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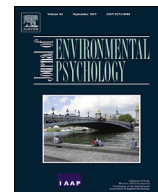
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## Effects of distance from home to campus on undergraduate place attachment and university experience in China



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### ABSTRACT

First-year students in transition from hometown to campus are generally confronted by intellectual and social challenges as well as disruption and the formation of the place attachments associated with relocation. Understanding the variables affecting student place attachment helps address the widespread concern about student transition. Interactions between place attachment to hometown and campus, and the effects of endogenous and exogenous variables on place attachments, were analysed using covariance analysis, based on questionnaire data gathered at a Chinese university. Campus identity acts as a predictor for the other three dimensions of place attachment to hometown and campus: hometown identity, hometown dependence and campus dependence. Place attachment to campus exerts a direct effect on place attachment to hometown, while the latter indirectly impacts on the former through mediators including academic self-efficacy and peer relationships. Gender, household registration record and duration of dormitory stay were also identified as statistically significant predictors of student place attachment.

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### 1. Introduction

Although the transition to university is traditionally perceived as a positive opportunity for personal development, all students face intellectual and social challenges (Chow & Healey, 2008; Fisher & Hood, 1987). While most students can successfully manage the process of transition, there is still a substantial minority (up to 20%) who do not adapt very well and who fail to fulfil the academic and social requirements of university life (Lowe & Cook, 2003). Underperformance resulting from not being able to make adjustments in learning and social contacts is an even more frequent outcome (Johnston, 1994). When geographical distance is involved, changes in the physical environment and the break with previous social networks make the transition more complicated. Students whose affective bonds with their hometowns are disrupted and whose sources of safety and identity are threatened have to develop associations with the new place, resulting in a more daunting transition (Brown & Perkins, 1992; McAndrew, 1998; Scopelliti & Tiberio, 2010; Tognoli, 2003).

This human-place bond – termed ‘place attachment’ (Chow & Healey, 2008; Rijnks & Strijker, 2013) or as understood through related concepts such as ‘place identity’ (Chow & Healey, 2008), ‘sense of belonging’ (Cemalcilar, 2010) and ‘rootedness’ (McAndrew, 1998), along with their disruption – has been examined in a substantial number of articles (Fried, 1963; Hidalgo & Hernández, 2001; Proshansky, Fabian & Kaminoff, 1983). However, the case of undergraduates making the transition from home to university has received much less attention, with some exceptions (e.g., Chow & Healey, 2008; Scopelliti & Tiberio, 2010; Tao, Dong, Pratt, Hunsberger, & Pancer, 2000). Among these exceptions, place attachment has been studied with reference to endogenous variables such as self-efficacy, psychological disorders and interpersonal relationships. For example, Fisher, Murray, and Frazer (1985) propose that about sixty to seventy percent of college first-year undergraduates report homesickness in the first few weeks and many still continue to suffer. In the context of a university campus, self-efficacy is also associated with persistence and achievement in learning (Multon, Brown, & Lent, 1991). As interpersonal relationships play a key role in an individual's intellectual development and personal growth (Bowlby, 1969), they are also important for the formation of place attachment (Chow & Healey, 2008). Although Tinto (1987) suggested that successful

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adjustment to the transition requires managing both the academic and social aspects of the new environment, the relationships among one or more place attachments, academic activities, interpersonal interactions, emotional wellbeing and other variables remain unclear (Freeman, Anderman, & Jensen, 2007).

University enrolment in China began to expand in 1999, when the *Education Revitalization Plan for the 21st Century* was approved by the State Council and forwarded to the Ministry of Education. In 1999 the number of students enrolled in universities reached 1.6 million. Since then, enrolment has been growing at a rate of approximately twelve percent annually. Although there is no overall data about the percentage of students who attend universities in places other than their hometowns, the proportion could be higher than ninety percent, according to surveys in universities under the national enrolment census (Liu, Guo, Fu, Cao, & Er, 2010). Therefore, the transition from home to university in China provides an ideal arena for research into place attachment, as well as into related predictors and mediating variables for the undergraduates' successful performance at university.

## 2. Place attachment in earlier research

### 2.1. Dimensions of place attachment and their relationships

Williams and Roggenbuck (1989) originally proposed a two-dimensional construct for place attachment: place dependence reflects the importance of a place in providing features that support specific goals (Stokols & Shumaker, 1981) and place identity refers to the symbolic importance of a place in giving meaning and purpose to life (Shamai, 1991). Kyle, Graefe, and Manning (2005) explored the dimensionality of place attachment in recreational settings with a first-order, three-factor correlated model in which social bonding was added as the third dimension: this model proved to be superior to others. Raymond, Brown, and Weber (2010) also incorporated natural bonding, family bonding and friend bonding into the place attachment framework construct and compared it to the traditional two-dimensional model. The traditional two-dimensional model proved to be a better fit for the data in that study, as also suggested by a variety of other samples (Kyle, Graefe, Manning, & Bacon, 2004; Moore & Graefe, 1994).

Many later studies adopted the two-dimensional construct of place attachment and the correlation between the dimensions (Kyle, Graefe, et al., 2004; Kyle, Mowen, & Tarrant, 2004; Raymond et al., 2010; Williams & Vaske, 2003), while some followed the construct but considered the dimensions to be uncorrelated components (Brown & Raymond, 2007; Hernández, Hidalgo, Salazar-Laplace, & Hess, 2007; Kyle, Mowen, et al., 2004). In their study of lakeshore owners' attitudes towards their properties, Jorgensen and Stedman (2001) recommended a correlated uniqueness model of sense of place, in which items under the same dimension were correlated, while items under different dimensions were not. Moore and Graefe (1994) suggested that place identity could result from frequent visits and ascribed visit frequency to be a manifest variable of place dependence. This relationship was also found by Rijnks and Strijker (2013) in their study of regional identity. Harmon, Zinn, and Gleason (2006) observed similar phenomena in their study at Isle Royal National Park, but they found no connection between place dependence and visit frequency, indicating that place dependence is not a necessary predictor of place identity (Proshansky et al., 1983). Though a correlation between the two dimensions of place attachment is widely accepted, few studies have focused on the ability of one dimension to predict the other.

