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Are you an awkward tourist? Keys to enhance the cohesion between tourists and local residents from the viewpoint of leisure literacy and recreationist-environment fit

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ABSTRACT

The study intends to explore the mechanism of the cohesion between tourists and local residents from the viewpoint of leisure literacy and recreationist-environment fit, as well as the moderating effects of tourists' self-image congruity in the said mechanism. The research focused on nature-oriented eco-tourism activities. Convenience sampling is adopted and subjects selected by the study are the visitors of 5 eco-tourism destinations in Taiwan. A total of 1507 questionnaires were returned, of which 76 were invalid and 1431 were valid for a valid return rate of 78.20%. The variables of this research are analyzed with SPSS 22.0. Furthermore, self-image congruity moderates the relationship between leisure literacy and recreationist-environment fit. The findings of the study will help understand the influential elements of the cohesion between tourists and local residents. Further discussion and suggestions both for tourism management and future research are proposed in the end of the study.

1. Introduction

Because of the proactive promotion of environmental conservation by the Taiwanese government, ecotourism has been established through the combination of local resources, economies, and lifestyle of local residents. This ensures the sustainability of tourism while simultaneously conserving the environment. However, ecotourism focuses on protecting the natural environment of tourist destinations, which must be based on the environmental awareness of tourists. Tourists must be responsible for the environment, comply with local laws and regulations, and minimize damage on natural environment (Chiu, Lee, & Chen, 2014). With the flourishing development of tourism in Taiwan, demands for recreation have increased, but so has environmental damage (Dai et al., 2019; Lu & Hsu, 2011). In touristic activities, the participation of tourists is usually the primary drive behind the entire trip. Such participation leads to direct contact with and possible impacts on the environment. Numerous tourist behaviors that damage the environment also affect local residents, such as littering and illegal parking (Dai et al., 2019; Lu & Hsu, 2011).

Environmental damage caused by the intrusion of crowds of tourists hinders the quality of life of local residents as well as the quality of travel for tourists. Therefore, how to propel the tourist to build mutual cohesion of the recreational area with the residents is an important issue. Studies on the consensus and identification between a person and a crowd (i.e., the tourist and local residents in this study, respectively) have determined them based on cohesion. The core concept of cohesion involves how group members have identity or emotional connection with other members (Hammarstorm, 2005; Lehto, Choi, Lin, & MacDermid, 2009). In such context, the cohesion generates the sense of responsibility for humanity, nature and society and becomes the positive emotional power which connects tourists with residents. However, little attention has been paid to such topics in related studies (e.g., Woosnam,

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2011; Woosnam & Norman, 2010).

As having good leisure literacy, individuals can understand the relationship between self and leisure (Mundy & Odum, 1979), properly arrange leisure time (Zeyen, Odum, & Lancaster, 1977), possess the skills and norms of leisure activities, and be protective of the environmental resources of leisure activities (Dai et al., 2019), and select appropriate and adequate leisure activities for self (Leigh, 1971). When tourists engage in activities in tourist destinations, tourists with higher levels of leisure literacy may pay more attention to protecting the recreational environment and concern about how local residents feel (Kyle, Graefe, Manning, & Bacon, 2003; Lee, 2011). Accordingly, whether tourists' leisure literacy will affect the level of cohesion is the first research question of this paper.

Recreationist-environment fit involves the degree of compatibility of the interaction between the recreationists and the recreational environment. When the recreationists and the recreational environment are close in certain characteristics, their interaction will engender a fit (Tsaur, Chang, Tsai, & Lin, 2008). Is it more likely to form a fit between recreationists and recreational environment when tourists possess higher leisure literacy? Such is the second research question of this study.

Recreationalists who are more compatible with the recreational environment will be more protective towards the local resources during their visit, and will do their best to defend the recreational environment from harm, and respect the regular daily routine of local residents, and be more willing to form a good interactive relationship with residents (Woosnam, 2011; Tsaur et al., 2008; Woosnam & Norman, 2010). As such, does the recreationist-environment fit affect the cohesion between recreational and local residents? The third research question of this study is proposed then.

Some research in tourism field (Chon, 1992; Litvin & Goh, 2002) have discovered that the higher the consistency of tourists' self-image, the higher their tourism satisfaction will be. Accordingly, whether the degree of self-image consistency will moderate the relationship among leisure literacy, recreationist-environment fit and cohesion constitutes the fourth research question of this study.

The results are expected to provide actual contributions to ecological scenic area management as well as promote harmonious interactions with local residents for recreational behavior studies, the government, and related businesses.

2. Literature review and hypotheses

2.1. Definition and relevant research on leisure literacy

The notion of literacy has evolved with time. Luke (1992) indicated that literacy is both a strategy and skill that change with the development of society, civilization, and technology. Lyman (1990) indicated that literacy is the ability individuals possess to adapt to society and effectively communicate with their surroundings to achieve their own goals. Mundy and Odum (1979) determined that literacy is a type of life value that guides people in finding their direction in life through understanding how to live, choose, and make the best of the value of life. Potter (2004) indicated that literacy is a positive attitude and perspective adopted by individuals to contact and actively interpret the media messages they encounter. The National Literacy Act of the United States indicated that literacy is a set of competencies including reading, writing, computation, and problem-solving. In addition, literacy refers to the abilities required to function on a personal, professional, or social level for an individual to achieve their goals and develop their knowledge and potential (National Institute for Literacy, 2009). In other words, the concept of literacy has been extended from basic reading and writing abilities of a particular field to the perspective and values of an individual in a particular field, as well as a guideline that guides the activity or behavior of an individual.

Dai et al. (2019) find that leisure literacy has 5 dimensions, including leisure knowledge, leisure skills, leisure cognition, leisure behavior, and Taoist/Confucianist state-of-mind. Dai et al. (2019) also find that, as influenced by Taoism/Confucian culture, a Taoist/Confucianist state-of-mind is valued over leisure knowledge, leisure cognition, and leisure behavior; in different cultural backgrounds, the cultivations of individuals' leisure literacy may differ. Leisure literacy applies the notion of literacy to leisure. Clarke, Gewirtz, and McLaughlin (2000) indicated that leisure literacy refers to self-confidence and ability in leisure activities, involves the basic confirmation of opportunities, and the perspective that individuals can smoothly participate in activities. In other words, leisure literacy can refer to personal values for leisure and guidelines for the participation or selection of leisure activities by individuals. Quality leisure activities and benefits are substantial objectives that people pursue. In today's modern and open society, quality leisure is easily obtained by injecting humanitarian thinking into leisure time and behaviors (Zhuang, 2005). In addition, reflections and reinforced subjective cognition on leisure may enable the agency of individuals in their leisure life to direct the construction of leisure life and mitigate the effect of vicious factors on the choice of leisure activity. Thus, external influences may be mitigated when selecting leisure activities. Individuals may truly face their inner self to choose and construct leisure behaviors and lives that they truly love (Stokmans, 1999). That is, optimal leisure literacy enables individuals to correctly choose appropriate leisure activities and benefited from them.

Studies on leisure have seldom discussed the connotation of leisure literacy because it refers to personal points of view and values on leisure, which guide the participation of individuals in leisure activities. However, study results have mentioned the concept of leisure literacy (Clarke et al., 2000; Dai et al., 2019). In the field of leisure education, studies have revealed that leisure literacy is the result of leisure education (Kleiber, 1981; Yu, 2000); that is, the content and process of leisure education serve as the foundation of leisure literacy. Mundy and Odum (1979) indicated four main dimensions of leisure education, namely (1) leisure awareness, (2) time management, (3) daily living skills, and (4) special leisure skills. Dattilo and Murphy (1991) compiled theories of relevant studies and proposed a leisure education system model with seven dimensions and established a leisure education model and the leisure ability cultivation stairs as their main framework. These seven dimensions were: (1) awareness of leisure, (2) appreciation of leisure, (3) self-determination in leisure, (4) making decisions about leisure, (5) using resources that facilitate leisure, (6) interacting socially during leisure, and (7) recreational activity skills. Afterwards, Mundy (1998) modified the system model proposed by Mundy and Odum (1979), incorporating leisure decisions and social interaction skills into leisure skills, and increasing leisure resources. The four major indicators are re-summarized as leisure awareness, self-awareness, leisure skills, and leisure resources.

