

CONCEPTUALIZATION AND MEASUREMENT OF DIMENSIONALITY OF PLACE ATTACHMENT

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To extend the discussion and application of place attachment to tourism-relevant contexts, this article proposes two neglected dimensions: *place memory* and *place expectation*. Combining these dimensions, a six-dimension construct of place attachment is tested using confirmatory factor analysis and found to be a good fit for data collected from two places: Sydney, Australia and Shanghai, China. The new dimensionality includes an individual's past experience and future expectations of his/her attachment to a place, and thus has a potential to interpret one's attachment to a place based on a shorter term stay. The implications of the study for researchers and destination managers are discussed.

Key words: Place attachment; Tourism destination; Place memory; Place expectation; Cross-culture; Confirmatory factor analysis

Introduction

Researchers from the disciplines of environmental psychology, recreational and leisure studies, and tourism have attempted to conceptualize the range of human feelings associated with specific environments (e.g., Bricker & Kerstetter, 2000; Hammitt, Backlund, & Bixler, 2006; Kyle, Graefe, & Manning, 2005; Mesch & Manor, 1998; Yuksel, Yuksel, & Bilim, 2010). Emerging research suggests that an individual's relationship with a place can evoke strong emotions that influence an individual's

behavior such as spreading positive word of mouth about the place as a tourism destination (Chen & Dwyer, 2010, 2011; Gu & Ryan, 2008). Accordingly, exploring the nature and the extent of one's relationship with a place is useful in the urban planning and marketing of a destination.

The majority of research applies place attachment to describe the complex relationship between an individual and a place, defining the construct as an individual's evaluation of a place. Previous studies have discussed place attachment in terms of cognitive, affective, and conative aspects of an individual's

evaluation of a place. The findings are that place attachment can influence an individual's perception of a place, and improve the likelihood that an individual will develop a favorable attitude toward it (e.g., Walker & Chapman, 2003). However, when applied to the more general tourism context, this measure of place attachment is limited as it overlooks the dynamic nature of the individual–place relationship, and relies heavily on long-term interactions between oneself and a place. For instance, a tourist cannot be expected to identify him/herself strongly with a tourism destination based on a 3-day tour. Therefore, adjustments need to be made for place attachment to be replicated in tourism studies.

On the other hand, tourism researchers now realize the importance of stories as a core element in understanding tourist experiences (Moscardo, 2010). The stories about a tourist in a destination are an important link between the tourist–destination relationship and his/her relevant behaviors such as word of mouth. Therefore, it is expected that a tourist's attachment can be reflected in his/her past stories within a destination. Similarly, a potential tourist can form his/her relationship with a destination in terms of his/her expectations of the place. For instance, an individual may have a strong attachment to a place where a life-changing event occurred (such as graduation, or marriage), or to a new place to which they attach future aspirations. These places do not have to be highly evaluated in place identity, dependence, or social bonding.

With the goal of better understanding the relationship between an individual and a place (especially a tourist and a destination), and the goal of incorporating the perspective of tourist experiences in understanding this relationship, this article first reviews the literature on individual–place relationship studies across different disciplines, clarifies the differences between constructs depicting the individual–place relationship, and conceptualizes a six-dimension structural model of place attachment combining evaluation and experience/expectation-based dimensions. With this conceptualization, the place attachment construct can be applied to more general contexts: it has potential in interpreting the tourist–destination relationship and its influences on tourists' posttour behaviors; it can help understand how to reflect different types of residents' (e.g., locals, immigrants, overseas workers,

etc.) relationship with a place; and it can be used to study an individual's psychology and behaviors within a place under some specific settings such as recreation. The proposed conceptualization is further developed with a measurement that is tested using confirmatory factor analysis and structural equation modeling techniques based on two groups of samples from Sydney, Australia and Shanghai, China. The results from the data analysis suggest the model to be a reliable instrument for destination management and marketing.

Literature Review

From Sense of Place to Place Attachment

The earliest concept to depict the individual–place relationship is *sense of place*, which is also referred to as *place attachment*, *topophilia*, *insidedness*, and *community sentiment* (Low & Altman, 1992). *Sense of place* is defined in different disciplines under different contexts. *Sense of place* is composed of two different aspects: (1) *relationship to place* consists of the different ways that people relate to places, or the types of bonds people can have with a place; (2) *place attachment* consists of the depth and types of attachments to one particular place (Cross, 2001).

The structure of the two different concepts is shown in Figure 1. *Relationships to place* reflects the individual–place relationship in terms of how this relationship is formed. For instance, one is related to a place if it is his/her birthplace. The *relationships to place* changes in terms of the nature of the relationship (e.g., moving to another place for working purpose) rather than for psychological reasons, and thus it is an important variable in comparative studies such as studying culture issues pertaining to residents and immigrants. Alternatively, the degree of attachment between an individual and a place varies and may be influenced by other factors such as the satisfaction level, length of residence, memorable events, etc. *Place attachment* can reflect an individual's psychological change in the relationship with a particular place, which is the essential issue in understanding tourists after visiting a destination or a group of residents after certain environmental changes. Therefore, this study centers the dimensionality and measure development for the variable aspect of *sense of place*: place attachment.

