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Original Article

Reliability and Validity of Place Attachment Scale among Iranian Older Adults

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Introduction: Place attachment is a sense of comfort of people in their neighborhood. Aged people are sensitive to changes in their environment. This study aimed to find the reliability and validity of the Place Attachment Scale (PAS) among Iranian older adults.

Methods: This was a methodological study in which the study population consisted of 550 elderly people living in Tehran. Data were collected through PAS. Data analysis was performed using IBM SPSS statistics v.22 and LISREL v.20 software via Pearson correlation test, independent t-test, Cronbach's alpha, exploratory and confirmatory factor analysis.

Results: Face validity of the PAS was confirmed by a panel of experts. Internal consistency of PAS was 0.95. Exploratory and confirmatory factor analysis confirmed the construct validity of the PAS (CFI= 1.00, GFI= 0.98, RMSEA= 0.05) . The mean score of the participants' PAS was 23.78 ± 7.58 that was indicative of a moderate level of place attachment.

Conclusion: PAS is a suitable tool for assessing Place Attachment among Iranian older adults.

Keywords: Aged, Place Attachment, Reliability, Validity

Introduction

Place attachment (PA) is a social-emotional concept (1) and one of the most important factors affecting people's health is their environment and neighborhood (2). The concept of place has generally been considered in the well-being theories (3). According to person-environment theories of aging, the people who live in a proper environment to their physical, cognitive, and emotional needs, have higher life satisfaction and well-being. Age-related changes make older people more sensitive to the characteristics of their environments (4).

PA refers to a person's sense of comfort in her/ his environment (5). The studies on PA are categorized into personal, environmental and social (6). PA at the personal level has components that explain the emotional and cognitive relationship between the person and his / her environment. At the personal level, the concepts to be considered include place identity, place dependence, and social relations in the neighborhood (7). Place identity is one of the infrastructures of personal identity that explains it based on the values about the place (8). Place

dependence is the targeting behaviors arising from the feeling of living in the neighborhood (9) and, finally, social relations in the neighborhood is an important dimension that indicates PA; these relationships become increasingly important in old age (10). "Aging in place" is one of the important concepts in gerontology. If the elderly people interested in their living environment, they will have a good "Aging in place". There should be a suitable scale for measuring PA for this purpose. There are several tools for evaluating PA (11, 12). But the concept of PA is rooted in culture and society. Therefore, it is better to use tools that are specific to the community. So far, no PAS for the older adults has been studied in Iran. However, the Place Attachment Scale (PAS) examined in this study had good validity and reliability for young people. Therefore, this study aimed to evaluate the validity and reliability of PAS among Iranian older adults.

Methods

Study design and participants

This was a methodological study in which the study population consisted of 550 elderly people living in Tehran.

The study population consisted community-dwelling older adults (60 years and above) living in Tehran. Tehran (the capital of Iran) was chosen as study setting because of its vast ethnic diversity. The convenience sampling was performed in this study. The participants were selected from the Primary Health Centers (PHCs) for primary care that volunteered to participate in the study.

The face validity was assessed by the eight experts. They were asked to determine if the PAS was comprehensible to the elderly and whether it was grammatically and lexically appropriate. Then, the tool was given to five elderly people, and they were asked about the comprehensibility of the PAS. After making sure that the scale items was appropriate and the proposed minor corrections were made, sampling was initiated and the participants were asked to complete the questionnaires.

The reliability was assessed on 35 older people including test-retest reliability after two weeks and internal consistency. Exploratory factor analysis was performed on 350 samples from elderly people who referred to PHCs. Confirmatory factor analysis was conducted on another 200 elderly people who referred to PHCs. Inclusion criteria consisted of age 60 years and over, appropriate cognition status based on Mini-Cog test result (three words recall task and clock drawing test) (13), ability to communicate in Persian language; and exclusion criteria were limited to incomplete completion of the questionnaire. Questionnaires were completed by the self-report and interview if the participant was illiterate.

Instrument

The questionnaire included demographic information (including sex, age, marital status, education, self-reported economic status, and length of residence in the current place) and place attachment scale (PAS). PAS was designed to assess PA at a personal level. PAS is an eight-item Persian-language scale developed by Khodaee et al. (2015) in Iran based on place attachment at the personal level (14) but has not been evaluated among the elderly. The PAS measures place identity (three items), place dependence (three items), and social relations in the neighborhood (two items). It is scored on a Likert scale ranging from very low (1) to very high (5). The minimum score is eight and the maximum is 40. Permission to use PAS was obtained from its developer.

Ethical considerations

The informed consent was obtained from all the participants after explaining the aim of the study. All participants were assured that the information would remain confidential. All general ethical codes were observed in this study. This study was approved by the Ethics Committee of the University of Social Welfare and Rehabilitation Sciences (Ethical code: IR.USWR.REC.1394.1).