In addition, studies on leisure education have mentioned the concept of leisure literacy. For example, leisure awareness refers to individuals having adequate leisure ideas (Huang, 1991), understanding self and leisure as well as the relationship between leisure and their own lifestyle (Mundy & Odum, 1979), and knowing leisure opportunities and the values of leisure well (Yu, 2000). Time management refers to the ability to distribute and use free time (Huang, 1991) and arrange leisure time (Zeyen et al., 1977). Leisure activity skills include the ability to effectively use leisure and learn about the skills and regulations of a leisure activity (Yen, 1994). Social protection refers to the ability to understand the effects of leisure activities on society (Zeyen et al., 1977) and care for environmental resources required for leisure activities (Dai et al., 2014; Huang, 1991). Making decisions about leisure refers to the ability to make decisions for one's own leisure behavior, consciously selecting a leisure activity (Leigh, 1971), selecting meaningful leisure activities for oneself and family, and being able to choose personal leisure activities flexibly (Mundy & Odum, 1979).

As the abovementioned literature suggested, personal leisure literacy comprises the relationships among leisure and society and leisure and

life, decisions on proper leisure activities, arrangements for leisure time, and leisure ability. These attributes constitute the basis that affects individuals' arrangement of leisure activities and improvements in leisure quality. In terms of the perspective of tourists, will their leisure literacy positively enhance the cohesion between them and residents of tourist destinations, and strengthen thereby the recreationist-environment fit? Such is also the issue that has not been fully explored previously.

2.2. Definition and relevant research on recreationist–environment fit

The concept of fit has long been developed in studies on organizational science. The concept was then used to determine person–environment fit. Studies have revealed that a higher fit refers to higher commitment, positive emotional experiences, and improvements in performance (Chatman, 1989; Kristof, 1996).

In terms of psychology or organizational behavior, Kristof (1996) defined person–organization fit as the compatibility of a person and an organization when discussing the results of the interaction between individuals and their environment. As is also indicated by Kristof (1996), the condition of generating such a fit include (1) at least one party satisfying the needs of the other party, (2) both parties sharing similar basic common traits, and (3) both aforementioned conditions. Tsaur et al. (2008) extended this to the field of leisure and recreation and proposed the concept of recreationist–environment fit, which was defined as the compatibility of recreationists and recreational environments. The concept included the following aspects: (1) supplementary fit, (2) requirement–abilities fit, and (3) need–supplies fit (Tsaur et al., 2008). Supplementary fit refers to similar traits of individuals and their environment. Similarities in personalities, values, objectives, and attitudes of recreationists and their environment generate supplementary fit. Requirement–abilities fit demands recreationists possess certain abilities required by their recreational environment, such as knowledge, experience, skills, and involvement. By contrast, the need–supplies fit can be achieved when the capability of a recreational environment satisfies the needs of tourists, such as activity attributes, recreational equipment, natural resources, recreational benefits, interpersonal interactions, and recreational experiences.

In addition, Tsaur et al. (2008) established a recreationist–environment fit scale. The scale comprised six dimensions, namely environmental resources, social opportunities, environmental functions, activity knowledge and skills, environment equipment, and management. Of these, activity knowledge and skills are related to requirement–abilities fit, management is related to supplementary fit, and the remaining four dimensions are related to need–supplies fit. The recreationist-environment fit scale developed by Tsaur et al. (2008) appears to have not been used in subsequent empirical studies. The six dimensions of the recreationist–environment fit scale are applicable to the sample attributes of this study, specifically, ecotourism tourists will consider needs-supplies fit (e.g., natural resources, interpersonal opportunities, environmental functions, and facilities), requirements-abilities fit (e.g., activity knowledge/skills), and supplementary fit (e.g., operation/management).

2.3. Definition of and relevant research on cohesion

Cohesion is defined as a sense of bonding and having an emotional connection with others. The concept refers to perceiving similarities within a group, identifying with others in the group, and having certain levels of contact (Frank, 1957; Gross & Martin, 1952; Hammarstrom, 2005; Jacobs & Allen, 2005; Wallace & Wolf, 2006). Carron (1988) indicated that cohesion is the goal that groups pursue to create connections and hold the group together. Jacobs and Allen (2005) described cohesion as a feeling that enhances the sense togetherness within a group and the manners in which a member views other members. Hammarstrom (2005) referred to cohesion as an emotional connection between an individual and others. When determining the harmony, consistent values, mutual recognition, or sense of belonging between groups of tourists and local residents, cohesion is a critical concept in the discussion.

Studies on cohesion in the field of tourism and leisure are rare, and the majority have focused on the strong sense of "we" generated in a group through interactions between family members during touristic activities (Lehto et al., 2009; West & Merriam, 1970). Kelly (1981), Oldenburg (1999), and Wearing (1998) have suggested that leisure environments are a social space where people not only establish relationships with others but also provoke social behaviors. Yarnal and Kerstetter (2005) revealed that passengers on a cruise ship have opportunities to develop intimate relationships and friendships during their vacation. Moreover, senses of comfort, belonging, and relaxation enable group members to explore their own relationships and relationships with others. Overall, touristic activities offer opportunities for enhancing intimacy among group members. In other words, such activities provide a force for forming cohesion between family members or between tourists and other tourists.

Regarding the assessment of cohesion, Woosnam and Norman (2010) conducted a survey on the emotional cohesion of local residents and tourists as perceived by local residents. In this survey, cohesion was divided into three dimensions, namely emotional fit, sympathetic understanding, and welcoming tourists. Emotional fit refers to local residents feeling as though they are in harmony with tourists or making friends with them; sympathetic understanding refers to that local residents recognize, like, and understand tourists in their region; and welcoming tourists refers to local residents feeling proud of having tourists in their region and believing that their community can obtain economic and other benefits from them. Notably, no empirical tourism studies have been conducted on group cohesion. Woosnam (2011) applied a concept similar to cohesion to measure the relationship between the local residents' emotional connection with tourists in a tourist destination and other aspects. The results revealed that common faith, common behaviors, and interactions positively affected the emotional connection. Although Woosnam and Norman (2010) only conducted their study on local residents, the items were designed to measure the generation of cohesion between local residents and tourists. As asserting that considering the cohesion between tourists and residents of ecotourism destinations from the perspective of tourists, this study not only echoes the arguments of Woosnam (2011), but also help enrich tourism literature. Thus, adopting the same scale to assess cohesion in this study is fitting.

2.4. Self-concept and self-image congruity

Self-image congruity originated from the self-concept in psychology. The self-concept can be divided into single self-construct and multiple self-constructs (Sirgy, 1982). Single self-construct refers to the true self-concept of a person, or the self that a person truly perceives within. However, modern psychological studies have revealed that self-concept is closer to multiple self-constructs, which comprise more than one self (Burns, 1979; Rosenberg, 1979). Various categorization methods for self-concept has been derived according to the definitions of different scholars. In the theory of the self, Rogers (1951) divided self-concept into two main dimensions, namely the real self and ideal self. The real self is based on the reality one perceives (i.e., who I am as a person) and the ideal self is an image built by a person based on the ideal and objective the person wishes to achieve.

The idea of self-image congruity was first proposed in the 1960s. Its application in studies on consumer behavior focuses mainly on the effect of the relationship between product symbolism and self-concept on consumer behavior. According to the theory of self-enhancement, through purchasing and using symbolic products, consumers can define, maintain, or enhance their self-concept. Therefore, consumers prefer products with an image similar to their own self-concept and even use such products to shape their self-image (Grubb & Grathwohl, 1967;

Rogers, 1951). The real self of tourists represents what they think other tourists who will go to eco-tourism destinations are similar to themselves, and their ideal self represents their belief that other tourists to eco-tourism are very similar to the people they want to be.

This study referred to Sirgy (1982) and divided self-image congruity into real self and ideal self, adopting these concepts to determine the moderating effect of touristic self-image congruity on tourists.