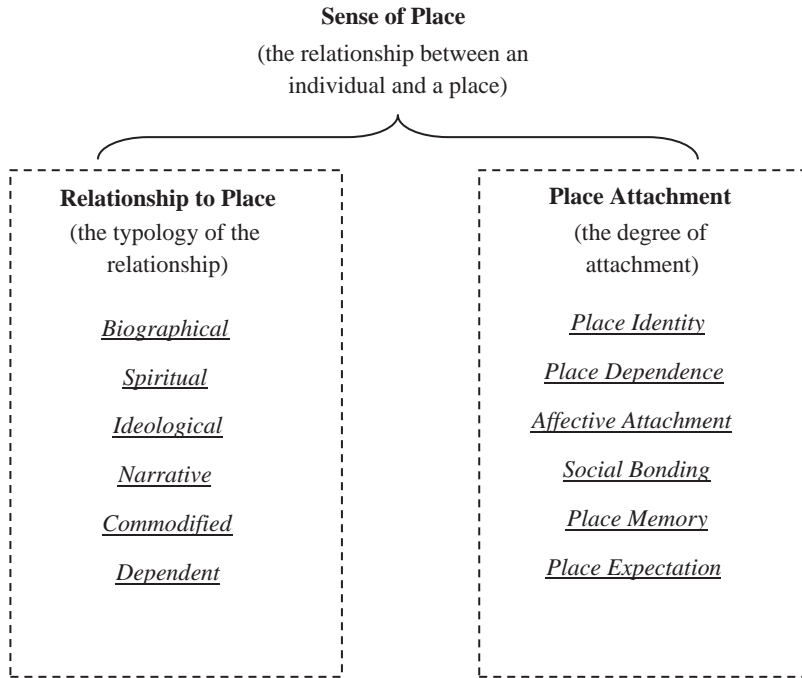


Figure 1. Concept structure.

Place Attachment

The concept of place attachment has roots in attachment theory, which has been studied mainly by Bowlby and Salter Ainsworth since early 1930s, to study a child’s tie to its mother and its disruption through separation, deprivation, and bereavement. Bowlby (1969, 1973, 1980) defines attachment as an affection bond or tie between an individual and an attachment figure, which is a basic human need for security. Concerning the attachment between individuals and places, a variety of disciplines have shown an interest in understanding the attachments that people form with places. Thus, sociology emphasizes how the symbolic meanings of place influence social interactions (Greider & Garkovich, 1994); environmental psychology develops the construct of place attachment (Altman & Low, 1992), which refers to “a positive connection or bond between a person and a particular place” (Williams & Vaske, 2003, p. 831). In environmental psychology, a number of researchers have attempted to conceptualize, understand, and measure attachment to interpret the individual–individual, individual–community, and individual–place bonding (e.g., Jorgensen &

Stedman, 2001; Kyle, Absher, & Graefe, 2003; Kyle, Bricker, Graefe, & Wickham, 2004).

In sum, research on place attachment can be divided into two streams. The first stream of research (in environmental psychology) considers place attachment as an outcome of an individual’s evaluation and attitude towards a place based on his/her knowledge of this particular place. The second stream of research (research in interaction) ascribes the bond formed by an individual to a spatial setting to the meaning given to the place through experiences and expectations.

Dimensionality: Evaluation and Attitude Based

In early research regarding dimensions of place attachment, most evaluation-based conceptualization studies note that affect, emotion, and feeling are central to place attachment (Low & Altman, 1992). Kyle et al. (2005) claim that cognition (including thought, knowledge, and belief) and practice (action and behavior) are also relevant. Recent research on place attachment summarizes the different aspects included in place attachment and

considers the individual–place bond in terms of two dimensions: *place identity* (Proshansky, Fabian, & Kaminof, 1983) and *place dependence* (Bricker & Kerstetter, 2000; Kyle, Graefe, Manning, & Bacon, 2004; Moore & Graefe, 1994). This two-dimension (*place identity* and *place dependence*) place attachment construct is widely accepted in the research fields of both environmental psychology and tourism management (Kyle et al., 2005; Williams & Vaske, 2003; Yuksel et al., 2010).

Some researchers have developed the place attachment model to include three, four, and even five dimensions (Hammitt, Backlund, & Bixler, 2004; Hammitt, Kyle, & Oh, 2009), and the different terminologies have added to confusion on understanding research in this realm. Different models of individual–place bonds (i.e., place Attachment in this study) are summarized in Table 1, which reveals that individual–place bond research has typically used different combinations of several constructs. Place identity and place dependence remain the most widely used dimensions of individual–place bonds for both recreational and residential settings. Models proposing a single construct have generally not been confirmed and accepted (Williams & Vaske, 2003), although some of them are found to be reliable (Stedman, 2003).

Proshansky et al. (1983) state the different functions of *place identity*, including recognition function, meaning function, expressive-requirement function, mediating change function, and anxiety and defense function. *Place identity* is one important aspect that can help an individual define his/her social identity. Ashforth, Harrison, and Corley (2008) identify three levels of self-identity from narrow to broad: core of identity, content of identity, and behaviors of identity. *Place identity* penetrates all three levels of self-identity, defining how a place establishes an inner relationship with a person from self-definition, to values, goals, beliefs, etc., and then to behaviors.

Place dependence, rooted in transactional theory, refers to a functional attachment to a place which reflects “the importance of a place in providing features and conditions that support specific goals or desired activities” (Williams & Vaske, 2003, p. 831). Distinguished from *place identity*, *place dependence* reflects the degree of harmony between individuals and places, and an ongoing relationship with a particular setting. Therefore, this construct is comparative based. It is stated that the ability of an individual to make judgments on how well the place meets his/her functional needs depends largely on developing a frame of reference through experience (Backlund & Williams, 2003).

