

A Study on the Relationship between Leisure and Self-perceived Health Status

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Abstract— This paper aims to study whether tourists' participation in leisure activities in the cramped space of hotel rooms can improve their conscious health status. This paper, taking Taiwan tourists entering China as an example, explores the relationship between the degree of perceived freedom of tourists' participation in leisure activities in hotel rooms and their conscious health state through empirical research and constructs a model of leisure and conscious health state in confined space. The main results show that: (1) when the degree of leisure perceived freedom is the same, the effect of tourists' Leisure Involvement on the degree of conscious health is better; (2) Tourists' leisure perceived freedom is significantly positively correlated with leisure involvement, but it is significantly negatively correlated with leisure adjustment strategies; (3) Tourists' leisure involvement is significantly positively correlated with leisure adjustment strategies and self-perceived health status, and significantly positively mediates the relationship between leisure perceived freedom and leisure adjustment strategies; (4) There was no significant correlation between leisure adjustment strategies and self-perceived health status, and it could not significantly mediate the relationship between leisure involvement and self-perceived health status. The research results can be used as a reference for constructing the theoretical framework of tourists' leisure behavior patterns in narrow space.

Keywords— Leisure perceived freedom; self-perceived health status; Leisure involvement; Leisure adjustment strategy; Cramped space

I. INTRODUCTION

Generally speaking, the activity space of the hotel rooms where tourists stay is relatively narrow, so tourists' participation in leisure activities in the narrow activity space is bound to be hindered and it is difficult to obtain a better leisure experience. Therefore, whether tourists' participation in leisure activities in hotel rooms can positively improve their self-perceived

comprehensive health status has a certain research value. Up to now, there are few research results on the relationship between tourists' participation in leisure activities in hotel rooms and their comprehensive health status. This paper takes Taiwan tourists who enter China as an example to explore the relationship between the degree of perceived freedom of tourists' participation in leisure activities in hotel rooms and their conscious health status through empirical research. The research

results can be used as a reference for the construction of the theoretical framework of tourists' leisure behavior mode in confined space.

II. LITERATURE REVIEW AND MODEL CONSTRUCTION

2.1 Literature review

The activity space of the hotel rooms where tourists stay is usually narrow, so tourists' participation in leisure activities in the narrow activity space is bound to be hindered and reduce the degree of perceived freedom, and it is difficult to obtain a better leisure experience and benefits. Perceived freedom is the main criterion to judge whether an individual is in a leisure state. As long as an individual can subjectively perceive that he can freely choose and participate in activities, it is leisure [1]. The freedom of leisure perception is the sense of leisure formed by the subjective will of individuals without any obstacles and coercion. It is the degree to which individuals perceive that they can be competent and control leisure activities and meet their internal leisure needs and can invest in and enjoy leisure activities [2]. Eills and Witt (1984) summarized the dimensions measuring the degree of leisure perceived freedom in their leisure diagnostic battery (LDB) as perceived leisure competence, perceived leisure control, leisure demand, leisure involvement, and leisure playfulness [3-4]. Health is what people want to have and pursue. It is a perfect state of environmental adaptability in physical, mental, and social activities, not just a state without disease and weakness [5]; Positive health is to actively balance the physical, psychological, and social aspects and present a stable and happy state, while negative health refers to the negative prevention of disease. In the closed and narrow hotel room space, tourists are easy to be in a state of stress physically and mentally, so they must take some kind of pressure adjustment behavior to adjust their body and mind, relieve pressure, and bring positive effects [6]. Research shows that participating in leisure activities can adjust life stress and further promote or maintain individual physical and mental health or prevent the occurrence and deterioration of physical and mental diseases [7-11]. Conscious health state refers to the self-evaluation of

an individual's physical health state after integrating the overall feeling and perception, which is a general health evaluation [12]. The individual's self-examination and evaluation of health status is unique due to the differences in values, which can reflect the individual's comprehensive physical and psychological health status and then affect the individual's health promotion behavior [13]. Greenberg et al. (2004) proposed five health measurement dimensions to comprehensively measure an individual's self-perceived health, including physiology, psychology, society, emotion, and spirit. The higher the measurement score, the better the individual's self-perceived health [14].