2.5. Relationships between each dimension and hypotheses

2.5.1. Relationship between leisure literacy and cohesion

Leisure literacy applies to the confidence and ability of an individual in leisure activities (Clarke et al., 2000) and can be acquired through education (Kleiber, 1981). Furthermore, Peterson and Gunn (1984) claimed that leisure education should include leisure awareness, skill development, social interaction, and leisure resources. Overall, the main components of leisure literacy include self-awareness, leisure decision-making, social responsibilities, and recreational activity skills (Leigh, 1971; Mundy & Odum, 1979; Zeyen et al., 1977). Tourists with optimal leisure literacy also possess appropriate leisure ideas (Huang, 1991). In addition to relaxing and relieving stress through recreational activities (Ajzen & Driver, 1992; Unger & Kernan, 1983), tourists aim to enhance their self-recognition through leisure activities (Bishop, 1970). Moreover, tourists will value the experience in the process of a recreational activity and proactively participate in it. Such tourists will naturally protect local recreational facilities and respect and maintain the living environment of local residents when selecting a recreational activity (Dai et al., 2019; Huang, 1991). Jacobs and Allen (2005) described cohesion as a feeling that enhances the sense of togetherness within a group and how a member views other members. Hammarstom (2005) revealed that cohesion is the emotional connection of an individual with others. Therefore, tourists with high leisure literacy may be able to identify with the values of local residents or have empathy and an emotional fit with them, and thus may conduct benign interactions with them, resulting in mutual recognition. High leisure literacy of tourists results in their high emotional contact with others and high willingness to support local residents and help them protect the local environment. This study inferred that leisure literacy may affect the formation of cohesion resulting from the emotional connection between tourists and local groups. Accordingly, it proposed the following hypothesis:

H1. Tourists with high leisure literacy will have high cohesion with local residents.

2.5.2. Relationship between leisure literacy and recreationist–environment fit

Leisure literacy has been associated with self-reflection and the positive attitude towards the environment (Dai et al., 2019). Leisure literacy refers to individuals' leisure values, which guide them in selecting and participating in leisure activities. Leisure literacy can be developed through education (Kleiber, 1981) and affects the choices an individual makes regarding leisure and recreational activities. Optimal leisure literacy results in satisfactory recreational experiences for tourists and increases their willingness to revisit a destination. Tourists with high leisure literacy intend to improve their physical and mental health, care for local ecological resources, and work to protect the local environment during visits (Dai et al., 2019; Huang, 1991).

Recreationist–environment fit refers to the level of compatibility of the interaction between recreationists and the recreational environment. The fit exists when similarities are identified between recreationists and the environment. Additionally, if a recreationist is equipped with certain abilities the recreational environment requires or the environment can provide the experiences the recreationist seeks, a fit is established (Tsaur et al., 2008). Recreationist–environment fit helps to satisfy the recreational experiences of tourists and increase the possibility of and their willingness to revisit. High recreationist–environment fit means tourists care for local resources and will work to protect the recreational environment (Tsaur et al., 2008).

In addition, recreationists with high leisure literacy will attempt to acquire the abilities required by the recreational environment, such as knowledge, experiences, and skills, to fully enjoy the trip. Therefore, this study inferred that high leisure literacy of tourists may result in high recreationist–environment fit, and accordingly, it proposed the following hypothesis:

H2. High leisure literacy will result in high recreationist–environment fit.

2.5.3. Relationship between recreationist–environment fit and cohesion

Similarities between recreationists and their environment were defined by Tsao et al. as supplementary fit. Requirement–abilities fit is achieved when a recreationist is equipped with abilities required by the recreational environment, such as knowledge, experience, skills, and involvement. Need–supplies fit is achieved when the recreational environment is capable of meeting the needs of tourists, such as activity attributes, recreational equipment, natural resources, recreational benefits, interpersonal interactions, and recreational experiences (Tsaur et al., 2008).

Cohesion is defined as a sense of bonding and emotional connection with others. The concept refers to perceiving similarities within a group, identifying with others in that group, and having certain levels of contact (Wallace & Wolf, 2006). Carron (1988) suggested that cohesion is the goal that groups pursue to create connections and hold the group together. Tsaur et al. (2008) indicated that recreationist–environment fit is a special recognition, appreciation, and care of an individual for the environment, as well as the integration of emotion, cognition, and behavior. High recreationist–environment fit results in tourists having high willingness to respect and care for local residents. In other words, tourists who have high fit with a certain environment have their needs regarding its functionality met and their experiences result in positive evaluations and identification. Such experiences cause the tourist to pay more attention and effort to maintaining the safety and cleanliness of the recreational environment. Moreover, these emotions, attitudes, and behaviors are aligned with the values of local residents, thereby improving the interactions and relationships between tourists and residents. Overall, this study inferred that high recreationist–environment fit results in emotional connections and emotional cohesion between tourists and local residents. Therefore, it proposed the following hypothesis:

H3. High recreationist–environment fit will result in high cohesion between tourists and local residents.

2.5.4. Moderating effect of self-image congruity

On the basis of the overall framework of traveling behavior and the effect of self-image congruity on travel choices, Sirgy and Su (2000) revealed that tourists' travel willingness is related to their self-image congruity, and the result also shows that self-image congruity has the effect on travel willingness. Relevant studies have indicated that high congruity with the real self or ideal self of consumers often results in a high possibility of them purchasing certain products or preferring a particular brand (Onkvisit & Shaw, 1987; Malhotra, 1988). This theory has been applied to the field of tourism, revealing that high self-image congruity may result in tourists having high satisfaction with a travel destination (Chon, 1992; Litvin & Goh, 2002). The higher the congruity between the self-concept of tourists and the destination or typical tourists in said destination, the higher the willingness or possibility of those tourists visiting the destination (Sirgy & Su, 2000; Litvin & Goh, 2003; Kastenholz, 2004; Liu, Lin, & Lin, 2012). Beerli, Meneses, and Gil (2007) revealed that tourists are more likely to visit a destination that has an image closer to their own self-concept.

High self-image congruity means that tourists will choose a recreational environment that reflects their own specific external images,

which results in high levels of trip satisfaction as well as high willingness to protect the local environment and respect local residents' lifestyle. Therefore, this study inferred that the causal relationship between leisure literacy, recreationist–environment fit, and cohesion may be moderated by the self-image congruity of a tourist. Accordingly, it proposed the following hypotheses:

H4. Tourists' self-image congruity has a moderating effect on the relationships between leisure literacy and cohesion.

H5. Tourists' self-image congruity has a moderating effect on the relationships between leisure literacy and recreationist–environmental fit.

H6. Tourists' self-image congruity has a moderating effect on the relationships between recreationist–environmental fit and cohesion.

3. Methods

3.1. Research framework

Leisure literacy of tourists helps them form cohesion with local residents (H1: Huang, 1991; Jacobs & Allen, 2005; Dai et al., 2019). Leisure literacy may be positively related to recreationist–environment fit (H2: Huang, 1991; Tsaur et al., 2008; Dai et al., 2019), and recreationist–environment fit may provoke the establishment of cohesion (H3: Wallace & Wolf, 2006; Tsaur et al., 2008). The causal relationship between leisure literacy, recreationist–environment fit, and cohesion may be moderated by the self-image congruity of an individual (H4, H5, H6: Sirgy & Su, 2000; Litvin & Goh, 2002; Litvin & Goh, 2003; Kastenholz, 2004; Liu et al., 2012). Fig. 1 presents the framework and hypothesis paths of this study.

3.2. Study site

The targeted participants were tourists who participated in ecotourism. This study examined the relationship between their leisure literacy, recreationist–environment fit, and cohesion in recreational experiences, as well as the moderating effect of their self-image congruity. This study set Sun Moon Lake, Dasyueshan, Liuqiu Island, Mount Chike, and Mr. Brown Avenue in Taiwan as the study sites (see Fig. 2). The 5 locations, spreading from west coast to east coast and characterizing the qualities from mountains to plain/island, are representative of ecotourism sites in Taiwan. Actually, these five locations are famous ecotourism attractions where local residents and management authorities have been troubled by environmental damage caused by tourists.

Sun Moon Lake (site 1, 日月潭): Taiwan's marvelous Sun Moon Lake Scenic Area attracts numerous tourists, and its annual Cross-Lake Swim Meet welcomes swimmers from home and abroad. However, after the crowded holiday, tons of garbage are left at Sun Moon Lake, such as instant noodle bowls and even rechargeable batteries, which jeopardizes the natural surroundings and beautiful scenes. The weight of trash reaches around 500 kg per month and the total of 6 tons in 2019 (Liberty Times Net, 2019).