Table 1
Models of Individual–Place Bonds

Term Used	No.	Name of Dimensions	Setting Context	Reference(s)
Sense of place	1	Sense of Place	The Northern Highlands Lake District of Northern Wisconsin, residential	Stedman (2003)
Place attachment	2	Place Identity Place Dependence	Recreational and residential	Bricker and Kerstetter (2000), Moore and Graefe (1994), Williams and Vaske (2003)
Sense of place	3	Place Identity Place Attachment Place Dependence	Lakeshore property owners in northern Wisconsin, residential	Jorgensen and Stedman (2001)
Place bonding	2	Place Attachment Place Identity	Three rural counties in the Inland Northwest US, residential	Nielsen-Pincus et al. (2010)
Place attachment	3	Place Identity Place Dependence Social Bonding	Appalachian Trail US, recreational	Kyle, Graefe et al. (2004)
Place attachment	5	Place Identity Place Dependence Nature Bonding Family Bonding Friend Bonding	South Australia, residential, rural	Raymond, Brown, and Weber (2010)

The affective dimension of individual–place bond can be denoted as *affective attachment*. According to Jorgensen and Stedman (2001), *affective attachment* contains emotional content explicitly and the affective relationship between people and a place goes beyond cognition, preference, or judgments. Relph (1976) suggests that as people’s experience with a place becomes deeper and more diverse, the *affective attachment* grows over time as well. Affective attachment is one very important dimension of place attachment, because it can generate feelings of well-being and security that a person draws from a place (Nielsen-Pincus, Hall, Force, & Wulfhorst, 2010). In addition, affective attachment “involves an interplay of affect and emotions, knowledge and beliefs, and behaviors and actions in reference to a place” (Altman & Low, 1992, p. 5).

A *social bonding* dimension is proposed by Kyle et al. (2005), based on work in the environmental psychology literature. *Social bonding* refers to social relationships between individuals and individuals, individuals and community, and individuals and culture (Low & Altman, 1992). The definition of *social bonding* includes two levels of meanings: (1) the strength of social connection between individuals and places, and (2) the feeling of individuals of belonging to places. Strong social bonding can lead to strong emotional ties to place, and these emotions are often the product of repeated place interactions and experience that yield steady accretion of sentiment (Kyle & Chick, 2007). Social bonding has been increasingly studied in recent research because the community is playing important role in forming place attachment.

Other dimensions of place attachment have been studied in different research contexts to help explore specific issues. For instance, Mishra, Mazumdar, and Suar (2010) include another dimension of place attachment, an economic dimension, to investigate whether there is correlation between residents’ place attachment and their flood preparedness. Gosling and Williams (2010) consider a dimension of natural bonding of place attachment to examine whether there is an impact of place attachment on proenvironment behaviors.

In sum, from the definitions of and discussions of these dimensions of place attachment, it can be inferred that all these dimensions of place attachment are based on interactions and evaluations over an

extended time, and thus not appropriate for exploring the relationship between a tourist and a destination. For instance, Park, Lee, and Chen (2011) applied the measurement of place attachment based on traditional three- and four-dimension conceptualization to short-term visit tourists to a destination and found that all respondents rated very low in every dimension of place attachment, suggesting short-term visit tourists cannot form place identity, place dependence, or social bonding to a destination.

Dimensionality: Experience/Expectation Based

To address the problem identified, we propose two additional dimensions of place attachment based on experiences and expectations. Recent research in interaction studies provides a new perspective to the study of place attachment, which is to understand the attachment formed on a short-term experience or long-term expectation. Milligan (1998) proposes an interactionist-based theory of place attachment, in which the individual–place bond is formed due to the meaning given to the particular place through interactional processes. This article suggests two interwoven components of place attachment following Milligan’s (1998) discussion: (1) *place memory*, defined as how strong of the memories of stories associated with a place, (2) *place expectation*, defined as how much the future experiences perceived as likely to occur in a place. The first additional dimension is the outcome of a short-term interaction process between an individual and a place, while the second additional dimension is based on a long-term expectation between an individual and a place.

An individual finds himself/herself bonded to a particular place because of the meaningful experience between him/her and the place. Accordingly, a *place memory* with this particular place is created over time, forming part of human memory, and thus a place becomes special or unique because it is embedded with unique meanings by an individual according to his/her past experience with this place. The consistency in personal memory and place history can further strengthen the individual–place bond. *Place memory* is dynamic while independent from the length of stay, because it can be added or reinterpreted over time in terms of the experiences rather than the length of experiences (Katovich & Couch, 1992; Zerubavel, 1996). For some places

with extremely memorable events in one's personal life, an individual often will consciously return to or escape from such a place due to its association with a powerful memory. However, it does not imply that only extremely memorable events can assist in forming *place memory*. There are abundant small or uneventful interactions taking place in everyday life, and the cumulative effect can also build up certain meaning or group of meanings and help an individual establish an attachment to a place. For instance, a couple may often revisit a place where they first met or got engaged; tourists go back to the Appalachian Trail to repeat hiking activities due to their past hiking experience there (Kyle, Graefe et al., 2004).

In addition, an individual perceives and processes information on the upcoming events or activities within a place, and further creates expectations on these events and this place, which forms a *place expectation*. *Place expectation* is more directly linked to the specific characteristics of a place, because physical details of a site can influence the expectations an individual has for interactions there (Milligan, 1998). *Place expectation* can either strengthen or weaken the individual-place bond, and it can change according to the information update of the expected activities or events.

We conclude that *place memory* and *place expectation* are the two dimensions of place attachment based on the experiences or "expected" experiences between an individual and a place (Stamboulis & Skayannis, 2003). More importantly, with these two dimensions of place attachment, one can be attached to a place based on a short-term stay, or merely imaginations or expectations. From this point of view, these two dimensions of place attachment are more appropriate to be applied to discuss tourist or potential tourist issues within a tourism context. Furthermore, discussion on these two dimensions is consistent with the emphasis on experience in disciplines such as tourism marketing and management; the interaction is bilateral, because the individual experience is usually created with a certain level of historical event or events, and hence has become a part of history of the place. The consistency in personal memory and place history can further strengthen the individual-place bond. *Place memory* and *place expectation* are dynamic and independent from length of stay, because they can

be added or reinterpreted over time due to the experiences and expectations rather than the length of time (Katovich & Hintz, 1997; Zerubavel, 1996).