At present, the research on the relationship between leisure and self-perceived health is scarce. The research focus of leisure perceived freedom is mainly to explore the relationship between leisure perceived freedom and individual leisure behavior with leisure perceived freedom as the pre-factor, such as the higher the degree of leisure perceived freedom, the higher the opportunity and frequency of individual participation in leisure activities [15-17]; the higher the degree of freedom of leisure perception, the lower the sense of leisure hindrance [18]. Siegenthaler and O'Del (2000) pointed out that the higher the degree of freedom of parents' leisure perception, the more they can help their children reduce their sense of leisure hindrance [19]. Poulsen et al. (2007) pointed out that there was a positive relationship between perceived leisure control, leisure perceived freedom, leisure involvement, leisure time participation, and life satisfaction [20]. Zhao and Wu (2017) and other researchers pointed out that there is a significant positive reciprocal relationship between leisure perceived freedom and leisure adjustment strategies [2, 4, 21]. The research on self-perceived health status mainly focuses on the relationship between self-perceived health status and leisure sports, physical activity, individual actual health status, health promotion behavior, etc. For example, self-perceived health status is significantly positively correlated with health promotion behavior [12, 22], while healthy behavior can predict self-perceived health status [23]; the level and duration of continuous participation in leisure sports or physical activity have a positive and

significant impact on self-perceived health status [24-31]; and self-perceived health status is related to chronic diseases caused by unhealthy lifestyles [32].

2.2 Model construction and research hypothesis

According to the literature review results, this paper further verifies the construction of the leisure and conscious health state model in cramped space. Taking Taiwan tourists entering China as an example, this paper explores the relationship between the degree of perceived freedom and conscious health state of tourists participating in leisure activities in hotel rooms through empirical research. The research results can be used as a reference for constructing the theoretical framework of tourists' leisure behavior mode in cramped space. The research model constructed by taking leisure perceived freedom, leisure involvement, and leisure adjustment strategies as the pre-factors of conscious health status is shown in Figure 1, and seven research hypotheses are proposed as follows:

H1 : Leisure perceived freedom has a positive impact on leisure involvement.

H2 : Leisure perceived freedom has a positive impact on leisure adjustment strategies.

H3 : Leisure involvement has a positive impact on leisure adjustment strategies.

H4 : Leisure involvement can mediate the relationship between leisure perceived freedom and leisure adjustment strategies.

H5 : Leisure involvement has a positive impact on self-perceived health.

H6 : Leisure adjustment strategies have a positive impact on self-perceived health.

H7 : Leisure adjustment can mediate the relationship between leisure involvement and conscious health status.

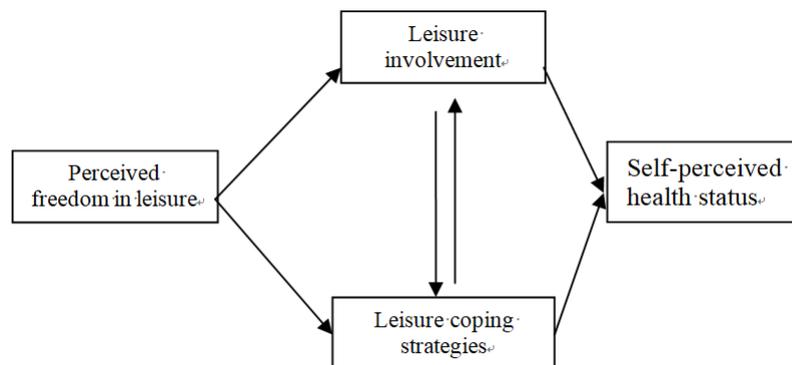


Fig.1 Research model diagram: leisure and conscious health state model in cramped space