According to Proshansky et al. (1983), place attachment (or as they termed it, 'place identity') is developed through a process of distancing and evolves from an individual's environmental past. It

has been suggested that relocation, whether forced or voluntary, could lead to disruptive psychological experiences, especially for people with high place attachment to their hometowns (Fried, 1963; Fullilove, 1996) for whom this attachment to the place of origin could inhibit the formation of attachment to a new place. However, Bowlby (1969) pointed out the possibility that people could still become attached effectively to a new place, since their high attachment to their original home provides 'a safe haven' from which to explore the new setting. This was confirmed by Giuliani, Ferrara, and Barabotti (2003) in their findings about multiple place attachment to different places after relocation. Scopelliti and Tiberio (2010) found that both place attachment to hometown and place attachment to campus city exerted adverse effects on homesickness among undergraduates, but they perceived the two attachments as independent variables for predicting homesickness without considering the interactions between them. To date, research on the association of place attachment to past and present environments remains scarce.

### 2.2. Effects of demographic variables on place attachment and related endogenous variables

Among the demographic variables related to place attachment and its psychological consequences, residence length has received wide attention (Lewicka, 2011). For instance, Brown and Raymond (2007) used a three-way full-factorial model to examine the relationships between respondent variables and place attachment in Australia, and found weak but significant positive correlations between length of residence and place identity. These findings are consistent with those from a number of other studies (e.g. Goudy, 1982; Goudy, 1990). As mobility is closely related to the residence length variable, it also affects place attachment in various ways (Lewicka, 2011). Home ownership was also found to be a consistent predictor of place attachment in a number of studies (e.g. Bolan, 1997). Other variables such as social status or age sometimes showed positive and/or negative patterns of relationship with place attachment (Fried, 1984; Lalli, 1992; Lewicka, 2005), suggesting that the relationship may well be mediated or moderated by additional factors (Lewicka, 2011).

Gender could be an important variable in mediated or moderated relationships. Vorkinn and Riese (2001) argued that the correlation between gender and place attachment was quite weak while Scopelliti and Tiberio (2010) suggested using more sensitive variables than gender in further studies, since they unexpectedly identified no gender differences in place attachment to hometown. Although the effects of gender on place attachment have to be further clarified, its correlations with academic performance and psychological disturbances have been consistent. Researchers (e.g. Olani, 2009) found that female students have higher grade point averages (GPAs) than their male counterparts but lower academic self-efficacy (Liang, 2004; Shafer & Ayman, 2014). Fisher and Hood (1987) noted an overall rise in psychological disturbances among American students in transition to university, with females showing significantly higher levels of depression and anxiety.

Studies of university students have investigated the role of yet more variables (such as distance) and their characteristics. For instance, Chow and Healey (2008) pointed out that proximity to home provides opportunities for gradual adjustment and a sort of stability for first-year undergraduates (Brown & Perkins, 1992). Tognoli (2003) stressed the greater need to establish community relationships at the campus level for those students whose hometowns are further away, indicating the significant impact of distance on transition and adaptation.

Chemers, Hu, and Garcia (2001) argued that academic self-efficacy, along with optimism, have indirect positive effects on

first-year undergraduate commitment to college. Shamai (1991) classified place attachment ('having a sense of place', in his words) into three phases, with commitment to a place being the final stage. Therefore, the findings of Chemers et al. (2001) could be interpreted to mean that academic self-efficacy is a positive predictor of place attachment to a campus. Many investigators have also noted high incidence rates of psychological disorder among first-year undergraduates, particularly at the initial stage after registration (Guo, Huang, Liu, & Wang, 2013; Hicks & Heastie, 2008). It is widely agreed that emotional disorders are closely related to maladjustment to academic and social life in the new environment (Chow & Healey, 2008; Guo et al., 2013; Sun, 2005). Teachers, administrators and peers are three important groups with whom students constantly interact at school, and Cemalcilar (2010) found that the combination of these relationships was a substantial predictor of place attachment to school among middle-school students in Turkey. Failure to establish peer relationships was found to be negatively correlated with both self-identity (Brown & Lohr, 1987; Li, 2004) and psychological wellbeing (Armsden & Greenberg, 1987; Li & Han, 2002) during adolescence.

### 2.3. Transition to university in the Chinese context

There are several distinctive characteristics in the social context of Chinese students' adjustment to university. First, a Chinese university campus is not only the centre of learning activities, but also the setting for the students' daily lives, since undergraduates, especially first-year undergraduates, are required to live in on-campus dormitories with their classmates. Second, large lecture-centric courses on introductory topics are provided in the first and second academic years, resulting in less lecturer-student contact in the initial transition period. Third, the parent-adolescent bond is generally so close that it acts as an important source of social support for students (Tao et al., 2000). As a consequence, parents and peers rather than lecturers are listed as the important sources of support for undergraduates in transition (Tao et al., 2000).

The occurrence rates of psychological disorders among first-year undergraduates in China vary from 3.8% to 26.1% (Yang & Zhang, 2011). Numerous researchers (e.g. Guo et al., 2013; Xie & Zhang, 2005) have suggested that psychological health-related problems could be closely linked to first-year undergraduates' inability to adapt to an unfamiliar environment, caused by the distance from home. The responses to an open-ended questionnaire administered by Xie and Zhang (2005) showed that the complaints from first-year undergraduates who reported psychological disorders centred on three aspects: environmental adjustment, interpersonal relationships and self-identity. The proportion of Chinese university students who worry about interpersonal relationships varies between forty and eighty percent (Xi & Li, 2006). Depression is the most common type of mental disturbance among Chinese students (Crystal et al., 1994), since loss of control resulting from transition could cause them to experience negative emotions (Fisher, Frazer, & Murray, 1986).

