Recreational scuba diving as a special form of tourism: lessons from Taiwan

You-De Dai, Fei-Hsin Huang, Kuan-Yang Chen, Wei-Jen Chen and Tzung-Cheng Huan

Abstract
Purpose – Recreational scuba diving is one of the fastest growing tourism industries around the world and has become a popular activity in Taiwan. Few studies focus on enduring involvement with a high risk or difficult activity specialization, so this study aims to explore the causal relationship between enduring involvement and specialization and seeks to explain sustained involvement in scuba diving activity as a recreation specialization.

Design/methodology/approach – This research selects four diving sites in Taiwan as survey locations, specifically Yeliou, Longdong, Kenting and Green Island. The questionnaire consists of three sections, including demographic information, enduring involvement and specialization. By analyzing the data collected from 810 scuba divers in Taiwan, structural equation modeling is used to examine the causal relationships among the variables.

Findings – The primary findings of this study are as follows: attraction positively affects divers’ commitment and lifestyle through joy, relaxation and sharing diving experiences; the results indicate that self-expression is associated with past experience of participating in scuba diving activity; and centrality indicates that participants’ daily life and recreation are related to each other and become central to their life. Results show that most theoretical hypotheses are supported, but there is no significant evidence of attraction impacting past experience or self-expression influencing commitment and lifestyle.

Originality/value – To the best of the authors’ knowledge, this study is the first to examine the causal influence of enduring involvement and specialization in the scuba diving context. The findings provide a solid theoretical basis for the study of sustained involvement motivation and behavior on specialization. Implications and recommendations for future research are discussed.

Keywords Recreational scuba diving, Enduring involvement, Recreation specialization

Paper type Research paper

水肺潜水作为一种特殊的旅游方式：台湾经验：
目的：休闲水肺潜水是全球发展最快的旅游业之一，已成为台湾的热门活动。很多研究关注持续潜水高风险或困难活动的专门化，因此本研究探讨持续潜水和专门化之间的因果关系，并试图解释持续参与水肺潜水活动作为休闲专门化。

设计方法/步骤：这项研究选择了台湾的四个潜水地点作为调查地点，特别是野柳、龙洞、垦丁和绿岛，问卷分为三个部分，包括人口统计信息、持续参与和专门化。通过分析从台湾810名潜水员那里收集的数据，使用结构方程模型检查变量之间的影响关系。

研究结果：这项研究的主要发现是：（1）吸引力通过愉悦、放松和分享潜水经历积极影响潜水员的承诺和生活方式；（2）结果表明自我表达与过去参加水肺潜水活动的经历有关；（3）中心性表示参与者的日常生活和娱乐彼此相关，并成为他们的生活方式的中心。结果表明，大多数理论假设均得到支持，但没有显著证据表明吸引力会影响过去的经验或自我表达影响承诺和生活方式。

独创性/价值：根据我们所知，本研究是第一个研究在潜水环境下持续潜水和专门化的因果关系影响的研究。研究结果为专门化持续参与动机和行为的研究提供了坚实的理论基础，讨论了对未来研究的影响和建议。

关键词：休闲水肺潜水；持续潜水；潜水专门化

El buCEO recreativo como una forma especial de turismo: lecciones de TaiWán

Objetivo: El buCEO recreativo es una de las industrias turísticas de más rápido crecimiento en todo el mundo y se ha convertido en una actividad popular en TaiWán. Pocos estudios se centran en la

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TOURISM REVIEW
1. Introduction

Recreational scuba diving is one of the fastest growing tourism industries around the world (Emang et al., 2020; Gerungan and Chia, 2020; Lück, 2021) and has become a popular activity in Taiwan (Buzzacott, 2008; Ku and Chen, 2013; Chen and Yeh, 2018). As a nation encircled by ocean, Taiwan is viewed as a treasured island for its rich marine ecosystem and natural scenery, which is particularly suitable for diving activities. Although there are numerous academic studies on scuba diving as a tourist/recreation activity, they are typically focused on scuba divers’ motivations and behaviors (Barker and Roberts, 2004; Meisel-Lusby and Cottrell, 2008), economic benefits (Tapsuwan and Asafu-Adjaye, 2008) or environmental impacts and sustainability issues (Uyarra et al., 2009; Ku and Chen, 2013; Bertella, 2019; Lucrezi et al., 2020). Carl et al. (2021) studied how the flow experience of scuba diving tourists affects their storytelling intentions. Lucrezi et al. (2020) pointed out that because of the pressure of tropical diving protection, the demand for diving in non-tropical marine protected areas (MPA) may continue to grow. Non-tropical marine protected areas are vulnerable to the impact of diving tourism, so diving activities need to be monitored and sustainably managed to ensure protection. Thapa et al. (2005) explored how scuba diving becomes a highly specialized activity that is related to the participants’ pro-environmental behavioral involvement. However, there is little literature on the constructs leading to different specializations, which is important to understand to help managers influence behavioral change and to increase our understanding of how these constructs work together. Understanding more about enduring involvement and specialization for scuba diving not only fills a gap in the literature, but also has a practical impact on recreational scuba organizations by providing information about customers, which can be used to improve their operations. Although previous research shows that enduring involvement is related to recreation specialization (Havitz and Howard, 1995), more research is needed on how the different aspects of enduring involvement (i.e. attraction, self-expression and centrality) and specialization (i.e. past experience, commitment, and lifestyle) relate to each other. In this paper, the context of scuba diving is used to examine these relationships.

Individuals frequently participate in their preferred leisure activities for the long term. Wiley et al. (2000) delineate three aspects of long-term leisure involvement, including attraction, self-expression and centrality. Enduring involvement refers to a sustained level of concern with an issue, product or activity, which represents a personal continuous attachment to the
attitude object (Sherif and Hovland, 1961). Bricker and Kerstetter (2000) note that enduring involvement is a variable worth studying within the connection of specialization. Several scholars explore how enduring involvement in a leisure activity affects recreational behaviors and preferences (Barber et al., 2009; Ritchie et al., 2010; Prayag and Ryan, 2012). Some scholars examine enduring involvement in different leisure activities (Havitz and Howard, 1995; Bergadaà et al., 1995); however, few studies focus on enduring involvement for scuba diving.

Recreation specialization is a concept that explains the developmental process of behavioral patterns whereby recreationists acquire knowledge and skills, and then progress to higher stages of involvement. Participants in a high risk or difficult activity may become highly specialized after extensive involvement (Kuentzel and McDonald, 1992). Scuba diving is understood to be a recreational activity requiring a high technological level. Bryan (1977) found that recreation specialization can be seen as a continuum of behavior from general to specific. It can be reflected by skill, equipment and preferences for specific recreation components (Bryan, 2000). However, Kuentzel and McDonald (1992) argue that a synthesized index treatment of specialization may omit the interpretive detail, which is needed to improve the conceptual and empirical understanding of specialization in specific circumstances (e.g. a specific activity).

