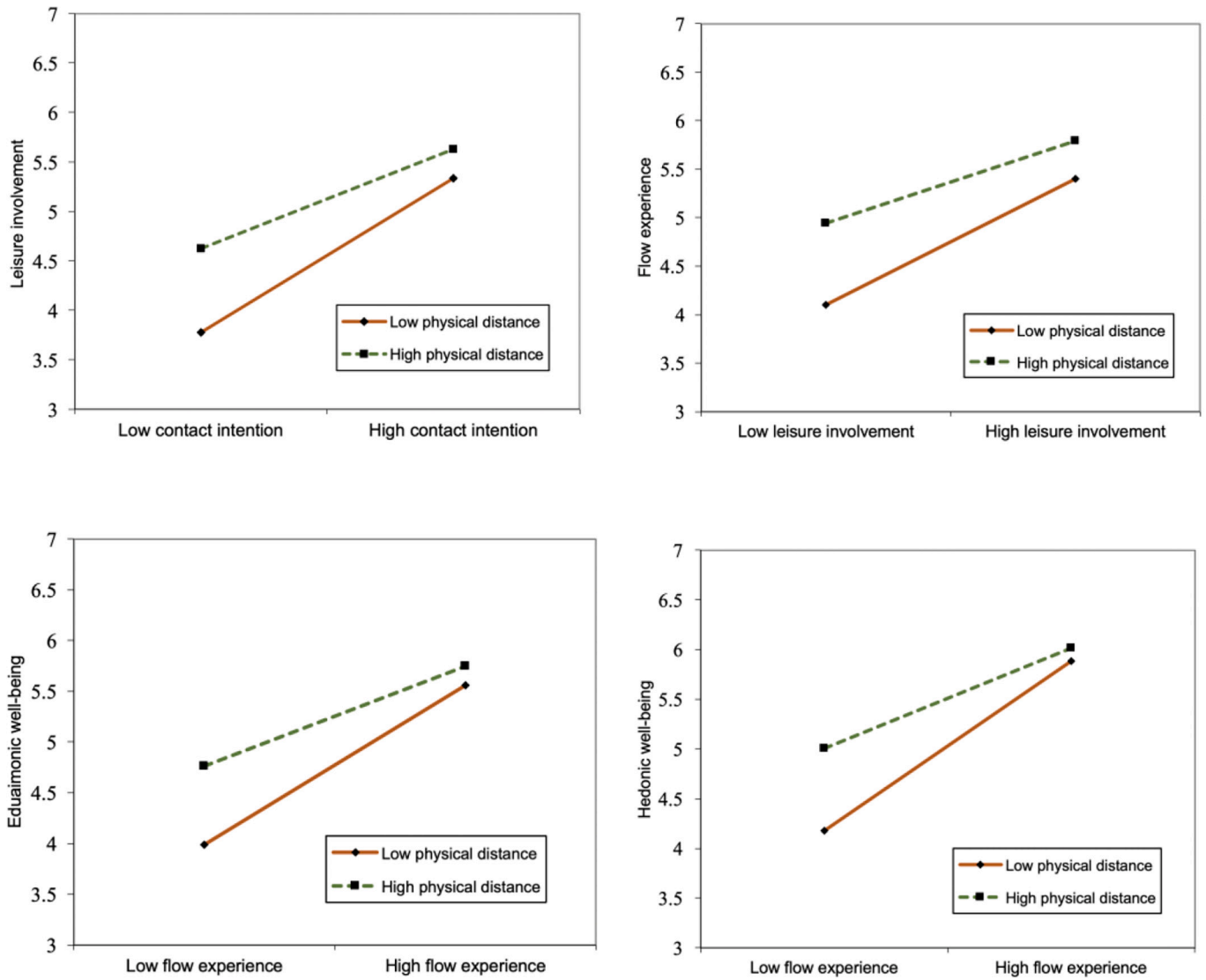


Fig. 2. The simple slope test results.

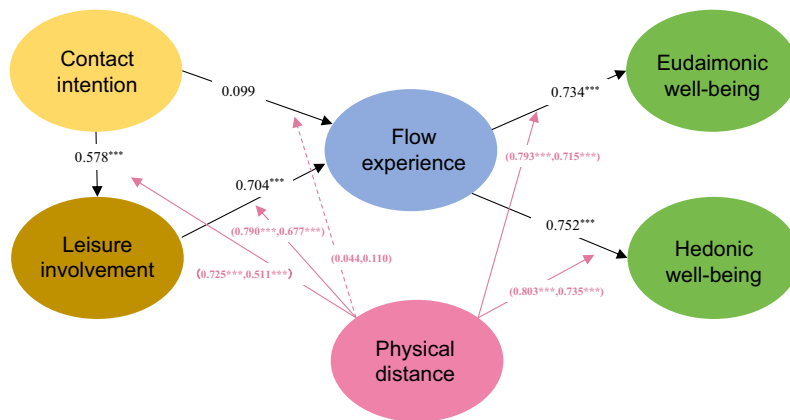


Fig. 3. Structural model results.