Liang (2004) noted that females showed significantly higher levels of psychological disturbance among Chinese students in transition to university but Yang and Zhang (2011) did not observe similar phenomena. Some researchers found that female students have higher grade point averages (GPAs) than their male counterparts but lower academic self-efficacy (Liang, 2004; Shaher & Ayman, 2014). However, others (Wang & Hu, 2005) found no gender differences among first-year undergraduates related to their self-efficacy for learning ability and learning behaviour. Therefore, more studies should be conducted to clarify the effects of gender on first-year undergraduate adaptation to the new

environment.

Major differences based on discipline were found to be related to emotional wellbeing: students studying social sciences and science reported lower levels of negative emotions than their counterparts studying arts (Yang & Zhang, 2011). Students studying hard sciences had higher levels of trust than those studying social sciences (Zheng, 1998). Study year also played a role in student endeavours to establish social networks: first and second-year undergraduates were more likely to be baffled by social relationships than third and fourth-years (Wang & Hu, 2005), as they became more familiar with the campus and gradually established social networks, resulting in a higher level of self-disclosure which helped maintain their social relationships (Laurenceau, Barrett, & Pietromonaco, 1998).

'Hukou' refers to a Chinese citizen's birthplace where he/she is registered under the household registration system, either as an urban resident if he/she was born in a city or a town, or as a rural resident if he/she was born in the countryside. Residents with an urban Hukou traditionally enjoy more social welfare support in education, healthcare and employment than those with a rural Hukou. Accordingly, the Hukou record is generally fixed and it is difficult for residents with a rural Hukou to change to an urban one later in life. Hukou has been found to be related to Chinese students' emotional wellbeing and social network building (Xi & Li, 2006). Undergraduates with rural Hukou had higher levels of psychological distress compared to their counterparts with urban Hukou (Wang et al., 2005). Students with rural Hukou were also more inclined to be troubled by transitional problems (Xi & Li, 2006) and to exhibit lower levels of trust (Xu & Pang, 2004). Since 2000, average household income per capita has been 3 times higher for urban residents than for rural residents in China (The National Bureau of Statistics, <http://www.stats.gov.cn>). Therefore, in addition to the intellectual and social challenges faced by all students, most students with rural Hukou have to deal with significant financial pressure, leading to a negative impact on both their emotional and social wellbeing (Xi & Li, 2006).

These studies of first-year undergraduates in China explored themes related to place attachment such as social networking (Wang & Hu, 2005) and self-identity (Xie & Zhang, 2005), but none were listed specifically under place attachment. Furthermore, no study focused on the disruption and fostering of place attachment and associated variables during the voluntary relocation process. Therefore, it is worth examining the effects of distance on first-year undergraduate place attachment and adjustment to transition.

Place attachment is constantly being evaluated and redefined in the light of changing relationships with place (Chow & Healey, 2008), resulting in interactions between our place attachment to various places. First-year undergraduates making the transition to university gradually develop an association with the campus, build a social network, try to overcome psychological fluctuations and at the same time work to achieve the educational purpose of their voluntary relocation. This study has the following objectives: (1) to examine the interactions between place attachment to hometown and place attachment to campus (i.e. the effect of distance); (2) to elucidate the relationships between place attachment and endogenous variables with regard to academic efficacy, emotional wellbeing and interpersonal relationships; and (3) to explain the effects of exogenous (respondent) variables on place attachment and other endogenous variables.

This study follows the place attachment construct proposed by Williams and Vaske (2003), including the scale items pertaining to place dependence and place identity. We used a survey of first-year undergraduates who left their hometowns for a campus in Nanjing, China, to examine the associations between place attachment to hometown and place attachment to campus, and the potential

effects of demographic variables on place attachments and student performance. Based on the literature reviewed earlier, we hypothesized that exogenous variables such as distance between hometown and campus, gender and Hukou would be predictors of first-year undergraduate place attachments. We also predicted that the students' academic efficacy, emotional wellbeing, and interpersonal relationships would be related not only to their place attachment to the campus, but also to their place attachment to their hometowns. Specifically, the greater the level of academic efficacy, emotional wellbeing and interpersonal relationships that the students perceived, the more intensely they would be expected to develop bonds with campus. Moreover, these exogenous variables would act as mediators in the interaction between place attachment to campus and place attachment to hometown.

### 3. Method

#### 3.1. Respondents

First-year undergraduates in the transition to university have not yet had much opportunity to become accustomed to their new environment, and are immediately confronted with a new set of social and intellectual challenges, which may raise questions about who they are and how they see themselves (Cassidy & Trew, 2004). Therefore, we used data obtained from questionnaires given to 265 first-year undergraduates at the College of Public Administration at Nanjing Agricultural University in Nanjing, China. Nanjing, the capital of Jiangsu Province and home to a registered population of 8.7 million residents, is the second-largest commercial centre in eastern China, only exceeded by Shanghai. In 2012, 35,000 students were registered at this university, including 17,000 full-time undergraduates and more than 8000 graduate students. In recent years the annual full-time enrolment at Nanjing Agricultural University has varied between 4200 and 4500 students (total from 16,800 to 18,000 in four years).

#### 3.2. Survey process

The questionnaire, which was administrated in Chinese, was completed by students at the end of a classroom lecture in December 2012. All the students were cooperative and agreed to participate. Completion of the questionnaire generally took the participants no more than ten minutes. Of the 265 completed questionnaires, 22 contained erroneous or missing information, so the final sample size for further analysis was 243.