Proposed Structural Model of Place Attachment

Accordingly, this study proposes a six-dimension structural model of place attachment combining both evaluation- and interaction-based dimensions. The six dimensions are (1) *evaluation based*: place identity, place dependence, affective attachment, and social bonding; (2) *experience/expectation based*: place memory, place expectation. In the proposed model, the four dimensions of place attachment based on evaluations are retained to reflect the outcomes of place attachment based on long-term interactions, while two dimensions of *place memory* and *place expectation* are introduced to illustrate the attachment to a place based on short-term interactions or purely ideas about the place (Fig. 2). With the proposed model, short-term tourists and potential tourists can be studied for their attachment to a place with a focus on experiences and expectations, while all facets of attachment to a place by long-term residents can be interpreted with the entire model. In addition, the comparisons between applications of this model to different target groups can provide implications for researchers from different disciplines in social science to understand the complex nature of the individual-place relationship.

Method

Study Design

The study was conducted in two phases. Phase one was conducted in order to facilitate the generation of measurement items of the dimensions of place attachment. Phase two involved the development and administration of a structured survey distributed to 330 residents of Shanghai, China and 361 residents of Sydney, Australia.

Scale Development

To generate the potential items, the scale development approach proposed by DeVellis (2003) was applied. Phase one consisted of 15 interviews with current residents of Sydney, who were living in

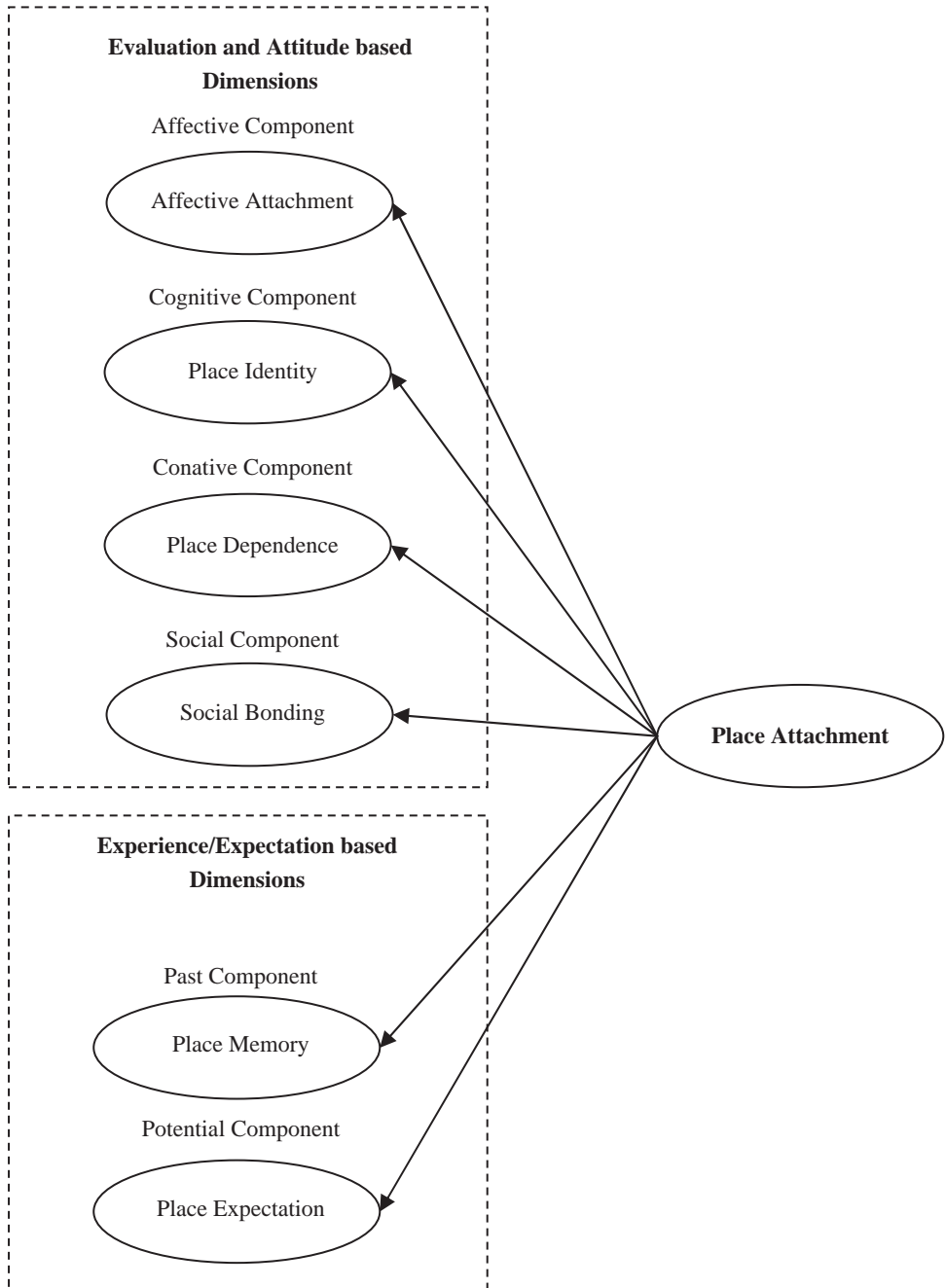


Figure 2. Proposed model of place attachment dimensions.