Previous recreation literature examines the level of specialization on psychological commitment to leisure activity (Bryan, 1977; McIntyre and Pigram, 1992), motivations and preferences for site attributes (Lee et al., 2007), skill level and activity-related interests (Donnelly et al., 1986) and place attachment (Bricker and Kerstetter, 2000). An underlying premise behind these foundational studies is that recreation specialization involves a psychological commitment to leisure activity and some participants are likely to improve skill level and activity-related knowledge and interests.

Understanding of the involvement-commitment relationship has evolved for specific activities, such as scuba diving. For example, specialized divers are more likely to protect corals and to pick up litter from the sea floor than less specialized divers (Anderson and Loomis, 2011). Anderson and Loomis’s study provides valuable information on scuba diver specialization and behavioral norms, but they do not provide information about how enduring involved behavior can promote recreation specialization. Based on the importance of enduring involvement and recreational specialization for both practice and theory, this study combined the critical constructs and adopted a robust structural equation methodology to test the diving behavior of recreational scuba divers. Specially, the purposes of this study are:

- to identify the causal relationship between the components of enduring involvement (i.e., attraction, self-expression and centrality) and recreational specialization (i.e., past experience, commitment and lifestyle) for scuba divers; and

- to understand the detailed causal relationship between the dimensions of enduring involvement and recreational specialization of scuba divers and how it becomes the foundation of promoting facilities, improving skills and continuing involvement.

Although a relationship between enduring involvement and recreational specialization is expected, understanding it in more depth by exploring the components is important to develop the literature and provide more information for managers to influence behavioral change of scuba divers.

2. Literature review

This section discusses how enduring involvement is related to its predictors (past experience, commitment and lifestyle). In addition, the study constructs are explained and previous studies that support the proposed linkages are discussed.
2.1 Recreational scuba diving

With the popularization of marine tourism and water recreation activities, people have more requirements for recreational activities (Schaffer and Tham, 2020). Diving activities have been developed and classified in detail. Diving can be divided into skin diving and scuba diving. Skin diving is done with a mask, fin and snorkel underwater and is also described as “breath-hold diving” (Allen and Cherry, 1976). Scuba (i.e. self-contained underwater breathing apparatus) requires training and practice to develop the necessary techniques to become comfortable in the underwater environment with the equipment (Dimmock, 2007). Scuba diving is a rapidly growing tourism and recreational activity in many countries (Stolk et al., 2007; Emang et al., 2020; Gerungan and Chia, 2020; Lück, 2021), because of the development of safe and affordable diving equipment (Davis and Tisdell, 1995), technological advances that enable easy access to marine ecology (Parker, 2001) and the growing interest in experiencing natural environments (Dimmock and Wilson, 2009). Because of the popularization of recreational scuba diving and its environmental impacts, the behavior of recreational scuba divers is an important context to test the link between the components of enduring involvement and specialization.

2.2 Enduring involvement

The concept of involvement first appeared in the practical field of political persuasion (Sherif et al., 1965), and expanded to the fields of consumer research (McIntyre, 1989; Sharma et al., 2020) and recreation, tourism and hospitality (Selin and Howard, 1988; Beckman et al., 2020). Involvement is generally seen as a motivating or causal variable. Depending on the level of involvement, people differ greatly in the extensiveness of their processing of information and their purchase decision process (Havitz and Dimanche, 1990). Laurent and Kapferer (1985) indicate involvement affects choice and purchase behavior directly. Bloch (1981) recognizes involvement increases the understanding of recreation behavior, which may cause positive or negative results.

Enduring involvement was considered to be a continuum ranging from low to high levels of involvement in an issue or product (Bloch, 1981; Beckman et al., 2020). Laurent and Kapferer (1985) propose enduring involvement derives from the central values that define one’s singularity, identity and ego. McIntyre (1989) explores individual differences in participation from different levels of enduring involvement and categorized involvement, including three dimensions: attraction, self-expression and centrality. McIntyre and Pigram (1992) investigate vehicle-based campers’ behavior with recreation specialization, which divide involvement into importance, enjoyment, self-expression and centrality. Scholars also suggest that attraction is best conceptualized in terms of recreationists’ perceptions of activity pleasure and importance (McIntyre and Pigram, 1992; Kim et al., 2019). According to the above discussion, the present study defines enduring involvement as: an individual’s acknowledgement of a specific event or activity, which based on their sense, needs, values or past experience raise an enduring process from low to high involvement. This study also adopts McIntyre’s (1989) suggestions to categorize enduring involvement as attraction, self-expression and centrality. Consequently, this study describes attraction as participants experiencing the important and positive feelings in their recreational activities. Self-expression means that participants look forward to expressing themselves truly or obtaining other’s approval by joining recreational activities. Centrality indicates that participants’ daily life and recreational activities are mutually related.

How has enduring involvement been conceptualized in the past years? Regarding studies on the dimension and measurement of enduring involvement, see studies regarding dimension and measurement of enduring involvement for more detailed information.

**Dimensions/measurement/title/source**

1. Attraction, self-expression and centrality/seven-point Likert scale
- Running involvement and life satisfaction: The role of personality (Sato et al., 2018).
- Gender differences in leisure involvement and flow experience in professional extreme sport activities (Chang, 2017).
- The influence of leisure involvement and place attachment on destination loyalty: Evidence from recreationists walking their dogs in urban parks (Lee and Shen, 2013).
- The use of negotiation strategies among recreational participants with different involvement levels: The case of recreational swimmers (Alexandris et al., 2013).
- The relationship between serious leisure characteristics and recreation involvement: A case study of Taiwan’s surfing activities (Cheng and Tsaor, 2012).
- An application and extension of the constraints–effects–mitigation model to Minnesota waterfowl hunting (Schroeder et al., 2012).
- Segmenting winter sport tourists by motivation: The case of recreational skiers (Alexandris et al., 2009).
- An examination of the relationship between leisure activity involvement place attachment among hikers along the Appalachian trail (Kyle et al., 2003).
- Men’s and women’s involvement in sports: An examination of the gendered aspects of leisure involvement (Wiley et al., 2000).
- The personal meaning of participation: Enduring involvement (McIntyre, 1989).