physiological obstacles. The inability to offer valuable tourist engagement produces negative outcomes for tourists and has implications for the local hosts (Bec, Moyle, Schaffer, & Timms, 2021). The present study found that although contact intention still has a positive impact on

leisure involvement, it does not necessarily produce as good a flow experience as it did before the pandemic. Even when the pandemic is over, visitors will tend to take minimal risks while enjoying hospitality and tourism products (Im et al., 2021). Without actual physical contact,

shared emotions could increase intentions to visit after the pandemic ends (Hang, Aroean, & Chen, 2020). Thus, destinations could discover new approaches to satisfy tourists' contact intention at the emotional level through non-close physical contact. Destinations should provide creative, high-quality leisure involvement. Examples here are online channels or smartphone applications for (potential) tourists to share common feelings; destinations should apply immersive technology to create interactions in digital marketing (Ketter & Avraham, 2021) toward producing safe participation experiences.

Starting with the background of the pandemic and applying a two-dimensional approach, we found that flow experience positively affected tourists' eudaimonic and hedonic well-being, which was, however, moderated by the physical distance. In reality, tourists who used to travel abroad will turn to domestic tourism as a result of COVID-19 (Arbulú, Razumova, Rey-Maqueira, & Sastre, 2021). Domestic tourism could be an important way to improve national well-being after the pandemic. However, the density of domestic tourists would increase, which could lead to closer physical distance among tourists and greater risk. Creating a high-level flow experience without causing more risk induced by physical proximity could be a challenge. In this regard, online methods should be considered. James and Kearns (2020) demonstrated that to enhance well-being, people use social media to remain in contact with family and friends at remote locations. That practice could be applied for tourism destinations during COVID-19: it would involve creating a constant experience even when tourists are not on-site. Rather than regarding flow experience as a short-term situation that is possible only on-site, it would mean destinations building long-term connections with potential tourists and creating a remote flow experience by means of new technology. In addition, recovery strategies should be implemented to improve the well-being of different types of tourists (Raki, Nayer, Nazifi, Alexander, & Seyfi, 2021) with respect to their various characteristics. The source of eudaimonic well-being is related to personal growth and knowledge harvest; it can be increased by deepening the content depth of online cognitive experience. The source of hedonic well-being is related more to sensory relaxation and experience; thus, greater attention should be paid to its online sensory effect. A tourist destination has to consider the effect of contact intention on leisure participation and the effect of leisure participation on flow experience; however, it is necessary also to consider physical distancing, which is a functional factor in the tourism experience and subsequent well-being (Tuzovic, Kabadayi, & Paluch, 2021).

Tourism is a highly interactive pursuit, and the lockdowns caused by COVID-19 may have induced an even stronger contact intention among tourists. To address the discrepancy between contact needs and restrictions as well as achieving a greater sense of well-being, new ways should be found to meet tourists' willingness for interpersonal interactions and communication—while ensuring their safe physical distance. Research has found that tourists' revisit attention is influenced by their perceived trust (Hassan & Soliman, 2021), which also applies to tourists' well-being. It is necessary to reaffirm trust among tourists by establishing a secure environment, and that is a priority in eliciting well-being. Developing a feeling of security could be achieved through a system of prevention mechanisms readily perceived by the tourists; examples here are body temperature checks at destinations, salient medical care counters at destinations, offering free masks and sanitation facilities, constant presence of specialized staff, and crowding information (Adam, Werner, Wendt, & Benlian, 2020). It should be possible for

tourists to check such mechanisms at any time. In the airline industry, researchers have analyzed strategies to win satisfaction and loyalty in the post-pandemic world based on non-contact services (Moon, Lho, & Han, 2021). The present study indicates a means to manage tourism destinations in the new non-contact era.

7. Limitations

As a result of the pandemic, the tourists who visited Suzhou between February and March 2021 (time of the questionnaire survey) had certain characteristics: most of them were young with strong risk tolerance. Thus, the questionnaire data obtained then reflected Suzhou visitors with such characteristics. As the pandemic and preventive measures undergo change, tourists' will likewise modify their adaptability to physical proximity; their mentality, demands, and destination management will also change. When COVID-19 is over, people may continue to maintain social distancing, or they may be eager for closer interpersonal contact. Future research should examine how that situation could affect the tourism experience and well-being. The well-being induced by tourist activities includes the well-being of locals (Khan, Bibi, Lyu, Raza, & Meo, 2020) as well as tourists. The present study has mainly addressed tourists' well-being; the post-pandemic well-being of locals at destinations would appear to be a critical future topic.

Submission declaration and verification

We confirm that this manuscript has not been published previously, it is not under consideration for publication elsewhere, its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out. If accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder.