Sydney for more than a year and identified themselves as residents of Sydney. Participants were asked to raise three past experiences in Sydney that were unique or unforgettable and three past events that they had attended that first come to their mind,

to refresh their memory about Sydney. They were then asked to reflect on Sydney based on their memory of past experiences and events. Furthermore, they were asked to reflect their opinion on their imagination of future Sydney. Items of the

two dimensions of place attachment were generated from the reflection of the interviews, including keywords such as *unforgettable*, *memorable*, *unique*, *feeling connected*, etc. Multiple items were generated combining the interview-created items and literature-generated items for all six dimensions of place attachment. Six experts (academics) from backgrounds of marketing and tourism research were asked to review the items and suggest revisions based on the conceptual definitions of place attachment and the different dimensions.

Experts and peer reviewers from a background of marketing and tourism research were invited to assess the face and content validity of the 46 items generated. Seven experts from the field of tourism management, consumer behavior, environment psychology, and service marketing were asked to evaluate the items and help in their addition and reduction. Being provided with the definitions of the construct place attachment and its dimensions, the experts reviewed clarity, conciseness, and fit, and further reduced the items to 32.

Participants and Materials

In phase two, data were collected from November, 2011 to March, 2012. A total of 1,500 individuals were approached from November 2011 through March 2012 in two cities: Sydney and Shanghai. Stratified sampling was used to recruit respondents to ensure roughly the same ratio of respondents from each district as the ratio in the demographics (Whitley, 2002). In Shanghai, volunteers were hired to conduct a stratified sampling from different districts of Shanghai by randomly inviting respondents to complete an online survey using iPads or laptops in different residential communities, and the volunteers were trained and supervised to explain the questions and maintain the quality of data collected. In Sydney, a research panel was used to conduct a similar stratified sampling from different districts of Sydney. The online survey was developed based on *Qualtrics* and several settings were arranged to present incomplete questionnaires and eliminate responses not satisfying residential requirements. In the end, 330 valid questionnaires from Shanghai and 361 valid questionnaires from Sydney were collected for data analysis.

All of the respondents were residents of each city who have lived there for at least a year to ensure they had established attachment to the place they reside in (demographic profile is shown in Table 2). A questionnaire was designed with each item in a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) format. Respondents were asked to recall three past experiences and three past events they attended that first come to mind, before they answered questions indicating their place memory and place expectation with the place.

Procedure

An exploratory factor analysis was run using the Principal Components Extraction Method with Varimax rotation for both data sets and the findings did not show a need to revise the dimensionality. A confirmatory factor analysis (CFA) followed using the Maximum Likelihood in IBM® SPSS® 20 and IBM® SPSS® Amos 18 was applied to Sydney data (Shanghai data was further used in the following CFA and comparative study) to purify the scale, and 10 items were removed because they did not meet the fit criteria required to remain in the model. The retained items for the place attachment scale passed a convergent validity based on factor loadings, which are listed in Table 3.

Model Specifications and Analytic Strategy

In this study four models of place attachment were tested: (1) a unidimensional model; (2) a first-order, six-factor correlated model; and (3) a second-order model consisting of six first-order factors loading onto a single second-order factor; and (4) a second-order model consisting of six first-order factors loading onto two correlated second-order factors. In the comparison, two groups of data (Shanghai and Sydney) were tested under a cross-validation method to provide a stringent examination of the scale's psychometric properties.

Data Analysis and Results

Reliability and Validity

This study assessed the reliability of six-dimension place attachment measure using Cronbach's alpha

Table 2
Demographic Profile of Respondents

Demographics	Shanghai (n = 330)		Sydney (n = 361)	
Age [mean (SD)]	32.6 (10.5)		40.5 (13.8)	
Length of residence [mean (SD)]	20.2 (16.4)		24.4 (17.5)	
Gender				
Male/female	48.5%/51.5%		50.1%/49.9%	
Status				
	Permanent residence	52.4%	Australian citizen	84.2%
	Temporary residence	16.7%	Holding permanent residence visa	11.4%
	Other registered residence	22.4%	Holding other visa	4.4%
	Foreign passport	8.5%		
Education				
	Graduate degree or higher	9.4%	Graduate degree or higher	23.0%
	Bachelor degree	23.0%	Bachelor degree	32.1%
	Diploma	30.6%	Diploma	15.2%
	Certificate	15.5%	Certificate	18.3%
	High school or less	21.5%	High school or less	11.4%
Income				
	<RMB20K	26.4%	< \$20K	15.2%
	RMB20K to 49,999	23.9%	\$20K to \$39,999	16.3%
	RMB 50K to 99,999	28.5%	\$40K to \$59,999	19.9%
	RMB 100K to 199,999	15.2%	\$60K to \$79,999	19.1%
	RMB 200K to 4,999,999	5.5%	\$80K to \$99,999	14.1%
	RMB 500K or more	6.0%	\$100K or more	15.2%
Ethnic background				
	Han	91.8%	Australia/Oceania	48.8%
	National minority	7.0%	East Asia	14.4%
	Overseas	1.2%	South Asia	8.3%
			Middle East	1.9%
			Europe	23.0%
			Africa	1.4%
			North America	1.4%
			South America	0.8%

of each dimension of place attachment. According to Santos (1999), for the value of Cronbach’s alpha, 0.70 is the cut-off value for being acceptable, and all Cronbach’s alpha values in this study are over 0.80. Evidence of convergent validity was provided in the factor loadings and significant *t* values (most factor loadings are larger than 0.66, all *t* values are larger than 10 > 1.96) (Byrne, 2001). To test the discriminant validity of the factor analysis, the correlation matrix for the six dimensions of place attachment was examined and relevant significance level to the square root of the average variance extracted (AVE). The results are shown in Table 4.