The questionnaire consists of three sections: (1) the basic demographics of the sample population, (2) place attachment, and (3) emotional disturbance, peer relationships and academic self-efficacy. Hometown was defined on this questionnaire as 'where you had lived the longest before you joined university', since pilot test participants were confused by the term 'hometown' and queried whether it was where their grandparents' or parents' homes were located. The first section included eleven questions about the participants' basic attributes, such as age, gender, hometown, study major, number of roommates, duration of dormitory stay and so on. The second section, on place attachment, contained items related to both hometown and campus: it follows Williams and Vaske's (2003) place attachment scale and included eight items in each. The items were scored on a five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

The third section contained questions related to emotional disturbance, peer relationships and academic self-efficacy. The emotional disturbance section comprised four items on self-reported anxiety, loneliness, depression and homesickness, which were adapted from Sun's (2005) self and personality scales. There

were three peer relationship items: 'I am involved in college activities such as clubs, sports, student government, etc.', 'I think about changing my dormitory' and 'I like most of my roommates'. These were adapted from the open-ended questionnaire on personal contact proposed by Xie and Zhang (2005). As the respondents had not yet had any examinations (the questionnaire was administered at the end of the first semester), there were only six academic self-efficacy items: 'the course requirements exert a lot of pressure on me', 'I study very hard', 'I am satisfied with my Major', 'I have already got used to the learning style in college', 'I often skip classes', and 'I take the initiative to communicate with the lecturer in and after class'. These items were adapted from Sun's (2005) survey on academic life and adaptability to new settings.

Scoring methods varied in the third section. Psychological disturbance items (i.e. the first two peer relationship items and the last academic performance item) were scored on a five-point scale: the numbers 1 to 5 respectively represented *never*, *seldom*, *occasionally*, *frequently* and *very frequently*. The other items in section three were scored on the same scale as the place attachment items.

#### 3.3. Method of analysis

We carried out corrected item-total correlation tests (Churchill, 1979) and inter-item correlation tests (Hair, Black, Babin, Anderson, & Tatham, 2006) to examine the item consistency. We then carried out exploratory factor analysis on the preserved items to identify the underlying dimensions and latent constructs. We assessed the measure's reliability by checking the internal consistency (Cronbach's alpha) of the items for each dimension with SPSS (version 20).

We performed covariance analysis using LISREL 8.3 (Jöreskog & Sörbom, 2001) to explore the impacts of exogenous variables on the endogenous variables and the interactions between the latter. Overall model-fit indicators included Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980), Normed Fit Index (NFI; Bentler & Bonett, 1980), Comparative Fit Index (CFI; Bentler, 1990) and Incremental Fit Index (IFI; Bollen, 1989). A RMSEA value less than 0.08 (Hu & Bentler, 1995) or a CFI, NFI or IFI value in excess of 0.90 (Bentler, 1990; Bollen, 1989) indicates acceptable model fit. In the analysis of structural equation models, the x-variables were considered to be fixed or unconstrained random

**Table 1**  
Demographic characteristics of the sample (N = 243).

Variable (code)	n	%	Variable	n	%
<i>Gender</i>			<i>Ever left hometown for more than half a year before</i>		
Male (1)	80	32.9	No (1)	191	78.6
Female (2)	163	67.1	Yes (2)	52	21.4
<i>Age (in 2012)</i>			<i>Length of time spent living in a dormitory before</i>		
<18 (1)	17	7.0	None (1)	87	35.8
18 (2)	111	45.7	<3 years (2)	51	21.0
19 (3)	85	35.0	3–6 years (3)	78	32.1
>19 (4)	30	12.3	>6 years (4)	27	11.1
<i>Hukou</i>			<i>Having been to Nanjing before</i>		
Rural (1)	98	40.3	No (1)	170	70.0
Non-rural (2)	145	59.7	Yes (2)	73	30.0
<i>Major</i>			<i>Have relatives/family friends in Nanjing</i>		
Humanities (1)	180	74.1	No (1)	187	77.0
Sciences (2)	63	25.9	Yes (2)	56	23.0
<i>Distance to hometown (km)</i>			<i>Number of family visits after admission</i>		
0–250 (1)	56	23.0	None (1)	120	49.4
251–650 (2)	64	26.3	1–3 (2)	107	44.0
651–1050 (3)	67	27.6	4–6 (3)	9	3.7
>1050 (4)	56	23.1	More than 6 (4)	7	2.9

**Table 2**  
Bivariate correlation coefficients (Spearman) for demographic variables (N = 243).

	1	2	3	4	5	6	7	8	9	10
1. Distance										
2. Gender	−0.05									
3. Age	0.24**	0.10								
4. Hukou	0.07	−0.06	0.22**							
5. Never left hometown before	0.17**	−0.10	0.19**	0.00						
6. Having been to Nanjing before	−0.40**	−0.04	−0.14*	0.17**	−0.01					
7. Years spent living in a dormitory before	0.22**	−0.17**	0.28**	−0.41**	0.28**	−0.35**				
8. Number of roommates	0.01	0.82**	0.01	−0.05	−0.07	−0.05	−0.14*			
9. Family visits since registration	−0.27**	−0.02	−0.15*	0.20**	−0.06	0.25**	−0.20**	−0.09		
10. Relatives in Nanjing or not	−0.23**	0.09	0.10	0.07	0.07	0.35**	−0.17**	0.09	0.33**	
11. Major	−0.23**	−0.23**	0.05	−0.03	−0.01	0.06	−0.01	−0.21**	0.13	0.03

\* Correlation is significant at 5% (two-tailed).

\*\* Correlation is significant at 1% (two-tailed).

demographic variables. For the measurement of underlying dimensions, we posited that each manifest variable had a positive factor loading only on the dimension it was assumed to measure.

## 4. Results

### 4.1. Demographic characteristics

Most of the first-year undergraduates (80.7%) were aged 18 or 19, indicating that they were ordinary secondary school students who graduated in 2012. Older students would have graduated earlier or taken an entrance examination more than once; younger students may have skipped grades in primary school or secondary school (cf. Table 1). Nearly sixty percent of the students had registered residential addresses in urban areas, according to the Hukou system. The students' hometowns were distributed across the whole country: the students originated from nineteen of China's 34 provinces, and from four autonomous regions and four municipalities. Slightly less than half (46.1%) of the respondents were from Jiangsu or neighbouring provinces/municipalities (i.e. Zhejiang Province, Anhui Province, Shandong Province and Shanghai), where the physical and social conditions are much more similar to those in Jiangsu compared with provinces further away.