2. Attraction, self-expression and centrality/five-point Likert scale
- The relationship between involvement with travelling to Islamic destinations and Islamic brand equity: A case of Muslim tourists in Malaysia (Shafaei, 2017).
- Examining the relationship between motivation, enduring involvement and volunteer experience: The case of outdoor recreation voluntary associations (Lu and Schuett, 2014).
- Early-life outdoor experiences and involvement in outdoor recreational activities in adulthood: a case study of visitors in Da-Keng, Taiwan (Wang et al., 2013).
- Cycling in mid and later life: Involvement and benefits sought from a bicycle tour (Gibson and Chang, 2012).
- An empirical structural model of tourists and places: Progressing involvement and place attachment into tourism (Gross and Brown, 2008).
- The social hierarchy of fishing: myth or reality? (Morgan, 2006).
- An examination of the leisure involvement–agency commitment relationship (Kyle and Mowen, 2005).
- Effect of activity involvement and place attachment on recreationists’ perceptions of setting density (Kyle et al., 2004).
- Recreation specialization and site choice among vehicle-based campers (McFarlane, 2004).

2.3 Recreational specialization
The term recreation specialization refers to a continuum of recreational behavior from the general to the specific, reflected by the equipment and skills used in sport and recreation
activity setting preferences (Wellman et al., 1982; Schreyer and Beaulieu, 1986; Donnelly et al., 1986; Irauri et al., 2021). Bryan (1977) proposes that specialization is a continuous behavior from vague interests in activities and lower involvement to specific interests and higher involvement. Specialization is a concept that is used to evaluate the change of scattered participants to a homogeneous activity group (Bryan, 1977). In Bryan’s (1977) work, anglers are classified by the scale of specialization (i.e. occasional anglers, generalists, technique specialists and technique-setting specialists), which is used to reflect participation, technique and setting reference of anglers. Bryan (2000) also emphasizes that each level of specialization carries distinctive behavior and orientations. In particular, he suggests that as specialization increases, resource dependency also increases.

Scott and Shafer (2001) propose recreation specialization as a developmental process and find that personal commitment can be applied to evaluate the progression of recreation specialization. Miller and Graefe (2000) recommend that the dimensions of specialization provide for managers to include information on levels of participation, commitment and lifestyle, which may illustrate differences in attitudes based on these constructs. Similarly, Kuentzel and McDonald (1992) research the specialization of whitewater boating participants and divide specialization into three dimensions of past experience, commitment and lifestyle; however, they argue that a synthesized index treatment of specialization may omit the obtained interpretive detail, which needs to include better conceptual and empirical descriptions. Virden and Schreyer (1988) address, through identifying subtypes within a recreational activity, that it may explain user differences in preferences toward specific physical, social and managerial settings.

Because of the more comprehensive development of dimensions and measurement items in specialization from researchers, three dimensions of specialization are adopted in this study from Kuentzel and McDonald (1992) as a measurement scale, which includes past experience, commitment and lifestyle. Past experience is defined as participants’ memory, duration and frequency of participation (Leri and Theodoridis, 2019; Sthapit et al., 2019). Commitment is measured by the money participants spend buying equipment for recreational activities; and lifestyle is considered to be the role that recreational activities play in participants’ recreation time or life.

How has recreational specialization been conceptualized in the past years? Regarding studies on the dimension and measurement of specialization, see studies regarding dimension and measurement of recreational specialization for more detailed information.

### Dimensions/measurement/title/source

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<td>1. Past experience, commitment and lifestyle/seven-point Likert scale</td>
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- Recreation specialization as an indicator of environmental preference (Virden and Schreyer, 1988).
- Differential effects of past experience, commitment, and lifestyle dimensions on river use specialization (Kuentzel and Mcdonald, 1992).
- Socialization influences of specialization among birdwatchers (McFarlane, 1996).
- Degree and range of specialization across related hunting activities (Miller and Graefe, 2000).
- Serious leisure and recreation specialization (Tsaur and Liang, 2008).
- Specialization and marine based environmental behaviors among SCUBA divers (Thapa et al., 2006).

2. Past experience, commitment and lifestyle/five-point Likert scale
   - Recreational specialization and ecologically responsible behavior of Chinese birdwatchers in Hong Kong (Cheung et al., 2017).

3. Behavior, skill/knowledge and commitment/seven-point Likert scale
   - Progression, stability, or decline? Sociological mechanisms underlying change in specialization among birdwatchers (Scott and Lee, 2010).

4. Behavior, skill/knowledge and commitment/five-point Likert scale
   - Using recreation specialization to understand conservation support (Oh and Ditton, 2008).
   - Exploring relationships between recreation specialization, restorative environments and mountain hikers' flow experience (Wöran and Amberger, 2012).
   - Assessing the role of recreation specialization in fishing site substitution (Oh et al., 2013).

5. Past experience, economic commitment and centrality to lifestyle
   - Birder specialization differences in conservation involvement, demographics, and motivations (Hvenegaard, 2002).
   - Investigating the leisure behavior of Iranians: the structural model of serious leisure, recreation specialization and place attachment (Heidari et al., 2019).

6. Affective, cognitive and behavioral/five-point Likert scale
   - Relative importance of factors involved in choosing a regional ski destination: Influence of consumption situation and recreation specialization (Won et al., 2008).

7. Motivations, destination attributes and behavior/seven-point Likert scale
   - Segmenting overseas golf tourists by the concept of specialization (Kim et al., 2008).

8. Skill level, participation and lifestyle/commitment/nine-point Likert scale
   - Recreation specialization among New Zealand river recreation users: a multiactivity study of motivation and site preference (Galloway, 2012).

9. Level of experience; skill level and ability; centrality to lifestyle; equipment and investments; and enduring involvement/five-point Likert scale
   - Level of specialization and place attachment: An exploratory study of whitewater recreationists (Bricker and Kerstetter, 2000).

10. Commitment (personal commitment and behavioral commitment)/seven-point Likert scale
    - Empirical linkages between serious leisure and recreational specialization (Lee and Scott, 2013).

2.4 Hypothesis development – basic research model

A number of studies demonstrate that enduring involvement has a positive relationship with specialization. As such, Scott and Shafer (2001) propose that specialization is understood
as a focusing of behavior, the acquiring of knowledge and skills and behavioral commitment. Behavior implies time of involvement, frequency of participation and equipment possessed. In addition, frequent involvement in one activity and the desire to advance levels of skill and specific knowledge can lead to structuring their family lifestyle, social networks and occupation around their activity (Kerins et al., 2007). Individuals who have shown high involvement in a specific activity tend to present strong levels of psychological commitment and loyalty to a favored place (Iwasaki and Havitz, 1998). Similarly, Dawson et al. (2011) use the influence of skiing activity involvement on behavioral adaptations and found less involved skiers presenting lower levels of commitment than those who highly involved individuals. Based on the theoretical statement discussed above, a basic research model is proposed as Figure 1 and a general hypothesis is developed. The general hypothesis is as follows:

\[ H. \] Higher enduring involvement leads to higher recreational specialization for scuba divers.