Author contributions

Jiaojiao Sun: Investigation; Writing - original draft; Writing - review & editing; Data Curation, Validation, Visualization.

Yingzhi Guo: Conceptualization & Methodology.

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Declaration of Competing Interest

None.

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Appendix A. Research instrument

Questionnaire on tourists' well-being and physical distance.

Dear sir / madam:

Hello!

Dear tourists! Welcome to Suzhou. We are conducting a survey on tourists' well-being and physical distance. The questionnaire is filled in

anonymously and for scientific research purposes only. Please feel free to fill in.

Your valuable opinions will be of great help to the development of the destination. Thank you.

Part I. Basic Information.

1. Your gender:	<input type="checkbox"/> Male <input type="checkbox"/> Female
2. Your age:	<input type="checkbox"/> ≤18 <input type="checkbox"/> 18–25 <input type="checkbox"/> 26–30 <input type="checkbox"/> 31–40 <input type="checkbox"/> 41–50 <input type="checkbox"/> 51–60 <input type="checkbox"/> ≥ 60
3. Your education:	<input type="checkbox"/> High school or under <input type="checkbox"/> Junior college <input type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate and above
4. Your profession:	<input type="checkbox"/> government staff <input type="checkbox"/> enterprise staff <input type="checkbox"/> education and scientific research personnel <input type="checkbox"/> self-employed <input type="checkbox"/> retirees <input type="checkbox"/> students <input type="checkbox"/> others (please identify).
5. Your monthly income (RMB)	<input type="checkbox"/> ≤4000 <input type="checkbox"/> 4001–6000 <input type="checkbox"/> 6001–8000 <input type="checkbox"/> 8001–10,000 <input type="checkbox"/> 10,001–12,000 <input type="checkbox"/> ≥ 12,000

Part II. Please check the box according to the actual situation of your trip. (1 = very disagree, 7 = very agree, the higher the score, the more you agree).

	1	2	3	4	5	6	7
1. This travel experience helped me become self-determining and independent.							
2. This travel experience helped me have warm, satisfying, and trusting relationships with others.							
3. This travel experience helped me possess a positive attitude toward myself.							
4. This travel experience helped me feel there is meaning to present and past life.							
5. This travel experience helped me develop a lot as a person.							
6. This travel experience helped me have a sense of mastery and competence in managing the environment.							
7. This travel experience increased my overall life satisfaction.							
8. This travel experience contributed to my overall happiness.							

Part III. Please answer according to the actual situation of your trip. (1 = very disagree, 7 = very agree, the higher the score, the more you agree).

	1	2	3	4	5	6	7
1. I would like to talk about the trip with the local residents.							
2. I would like to ask the local residents for directions.							
3. I would like to take part in sightseeing activities with local residents.							
4. I would like to take photos with local residents.							
5. I would like to take part in recreational activities with local residents.							
6. I would like to exchange contact information with local residents.							
7. I would like to exchange gifts with local residents.							
8. I would like to talk about family or work with local residents.							

Part IV. Please check the box according to the actual situation of your trip. (1 = very disagree, 7 = very agree, the higher the score, the more you agree).

	1	2	3	4	5	6	7
1. City tourism is very important to me.							
2. City tourism is very fun activity.							
3. City tourism is the activity that makes me feel most satisfied.							
4. City tourism can relax me and clear away the pressure of daily life.							
5. When I travel, I can fully express myself.							
6. When I see other people travel I can discuss it with them.							
7. I feel that travel can help me better understand myself.							
8. I find that my life is closely related to travel.							
9. I like to talk about travel with my friends.							
10. I have many friends who travel.							

Part V. Please check the box according to the actual situation of your trip. (1 = very disagree, 7 = very agree, the higher the score, the more you agree).

	1	2	3	4	5	6	7
1. When I travel, I felt completely in control.							
2. I felt things were under control when I travel.							
3. Travel equipment helped me to control everything.							
4. I did not think of other things when I travel.							
5. I totally concentrated when travelling.							
6. I became totally absorbed in travelling.							
7. Time seemed to pass quickly when travelling.							
8. I tended to lose track of time when travelling.							
9. Travelling made me feel time passed quickly.							

Part VI. Please check the box according to the actual situation of your trip.

	Yes	No
When travelling, do you mostly comply with the rule of keeping a physical distance of 1 m from others?		

Thank you for your participation and wish you a great trip!

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Dr. Jiaojiao Sun is an associate professor in the School of Business, Suzhou University of Science and Technology, she is currently taking a postdoc position in the Postdoctoral Station of Business Administration at Fudan University. Her research interest focuses on tourism anthropology and tourist culture.



Professor. Yingzhi Guo is Professor in the Department of Tourism at Fudan University. Prof. Guo's research interest focuses on tourism planning and tourism marketing.