To compute the correlation coefficients for each of these variables, we retrieved data about the distance between the campus and each hometown using Google Maps: these distances ranged from less than 30 km for a nearby city to more than 4800 km for cities in the Xinjiang Autonomous Region. We then aggregated the data into four groups of almost the same size: less than 250 km, 251–650 km, 651–1050 km, and more than 1051 km.

We observed significant correlations between some of these demographic variables (cf. Table 2). The significant negative correlation between distance and the item 'Having been to Nanjing before' ( $r = -0.40, p < 0.01$ ) is probably because Nanjing is a famous tourist destination and these students had better access to it due to the shorter distances. Distance also correlated significantly with the number of family visits since registration ( $r = -0.27, p < 0.01$ ) and the item 'relatives in Nanjing or not' ( $r = -0.23, p < 0.01$ ): this suggests decreased visit frequency caused by distance decay and relative close distribution of close or extended family members.

### 4.2. Item construct and reliability

After we corrected the item–total correlation and the inter-item correlation tests, four items were deleted and the remaining 25 were entered into the factor analysis. The four deleted items related to lecturer support, homesickness, course attendance and course burden. Following the criteria suggested by Hammitt, Backlund, and Bixler (2006), we extracted components with eigenvalues

greater than 1 and retained items whose foremost factor loading was greater than 0.40 without high cross-loadings. The principal component and reliability analyses of responses to the questionnaire indicated six underlying dimensions, which together accounted for more than seventy percent of the variation after rotation. All the items under these dimensions were retained with only one exception: hometown dependence (item 4) was deleted due to high cross-loading. Although the internal consistency of one dimension (academic self-efficacy) was questionable (Cronbach's alpha coefficients were slightly higher than 0.60; cf. Table 3), Crotina (1983) has suggested that coefficients of 0.60 and above could also be acceptable in scales with fewer than six items. Based on this, we concluded that all the scales were reliable.

The respondents' attachment to their hometowns forms the first factor (hometown attachment) and includes seven items. The second and third factors taken together, campus identity and campus dependence, evaluated the respondents' attachment to campus, including one more item. Mean values of the hometown attachment items were significantly higher than those of the campus items ( $p < 0.001$ ).<sup>1</sup> This is in line with Williams and Vaske's (2003) suggestion that a person's place attachment should differentiate between various places. Overall, respondents had stronger and more positive beliefs about their hometowns compared with neutral to medium positive (3.3–3.6) scores on campus identity items and medium negative to neutral (2.3–3.1) scores on campus dependence items. The fourth, fifth and sixth factors measured respondents' emotional wellbeing, peer relationships and academic self-efficacy respectively, explaining 18% of the variance altogether. Generally, respondents had a positive self-evaluation of their emotional wellbeing and peer relationships. However, they had only neutral scores on all of their academic self-efficacy items.

### 4.3. Covariance analysis

All the parameters we estimated for the measurement model were significant ( $p < 0.05$ ) in the covariance analysis of the structure equation model. Furthermore, the structural model was modified by removing several structural paths and demographic x-variables without significant effects. Overall fit indices for the re-specified model indicate an acceptable fit for these data ( $\chi^2 = 652.58, df = 334, RMSEA = 0.063, CFI = 0.96, NFI = 0.92, IFI = 0.96$ ). In the re-specified model, campus identity was found to impact positively on campus dependence, the other dimension of campus attachment. Therefore, we split a nested model with the original one-dimensional construct of hometown attachment into two dimensions to investigate whether a similar effect exists.

<sup>1</sup> Dependence item 4 is the only exception: it had a  $p$  value of 0.002.

**Table 3**  
Principal component analysis of place relocation.

Item	Factor loadings	Mean	S.D.	Alpha
<i>Hometown attachment</i> (Eigenvalue = 6.367; variance explained = 26.5%)				
Identity1: I feel my hometown is a part of me	0.83	4.33	0.83	0.90
Identity2: My hometown is very special to me	0.82	4.35	0.81	
Identity3: I identify strongly with my hometown	0.86	4.23	0.85	
Identity4: I am very attached to my hometown	0.87	4.36	0.80	
Dependence1: My hometown is the best place for what I like to do	0.82	3.84	0.98	
Dependence2: No other place can compare to my hometown	0.67	3.08	1.14	
Dependence3: I get more satisfaction from being in my hometown than in any other place	0.72	3.49	1.14	
<i>Campus identity</i> (Eigenvalue = 3.366; variance explained = 14.0%)				
Identity1: I feel campus is a part of me	0.84	3.48	0.81	0.89
Identity2: Campus is very special to me	0.86	3.57	0.79	
Identity3: I identify strongly with my campus	0.74	3.33	0.79	
Identity4: I am very attached to my campus	0.74	3.40	0.74	
<i>Campus dependence</i> (Eigenvalue = 2.499; variance explained = 10.4%)				
Dependence1: My campus is the best place for what I like to do	0.70	2.75	0.83	0.82
Dependence2: No other place can compare to my campus	0.86	2.36	0.85	
Dependence3: I get more satisfaction from being on campus than anywhere else	0.83	2.47	0.80	
Dependence4: Doing what I do on campus is more important to me than doing it anywhere else	0.52	3.02	0.93	
<i>Emotional wellbeing</i> (Eigenvalue = 1.929; variance explained = 8.0%)				
I frequently feel isolated (inversed)	0.83	3.93	0.85	0.85
I often feel anxious (inversed)	0.87	3.87	0.89	
I feel depressed (inversed)	0.87	3.81	0.86	
<i>Peer relationships</i> (Eigenvalue = 1.617; variance explained = 6.7%)				
I am involved in extracurricular group activities	0.63	3.70	0.73	0.78
I like most of my classmates	0.79	4.40	0.72	
I want to change my dormitory (inversed)	0.79	4.04	0.75	
<i>Academic self-efficacy</i> (Eigenvalue = 1.267; variance explained = 5.3%)				
I study very hard	0.78	2.89	0.88	0.61
I am satisfied with my Major	0.65	3.09	0.92	
I am already used to the learning style in college	0.71	3.05	0.85	

N.B. Negatively worded items were inversely recorded.