As shown in Table 4, the measurement model based on the Shanghai sample passed the examination of discriminant validity. However for the Sydney sample strong correlations between constructs

of *place identity*, *place dependence*, and *affective attachment* were found. This indicates that the dimensions of place attachment in the model are not perfectly correlated and can be considered as six different components of place attachment. The strong correlations between the three dimensions above do not necessarily indicate a failure of conceptualization and measure. In fact, similar strong correlations between some dimensions were found in previous research in place attachment. For instance, Lee, Kyle, and Scott (2012) combined two dimensions of place attachment—*place identity* and *social bonding*—in their research based on the Potteet Strawberry Festival. Therefore, to be consistent with existing literature on place attachment, we retained the six-dimension conceptualization of place attachment in spite of the strong correlations found.

Table 3
Refined Place Attachment Items ($n = 361$ From Sydney)

Items	Mean	SD	Factor Loading	<i>t</i> Value
Place identity (Cronbach's alpha = 0.911; AVE = 0.716; CR = 0.910)				
I identify strongly with . . .	5.54	1.299	0.845	–
I feel commitment to . . .	5.43	1.399	0.810	19.09
I feel that I can really be myself in . . .	5.51	1.263	0.813	19.13
. . . is very special to me.	5.47	1.358	0.913	23.04
Place dependence (Cronbach's alpha = 0.818; AVE = 0.607; CR = 0.821)				
I prefer . . . over others for the activities that I enjoy.	4.86	1.403	0.669	–
. . . is my favorite place to be.	4.98	1.508	0.845	13.81
I really miss . . . when I'm away from it for too long.	5.06	1.530	0.812	13.07
Affective attachment (Cronbach's alpha = 0.921; AVE = 0.753; CR = 0.924)				
Sydney means a lot to me.	5.37	1.336	0.925	–
I feel a strong sense of belonging . . . and its settings/facilities.	5.34	1.321	0.917	30.36
I have emotional attachment to . . . and its settings/facilities.	5.25	1.461	0.786	20.69
I have a special connection to . . . and the people here.	5.28	1.352	0.835	13.52
Social bonding (Cronbach's alpha = 0.825; AVE = 0.612; CR = 0.825)				
My friends/family would be disappointed if I were to move from . . .	4.98	1.563	0.744	–
If I were to leave . . . I would lose contact with a number of friends.	5.10	1.431	0.745	13.32
Many of my friends/family prefer . . . over other cities.	5.01	1.375	0.853	13.52
Place memory (Cronbach's alpha = 0.917; AVE = 0.738; CR = 0.918)				
My experiences in . . . are unique.	5.17	1.255	0.779	–
My experiences in . . . are unforgettable.	5.31	1.269	0.883	18.96
My experiences in . . . make me love Sydney more.	5.23	1.284	0.909	19.42
I feel connected to . . . due to my experiences here.	5.33	1.319	0.859	23.54
Place expectation (Cronbach's alpha = 0.908; AVE = 0.715; CR = 0.909)				
In the future . . . is better than now.	4.59	1.507	0.820	–
In the future . . . continues creating unique experiences for me.	4.96	1.328	0.853	18.68
I will be enjoying . . . in the future more than now.	4.64	1.369	0.857	19.56
I feel connected to . . . in the future due to my experiences here.	4.88	1.339	0.852	18.33

Table 4
Correlation Matrix and the Square Root of AVE

	Place Identity	Place Dependence	Affective Attachment	Social Bonding	Interactional Past	Interactional Potential
Sydney ($n = 361$)						
Place identity	1					
Place dependence	0.850*	1				
Affective attachment	0.931*	0.869*	1			
Social bonding	0.566*	0.577*	0.586*	1		
Place memory	0.775*	0.760*	0.799*	0.550*	1	
Place expectation	0.579*	0.589*	0.565*	0.421*	0.652*	1
Square root of AVE	0.846	0.779	0.868	0.782	0.859	0.846
Shanghai ($n = 330$)						
Place identity	1					
Place dependence	0.734*	1				
Affective attachment	0.681*	0.700*	1			
Social bonding	0.541*	0.536*	0.693*	1		
Place memory	0.749*	0.686*	0.728*	0.606*	1	
Place expectation	0.566*	0.612*	0.502*	0.383*	0.606*	1
Square root of AVE	0.761	0.836	0.779	0.853	0.831	0.754

* $p < 0.001$.

Testing Competing Models

Using Amos 18, the goodness-of-fit for each alternative model was tested with the chi-square test, the root mean square error of approximation (RMSEA), normed fit index (NFI), comparative fit index (CFI), and other fit indexes (Bentler, 1990; Byrne, 2001). According to previous research, there is a range of assessment strategies based on the performance of different fit indexes (Amburgey & Thoman, 2012), which are briefly reviewed as follows.

The chi-square statistic is used as a test of discrepancy between the predicted and observed models, and to support the model fit, the chi-square statistic should be found insignificant. However, as the sample size increases, it is usually difficult to reach statistical insignificance (Marsh, Balla, & McDonald, 1988). Therefore the ratio of the chi-square statistic divided by the model degrees of freedom is used to indicate the fit, and the rule of thumb for an acceptable value of χ^2/df is less than 3 (Arbuckle, 2008). Based on population discrepancy, RMSEA is used to estimate the lack of fit using a perfect or saturated model for comparison. Hu and Bentler (1999) indicate that a RMSEA value less than 0.08 is acceptable for a model fit. Standardized root mean square residual (SRMR), measuring the standardized difference between the observed covariance and predicted covariance matrix elements, requires a value less than 0.05 for a good fit and the minimum acceptance level is 0.10 (Hu & Bentler, 1999). Some other fit indexes include CFI and the Bentler-Bonett (Bentler & Bonett, 1980) NFI require minimum acceptable fit level at over 0.90.