III. RESEARCH METHODS

3.1 Empirical research methods and analysis

3.1.1 Questionnaire design

The reference sources for the scale preparation of the empirical research questionnaire in this paper are shown in Table 1. In addition to the basic information of the subjects, the questionnaire items were closed single choice questions, which were filled in by the subjects according to the facts. The results of the questions were measured by Likert five point scoring method, and each point was assigned a value of 5-1. The higher the

actual score of the subjects' answers, the higher the corresponding attribute level. The sixth item of the self-perceived health status scale was the reverse question.

3.1.2 Implementation of questionnaire survey

This paper takes Taiwan tourists entering China as the empirical research object, and uses the stratified sampling method first, and then the convenience sampling method to extract the test samples. First, the sample matrix of Taiwan tourists entering China is divided into four sampling groups according to the

direct passenger transport destination cities across the Strait, including Beijing, Shanghai, Xiamen and Chengdu, and then the test samples are extracted from the four sampling groups according to the convenience sampling principle. The official questionnaire survey was

conducted from February 1 to June 30, 2024. This article entrusts family members and friends from Taiwan to conduct direct flights between the two sides of the Strait at the above four towers.

Table 1 Questionnaire design and compilation

Scale	Measurement dimension	Question item	Question content	Score meaning	Reference source
Basic information of subjects	background information	1-1 to 1-6	Gender, age, education background, marriage, occupation, registered permanent residence.	The answer scores reflect the basic situation of the subjects, and are irrelevant to the measurement of cognitive level.	Based on the research needs and the formulation of prevention and control policies for the epidemic situation of new crown pneumonia.
		1-7 to 1-11	Entry destination, exit City, isolation room type, isolation form, and destination after removal of isolation.		
		1-12	Types of indoor leisure activities during isolation.		
Leisure perception freedom	Perceptual leisure competence	2-1	I have the skills and knowledge to participate in leisure activities.	The higher the score, the more leisure freedom the subjects have.	Refer to the LDB short scale developed by Ellis et al. [33] and the scale proposed by zhaohongjie et al. [4].
		2-2	I am good at participating in leisure activities I want to participate in.		
		2-3	It is easy for me to choose the leisure activities I want to participate in.		
		2-4	I am good at participating in leisure activities with others.		
	Perceptual leisure control	2-5	I can decide the time, place and type of leisure activities.		
		2-6	I can decide with whom to participate in leisure activities.		
		2-7	Participating in leisure activities makes me feel good.		
		2-8	Participating in leisure activities can make others like me better.		
		2-9	I can make leisure activities more interesting.		

		2-10	I can make people who participate in leisure activities with me more pleasant.		
	Leisure needs	2-11	Participating in leisure activities makes me more sure of myself.		
		2-12	Participating in leisure activities calmed my anxiety.		
		2-13	Participating in leisure activities makes me feel more capable of handling difficult things.		
	Leisure involvement degree	2-14	Participating in leisure activities allows me to develop my creativity.		
		2-15	Participating in leisure activities makes me feel more capable of handling difficult things.		
		2-16	Participating in leisure activities makes me feel happy and excited.		
Leisure involvement	Attraction	3-1	It is very important for me to participate in leisure activities.	The higher the score, the more intrinsic self-relevance and importance of participating in leisure activities for subjects.	Refer to the scale proposed by Kyle et al. [34] and McIntyre et al. [35].
		3-2	I enjoy participating in leisure activities.		
		3-3	Participating in leisure activities makes me feel happy and happy.		
		3-4	Participating in leisure activities when I am stressed can relax me.		
	Centrality	3-5	Participating in leisure activities takes up most of my time.		
		3-6	My life is closely related to my participation in leisure activities.		
		3-7	Most of my friends are involved in leisure activities.		
		3-8	Participating in leisure activities is one of the focuses of my life.		
		3-9	I like to discuss with my friends the details of participating in leisure activities.		
	Self-expression	3-10	I can show my true self when participating in leisure activities.		
		3-11	When I see others participating in leisure activities, I can talk about leisure activities with confidence.		
		3-12	I hope others can see me when I participate in leisure activities.		
Leisure coping strategy	Relaxation and adjustment	4-1	I will temporarily avoid stress by participating in leisure activities.	The higher the score, the higher the actual	Refer to the scale prepared by Iwasaki et
		4-2	Participating in leisure activities is one of the important ways to keep me busy.		