Dasyueshan (site 2, 大雪山): The Dasyueshan Community in Taichung City's Heping District was voted as one of the top 10 places for firefly-watching in Taiwan. However, as the catastrophic fire took place in February, not only was Dasyueshan National Forest Recreation Area burnt out, but also a huge amount of trash was disclosed. Volunteers take pictures of the stunning scenes. Although the mountains surrounded by fogs are breath taking, people can't help but sigh seeing the damaged environment. The Chief Executive Officer of the Dasyueshan Forest Ecology and Economy Sustainable Development Association Li Cheng-Hun has been extremely troubled. The large crowds of tourists visit with disregard for the local community and contractors sell tourist packages for bird- and firefly-watching, which cause enormous stress on the local ecosystem. These businesses profit from the local environment, yet fail to promote the local economy; furthermore, the decision-making of the government is slow. Li stated that being selected as the top 10 fly-watching places was more troublesome than joyous for the community, and they hoped that the tourists could develop the same level of ecological awareness (HIKING BIJI, 2018).

Liuqiu Island (site 3, 小琉球; 琉球嶼): Liuqiu Island is extremely popular with tourists in Taiwan; however, crowds of tourists have caused numerous incidents of environmental damage. In order to reduce the amount of trash on the beach and create the proper habitat for green turtles to reproduce, Environmental Protection Administration conducts numerous methods, including promoting recyclable bottles on the island, regulating local residents doing recycling, and facilitating water dispensers in public (Liberty Times Net, 2018).

Mount Chike (site 4, 赤科山; 赤柯山): Each year when citron daylilies are in season, tourists flood to Mount Chike in Hualien, Taiwan for flower-viewing. Numbers of people bring a considerable amount of garbage to the mountain. In order to handle such situation, the government has to place lots of rubbish bin at the flower-viewing area. Local residents criticize the scenery destroyed by tourist. Peasant association of Fuli township can't tackle the deal of trash due to shortage of

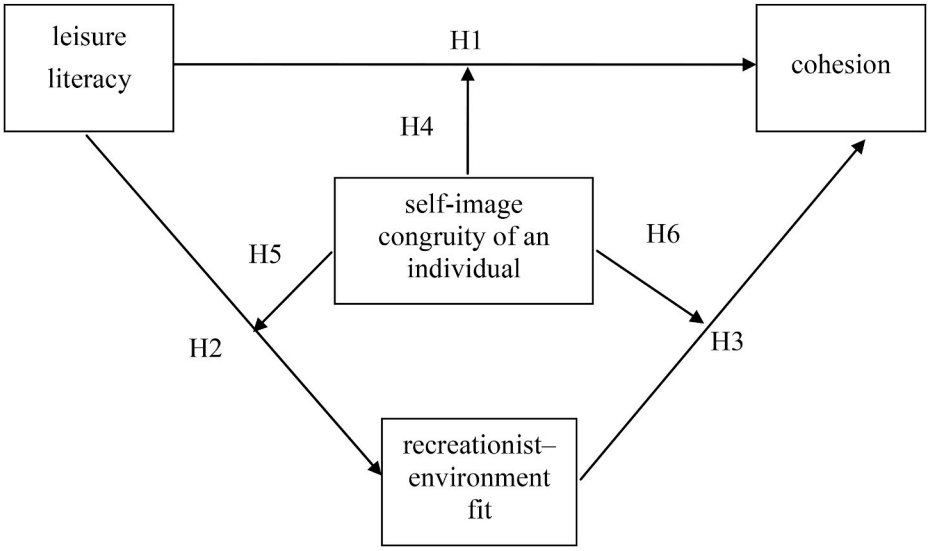

Fig. 1. Conceptual framework.

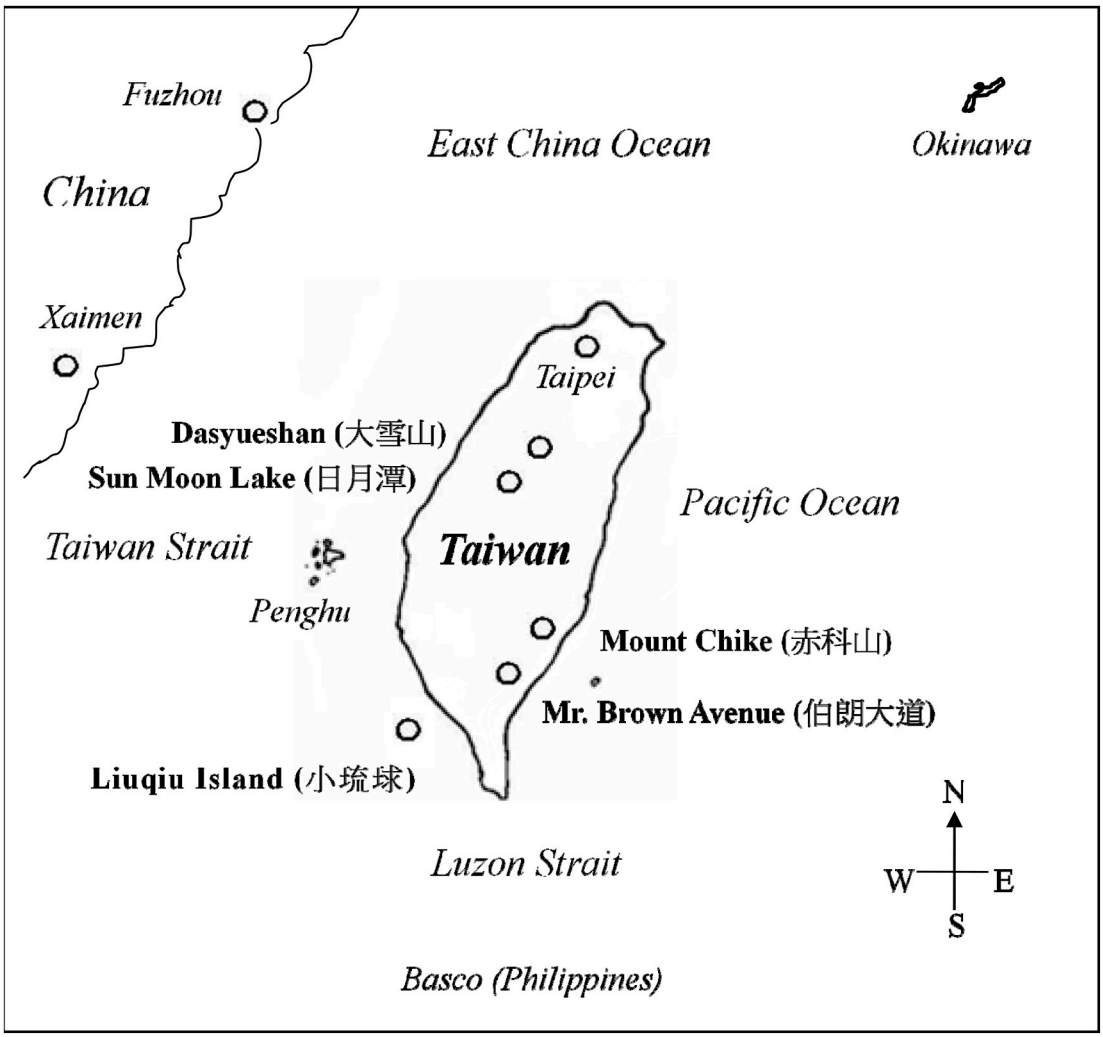

Fig. 2. Sampling sites.

manpower and call people out to take garbage home so that the environment can remain untouched (Liberty Times Net, 2018).

Mr. Brown Avenue (site 5, 伯朗大道): In addition, in Chishang Township of Taitung County in Taiwan, ever since Mr. Brown Avenue became a popular tourist attraction, conflicts between local residents and tourists over taking pictures or parking have been increasing. The view of the rice fields in Chishang is beautiful and the commercial shot here starring Takeshi Kaneshiro made it even more famous, attracting huge crowds of tourists. However, only 2 months after the promotion of cultural tourism by the local government, the rice fields were trampled by tourists. Farmers lamented the loss of the results of half a year's work (FTV News, 2019).