Table 5 illustrates the measures of model fit for all four models studied. The goodness-of-fit indices for the first-order, six-factor correlated model (Model 2) was superior to all the other models for both sample sets, and there was slight difference between the second-order model consisting of six first-order factors loading onto a single second-order factor and the second-order model consisting of six first-order factors loading onto two correlated second-order factors. Because this study has extended the construct of place attachment from the previous three or four dimensions to six dimensions, the model is more complex so that the unidimensional model performed far worse than the other alternative models.

Cross-Validation

The last step of scale development procedure in this study is the cross-validation of the scale for two different sample groups: samples from Shanghai and sample from Sydney. According to previous research, a multigroup analysis to compare a series of nested models with systematically increasing equality constraints across groups was conducted to test (1) the equivalence of the covariance matrices, (2) the configural equivalence of the factor structure, (3) the metric equivalence of the factor loadings, and (4) the scalar equivalence of the item intercepts (MacKenzie, Podsakoff, & Podsakoff, 2011).

Table 6 illustrates the goodness-of-fit indices for cross-validation. Besides the tests of Sydney and

Table 5
Goodness-of-Fit Indices of Competing Models Tested: Cross-Group Analyses

Model	χ^2	<i>df</i>	χ^2/df	RMSEA	SRMR	CFI	NFI
Shanghai residents sample (<i>n</i> = 330)							
Model 1: Unidimensional	1703.80	209	8.152	0.147	0.0919	0.686	0.658
Model 2: First-order	505.56	194	2.606	0.070	0.0468	0.934	0.899
Model 3: Second-order 1	540.85	203	2.664	0.071	0.0532	0.929	0.892
Model 4: Second-order 2	539.00	202	2.668	0.071	0.0527	0.929	0.892
Sydney residents sample (<i>n</i> = 361)							
Model 1: Unidimensional	1810.63	209	8.663	0.146	0.0902	0.756	0.734
Model 2: First-order	447.80	194	2.308	0.060	0.0447	0.961	0.934
Model 3: Second-order 1	485.34	203	2.391	0.062	0.0525	0.957	0.929
Model 4: Second-order 2	458.46	202	2.270	0.059	0.0467	0.961	0.933

Table 6
Goodness-of-Fit Indices for Cross-Validation (First-Order Model)

Model	χ^2	<i>df</i>	χ^2/df	RMSEA	SRMR	CFI	NFI
Shanghai	505.56	194	2.606	0.070	0.0468	0.934	0.899
Sydney	447.80	194	2.308	0.060	0.0447	0.961	0.934
Unconstrained	953.37	388	2.457	0.046	0.0447	0.950	0.919
Measurement weights	1021.77	404	2.529	0.047	0.0453	0.945	0.913
Measurement intercepts	1351.88	426	3.173	0.056	0.0456	0.918	0.885
Structural covariances	1465.62	447	3.279	0.058	0.0562	0.910	0.876
Measurement residuals	1720.13	469	3.668	0.062	0.0720	0.890	0.854

Shanghai sample, the unconstrained model and the measurement weights model satisfy all the requirements for model acceptance: χ^2/df is less than 3; RMSEA is less than 0.08; SRMR is less than 0.05; CFI and NFI are larger than 0.90. The results show that the structure model of place attachment is acceptable for both sample groups from Sydney and Shanghai, indicating a configural equivalence of the factor structure and a metric equivalence of the factor loadings. As to the model fit indices of the measurement intercepts model and structural covariances model, some of the indices are acceptable (such as RMSEA, SRMR, CFI); the other indices lie on the edge of acceptance (such as χ^2/df , NFI), indicating an equivalence of the covariance matrices and a scalar equivalence of the item intercepts at a lower statistically significant level.

In addition, a latent mean differences test was further conducted to test the scale's psychometric properties and explore variation in the level of attachment across groups that accounts for measurement error (Sousa & Chen, 2003). The sample group of Sydney was set as the reference group and the mean constraints for Shanghai sample were removed. The latent mean differences are reported in Table 7. As illustrated, none of the latent mean

differences was statistically significant at the level of 0.001. However the latent factor means related to place identity was different at the significance level of 0.01. One possible explanation for the variance in place identity is: 95.6% of respondents from Sydney possess Australian citizenship (84.2%) or permanent residence visa (11.4%), while the ratio in Shanghai respondents is 69.1% (52.4% of Shanghai registered residence and 16.7% of valid Shanghai temporary residence). The results indicate no significant measurement error across the sample from different culture backgrounds.

Discussion and Implications

This study examined the psychometric properties of a six-dimension place attachment measure using samples of Sydney residents from Australia and Shanghai residents from China. Structural equation modeling was applied to test measurement invariance and latent structures among these two samples. The results demonstrate the composite reliability and convergent and discriminant validity of the proposed first-order six-factor correlated model. Although the results from sample of Sydney residents suggest an incorporation of three dimensions of *place identity*, *place dependence*, and *affective attachment*, the six-dimension construct structure model was retained in view of the solid foundation of dimensionality of place attachment from previous research, as well as the results from Shanghai residents' sample. Two other second-order models were also tested and we followed Kyle et al.'s (2005) work to retain the first-order model, which is grounded in past research. The configural equivalence of the factor structure and the metric equivalence of the factor loadings were supported by the

Table 7
Latent Mean Differences Test

	Estimate	SE	CR	<i>p</i>
Place identity	-0.261	0.082	-3.181	0.001
Place dependence	0.051	0.087	0.588	0.557
Affective attachment	0.059	0.094	0.632	0.527
Social bonding	-0.048	0.102	-0.467	0.640
Place memory	-0.168	0.084	-1.993	0.046
Place expectation	0.168	0.086	1.953	0.051

cross-validation of two sample groups under the analysis in Amos. Therefore, the results from the empirical studies are satisfactory and suggest a further use of the measurement proposed in this study to general contexts.