of body and mind	4-3	Taking part in leisure activities to escape pressure can help me revive my spirit and solve problems.	degree of the subjects' leisure adjustment strategy attribute, and the more they will adjust the isolation pressure by participating in leisure activities.	al. [36] and zhaohongjie et al. [4].	
	4-4	Participating in leisure activities gives me a new perspective when facing problems.			
	Companion style	4-5			Participating in leisure activities allows me to get together with my supportive friends.
		4-6			Participating in social and leisure activities is an important way for me to adjust to stress.
	leisure adjustment	4-7			Leisure activities to socialize with friends is one of my strategies to adjust to stress.
		4-8			I will choose to participate in leisure activities with friends to adjust to pressure.
		4-9			Not participating in leisure activities with friends will make me unable to adjust to pressure.
	Leisure adjustment to enhance positive emotions	4-10			Participating in leisure activities gives me positive emotions.
		4-11			I feel much better after participating in leisure activities.
4-12		Participating in leisure activities can help me control negative emotions.			
self-perceived health status	Physical health	5-1	After participating in leisure activities, I feel healthier than others.	The higher the score, the better the subjects' self-awareness of health.	Refer to the scale proposed by Greenberg et al. [14].
		5-2	I feel better after participating in leisure activities.		
		5-3	I think my physical resistance is better than before I participate in leisure activities.		
		5-4	I feel less pain after participating in leisure activities.		
	Mental health	5-5	Participating in leisure activities makes me feel calm.		
		5-6	Participating in leisure activities will bring me stress and boredom.		
		5-7	I feel very happy to participate in leisure activities.		
		5-8	The sense of achievement of participating in leisure activities makes me feel happy.		
		5-9	Participating in leisure activities enriches my life.		

Social health	5-10	Participating in leisure activities can obtain good interpersonal interaction.
	5-11	I enjoy sharing my experience of participating in leisure activities with my family and friends.
	5-12	I would like to invite family and friends to participate in leisure activities.
	5-13	Participating in leisure activities is a good topic for me to chat with my family and friends.

The passenger destination city will issue questionnaires to inbound Chinese Taiwanese tourists on the spot and collect them immediately after completing the questionnaires. Beijing, Shanghai, Xiamen, Chengdu, and other entry port cities respectively distributed 100, 300, 120, and 80 questionnaires, with a total of 600. The effective questionnaires were 91, 285, 108, and 73, with a total of 557. The effective rate of the questionnaire was 92.83%.

3.1.3 Questionnaire analysis

The critical ratio of all the questions in the formal questionnaire in this paper is greater than 3 and reaches a significant level $P < 0.05$ and the R value is 0.4. All the questions have good discrimination power and are reserved [21]. In addition, the Cronbach's α values of the overall scale and the four scales of leisure perceived freedom, leisure involvement, leisure adjustment strategies, and conscious health state are 0.938, 0.923, 0.915, 0.907, and 0.896, respectively, showing that the formal questionnaire has high internal consistency and good reliability [21, 37].