The abovementioned cases reveal that all the causes for ecological problems in recreational areas, the main one is the inappropriate behavior of tourists. Scholars investigating negative effects caused by recreationists who fail to appropriately select and participate in leisure activities have indicated that modern society does not lack options or fields for leisure activities, but it does lack correct notions of and attitudes toward leisure (Dai et al., 2019; Ho, 2001; Hsu & Kao, 2000). Furthermore, such negative effects must cause unpleasant feelings for both local residents and other tourists.

3.3. Measurement

The objective of this study was to determine the relationships between leisure literacy, recreationist–environment fit, and cohesion, as well as to verify the moderating effect of self-image congruity on said relationships. The questionnaire included a leisure literacy variable, recreationist–environment fit variable, cohesion variable, and self-image congruity variable, which are listed in Appendix A and described in the following paragraphs:

3.3.1. Leisure literacy

This study compiled the definition proposed by Dai et al. (2019) with 22 items to measure leisure literacy of tourists. Dai et al. (2019) obtained a satisfactory alpha value. The scale adopted the format of a 7-point Likert scale was used (7 = strongly agree, 1 = strongly disagree).

3.3.2. Recreationist–environment fit

The scale used in this study was based on the recreationist–environment fit scale developed by Tsaur et al. (2008), which was modified by revising and deleting one unfit item which was "the facilities provided for certain activities meet my expectations. Tsaur et al. (2008) used 18 items to measure recreationist–environment fit of tourists and obtained a satisfactory alpha value. Therefore, the scale consisted of 18 items in the present study's questionnaire. A 7-point Likert scale was adopted (7 = strongly agree, 1 = strongly disagree).

3.3.3. Cohesion

On the basis of the scale developed by Woosnam et al. (2010), this study established a scale that measured cohesion between residents and tourists (from the view of tourists). This scale comprised a total of 16

items, including six items for the dimension of emotional connection, five for fondness of residents, and five for sympathetic understanding. Woosnam et al. (2010) obtained a satisfactory alpha value. A 7-point Likert scale was employed (7 = strongly agree, 1 = strongly disagree).

3.3.4. Self-image congruity

This study adopted the self-image congruity scale established by Chon (1992), which employs integral and direct items to assess actual and ideal self-congruity of tourists. Chon (1992) obtained a satisfactory alpha value. In this study, three items were related to the actual self and two were related to the ideal self. A 7-point Likert scale was taken (7 = strongly agree, 1 = strongly disagree).

3.4. Sampling

3.4.1. Sampling size

Generally, statistical methods require the consideration of sample sizes (i.e., the number of research participants). The greater the number of items, the greater the number of factors is, and therefore, the greater the number of participants is required. Tinsley and Tinsley (1987) proposed an item–participant ratio of 5–10 participants per item; however, the ratio can be less strict if the total sample size reaches 300. Comrey (1973) asserted that a sample size of 100 is poor, one of 200 is fair, one of 300 is good, one of 500 is very good, and one of 1000 is excellent. In addition, Comrey (1988) indicated that a sample size of 200 would be sufficient for ordinary factor analysis with fewer than 40 items.

This study designed 22 items for a leisure literacy scale, 18 items for a recreationist–environment fit scale, 16 items for a cohesion scale, and 5 items for a self-image congruity scale. The total number of items for the questionnaire was 61 ($22 + 18 + 16 + 5 = 61$). Therefore, according to Tinsley and Tinsley's (1987) safest reference value (the sample size should be 10 times the number of items), this study was required to obtain 610 ($61 \times 10 = 610$) questionnaire samples. Finally, this study estimated that it should distribute three times the original estimated number (i.e., 610 questionnaires) for the risk of invalid questionnaires. Thus, totally 1830 ($610 \times 3 = 1830$) questionnaires were distributed; 366 were distributed by convenience sampling in each of the five aforementioned study sites ($366 \times 5 = 1830$).

3.4.2. Sampling method

To ensure the validity of the results, this article chooses the research subjects who are tourists above 18 years old and are capable of filling out the questionnaire as the research subjects to answer the questionnaire. After confirming that the research subjects are qualified for the research, the convenience sampling method is adopted to select samples, and questionnaires are distributed in the following representative ecotourism sites in Taiwan: Sun Moon Lake, Dasyueshan, Liuqiu Island, Mount Chike, and Mr. Brown Avenue. As have been noticed by Dai et al. (2019) and Tsaur et al. (2008), Taiwan government promotes eco-tourism program, environmental education and outdoor recreational activities in universities so leisure, tourism, and outdoor recreation are gradually becoming a major part of college students' lifestyle. Thus, students occupy the largest proportion of respondents in this study.

3.5. Statistical analysis

The statistical tools used in this study to analyze the collected valid questionnaire data were SPSS 22.0 and AMOS 22.0 statistical analysis software (IBM Corporation, Armonk, New York, USA). The descriptive statistical analysis, reliability analysis, correlation coefficients analysis, and confirmatory factor analysis were used to test the respondent profile, correlation coefficient between variables, composite reliability, convergence validity, and discriminant validity of the questionnaire. Additionally, regression analysis was employed to test the hypotheses by exploring the cause-effect relationships between four different factors of the four estimated constructs. Linear regression analysis was used to test hypothesis H1, H2 and H3; non-linear regression analysis was used to test hypothesis H4, H5 and H6 because it is much less restrictive and more accurate to identify the moderating variables.

4. Results

4.1. Respondent profile

A total of 1830 questionnaires were distributed at Sun Moon Lake, Dasyueshan, Liuqiu Island, Mount Chike, and Mr. Brown Avenue. A total of 1507 questionnaires were returned, of which 76 were invalid and 1431 were valid for a valid return rate of 78.20%. Exclusion criteria for invalid questionnaires were incomplete responses, blank answers, missed items, more than one answer selected, and unfit responses for sampling criteria. Moreover, this study excluded responses that contained mostly the same answers to all items, regarding them as invalid. Analytic results of all valid responses revealed that the majority of respondents were female (53.0%); in the 18–24 years age group (31.90%); and had a university or college education level (55.2%). Furthermore, most respondents were unmarried (60.0%), had a monthly income under NT$20,000 (38.1%), and were students (36.3%). Moreover, most respondents lived in Taichung City (18.9%), Taipei City (11.2%), and New Taipei City (10.1%). Almost half of all respondents had only visited the destination once (49.1%).

4.2. Confirmatory factor analyses for reliability and validity

Cronbach's α reliability: For the reliability analysis, this study adopted the criterion of a Cronbach's α value > 0.70. The reliability of each factor was as follows: Cronbach's α of leisure literacy = 0.93; Cronbach's α of recreationist–environment fit = 0.92; Cronbach's α of cohesion = 0.93; and Cronbach's α of self-image congruity = 0.92. The results revealed that all the dimensions in this study had high reliability.

Model fit: A series of confirmatory factor analyses (CFA) were performed on construct measures and related items using AMOS 22.0. The resulting fit index of the hypothesized 4-factor model including leisure literacy, recreationist–environment fit, and cohesion and self-image congruity has $\chi 2 = 1958.123$, degree of freedom = 786, $\chi 2/df = 3.87$; RMSEA = 0.073 and CFI = 0.87. These exceed the model adaptability standard suggested by Bagozzi and Yi (1988) of $\chi 2/df < 5$; RMSEA < 0.08; CFI > 0.80).

Composite reliability and convergent validity: To test composite reliability (CR) and convergent validity, various statistics were computed. Seventy-two observed items were significant ($t > 1.96$, $p < 0.05$) and all the factor loadings of estimated parameters matched the criterion of 0.47 or more. Additionally, all the average variance extracted (AVE) of this study were between 0.36 and 0.68; excluding leisure literacy, the AVE were greater than the value of 0.5 suggested by Bagozzi and Yi's (1988) study. Although the AVE of leisure literacy was lower than 0.5, its composite reliability (CR) was 0.85, which was greater than the value of 0.6 suggested by Bagozzi and Yi (1988), meaning that its convergent validity was still acceptable.

Discriminant validity: Testing for discriminant validity is necessary. In testing, the "square root of the AVE of each construct" being greater than the "correlation coefficient of each paired variables" (Hair, 1995) is a consideration. Some steps occurred. Correlation coefficients were calculated between constructs in the measurement models. The results are in Table 1. Examining discriminant validity is another step. Fornell and Larcker (1981) indicate that if the "square root of the AVE" is greater than the correlation coefficient of the paired variables, the construct discriminant validity is acceptable, even if its AVE is < 0.5. The results support distinction of the constructs in the model.