2.5 Hypotheses development – advanced research model

McIntyre (1989) categorizes enduring involvement into three dimensions which are attraction, self-expression and centrality. Later, Kuentzel and McDonald (1992) develop a measurement scale of recreational specialization, which also includes three dimensions, and they are past experience, commitment and lifestyle. There are studies indicating that some dimensions of enduring involvement have positive impacts on the dimensions of recreational specialization. For example, McIntyre and Pigram (1992) further explore vehicle-based campers and find that developed-site campers who are relatively higher in self-expression may be as sensitive to their equipment in chosen settings as specialist users. Kyle et al. (2003) also prove that increasing self-expression in hiking activity can upgrade hiker’s dependence on the trail to provide specific recreational experiences. Kuentzel and McDonald (1992) argue that although commitment to leisure activity is positively correlated with past experience, the relationship between the two dimensions is more predictable among participants with lower levels than higher levels of experience. McIntyre and Pigram (1992) state that leisure activity centrality is an individual's overall lifestyle, which is organized around the specific activity and reflects on their lifestyle or social network. Findings in these studies imply that each dimension of enduring involvement is associated with intrinsic aspects of specialization. Based on the theoretical statement discussed above, an advanced research model is proposed as Figure 2 and nine additional hypotheses are developed.

The advanced conceptual framework is illustrated in Figure 2, which also shows enduring involvement (attraction, self-expression and centrality) has a positive impact on specialization. Therefore, higher enduring involvement leads to higher specialization (past experience, commitment and lifestyle) for scuba divers. The nine hypotheses developed in Figure 2 are as follows:

\[ H1-1. \] Higher attraction leads to higher past experience for scuba divers.
3. Methodology

To achieve the purposes of this study, the methodology includes measurement – for developing a draft questionnaire; pretesting and piloting a survey questionnaire – for improving the questionnaire; sampling – for collecting statistically valid samples; and analysis – for assessing the validity and reliability of the data and testing all research hypotheses.

3.1 Measurement

The questionnaire consists of three sections. The first section includes questions about demographic information such as gender, age, level of education, monthly income, frequency of scuba diving and money spent on diving trips and classes. The second part contains questions about the three dimensions of enduring involvement (attraction, self-expression and centrality), which use the scales developed by Kyle et al. (2003), McIntyre (1989) and McIntyre and Pigram (1992). The last survey section includes questions about three dimensions of specialization (past experience, commitment and lifestyle), which use the scales developed by Virden and Schreyer (1988) and used by Kuentzel and McDonald (1992) and by Thapa et al. (2006). All constructs are measured with multiple items using a
seven-point Likert-type scale (1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Neither agree nor disagree, 5 = Somewhat agree, 6 = Agree, 7 = Strongly agree).

3.2 Pretesting and piloting a survey questionnaire

3.2.1 Pretesting by ten people from our target group. Because of the lack of official information about the number of divers and the diving sites in Taiwan, an in-depth interview is conducted with the chief course director of the Professional Association of Diving Instructors (PADI). The measurement items are next submitted to ten academic or industry professionals, in addition to scuba divers for feedback to ensure measurement items are free of irrelevance, vagueness and overlap. The survey questionnaire is improved based on the results.

3.2.2 Piloting by selecting the pilot sample. The pilot survey is given to members of the PADI and is conducted by the employees of PADI at its annual year-end party. A total of 160 questionnaires are distributed, and 140 valid questionnaires are collected; the response rate was 87.5%. The data is tested by validity and reliability analyses and is improved by the respondents/professionals. Originally the construct of “enduring involvement” was 15 items, but it is still 15 items after the revision; the construct of “recreational specialization” was 12 items, but it is increased to 14 items after the revision.

3.3 Sampling

Taiwan is viewed as a treasurable island, a highly appropriate place for diving activities, because of the rich marine ecosystem and natural scenery. Therefore, after talking with PADI’s Taiwan Course Director, four diving sites, Yeliou, Longdong, Kenting and Green Island of Taiwan (see Figure 3), are selected as survey locations because of their rich marine resources (coral reefs, sedimentary rock, etc.) (Liu et al., 2012; Tsaur and Wang, 2007) and well-organized scuba diving training centers. Taiwanese recreational scuba divers are used as the invited samples for this study.

The purposive sampling and the convenience sampling approaches are conducted by the employees of scuba diving training centers at the above four diving sites, and the respondents at the diving centers are requested to have at least a PADI scuba diving certification (e.g. open water diver, adventure diver, advanced open water diver, rescue diver, master scuba diver, etc.) during the self-administered questionnaire distribution. A total of 1,200 surveys are distributed in the above four survey locations. There are 390 unusable responses, of which there are too many missing answers or the ticked answers in the entire questionnaire are almost the same. After excluding unusable responses, 810 scuba divers provided usable questionnaires, which are retained for analysis. This approach yields a response rate of 67.5%.

3.4 Analysis

SPSS v27 software is used to analyze the data collected. The respondent profiles contain gender, age, educational level, monthly income, frequency of scuba diving in a year, annual spending on scuba diving trips and participating in scuba diving training classes, etc. Lisrel 11 is adopted to perform the confirmatory factor analysis (CFA), which also details the model’s discriminant validity, convergent validity and goodness of fit (Kelloway, 1998). In addition, Cronbach's $\alpha$ values are used to evaluate the reliability of the measured items (Vogt, 1999; Hair et al., 2009).

Finally, in this research, a structural equation modeling is used to test one general hypothesis ($H$) and nine additional hypotheses ($H1-1$, $H1-2$, $H1-3$, $H2-1$, $H2-2$, $H2-3$, $H3-1$, $H3-2$, $H3-3$) by examining the causal relationships between enduring involvement...
(attraction, self-expression and centrality) and recreational specialization (past experience, commitment and lifestyle).