3.2 Research model validation and construction analysis

3.2.1 Measurement model fitting and confirmatory factor analysis

This paper uses the confirmatory factor analysis method of the high-order model proposed by Jöreskog et al. (1992) [38] and Doll et al. (1994) [39-40] to verify the measurement model and uses five indicators such as χ^2/df , GFI, AGFI, RMSEA, and CFI to evaluate the fitting of the measurement model [21, 41-42]. The fitting

test data of the measurement models showed that the χ^2/df values of the high-order measurement models of the four scales in this paper were 2.426, 2.306, 3.826, and 4.244, respectively, and the index values of GFI, AGFI, RMSEA, and CFI met the index threshold requirements, indicating that the high-order measurement models of the four scales in this paper were in a strict or acceptable fitting state. In addition, the target coefficient value of the four scales is 1 or approaching 1, which shows that the high-order model can fully replace the low-order model to make the model expression more concise. This paper then uses the high-order model to construct the measurement model of the four scales, estimate the parameters, and analyze the convergent validity and discriminatory validity [43]. In this paper, the convergence validity of the measurement model was evaluated by four indicators such as factor loading, square multiple correlation coefficient (SMC), construction reliability (CR), and average variance extraction (AVE) [41, 44-45]. The minimum values of factor loading, SMC, CR, and AVE of the four scale measurement models were higher than the threshold requirements of 0.5 [45], 0.5 [44], 0.6 [44], and 0.50 [44], respectively, which showed that the measurement models of the four scales in this paper had good convergence validity. In addition, this paper evaluates the discrimination validity of the measurement model by comparing the paired correlation value of the scale attribute AVE. When the AVE value of any attribute of the equivalent scale is greater than the square value of the correlation coefficient of the paired attributes and accounts for more than 50% of the number of comparisons, it means

that the scale attributes are differentiated from each other and the discrimination validity of the scale is good [44]. The verification results show that the measurement models of the four scales have good discriminant validity.

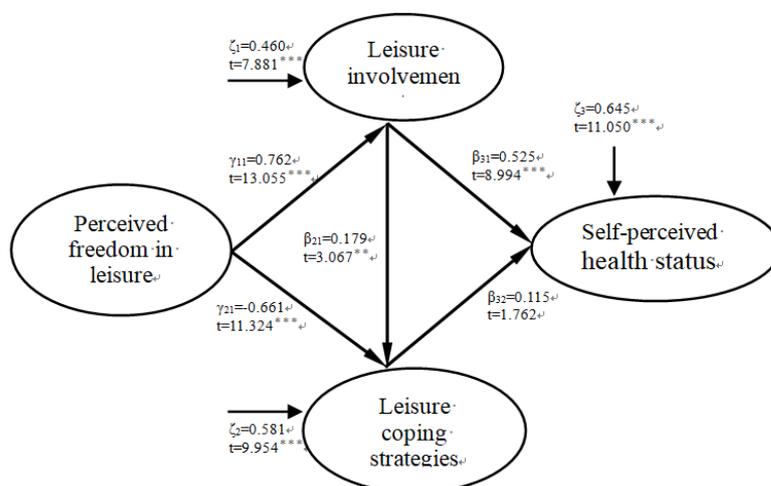
3.2.2 Structural model fitting analysis

In this paper, eight indicators such as χ^2/df , GFI, AGFI, RMSEA, NFI, NNFI, CFI and PNFI are used to evaluate the fitting of the structural model [41-42, 46-48]. The actual test values of the above eight indicators of the structural model in this paper are 2.511, 0.976, 0.952, 0.072, 0.941, 0.948, 0.959 and 0.765 respectively, which meet the more stringent threshold requirements, indicating that the structural model has a

good fitting state, and the path relationship parameters of potential variables can be estimated by path analysis method and the relationship meaning of potential variables can be explained.

IV. MODEL CONSTRUCTION OF LEISURE AND SELF-PERCEIVED HEALTH STATUS OF ISOLATED PERSONNEL UNDER EPIDEMIC PREVENTION AND CONTROL

The relationship path of the research structure model constructed in this paper and its standardized parameter estimates are shown in Figure 2.