Hometown identity was measured using the same items as campus identity. However, hometown dependence was measured with one fewer item (dependence 4) than campus dependence. Overall fit indices for the nested model not only indicated an acceptable fit ( $\chi^2 = 514.23$ ,  $df = 329$ ,  $RMSEA = 0.048$ ,  $CFI = 0.97$ ,  $NFI = 0.93$ ,  $IFI = 0.97$ ), but also a better fit with the significant  $\Delta\chi^2$  statistical value ( $p < 0.001$ ).

In the final model, we preserved four demographic variables (distance, gender, Hukou, and length of time living in dormitories) as x-variables, with the others not being included in the final equation to avoid collinearity due to the significant correlations (cf. Table 2). As shown in Table 4, both  $\gamma$  estimates specifying the impacts of exogenous variables on latent dependent variables and  $\beta$  estimates specifying interrelationships among the endogenous latent variables were significant ( $p < 0.05$ ). Gender was a significant predictor for several endogenous latent variables: compared to female first-year undergraduates, male first-year undergraduates generally possessed more positive hometown dependence and campus dependence, self-evaluated higher academic self-efficacy, and reported fewer emotional disorders. First-year undergraduates whose hometowns were closer to Nanjing had more positive hometown dependence and campus dependence. Students who had previously lived in dormitories for a longer period reported more emotional disorders and respondents from rural regions had higher self-evaluation on academic self-efficacy.

Like campus attachment, hometown identity positively affected hometown dependence. Campus identity had a positive effect on hometown identity, while campus dependence had a positive effect on hometown dependence. However campus identity and peer-relation negatively influenced hometown dependence. Both hometown identity and emotional wellbeing exerted positive impacts on peer relation. Affecting campus identity positively, academic self-efficacy is also positively predicted by both emotional wellbeing and hometown identity (cf. Fig. 1).

## 5. Discussion

### 5.1. Interactions between dimensions of place attachment

Although our study identified place attachment to hometown as one-dimensional, and place attachment to campus as two-dimensional by exploratory factor analysis, a chi-square

**Table 4**  
Structural model parameter estimates.

	$\gamma$ (t-value)	$\beta$ (t-value)	R <sup>2</sup>	
<i>Predictors of home identity</i>				
Campus identity		0.31 (2.80)	0.12	
<i>Predictors of home dependence</i>				
Distance	-0.15 (-3.31)		0.83	
Gender	-0.16 (-2.71)			
Campus identity		-0.35 (-3.68)	0.13	
Campus dependence		0.38 (4.46)		
Home identity		0.86 (14.22)		
Peer relationships		-0.18 (-3.20)		
<i>Predictors of campus identity</i>				
Academic self-efficacy		0.41 (2.77)	0.13	
<i>Predictors of campus dependence</i>				
Distance	-0.13 (-2.74)		0.47	
Gender	-0.16 (-2.40)			
Campus identity		0.62 (9.51)	0.42	
<i>Predictors of academic self-efficacy</i>				
Gender	-0.18 (-2.72)			
Hukou	-0.18 (-3.05)		0.10	
Emotional wellbeing		0.28 (3.47)		
Home identity		0.18 (3.00)	0.19	
<i>Predictors of emotional wellbeing</i>				
Gender	-0.20 (-2.49)		0.19	
Length of time living in dormitories	-0.20 (-3.13)			
<i>Predictors of peer relationships</i>				
Emotional wellbeing		0.49 (5.42)	0.19	
Home identity		0.24 (2.80)		

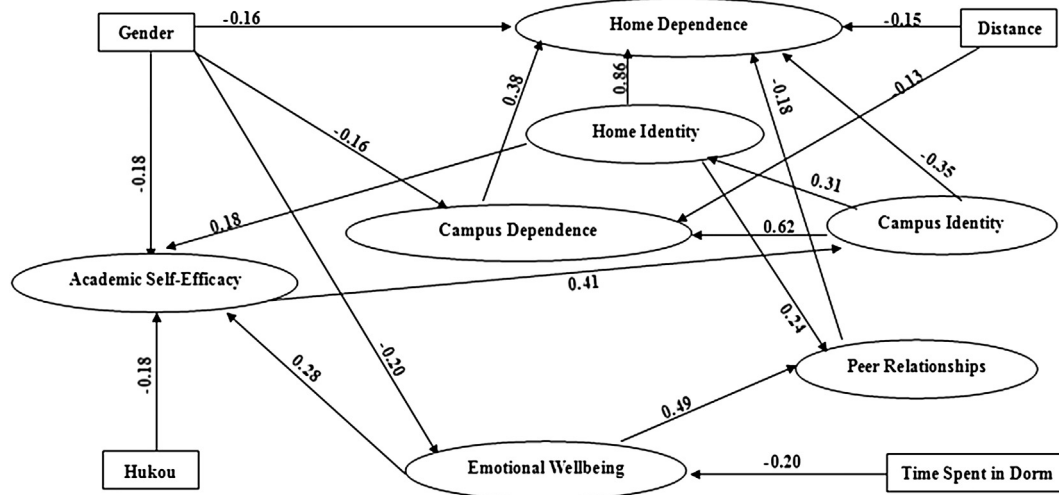


Fig. 1. The structural model result.

difference test of the structural equation model later illustrated the superiority of a two-dimensional construct of home attachment over the previous one. The two-dimensional construct of place attachment, first developed by Williams and Roggenbuck in 1989 and confirmed by other scholars (Jorgensen & Stedman, 2001; Raymond et al., 2010; Williams & Vaske, 2003), was therefore retained for further examination of the interactions between the dimensions of multiple place attachment. Mean scores of place identities in excess of 3 (cf. Table 3) indicated that an individual can simultaneously experience positive place identities related to two places (hometown and campus), which is line with the findings of Giuliani et al. (2003).