4. Results

4.1 Respondent profiles

Of the 810 Taiwanese participants, 69.9% are male and 29.6% are female. The biggest age group, ages 31–40, is 41.0%. Among the participants, 67.8% have an undergraduate (54.6%) or postgraduate (13.2%) degree and 25.8% have less than an undergraduate college (23.1%, senior high school; 2.7%, junior high school) degree. About 39.5% of respondents have a monthly income in the range of New Taiwan dollars (NT$) 35,001–60,000 (US$1,277~2,189); 1 US$ ≈ 27.41 NT$ () in 2021/08/08, quoted by Bank of Taiwan. About 39.3% of the respondents do scuba diving less than 12 times a year. More than half (53.2%) of the respondents have more than three years of scuba diving history. Around 45.4% of the respondents have more than three scuba diving trips every year. Over half of the respondents (52.2%) have yearly spent below NT$30,000 (US$1,095) on scuba diving trips; 61.6% have yearly spent more than NT$30,000 (US$1,095) on scuba diving equipment; and 56.0% of the respondents participate in scuba diving training courses, which range in cost from NT$0~20,000 (US$0~730) annually. Most respondents (71.3%) have PADI scuba diving certification (43.8% had open water diver and 27.5% have advanced open water diver). See Table 1 for the detailed information of respondents’ demographics and their scuba diving behavior profile.
4.2 Validity and reliability analysis

In the CFA, as shown in Table 2, the 18 observed items of enduring involvement and recreational specialization were significant \( (t > 1.96, \ p < 0.05) \). Moreover, all of the average variance extracted (AVE) values were between 0.41 and 0.77, and the analytical results support the discrepancy of the constructs included in the research model, excluding self-expression. The AVE values were bigger than the suggested threshold value of 0.50 recommended by Bagoozi and Yi (1988). Even though the AVE value of self-expression was smaller than 0.50, its composite reliability (CR) was 0.60, which was bigger than the suggested threshold value of 0.60 recommended by Bagoozi and Yi (1988), indicating that their convergent validity was still acceptable.

In the discriminant validity analysis, this study chose the square root of the AVE value of each construct that was bigger than the values of the correlation coefficients of paired variables (Hair et al., 2009; Fornell and Larcker, 1981). First, this study performed correlation analyses to verify any significant correlation between constructs measured in the research model. Subsequently, this study performed a discriminant validity analysis. The analytical results show that the square root of the AVE value of each construct is bigger than the correlation coefficients of the paired variables, and all constructs in the model are acceptable, even if the

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<td></td>
<td></td>
<td></td>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>469</td>
<td>57.9</td>
<td>15,000 or less</td>
<td>234</td>
<td>28.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15,001–30,000</td>
<td>189</td>
<td>23.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30,001–45,000</td>
<td>170</td>
<td>21.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>45,001–75,000</td>
<td>96</td>
<td>11.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75,001 or more</td>
<td>112</td>
<td>13.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 or younger</td>
<td>320</td>
<td>39.5</td>
<td>10,000 or less</td>
<td>141</td>
<td>17.4</td>
</tr>
<tr>
<td>31–40</td>
<td>332</td>
<td>41.0</td>
<td>10,001–30,000</td>
<td>164</td>
<td>20.2</td>
</tr>
<tr>
<td>41–50</td>
<td>118</td>
<td>14.6</td>
<td>30,001–50,000</td>
<td>128</td>
<td>15.8</td>
</tr>
<tr>
<td>51 or older</td>
<td>24</td>
<td>3.0</td>
<td>50,001 or more</td>
<td>371</td>
<td>45.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Diving training courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of scuba diving</td>
<td></td>
<td></td>
<td>10,000 or less</td>
<td>256</td>
<td>31.6</td>
</tr>
<tr>
<td>2 years or less</td>
<td>376</td>
<td>46.4</td>
<td>10,001–20,000</td>
<td>198</td>
<td>24.4</td>
</tr>
<tr>
<td>3–4 years</td>
<td>185</td>
<td>22.8</td>
<td>20,001–30,000</td>
<td>116</td>
<td>14.3</td>
</tr>
<tr>
<td>5 years or longer</td>
<td>246</td>
<td>30.4</td>
<td>30,001–50,000</td>
<td>71</td>
<td>8.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PADI scuba diving certification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 or less</td>
<td>318</td>
<td>39.3</td>
<td>50,001 or more</td>
<td>151</td>
<td>18.6</td>
</tr>
<tr>
<td>13–24</td>
<td>225</td>
<td>27.8</td>
<td>Open water diver</td>
<td>355</td>
<td>43.8</td>
</tr>
<tr>
<td>25 or more</td>
<td>257</td>
<td>31.7</td>
<td>Advanced open water diver</td>
<td>223</td>
<td>27.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rescue diver</td>
<td>85</td>
<td>10.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dive master</td>
<td>71</td>
<td>8.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Open-water scuba instructor</td>
<td>72</td>
<td>8.9</td>
</tr>
<tr>
<td>Yearly number of diving trips</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–2</td>
<td>432</td>
<td>53.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3–4</td>
<td>176</td>
<td>21.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 or more</td>
<td>192</td>
<td>23.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: 1 US$ ≈ 27.41 NT$ (New Taiwan dollars) in 2021/08/08, quoted by Bank of Taiwan; PADI = Professional Association of Diving Instructors
The AVE value of self-expression is smaller than 0.50. The analysis results support the discrepancy of all the structures included in the research model (see Table 3).

This study also uses the Cronbach’s α coefficient detection scale to measure reliability. If Cronbach’s α is >0.7, it means the reliability of this measure is consistent and credible (Vogt, 1999; Hair et al., 2009). Practically, Cronbach’s α value is at least bigger than 0.5, preferably bigger than 0.7 (Nunnally, 1978). Analysis results show that all construct reliability values of enduring involvement and recreational specialization were bigger than 0.70 (except self-expression, Cronbach’s α = 0.66), indicating consistency and stability of all construct items.

The test results of this study indicate that items for each study construct have a sufficient level of validity and reliability. In summary, the Cronbach’s α coefficient, CR, convergent validity and discriminant validity are acceptable (see Tables 2 and 3).