Table 1
Descriptive statistics and correlations for variables.

Variables	M	SD	1	2	3	4
1 = leisure literacy	4.01	0.48	(0.58)			
2 = recreationist–environment fit	4.08	0.37	0.61**	(0.68)		
3 = cohesion	2.01	0.68	0.39**	0.45**	(0.76)	
4 = self-image congruity	3.82	0.46	0.48**	0.61**	0.39**	(0.81)

Note: Square root of the AVE (average variance extracted) is in parentheses along the diagonal, **p < 0.01.

4.3. Hypotheses testing

To verify H1, cohesion and leisure literacy were inserted into a regression equation as the dependent variable and independent variable, respectively. Table 2 presents the obtained results, according to which leisure literacy is significantly effective at predicting cohesion (β = 0.39, p < 0.001). Therefore, H1 was supported.

To verify H2, recreationist–environment fit and leisure literacy were inserted into the regression equation as the dependent variable and independent variable, respectively. Table 3 presents the results, according to which leisure literacy was significantly effective at predicting recreationist–environment fit (β = 0.61, p < 0.001). Therefore, H2 was supported.

To verify H3, cohesion and recreationist–environment fit were inserted into the regression equation as the dependent variable and independent variable, respectively. Table 4 presents the results, according to which recreationist–environment fit was significantly effective at predicting cohesion (β = 0.55, p < 0.001). Therefore, H3 was supported.

To verify H4, leisure literacy and cohesion were inserted into the regression equation as the dependent variable and independent variable, respectively, and self-image congruity was set as the moderator variable. Table 5 presents the results, according to which the moderating effect of self-image congruity was nonsignificant (β = 0.03, p > 0.05). Therefore, H4 was rejected in general. However, H4 was supported in Sites 1, 3 and 5.

To verify H5, leisure literacy and recreationist–environment fit were inserted into the regression equation as the dependent variable and independent variable, respectively, and self-image congruity was set as the moderator variable. Table 6 presents the results, according to which the moderating effect of self-image congruity was significant (β = 0.06, p < 0.01). As presented in Fig. 3, under high or low self-image congruity, the leisure literacy of the tourists enhanced their recreationist–environment fit results. Furthermore, high self-image congruity resulted in high recreationist–environment fit. Therefore, H5 was supported in general. However, H5 was rejected in Sites 1, 2 and 5.

To verify H6, cohesion and recreationist–environment fit were inserted into the regression equation as the dependent variable and independent variable, respectively, and self-image congruity was set as the moderator variable. Table 7 presents the results, according to which the moderating effect of self-image congruity was nonsignificant (β = 0.03, p > 0.05). Therefore, H6 was rejected in general. However, H6 was supported in Sites 1 and 5.

4.4. Discussion

In responding to the emphasis of Dai et al. (2009) on more research in exploring the leisure literacy of tourists, this study should hopefully contribute to tourism field. Based on the literature review, six hypotheses were developed and four were supported.

4.4.1. Leisure literacy vs cohesion

Based on the analysis results, H1 was supported, which means that tourists with high leisure literacy will have high cohesion with residents. These test results of this study confirm the findings that cohesion of tourists with local residents can be determined from the perspectives of tourist perceptions and environment. An individual's perceptions on cohesion can be described from the viewpoint of leisure literacy, whereas environment on cohesion can be determined using the theory of recreationist–environment fit. Regarding tourist behaviors, characteristics of a tourist are related to individuals' participation in activities in a travel destination (Sirakaya & Woodside, 2005). The purpose of tourist leisure literacy is to enable tourists to correctly select appropriate leisure activities to be able to benefit from them. In leisure or touristic activities, participation in activities in a destination affects the travel experience of a tourist (Franklin, 2003). Tourists with leisure literacy tend to value the protection of ecosystems and be willing to follow relevant local laws and regulations (Dai et al., 2019). The test results also echo the findings of Carron (1988) that cohesion tends to favor the identification of group values and maintain the willingness of pursuing a goal with the group. This discovery may result from the consistent value or identification of an individual projected onto a group. Therefore, the higher the leisure literacy of a tourist, the higher the chance is that he or she may develop emotional connections with local residents, and thus, mutual cohesion. Hence, a major topic of discussion in the present study is whether tourist leisure literacy results in cohesion.

4.4.2. Leisure literacy vs recreationist–environment fit

As stated in the analysis results, H2 was supported, which means that high leisure literacy will result in high recreationist–environment fit. These test results of this study confirm the findings that leisure literacy refers to an individual's self-confidence and ability in leisure activities, as well as the basic confirmation of opportunities and notion that individuals can smoothly participate in activities (Clarke et al., 2000; Dai et al., 2019). Individuals with high leisure literacy value learning experiences in touristic activities and obtain optimal recreational

Table 2
Regression results between leisure literacy and cohesion.

dependent variable / β independent variable	cohesion					
	Total/n = 1431	Site 1/n = 371	Site 2/n = 235	Site 3/n = 321	Site 4/n = 113	Site 5/n = 391
leisure literacy	0.39***	0.35***	0.51***	0.49***	0.40***	0.37***
R^2	0.15	0.12	0.26	0.24	0.16	0.14
F	257.14***	50.65***	83.19***	101.75***	21.13***	63.20***

Note: Site 1 = Sun Moon Lake (日月潭); Site 2 = Dasyueshan (大雪山); Site 3 = Liuqiu Island (小琉球; 琉球嶼); Site 4 = Mount Chike (赤科山; 赤柯山); Site 5 = Mr. Brown Avenue (伯朗大道); ***p < 0.001.

Table 3
Regression results between leisure literacy and recreationist–environment fit.

dependent variable / β independent variable	recreationist–environment fit					
	Total/n = 1431	Site 1/n = 371	Site 2/n = 235	Site 3/n = 321	Site 4/n = 113	Site 5/n = 391
leisure literacy	0.61***	0.47***	0.63***	0.72***	0.61***	0.60***
R^2	0.37	0.23	0.40	0.51	0.38	0.36
F	653.41***	106.84***	155.03***	334.13***	66.56***	221.60***

Note: Please see Table 2 re Sites 1–5; ***p < 0.001.

Table 4
Regression results between recreationist–environment fit and cohesion.

dependent variable / β independent variable	cohesion					
	Total/n = 1431	Site 1/n = 371	Site 2/n = 235	Site 3/n = 321	Site 4/n = 113	Site 5/n = 391
recreationist–environment fit	0.55***	0.51***	0.57***	0.58***	0.55***	0.58***
R^2	0.30	0.26	0.32	0.33	0.31	0.33
F	608.86***	127.06***	109.78***	158.17***	49.14***	195.43***

Note: Please see Table 2 re Sites 1–5; ***p < 0.001.

Table 5
Moderating role of self-image congruity on the relationships between leisure literacy and cohesion.

dependent variable / β independent variable	cohesion					
	Total/n = 1431	Site 1/n = 371	Site 2/n = 235	Site 3/n = 321	Site 4/n = 113	Site 5/n = 391
leisure literacy (LL)	0.39***	0.27***	0.37***	0.39***	0.32***	0.24***
self-image congruity (SIC)	0.34***	0.37***	0.35***	0.24***	0.31***	0.29***
LL*SIC	0.03	0.09*	0.04	0.11*	0.06	−0.10*
R^2	0.26	0.26	0.37	0.30	0.26	0.23
F	167.17***	43.93***	45.05***	45.07***	12.48***	37.89***

Note: Please see Table 2 re Sites 1–5; *p < 0.05; ***p < 0.001.