To test the effect of *length of stay* on different dimensions of place attachment, we performed regression analyses on each dimension of place attachment with *length of stay* as independent variable. The results show that the scores of evaluation-based dimensions of place attachment change statistically significantly with how long a resident lives in the place, while scores of experience/expectation-based dimensions of place attachment vary independently from *length of stay*. The finding supports our judgments on the different natures of these dimensions in terms of how they are formed over time, and further supports that the experience/expectation-based place attachment can be used to interpret the relationship between tourists and destinations rather than evaluation-based place attachment. Therefore, this article provides a useful survey instrument for understanding tourist–destination relationship in tourism studies as well as practice.

Place differs in that it can vary from room, apartment, building, neighborhood, district, city, country region, state, to continent, etc. Hidalgo and Hernández (2001) reported a curvilinear, U-shaped, relationship between scale of place and strength of place attachment, finding that attachment to neighborhood is the weakest and that social attachment to a place is greater than physical attachment. Lewicka's (2010) research on four central European cities indicated that the curvilinear relationship between place scale and place attachment is particularly strong in highly attractive cities. Accordingly, this study chose two highly attractive resident cities (as well as attractive tourism destinations)—Sydney and Shanghai—to collect data. From Table 3 we can see that the average means of different items reach 5 out of 7, indicating a high attachment between the respondents and the cities. These findings suggest that attractive tourism destination cities should imply a high level of place attachment formed between the residents and the cities.

The configural equivalence of the factor structure and the metric equivalence of the factor loadings were supported in this study from two different cultural sample groups: Sydney in Australia and

Shanghai in China. In the studies of place attachment, although earlier research has social issues and environmental issues, cultural issues have largely been ignored in either conceptual development or empirical studies. This study tested the proposed model using samples from two different cultural backgrounds (East and West) to examine whether there is any difference in the conceptualization of this construct. And the results indicate no huge difference in understanding the different aspects of individual–place relationship between Chinese and Australian residents. This suggests the results from this study can be applied to different cultures, or cross-culture studies.

In addition, the results indicate the proposed two new dimensions of place attachment are highly correlated with the other dimensions of place attachment (especially for *place memory*). This suggests the inclusion of these two dimensions for place attachment is statistically appropriate. However, the high correlation cannot be expected for other different cases. In this study data were collected from a group of people who reside in a place for a long time, and a “mingling” effect is suggested because different dimensions of place attachment interact each other over a long period and achieve a more balanced or consistent degree of different dimensions of attachment.

Conclusion

Following a review of the literature on sense of place and place attachment from different disciplines, including environmental psychology, tourism marketing, interaction theories, etc., this study clarified different concepts used to describe an individual–place relationship, and further proposed a six-dimension structure model of place attachment. Following steps developing the scales, this article selected 22 items to measure the six dimensions of place attachment: *place identity*, *place dependence*, *affective attachment*, *social bonding*, *place memory*, and *place expectation*.

Although Milligan (1998) proposed a symbolic interactionist framework in the discussion of place attachment, most following research concentrated the discussion on several dimensions of place attachment: place identity, place dependence, social bonding, affective attachment, etc. However, some

dimensions of place attachment such as place identity and place dependence usually require long-term stay or residence, which limited the findings of place attachment studies from being applied in more general contexts. The findings suggest that to study the relationship between an individual and a short-term stay in a place, future researchers may use the proposed dimensionality or measure of place attachment from this study to focus on the “experience” or “memory creation” aspect of place attachment.

There are several contributions to theory from this study. For tourism research, the six-dimension place attachment construct model can be applied to study the more general tourist–destination relationship to emphasize the interactions between a tourist and a destination within a short term. The six-dimension point of view further forms the basis for studying its possible influences on other factors such as tourists’ word-of-mouth behaviors. For branding theories, although several constructs are available, such as loyalty, commitment, identification, and so on, none of them is adequate to help interpret the multidimensional, increasingly complicated human–brand relationship. There is potential for the six-dimension place attachment construct to be applied to help understand this complex relationship.

This study also has several managerial implications. It is important for destination management organizations to understand how close their key clients (the tourists) are to the destination, because consumer-to-consumer communication has become a crucial component in destination marketing and branding. However, the measurement of place attachment in tourism contexts has been neglected by researchers. The place attachment conceptualization and measure suggested in this article can now be applied to examine the degree of attachment from tourists to a tourism destination, even for short-stay tourists in urban areas. For event management and sport marketing research and industry, the place attachment conceptualization and measure can be replicated to study sport fans’ psychology and behavior, based on the relationship with their favored sport team or events.

A limitation of this research is that the data were collected at a single time point, in which case dynamic issues such as how different dimensions of place attachment change over time are ignored. Two assumptions underpinning the findings of the

study should be tested in the future studies. One is that the dimensions of place attachment change over time, while the other posits a “mingling” effect as different dimensions of place attachment interact with each other and achieve a more balanced or consistent degree of all dimensions of attachment.

This research has taken the first step toward to a more dynamic standpoint of understanding place attachment, rather than to propose the final solution. As the formation of attachment such as place identity or dependence requires long-term stay or repeat visitation, the application of the dimensionality of place attachment is largely limited in tourism research to the study of first-time/short-stay tourists. The two dimensions of place attachment proposed are based on interactions between an individual and a place, and thus do not require long-term stay or repeat visits. Incorporated with the ideas in experience tourism, these two dimensions, together with affective attachment, can be used to understand how tourists become attached to a tourism destination.

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