### Table 2  CFA for enduring involvement and recreational specialization

<table>
<thead>
<tr>
<th>Construct/variables</th>
<th>SFL</th>
<th>t-Value</th>
<th>SMC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enduring involvement</strong></td>
<td>(χ²/df= 4.59; CFI= 0.97; NNFI= 0.95; GFI= 0.97; RMSEA= 0.056)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attract (Cronbach’s α = 0.87, AVE = 0.62, CR = 0.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scuba diving is one of the most enjoyable things I do</td>
<td>0.87</td>
<td>–</td>
<td>0.76</td>
</tr>
<tr>
<td>Scuba diving helps me relax when I am stressed</td>
<td>0.82</td>
<td>26.13</td>
<td>0.68</td>
</tr>
<tr>
<td>Scuba diving is one of the most satisfying things I do</td>
<td>0.77</td>
<td>23.64</td>
<td>0.59</td>
</tr>
<tr>
<td>Scuba diving is attractive to me</td>
<td>0.68</td>
<td>19.98</td>
<td>0.46</td>
</tr>
<tr>
<td><strong>Self-expression (Cronbach’s α = 0.66, AVE = 0.41, CR = 0.6)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel the sense of achievement when others seeing me diving</td>
<td>0.68</td>
<td>–</td>
<td>0.47</td>
</tr>
<tr>
<td>I feel proud when people see me diving</td>
<td>0.72</td>
<td>15.14</td>
<td>0.52</td>
</tr>
<tr>
<td>I can really be myself when diving</td>
<td>0.48</td>
<td>10.95</td>
<td>0.23</td>
</tr>
<tr>
<td><strong>Centrality (Cronbach’s α = 0.75, AVE = 0.65, CR = 0.7)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most of my friends involve in scuba diving to the different extent</td>
<td>0.63</td>
<td>–</td>
<td>0.40</td>
</tr>
<tr>
<td>Scuba diving plays a central role in my life</td>
<td>0.95</td>
<td>13.63</td>
<td>0.90</td>
</tr>
<tr>
<td><strong>Recreational specialization</strong></td>
<td>(χ²/df= 6.06; CFI= 0.98; NNFI= 0.96; GFI= 0.96; RMSEA= 0.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past experience (Cronbach’s α = 0.89, AVE = 0.61, CR = 0.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated level of scuba diving experience</td>
<td>0.79</td>
<td>–</td>
<td>0.62</td>
</tr>
<tr>
<td>I have many years of scuba diving experience</td>
<td>0.79</td>
<td>16.98</td>
<td>0.62</td>
</tr>
<tr>
<td>I have taken numbers of scuba diving trips over the past years</td>
<td>0.76</td>
<td>16.49</td>
<td>0.58</td>
</tr>
<tr>
<td>Commitment (Cronbach’s α = 0.87, AVE = 0.77, CR = 0.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have owned numbers of scuba diving items</td>
<td>0.82</td>
<td>–</td>
<td>0.67</td>
</tr>
<tr>
<td>Amount of money invested in scuba diving equipment</td>
<td>0.93</td>
<td>22.90</td>
<td>0.87</td>
</tr>
<tr>
<td>Lifestyle (Cronbach’s α = 0.82, AVE = 0.52, CR = 0.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would rather choose scuba diving than any other form of recreation</td>
<td>0.71</td>
<td>–</td>
<td>0.50</td>
</tr>
<tr>
<td>Scuba diving occupies large percentage in my leisure time</td>
<td>0.82</td>
<td>18.07</td>
<td>0.67</td>
</tr>
<tr>
<td>I join exhibitions or activities that are related to scuba diving</td>
<td>0.69</td>
<td>16.21</td>
<td>0.48</td>
</tr>
<tr>
<td>Scuba diving determines lifestyle greatly</td>
<td>0.66</td>
<td>15.60</td>
<td>0.44</td>
</tr>
</tbody>
</table>

**Note:** SFL = standardized factor loading; SMC = squared multiple correlation

### Table 3  Means, standard deviations and correlations

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attraction</td>
<td>5.46</td>
<td>1.04</td>
<td>1(0.79)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Self-expression</td>
<td>4.87</td>
<td>0.99</td>
<td>0.54</td>
<td>1(0.64)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Centrality</td>
<td>4.32</td>
<td>1.29</td>
<td>0.46</td>
<td>0.53</td>
<td>1(0.81)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Past experience</td>
<td>3.20</td>
<td>1.77</td>
<td>0.20</td>
<td>0.20</td>
<td>0.31</td>
<td>1(0.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Commitment</td>
<td>5.46</td>
<td>1.91</td>
<td>0.30</td>
<td>0.22</td>
<td>0.31</td>
<td>0.58</td>
<td>1(0.88)</td>
<td></td>
</tr>
<tr>
<td>6. Lifestyle</td>
<td>4.27</td>
<td>1.19</td>
<td>0.53</td>
<td>0.52</td>
<td>0.67</td>
<td>0.31</td>
<td>0.38</td>
<td>1(0.72)</td>
</tr>
</tbody>
</table>

**Note:** ( ) = square root of AVE
4.3 Hypothesis testing

Table 4 details the results of hypothesis testing. Regarding the basic research model, the estimates of the standardized coefficients show the positive and significant impacts of enduring involvement (\( \gamma = 0.48, \ t = 15.02, \ p < 0.05 \)) on recreational specialization. Therefore, the hypothesis (\( H \)) that higher enduring involvement (attraction) leads to higher past experience for scuba divers is supported and this finding is consistent with the statement of Dawson et al. (2011), Kerins et al. (2007) and Iwasaki and Havitz (1998).

Regarding the advanced research model, the goodness-of-fit of hypothesized structural models is good (\( \chi^2(120) = 503.21, \ \chi^2/df = 4.19, \ \text{Root-Mean-Square Error of Approximation (RMSEA)} = 0.068, \ \text{Goodness-of-Fit Index (GFI)} = 0.93, \ \text{Comparative Fit Index (CFI)} = 0.95 \) and Non-Normed Fit Index (NNFI) = 0.94). Overall the values of the goodness-of-fit indices are acceptable (Bollen, 1990). There are nine hypothesized paths in this study. Six hypothesized paths are supported (i.e. 66.7% of the hypothesized paths), while three hypothesized paths are not supported (i.e. 33.3%).

The results in Table 4 provide support for \( H1-2 \) and \( H1-3 \), but not \( H1-1 \). The estimates of the standardized coefficients show the positive impacts of attraction on commitment (\( \gamma = 0.25, \ t= 2.90, \ p < 0.05 \)), and lifestyle (\( \gamma = 0.24, \ t= 5.19, \ p < 0.05 \)). Therefore, \( H1-2 \) and \( H1-3 \) are supported. However, the relationship between attraction and past experience is not supported (\( \gamma = 0.05, \ t= -0.57, \ p > 0.05 \)). This hypothesis is consistent with the statements of Scott and Shafer (2001) and Bryan (2000); however, this study only partially supports \( H1 \).

In considering this result, the reason attraction and past experience do not have a direct relationship could be that scuba diving is an enjoyable, satisfying and relaxing activity regardless of the respondents’ past experience (e.g. I have many years of scuba diving experience and I have taken numbers of scuba diving trips over the past years).

The results also reveal the positive effect of self-expression on past experience (\( \gamma = 0.30, \ t= 2.00, \ p < 0.05 \)). Thus, \( H2-1 \) is supported. However, there are non-significant effects of self-expression on commitment (\( \gamma = -0.10, \ t= -0.65, \ p > 0.05 \)) and lifestyle (\( \gamma = 0.01, \ t= 0.07, \ p < 0.05 \)), which fail to support \( H2-2 \) and \( H2-3 \). Based on the results, this study concludes the relationships between self-expression and recreational specialization are weakly significant when past experience, commitment and lifestyle of specialization are included in the model.