Table 6
Moderating role of self-image congruity on the relationships between leisure literacy and recreationist–environment fit.

dependent variable / β independent variable	recreationist–environment fit					
	Total/n = 1431	Site 1/n = 371	Site 2/n = 235	Site 3/n = 321	Site 4/n = 113	Site 5/n = 391
leisure literacy (LL)	0.54***	0.41***	0.54***	0.63***	0.51***	0.53***
self-image congruity (SIC)	0.26***	0.29***	0.22***	0.20***	0.33***	0.26***
LL*SIC	0.06**	0.04	−0.07	0.09*	0.18*	0.04
R^2	0.44	0.31	0.45	0.55	0.52	0.43
F	372.80***	54.83***	62.08***	130.44***	39.02***	95.22***

Note: Please see Table 2 re Sites 1–5; *p < 0.05; ***p < 0.001.

experiences. High leisure literacy means a tourist understands how to effectively and sustainably use the environmental resources of a destination in a manner suitable for drawing the feedback he or she requires, such as physical and mental health benefits and an awareness of ecological conservation (Dai et al., 2019; Huang, 1991). This study inferred that high leisure literacy may facilitate tourists experiencing congruity between them and recreational environments. That is, leisure literacy may provoke recreationist–environment fit. Therefore, this study sought to determine leisure literacy on the formation of recreationist–environment fit.

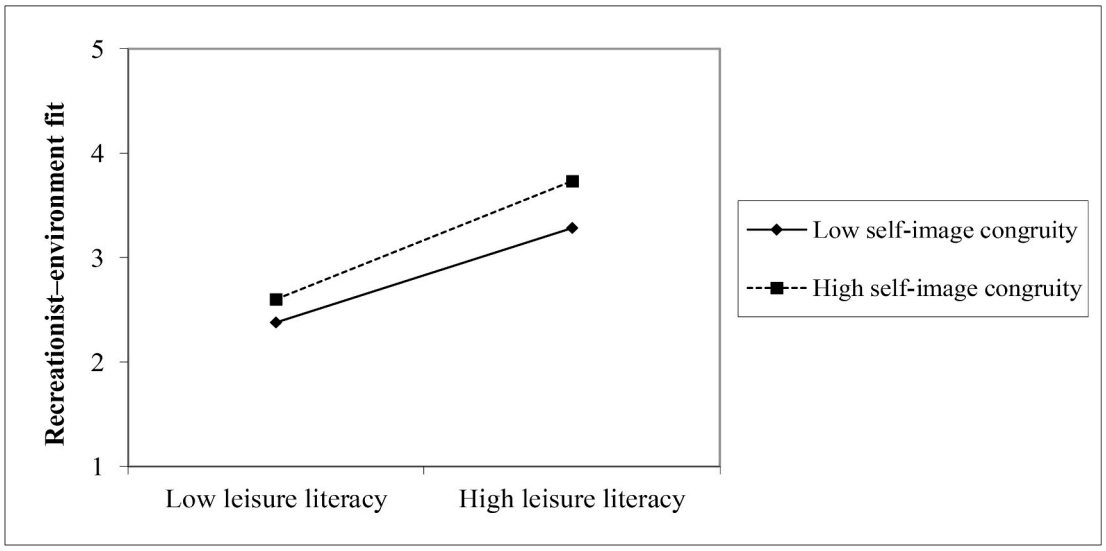

Fig. 3. Moderating effect of self-image congruity on the relationship between leisure literacy and recreationist–environment fit.

Table 7
Moderating role of self-image congruity on the relationships between leisure recreationist–environment fit and cohesion.

dependent variable / β independent variable	cohesion					
	Total/n = 1431	Site 1/n = 371	Site 2/n = 235	Site 3/n = 321	Site 4/n = 113	Site 5/n = 391
recreationist–environment fit (REF)	0.45***	0.41***	0.43***	0.49***	0.46***	0.49***
self-image congruity (SIC)	0.24***	0.29***	0.31***	0.17**	0.17	0.17***
REF*SIC	0.01	0.13**	0.02	0.01	0.07	−0.09*
R^2	0.35	0.34	0.40	0.36	0.33	0.37
F	252.53***	63.22***	51.22***	58.12***	18.14***	74.08***

Note: Please see Table 2 re Sites 1–5; *p < 0.05; **p < 0.01; ***p < 0.001.

4.4.3. *Recreationist–environment fit vs cohesion*

Based on the analysis results, H3 was supported, which means that high recreationist–environment fit will result in high cohesion between tourists and residents. These test results of this study confirm the findings that using the theory of recreationist–environment fit, the group cohesion of tourists and local residents described through the emotional connection with the environment can be determined. This topic was also discussed in the present study. Regarding the connotations of recreationists using the theory of recreationist–environment fit, the service facilities and recreational resources offered by an environment must fit their expectations and demands to generate high satisfaction and recreational experiences related to the environment (Tsaur et al., 2008). This study speculated that a high recreationist–environment fit provokes tourists to care for the recreational environment and maintain a harmonious relationship with local residents. In other words, recreationist–environment fit may provoke cohesion between them. Accordingly, this study sought to determine recreationist–environment fit on the formation of cohesion.

4.4.4. *Self-image congruity, a moderator*

Based on the analysis results, which means that tourists' self-image congruity has a moderating effect on the relationships between (1) leisure literacy and cohesion (H4), (2) leisure literacy and recreationist–environmental fit (H5), and recreationist–environmental fit and cohesion (H6). These test results of this study confirm the findings of the study, by Sirgy et al. (1997), which shows consumers on purchasing and choosing behaviors revealed that such behaviors related to brand preference, preference for product form, brand attitude, program choice, and consumer satisfaction may be affected by the self-image congruity formed by information and experiences of past purchases. Gardner and Levy (1955) indicated that different personalities were observed in users of different products or brands because consumers tend to choose a product or brand (e.g., of cosmetics or food) that is similar to or capable of representing themselves. In the field of tourism, Chon (1992) applied self-image congruity to tourist behavior and researched the connection between self-image congruity and tourism satisfaction. Litvin and Goh (2002) indicated that the self-image congruity was positively associated with tourists' interests in and possibility of traveling to different destinations. Tourists are more willing to travel to destinations that fit their self-image. Self-image comprises the actual self and ideal self. The actual self is based on the reality perceived by oneself (i.e., the type of person I am), whereas the ideal self is an image created by oneself; that is, the ideal and goal that a person wishes to reach (Gough, Fioravanti, & Lazzari, 1978). Therefore, according to self-image, tourists choose a destination they truly want to visit and later form an opinion that fits their self-expectation of the location. This study speculated that a touristic package with a high level of congruity with a tourist's self-image may have notably positive effects on the following three causal relationships: the effects of leisure literacy on cohesion, leisure literacy on recreationist–environment fit, and recreationist–environment fit on cohesion. Thus, self-image congruity may serve as a moderator variable for these relationships. This study determined the changes in the abovementioned causal relationships under the condition that self-image congruity serves as the moderator variable.

5. Conclusions, implications, limitation and future research

5.1. Conclusions

This section clarifies the analysis of the research hypotheses. Furthermore, explanations and suggestions for the research results are stated, which may serve as references for the tourism and leisure industry as well as relevant future studies. Next, practical suggestions based on the research findings are proposed for the reference of future studies, and finally, the research limitations are discussed.

The objective of this study was to determine whether the cohesion between tourists and local residents was affected by leisure literacy and recreationist–environment fit, as well as to determine the effect of leisure literacy on recreationist–environment fit. In addition, this study examined the moderating effect of self-image congruity on the abovementioned relationships. The results revealed that tourists' leisure literacy was positively correlated with cohesion and recreationist–environment fit. High leisure literacy resulted in strong cohesion and high recreationist–environment fit, whereas low leisure literacy resulted in weak cohesion and low recreationist–environment fit. This is because leisure literacy refers to personal values on leisure, which guide recreationists through selecting and participating in leisure activities. Leisure literacy can be cultivated through education and may affect the interaction between the recreationist and local residents as well as the fit between the recreationist and tourist destination. Optimal leisure literacy improves cohesion between the recreationist and residents and helps to establish friendships between the two parties. Tourists with high leisure literacy aim to integrate into the environment during their visits.

The results revealed that recreationist–environment fit positively affected the cohesion between recreationists and local residents. The higher the fit, the more harmonious the interaction between the two parties was. As previously mentioned, recreationist–environment fit refers to the compatibility of individuals with their environments (Tsaur and Lin, 2012) and the results of the interaction between the two. When this interaction evolves from compatibility between individuals and the environment to the emotion between the two, emotional connections between recreationists and local residents are strengthened.