Under the two-dimensional construct, place identity positively affected place dependence, both in the case of hometown and campus. Higher place identity, the emotional dimension of attachment, generally leads to higher place dependence, the functional dimension of place attachment. This result contradicts the findings of Moore and Graefe (1994), but is consistent to some extent with the findings of Proshansky et al. (1983), in that place dependence might not be a predictor of place identity. Place identity for a given setting connotes with the expectation of an individual's social roles in the specific setting (Proshansky et al., 1983), so once an individual's place identity has been realised and developed (Chow & Healey, 2008), social responsibility indicated by place identity and social relationships established as an intrinsic part of place identity (Feldman, 1990) entail dependence on the place through immersion in activities in the new environment, such as learning, entertainment and peer communication (as is the case for first-year undergraduates).

The influence of campus attachment on hometown attachment is threefold. First, campus identity predicted lower hometown dependence, which was consistent with Chow & Healey's (2008) findings that all first-year undergraduates expressed less dependence on home after realising their new identities. The stronger the student's emotional bond with the campus is, the weaker his or her functional bond with the hometown will be. Additionally, the removal of hometown dependence item 4 ('Doing what I do in my hometown is more important to me than doing it in any other place') also supports decreasing hometown dependence after relocation. The difference between hometown and campus in the removed item is much smaller (0.24) than the other items (0.79–1.09), suggesting that Nanjing was chosen as the destination for higher education because of the inaccessibility of a suitable

educational resource in the students' hometowns.

Second, campus identity was significantly predictive of higher hometown identity, providing support for the argument that place identity growing out of direct experiences with environments will be modified and transformed by subsequent direct experiences (Proshansky et al., 1983). In other words, a person's place identity with the environmental past will be re-evaluated based on the place identity with the environmental present. Accordingly, the higher a student scores on campus identity, the more he or she is emotionally attached to her hometown. This is also consistent with Graumann's (1983) finding that being away from a person's hometown can enhance hometown identity in the case of multiple identities.

Third, place dependence on hometown increased with place dependence on campus, which seems at first glance to contradict the findings of Chow and Healey (2008). However, according to Speller, Lyons, and Twigger-Ross (2002), home (hometown) provides an anchor for place-dependent memories and creates place-referent continuity in the development of place identity. In his exploration of the campus environment and the gradual formation of place dependence, Bowlby (1969) also found that respondents rely more on their hometown as a source of support (i.e. 'a safe haven'). Therefore, the more the student is functionally attached to the campus, the more he or she is functionally attached to the hometown.

## 5.2. Place attachment and the mediators

Hometown identity exerted a positive indirect impact on campus identity through the mediator of academic self-efficacy. The association between hometown identity and academic self-efficacy seemed baffling at first glance and is barely mentioned in the literature. A stronger hometown identity provides the students with a much greater sense of security as it gives the students a safe haven to rely on (Bowlby, 1969). Therefore, undergraduates with stronger hometown identity are more confident when coping with the challenges which accompany the transition (Curtrona, Cole, Colangelo, Assouline, & Russell, 1994), for instance, changes in their academic experience, and hence acquire a stronger campus identity. In line with the findings of Chemers et al. (2001), students who are more satisfied with their Major adapt more quickly to the teaching and learning style and study harder, developing a higher campus identity.



We found peer relationship to be a mediator between hometown identity and hometown dependence, in addition to the direct positive effect the former had on the latter. Peer relationship was positively predicted by hometown identity, but exerted an adverse impact on hometown dependence, indicating that hometown identity has a negative indirect influence on hometown dependence. Most respondents submitted their questionnaires along with classmates from the same hometowns – later on we found the same hometown locations in sequential records. We therefore inferred that since students from the same hometowns shared more of the same backgrounds, they were more likely to establish social relationships together compared to establishing relationships with classmates from different places, especially during the initial transitional period. They therefore went to class together, sat together and handed their questionnaires in together. Moreover, with the gradual establishment of peer relationships, Fried (2000) found that students become less dependent on their hometowns because the loss of previous social relationships caused by relocation could be compensated for, at least in part, by forming new social relationships. Relationships with peers and classmates from the same hometowns therefore bore a double meaning for respondents. On the one hand, it was a component of newly forming social relationships; on the other, it also represented a continuity of hometown identity, which was beneficial to the student's adjustment.

First-year undergraduates who reported lower frequencies for depressed moods, loneliness and anxiety generally valued academic efficacy and peer relationships more positively. Emotional wellbeing thus helps first-year undergraduates cope better with the intellectual and social challenges that confront them (Cassidy & Trew, 2004). As previous studies (Armsden & Greenberg, 1987; Xie & Zhang, 2005) identified academic pressure and failure in interpersonal relationships as the antecedents for psychological disorders, a cycle might exist between academic achievement, emotional status, academic efficacy and interpersonal relations; however, this needs to be confirmed by further study as we obtained no data on the students' GPAs. For instance, a vicious cycle could be that failure in interpersonal relationships and academic performance can lead to psychological disorders, which in turn will result in more difficulties in establishing social networks and achieving learning efficacy.

### 5.3. Effects of demographic variables

Distance negatively affected both hometown dependence and campus dependence. Undergraduates whose hometowns were nearer to campus were inclined to be more dependent on both places. Chow and Healey (2008) argued that people tend to maintain close relationships with a specific place for continuity through geographic proximity. Therefore, increases in distance could increase first-year undergraduate difficulties in maintaining such connections and create more unexpected challenges for them in campus in several respects. First, the further the respondent's hometown was from the campus, the more differences there would be between the physical and social environments of the hometown city and Nanjing, causing there to be more for the students to adapt to. Second, first-year undergraduates from nearby cities might be better prepared for the transition since they could get more information about the campus city through personal visits, as indicated by the negative correlation between distance and previous visits to Nanjing. Brown and Raymond (2007) also found that place attachment is closely associated with knowledge about a place. Third, family support in the form of parental visits and the respondents' visits to local relatives was more likely to be available due to proximity, as indicated by the significant correlations

between distance and the number of family visits and the item 'relatives in Nanjing or not'. Finally, proximity also facilitated a sense of security (Bowlby, 1969): in exploring the new setting, students with less distant hometowns could more easily seek family support and help because of their increased accessibility.