Path parameter symbol	Potential independent variable	Potential dependent variable	Estimated value	t value	Causality symbol
γ_{11}	Leisure perception freedom	Leisure involvement	0.762	13.055	+
γ_{21}	Leisure perception freedom	Leisure coping strategy	0.661	11.324	-
β_{21}	Leisure involvement	Leisure coping strategy	0.179	3.067	+
β_{31}	Leisure involvement	Self-perceived health status	0.525	8.994	+
β_{32}	Leisure coping strategy	Self-perceived health status	0.115	1.762	+
ζ_1	Measurement errors of higher order endogenous potential variables that cannot be explained.		0.460	7.881	
ζ_2			0.581	9.954	
ζ_3			0.645	11.050	

Fig.2 Path map of research structure model

The result of path analysis in Figure 2 shows that the hypothesis H1, H3, H4, and H5 validation is true, while H2, H6, and H7 validation is not true. According to this, leisure perceived freedom has a significant positive impact on leisure involvement and a significant negative impact on leisure coping strategies. Leisure involvement has a significant positive impact on leisure coping strategies and self-perceived health status and can mediate the relationship between leisure perceived

freedom and leisure coping strategies. Leisure coping strategies have no significant positive impact on self-perceived health status and cannot mediate the relationship between leisure involvement and self-perceived health status. The above research results show that the total effect value of the path of Taiwan tourists' perceived freedom to participate in leisure activities in the cramped activity space of the hotel room through the antecedents of leisure involvement is

0.4157 (leisure perceived freedom → leisure involvement → self-perceived health status; $0.4157=0.762 \times (0.525+0.179 \times 0.115)$) and reaches a significant level, and the total effect value of the path through the antecedents of leisure coping strategy is -0.06033 (leisure perceived freedom → leisure coping strategy → self-perceived health status; $-0.06033=(-0.661+0.762 \times 0.179) \times 0.115$) and did not reach a significant level. The sensitivity of the path relationship through the antecedents of leisure involvement was stronger than that through the antecedents of leisure coping strategy. When the degree of leisure perceived freedom is the same, the total effect of Taiwan tourists' leisure involvement on the degree of self-perceived health is better. That is, the higher the degree of perceived freedom of Taiwanese tourists to participate in leisure activities in the cramped activity space of hotel rooms, the more they think that leisure activities are more relevant to their internal self, the more willing they are to participate in leisure activities, and the longer the activity time will be, and the more they recognize that their health is in good condition. On the other hand, when the perceived freedom of participating in leisure activities is at a high level, the degree of adjusting isolation pressure by participating in leisure activities is not high, so the willingness to participate in leisure activities is not high, and then the degree of cognitive self-health is low.

V. CONCLUSIONS AND SUGGESTIONS

Taking Taiwan tourists entering China as an example, this paper explores the relationship between leisure and self-perceived health status under the condition of cramped activity space through empirical research and constructs the model of leisure and self-perceived health status under the condition of cramped space. The main research results show that when the degree of leisure perceived freedom is the same, the effect of tourists' leisure involvement on the degree of self-perceived health status is better; the higher the degree of perceived freedom of tourists' participation in leisure activities in the cramped activity space, the more they think that leisure activities are

more relevant to their internal self, the higher their willingness to participate in leisure activities, and the longer the activity time will be, and the more they recognize that their health is in a good state. In addition, the research results of this paper also pointed out that (1) leisure perceived freedom has a significant negative impact on leisure coping strategies; (2) leisure perceived freedom has a significant positive impact on leisure involvement; (3) leisure involvement has a significant positive impact on leisure coping strategies and self-perceived health status and can mediate the relationship between leisure perceived freedom and leisure coping strategies; and (4) leisure coping strategies have no significant positive impact on self-perceived health status and cannot mediate the relationship between leisure involvement and self-perceived health status. Moreover, as exploratory research, this paper still has room for in-depth research. For example, the antecedents of self-perceived health status can be changed to other leisure factors to verify whether the research results of this paper on the relationship between leisure and self-perceived health status will be different due to the differences of leisure antecedents.

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