Regardless of the level, self-image congruity enhances the effect of leisure literacy on recreationist–environment fit. Nevertheless, high self-image congruity results in high recreationist–environment fit. Therefore, the self-image congruity of tourists plays a vital role in their integration with the recreational environment.

5.2. Implications for managerial practice

Recreationists with adequate leisure literacy have their own principles for selecting and participating in leisure activities, and they value the fitness and leisure benefits of such activities. Therefore, companies must provide sufficient information about recreational products and itineraries when designing them to enable recreationists to clearly identify whether these activities meet their needs. Through doing so, companies can attract relevant groups to purchase and experience their products, thereby improving the recreationist–environment fit as well as the cohesion between recreationists and local residents.

Once the management of an ecotourism location understands the traits of the recreationists, the frontline employees can integrate ideas of environmental protection and ecological conservation into the tour during the production of relevant recreational experiences. In this manner, participants of these activities can learn about relevant knowledge and improve their leisure literacy.

From the perspective of recreationist–environment fit, in terms of environmental resources and environmental functions, management of a scenic site is recommended to design leisure activities for recreationists based on the recreational environment. The resulting high recreationist–environment fit can contribute to high cohesion between the recreationists and local residents. Regarding social opportunities, managements are recommended to host regular ecotourism activities such as bird-watching, flower-viewing, and firefly-watching. These ecological experiences can increase opportunities for social meetups among tourists and provoke cohesion between them and local residents.

Regarding activity knowledge and skills and environment facilities, management are advised to interview frequent visitors concerning the fitness of the travel destination and their skills, equipment, knowledge, and experiences. Additionally, understanding tourists' opinions about service and activity facilities and service personnel of a tourist destination can help the management adjust and improvements. Thus, recreationists may experience high recreationist–environment fit, which will enhance cohesion between them and local residents. In addition, managers can survey the preferences and needs of tourists regarding maintenance and management of the environment and make improvements based on the feedback.

As reported by the results, self-image congruity moderated the correlation between leisure literacy and recreationist–environment fit. Therefore, travel agencies should focus their marketing strategies on raising the awareness of potential customers about the congruity between themselves and images of particular recreational locations. For example, advertisements can appeal to people's actual self with phrases such as "To those who enjoys nature" and "How long have you been ignoring your inner calling for freedom and the aroma of the forest?" before linking them to a particular recreational area. By contrast, advertisements appealing to people's ideal self could emphasize that in XXX recreational area, "Fellow ecotourism amateurs are everywhere. Want to join?" or "Ecotourism trips for families and couples are everywhere, want to be like them?"

5.3. Contribution

Studies on cohesion in the fields of tourism and leisure have focused on increasing interactions between family members to improve cohesion through traveling together or simply the application of cohesion in tourism (e.g., Lehto et al., 2009; West & Merriam, 1970; Woosnam, 2011; Woosnam & Norman, 2010). Although recreationist–environment fit may be related to cohesion in a certain manner, relevant studies are scant, and furthermore, few studies have determined the relationship between leisure literacy and recreationist–environment fit and that between leisure literacy and cohesion. Moreover, studies on the changes in the three aforementioned causal relationships under self-image congruity as a moderator variable have not been conducted. This study contributes to the tourism literatures by making up for the above research gaps.

5.4. Limitations and future research directions

Although this study strictly endeavored to fit certain scientific principles in the research design, it was limited in terms of time and sample size. Additionally, it was based on a literature review and analysis of questionnaire surveys to understand the subjective perception of respondents. Therefore, this study proposed the following suggestions to serve as references for future studies regarding potential research directions. This study's sampling only targeted people in Taiwan. The feasibility of applying the results to other ethnic Chinese societies, such as those in Malaysia, Singapore, United States, and Europe, requires further investigation. In this case, the present study can serve as a reference for such comparisons. In addition, future studies are encouraged to determine the reasons and causes for such differences.

This study took tourists as research participants. Tourism studies on self-image congruity have mainly focused on tourists and rarely on residents. The self-image congruity of these residents differs from that of tourists because they have lived in a particular area for a long time. Moreover, these residents have a higher fit with the scenic area and are more devoted to the environment out of high cohesion. Future studies

are advised to conduct research on and in-depth interviews with local residents and analyze their opinions and ideas concerning ecotourism destinations.

Declaration of competing interest

None.

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Appendix A. Variables and definitions for each construct in this study

Construct/Definition
leisure literacy
1. Recreationists with leisure literacy have the ability to adapt to leisure activities.
2. Recreationists with leisure literacy will set goals to be achieved when participating in leisure activities.
3. Recreationists with leisure literacy should have the ability to socialize with others when engaging in leisure activities.
4. Recreationists with leisure literacy know the purpose of engaging in leisure activities.
5. Recreationists with leisure literacy can make continuous progress when engaging in leisure activities.
6. Recreationists with leisure literacy should be able to successfully complete leisure activities.
7. When engaging in leisure activities, I will give priority to the elderly to use recreational facilities.
8. When I am engaged in leisure activities, I will not offend everybody.
9. When engaging in leisure activities, I will value the feelings of others and not let others lose face.
10. When engaging in leisure activities, even if I don't like each other, avoid showing it.
11. When engaging in leisure activities, even if I am reasonable, I should avoid embarrassing the other person in words.
12. Recreationists with leisure literacy should avoid excessive involvement in leisure activities that will affect their normal routine.
13. Recreationists with leisure literacy should have the concept of environmental conservation.
14. Recreationists with leisure literacy are relaxed physically and mentally when engaging in leisure activities.
15. Recreationists with leisure literacy can achieve a balance between leisure and life.
16. Recreationists with leisure literacy should have a cheerful and optimistic attitude.
17. Recreationists with leisure literacy should understand the basic knowledge when engaging in leisure activities.
18. Recreationists with leisure literacy should understand the precautions for engaging in leisure activities.
19. Recreationists with leisure literacy should understand safety knowledge when engaging in leisure activities.
20. Recreationists with leisure literacy will guide others to engage in leisure activities.
21. Recreationists with leisure literacy will be willing to try different leisure activities.
22. Recreationists with leisure literacy will continue to engage in leisure activities.
recreationist–environment fit
1. The terrain characteristics of this environment are suitable for me to engage in this activity.
2. The resource conditions of this environment are suitable for me to engage in this activity.
3. The weather in this environment (e.g., temperature, wind direction, etc.) is suitable for me to engage in this activity.
4. This environment allows me to share the experience of the event with other activists.
5. This environment provides an opportunity for me to meet other activists.
6. This environment allows me and other activists to learn about the activity.
7. This environment allows me to relieve stress.
8. This environment allows me to feel comfortable physically and mentally when engaging in this activity.
9. This environment can satisfy my expectation of recreational experience.
10. My skills meet the requirements of the activity and site.
11. My device meets the requirements of the activity and site.
12. My knowledge meets the requirements of the activity and site.
13. My past experience meets the requirements of the activity and site.
14. The service facilities provided by this environment meet my expectations.
15. The personnel service in this environment meets my expectations.
16. The maintenance of facilities in this environment meets my expectations.
17. The venue management of this environment meets my expectations.
18. The values of this environmental management are in line with mine.
Cohesion
1. I will get close to some of the residents I meet.
2. I will be friends with the residents here.
3. I like the residents here.
4. I will take the initiative to approach some residents I meet.
5. I will take the initiative to chat with residents.
6. I have some interactions with the residents here.
7. I have a lot in common with the residents here (e.g., taking care of the environment in the recreation area).
8. I will trust the residents here.
9. I will be very happy to meet the residents here.
10. I will share my thoughts with the residents here.
11. I know the residents here. (e.g., residents welcome tourists very much).
12. I thank the residents for their contributions here. (e.g., carefully maintain the use environment of the recreation area).
13. I am proud to be here to play.
14. I can get benefits from the residents (for example: ask local tourist information).
15. I will treat the residents here well.
16. I will cherish the environment here.
self-image congruity
1. I think people who usually travel to (destination) are the same type of people as me.

(*continued on next page*)

(*continued*)

Construct/Definition
2. I think people who usually travel to (destination) are similar to me.
3. I think people who usually travel to (destination) seem to be alike to me.
4. I think the people who usually travel to (destination) are the same as I want to see myself.
5. I think the people who usually travel to (destination) are very similar to the people I want to be.

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