Although the results are consistent with the findings of Iwasaki and Havitz (1998) and Kim et al. (1997), \( H2 \) is only partially supported in this study. The reason self-expression is not significantly related to commitment and lifestyle could be that respondents feel the sense of achievement when others see them diving, feel proud when people see them diving and can really be themselves when diving, so it has no significant impact on respondents’ commitment (e.g. I

<table>
<thead>
<tr>
<th>Path</th>
<th>( \gamma )</th>
<th>SE</th>
<th>t-Value</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic research model</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( H ): Enduring involvement ( \rightarrow ) Recreational specialization</td>
<td>0.48</td>
<td>0.03</td>
<td>15.02***</td>
<td>○</td>
</tr>
<tr>
<td>Advanced research model</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( H1-1 ): Attraction ( \rightarrow ) past experience</td>
<td>0.05</td>
<td>0.08</td>
<td>-0.57</td>
<td>X</td>
</tr>
<tr>
<td>( H1-2 ): Attraction ( \rightarrow ) commitment</td>
<td>0.25</td>
<td>0.09</td>
<td>2.90**</td>
<td>○</td>
</tr>
<tr>
<td>( H1-3 ): Attraction ( \rightarrow ) lifestyle</td>
<td>0.24</td>
<td>0.05</td>
<td>5.19***</td>
<td>○</td>
</tr>
<tr>
<td>( H2-1 ): Self-expression ( \rightarrow ) past experience</td>
<td>0.30</td>
<td>0.15</td>
<td>2.00*</td>
<td>○</td>
</tr>
<tr>
<td>( H2-2 ): Self-expression ( \rightarrow ) commitment</td>
<td>-0.10</td>
<td>0.16</td>
<td>-0.65</td>
<td>X</td>
</tr>
<tr>
<td>( H2-3 ): Self-expression ( \rightarrow ) lifestyle</td>
<td>0.01</td>
<td>0.09</td>
<td>0.07</td>
<td>X</td>
</tr>
<tr>
<td>( H3-1 ): Centrality ( \rightarrow ) past experience</td>
<td>0.26</td>
<td>0.11</td>
<td>2.43**</td>
<td>○</td>
</tr>
<tr>
<td>( H3-2 ): Centrality ( \rightarrow ) commitment</td>
<td>0.43</td>
<td>0.11</td>
<td>3.83**</td>
<td>○</td>
</tr>
<tr>
<td>( H3-3 ): Centrality ( \rightarrow ) lifestyle</td>
<td>0.67</td>
<td>0.07</td>
<td>9.08***</td>
<td>○</td>
</tr>
</tbody>
</table>

Notes: \( \gamma = \) standardized coefficient; SE = standard error; ○ = supported; X = not supported
have owned numbers of scuba diving items and the amount of money invested in scuba diving equipment) and lifestyle (e.g. I would rather choose scuba diving than any other form of recreation, I join exhibitions or activities that are related to scuba diving, scuba diving occupies a large percentage of my leisure time and scuba diving determines my lifestyle).

The results in Table 4 provide support for H3-1, H3-2 and H3-3. Centrality is not only positively related to past experience ($\gamma = 0.26, t = 2.43, p < 0.05$), but also commitment ($\gamma = 0.43, t = 3.83, p < 0.05$) and lifestyle ($\gamma = 0.67, t = 9.08, p < 0.05$). This hypothesis is consistent with the statements of Kim et al. (1997), McFarlane (1996) and Scott and Shafer (2001). Our study shows full support of H3 when past experience, commitment and lifestyle of specialization were included in the structural model.

4.4 Discussion

Previous studies considered enduring involvement and specialization as an overall concept and examined the causal relationship. However, it is difficult to deeply understand which aspects of enduring involvement would affect specialization. Consequently, our research can refine the understanding of the more detailed relationships between enduring involvement and specialization.

First, past experience refers to examining the previous involvement of recreationists in a specific recreational activity, such as scuba diving. Past experience, meaning how specialized a recreationist has become in an activity, is a logical outcome because people will spend more time, money, and energy in an activity, the longer they participate. This result is consistent with the empirical study of Song et al. (2018).

Second, commitment refers to a feeling of loyalty and personal investment for a specific activity. The result shows that recreationists considered scuba diving as a kind of leisure activity for relaxing and releasing pressure. Hence, the more time invested in a specific activity and the better the lifestyle the activity yields, the more commitment to scuba diving is positively impacted. This result is in line with the Myburgh et al. (2018) study.

Finally, the scuba diving lifestyle comes to be central to the daily life of scuba divers who keep participating in the activity. These results are consistent with the findings of Andersson and Getz (2020).

Unlike previous research where involvement and specialization were measured in terms of the single relationship, this study extends the previous research by exploring the complex meaning behind each relationship:

- between the dimensions of enduring involvement (e.g. the dimension of involvement on commitment); and
- between recreational specialization (i.e. past experience, commitment and lifestyle).

Based on the above findings, this study provides a solid theoretical basis for the impact of sustained enduring involvement on recreational specialization through the use of basic and enhanced research models. By increasing comprehension of the participant’s preferences and behavior related to scuba diving activities and demonstrating the link between enduring involvement and recreational specialization, this study provides theoretical contributions and managerial implications.

5. Conclusion, contribution, implication, limitation and future research

5.1 Conclusion

By investigating the causal relationship between enduring involvement and specialization of scuba divers, the results show enduring involvement (attraction, self-expression and centrality) and specialization (past experience, commitment and lifestyle) have very
complicated relationships. While these results cannot be absolutely considered high (6 of whole 9 hypothesized paths, 66.7%, supported), they do show that a substantial portion of respondents’ expressions of specialization were accounted for by their enduring involvement toward preferred leisure activities (e.g. scuba diving). Researchers (McIntyre and Pigram, 1992; Kerins et al., 2007) also recognized that the types of skills, knowledge and the information recreationists possess are related to preference. This may indicate that the desire for familiarity in their preferences causes recreationists to be frequently involved in a specific activity.

More specifically, the research results of this study indicate that individuals with enduring involvement in scuba diving tend to exhibit more consistency with the influence on specialization, which consists of the statements from Scott and Shafer (2001) and Bryan (2000). In addition, self-expression and centrality are also positively related to past experience as expected. The results imply that participant’s time investment and skill development in scuba diving can yield increasing experience, more exacting performance demand and more detailed knowledge about scuba diving. In the meantime, the higher accumulation of experience may lead to greater changes to lifestyle because of adding a recreational activity. Because of enduring involvement, participants engaged in sustained scuba diving can make their diving skill sets advanced because the diving activity becomes center to their lifestyle.