Gender was a significant predictor for home dependence, campus dependence, academic self-efficacy and emotional wellbeing. Females reported more frequent occurrences of negative emotions and lower academic efficacy, consistent with previous findings on undergraduates in China (Liang, 2004) and abroad (Fisher & Hood, 1987). A possible explanation for the gender difference in academic self-efficacy is the various criteria used to evaluate academic performance (Liang, 2004). Zhang and Yang (1999) found that male university students are more concerned about broadening the scope of their knowledge and less about GPA and the opinion of others. In contrast, they found that female university students placed greater value on their GPAs and on lecturer and peer opinions when self-evaluating their academic performance, resulting in lower self-efficacy. Females were more likely to be less dependent on the campus, either through direct effect on campus dependence or through the partial mediation of academic self-efficacy. Females were also less dependent on their hometowns, which differs from Scopelliti and Tiberio's (2010) findings that there were no gender differences for place attachment to hometown. Similar gender differences related to bonds with places have also been observed in adolescents across thirteen countries (Dallago et al., 2009) as well as in adults (Lagrange & Ferraro, 1989). Dallago et al. (2009) ascribed females' weaker bonds with the places they lived in to their different use of the local area: males are more likely to hang out than females so are likely to know the local area better. However, the literature on adults demonstrates that adult women tend to spend more time in their local area and make more frequent use of local facilities, resulting in a stronger attachment to the local area than men (Campbell & Lee, 1992; Lagrange & Ferraro, 1989; Perkins & Taylor, 1996). Therefore, the effect of the transition from adolescence to adulthood on place attachment needs to be explored further.

Though age and length of residence were considered to be independent variables for place attachment (Brown & Raymond, 2007), a lack of age variation in this study meant that age was not a significant predictor in the structure equation model. Nevertheless, by comparing the scores on campus and hometown attachment, significant differences could be observed in which length of residence played a key role. Overall, respondents had a much higher place attachment to their hometowns where most had spent eighteen or nineteen years, than to the campus where they had lived for only four months.

We also noted that the item 'Never left hometown before' did not enter as an independent variable in the model, which seemed to contradict the positive association of residence duration and place attachment. Our explanation for this was that those who had left their hometowns could still maintain close relationships with them, either through communication with hometown social circles or through personal visits during traditional holidays where it is customary for families to come together.

Hukou negatively predicted academic self-efficacy, as students from rural regions evaluated themselves as more confident about their academic capabilities on campus than those from urban regions. People registered with rural Hukou usually had fewer opportunities for education, employment, welfare and so on than their urban counterparts. Therefore they need work harder to compete for the equal access of opportunity. The substantive and significant correlation between Hukou and length of time living in a dormitory was an indication of the unbalanced distribution of accessible educational resources. Students with rural Hukou tended

to have some and longer residence experience in dormitories because the great distance between home and school does not allow them to reside at home. The negative impact of length of time spent living in a dormitory on emotional wellbeing was somewhat unexpected: this variable has hardly ever been cited in previous studies of Chinese students. Since student dormitories are assigned based on the students' ID numbers, which are based on the stroke order of the students' surnames, students assigned to share a dormitory room are usually strangers. A possible explanation therefore is that having unfamiliar roommates in a campus dormitory will remind undergraduates with previous dormitory experiences of their loss of social relationships with their previous roommates, leading to more negative emotions.

## 6. Conclusions

The purpose of this study was to examine the interactions between dimensions of place attachment and the effects of respondent variables on place attachment among first-year undergraduates moving from their hometowns to a university campus in another city. Our findings indicate that the campus (city), the present locus for students, acts as a reference origin in their evaluation of attachment to their past place (the hometown). Attachment to hometown, in turn, also influences attachment to campus through variables such as academic self-efficacy.

Understanding the variables which affect student place attachment helps address widespread concerns about college students' adjustment to the transition. Initial experience of campus is particularly important in that it exerts an impact on the students' continuing university life (McInnis, James, & Hartley, 2000; McInnis, James, & McNaught, 1995). For students who leave home for campus, the better they adapt to the new physical and social environment, the quicker they will develop place attachment to the campus and thus improve their academic performance.

Our study shed light on how to promote place attachment with a campus by exploring the relationships between place attachment and other variables. Since higher academic self-efficacy entails a stronger campus identity, special support projects to enhance academic efficacy among first-year undergraduates should be encouraged in general. Campus dependence can also form and be enhanced with the gradual realization of campus identity, thus enabling place attachment to the campus as a whole to be developed.

Due to the significant differences between urban and rural areas, Hukou plays an important role in the development of undergraduate campus attachment. Students with rural Hukou generally experience higher academic self-efficacy. In addition, students from rural regions tend to spend more years living in dormitories, resulting in more frequent emotional disturbance and lower academic self-efficacy, which ultimately delays campus identity. Special attention should therefore be paid to promoting rural students' academic self-efficacy to help them adapt more quickly to the new environment.

Moreover, further studies should explore the relationship between place attachment to campus and peer relationships. Our findings suggest that undergraduates who share the same home identities are more likely to establish peer relationships with each other, since they share more similar contextual backgrounds. However, our study did not reveal whether the relationships between first-year undergraduates from the same hometowns facilitates their engaging in social relationships with students from different backgrounds. If the relationships with people from their own hometowns prevents these first-year undergraduates from building social networks with classmates from other places in their new environment, then activities to promote interactions between students from different cities or provinces should be promoted to ensure that

students develop a more balanced social network on campus, one which includes students from both their own hometowns and other places. It would also be interesting to focus on the evolution of undergraduates' place attachment and campus experience over time and include second, third and even fourth-year students as subjects, since the study year variable plays a role in student endeavours to establish social networks and acts as an indicator of residence history which has been found to foster attachment.

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