Additionally, this study highlights the crucial role of enduring involvement for relating to commitment and is consistent with past research advocating this linkage (Iwasaki and Havitz, 1998; Kim et al., 1997). Likewise, both attraction and centrality are positively associated with commitment. As a result, the attraction of scuba diving could raise participant’s interests effectively and make participants engage in this activity. Comparatively, because of long-term involvement in scuba diving, participant’s demands in equipment may increase simultaneously. Based on high-level involvement being a lifestyle in scuba diving, centrality is aimed to explain the relationship between a specific activity and a participant’s life, which illustrates psychological feelings whereby participants will purchase related equipment or join training courses that lead to greater participants’ commitments.

In particular, this study proves that enduring involvement can be a predictor of a lifestyle, which is shaped by a specific activity. This finding is consistent with previous research (Scott and Shafer, 2001). Moreover, both attraction and centrality have a positive effect on each participant’s lifestyle. In the present study, lifestyle refers to amount of leisure time invested in scuba diving. This result implies that once participants are attracted by specific activities, they may have the desire to understand these activities more and then progress to activities such as reading related books, participating in clubs and associations or paying more attention to related exhibitions and activities. When participants take scuba diving as an indispensable part of their life, it becomes one of their main focuses, which will affect their lifestyle simultaneously.

5.2 Theoretical contribution

First, little was the participants’ preferences and sustained involvements known in terms of specialized activity. To the best of the authors’ knowledge, this study was the first to examine causal relationships between enduring involvement and specialization in the scuba diving context. Based on the theoretical statement discussed in literature review, a basic research model is proposed as Figure 1 and a general hypothesis is developed. Consequently, an advanced research model is proposed as Figure 2 and nine additional hypotheses are developed. The results supported Kuentzel and McDonald (1992)’s argument that adding more dimensions to the specialization construct indicating the tourism and leisure behavior research that we used to conceptualize specialization could be applied to add more dimensions to enduring involvement.
Second, the findings provide a solid theoretical basis for the study of sustained enduring involvement on specialization. These findings, combined with previous research works, clarify the importance of examining the involvement-specialization relationship at each individual dimension in leisure settings. This appears to support recent research advocating the importance of involvement in understanding specialization (Bricker and Kerstetter, 2000; Bryan, 2000; Iwasaki and Havitz, 1998; Scott and Shafer, 2001; Wiley et al., 2000; Kyle et al., 2003; Anderson and Loomis, 2011). Thus, the importance of enduring involvement should not be ignored in tourism research related to leisure activity participation for future research designs.

5.3 Managerial implication

First, in this study, we found that attraction positively affects divers’ commitment and lifestyle through joy, relaxation and sharing diving experiences. Our findings implied that there are many diving sites in Taiwan, which are rich with marine resources, diving equipment rental stores and branches of training organizations. Thus, practitioners should adopt marketing strategies (e.g. social media marketing) to strongly advocate increased attraction to scuba diving activities, which can promote marine tourism effectively. Marketers for a recreational activity should actively find ways to increase the attraction of the activity (e.g. promoting scuba diving as a recreational activity which can help someone relax when someone is stressed or as one of the most enjoyable or satisfying things someone can do) that may contribute to building an enjoyable attitude toward the specialized activity in the long term. Kopelman et al. (2002) proposed that persons using a common natural resource (e.g. a coral reef) can be expected to behave in their ways to maximize their own short-term self-enjoyment. Sometimes, negative behavior may injure the natural resource, but sustainable self-enjoyment also requires self-management. Therefore, protecting the ecological environment is a way of effectively promoting scuba diving activities. These efforts will help environmentally conscious recreationists be more willing to engage in ecologically sound marine tourism (Bahja et al., 2019).

Second, the results indicate that self-expression is associated with past experience of participating in scuba diving. The experience refers to participants’ related skills and time investment in scuba diving activities in the past. Meanwhile, past experience represents more skills and knowledge being acquired. This study implies that divers expressing themselves are fulfilling their individual sense of value. They can obtain satisfaction and achievement while diving. Therefore, the more time spent investing in the diving activity, the greater the skill sets that are obtained. Thus, marketers should assess potential target customers according to their participating frequency and time, and then consider providing specific services for each segment.

Third, centrality indicates that participants’ daily life and recreation are related to each other and become their life center. This study also reveals that centrality (e.g. most of my friends involve in scuba diving to the different extent; scuba diving plays a central role in my life) can positively affect participants’ past experience, commitment and lifestyle. This study concludes that scuba divers went to training organizations or centers not only for learning diving skills or renting diving equipment, but also to share their experiences and make new friends with similar interests. Thus, marketers have to satisfy diversified leisure populations and increase the challenge levels for specific activities. As the results noted, creating centrality by long-term involvement would contribute to enhancing enjoyable experiences and improving diving skill sets. By doing so, participants would gain stronger positive experiences and find an activity that becomes central to their life. In response to the Anderson and Loomis (2011)’s study, through enduring involvement in scuba diving, divers will be specialized and have a stronger obligation to protect marine ecology.
5.4 Limitation and future research

Although this study clarifies some key issues, there are still some limitations that reveal research opportunities for future study. First, this study samples four representative diving sites in accordance with experts’ suggestions. According to Scott et al. (2005), recreational scuba divers were requested to be classified as casual, active or committed. A limitation in our study was the classification of each diver, which existed because of the representative population estimates chosen by experts. Future studies should adopt qualitative methods to examine diverse divers who are engaged long-term in scuba diving to overcome this issue, and thus increase validity.

Second, this is primarily a study to establish a link between practice and theory on recreational activity. Although this study is innovative in the linkage of enduring involvement and specialization, several non-significant linkages between sub-dimensions of enduring involvement and specialization might exist. The research results of this study have provided a starting point for more insightful studies about involvement and specialization. For example, this study examines scuba divers’ sustained involvement on specialization and such involvement may or may not lead to actual specialized behavior. Thus, future research must gain more insightful and in-depth knowledge about actual behavior in other specialized leisure activities to understand and refine the link between certain kinds of attitudes and dimensions.

Third, data for this study were collected from Taiwan’s recreational activity participants. Thus, it is appropriate to be cautious about generalizing the research findings to participant groups in other countries or areas. For future research, an expanded sampling range would increase the generalizability of the results.

Fourth, although a well-considered process was conducted to obtain measurement items to adequately evaluate enduring involvement and specialization in scuba diving, using only several items for evaluating the complex attitudinal construct may be too simplistic. For future research, a more rigorous and effective procedure that creates more items and viewpoints should be conducted to accurately evaluate these constructs.

Finally, because of the complexity of nine hypotheses, the analysis results do not include variables such as age, level of income, travel frequency and survey sites as control variables or for multi-group analyses. Mediation and moderator analysis may also yield interesting insights. Future research can start from the simple model explored here and expand to additional analyses.

References


Further reading


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