Statistical analysis

The results of descriptive statistics were shown as mean, standard deviation, number, and percentage. Data analysis was performed by independent t-test to compare the difference of scores between two groups (e.g. sex), ANOVA to compare the difference of scores in subgroups (e.g. educational levels), Cronbach's alpha for internal consistency, exploratory and confirmatory factor analysis was used for construct validity. Discriminant validity was assessed through Known-Groups Validity based on the Pearson correlation coefficient between length of residence in the current place and place attachment as found in the previous studies (15). The median length of residence in the current place was 14 years. Participants were divided into two groups (group 1 stay less than 14 years and group 2 stay longer than 14 years). Data were analyzed via IBM SPSS Statistics v.22 and LISREL v.20.

Results

Participants

The participants were 550 older adults that 324 of them were male (58.9%). The mean age of participants was 66.09 ± 6.67 years.

Reliability

The test-retest reliability of the PAS was 0.74 after two weeks in 35 elderly people ($p < 0.01$). Cronbach's alphas for the overall PAS were 0.95, and for the subscales were: 0.96 for place identity, 0.97 for place dependence, and 0.94, for social relations in the neighborhood.

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Exploratory factor analysis

Exploratory factor analysis was used for construct validity via Principal Component Analysis and Direct Oblimin Rotation on 350 samples (16). The Kaiser-Mayer-Olkin test was (< 0.85) and Bartlett test (< 0.001) with 28 degrees of freedom. Tables 1 and 2 show the results of the exploratory factor analysis.

Confirmatory factor analysis

Confirmatory factor analysis was performed on a sample of 200 other elderly people and its results are shown in table 3.

Discriminant validity

Discriminant validity was based on known groups. There was a significant positive correlation between the length of residence in the current place and PA score ($r = 0.11$, $p < 0.01$). Participants were divided into two groups (group 1 stay less than 14 years and group 2 stay longer than 14 years) and the correlation between PA and the length of residence in the current place was examined. Table 4 shows the results.

The mean score of initial sample (350 elderly people) PAS was 23.78 ± 7.58. Mean scores of subscales were 8.62 ± 3.07 for place identity, 9.14 ± 3.29 for place dependence, and 7.17 ± 1.64 for social relations. Table 5 shows the descriptive data for each of the PAS items.

The results showed that there was a significant difference between the means of PA scores between two sexes (male elderly: 24.37 ± 7.90 and female elderly: 22.94 ± 7) ($p = 0.01$). The mean of PA scores for self-reported socio-economic state were as follows: income > expenditure: 28.37 ± 7.15, income = expenditure: 25.49 ± 7.56 and income < expenditure: 22.23 ± 7.21. The mean of PA scores was significantly different between "Income> Expenditure" and "Income > Expenditure" ($p < 0.001$). The mean of PA scores on the other demographic variables showed no significant difference.

Table 1. Eigenvalues and cumulative percentages of variance in place attachment scale in the elderly

Components	Initial Eigenvalues			Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings	
	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%	Total
1	5.73	71.69	71.69	5.73	71.69	71.69	4.73
2	1.05	13.17	84.86	1.05	13.17	84.86	3.71
3	1.00	11.17	96.03	1.00	11.17	96.03	4.86

Table 2. Matrix pattern values of components of the place attachment scale in the elderly

Item	Components		
	1	2	3
How much would you like to live in your current neighborhood?	0.99		
How much good memory do you have in your neighborhood?	0.95		
How many are the special places in your neighborhood that gets your attention?	0.97		
How much do you feel relaxed in this neighborhood?		-0.99	
How much do you feel sad, if you have to leave your neighborhood?		-0.98	
How much do you feel responsible for cleaning your neighborhood?		-0.96	
How much do you have a friendly relationship with your neighbors?			0.98
How much do you help your neighbors when they are having trouble?			0.97

Table 3. Fit indices for Place Attachment Scale model

Absolute fit indices							Relative fit indices			
Chi-square	df	Chi-square / df	GFI	AGFI	RMR	RMSEA	NFI	CFI	RFI	IFI
16.48	10	1.64	0.98	0.93	0.03	0.05	0.99	1.00	0.97	1.00

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Table 4. Discriminant validity of place attachment in known groups

Item	Length of residence in the current place less than 14 years	Length of residence in the current place more than 14 years	p
Place identity	8.10	9.18	< 0.001
Place dependence	8.64	9.65	< 0.001
Social relations in the neighborhood	5.79	6.27	0.014
Place attachment	22.53	25.11	< 0.001

Table 5. Descriptive data for Place Attachment Scale items

Components	Item	Mean	Very Low	Low	Average	High	Very High
Place identity	How much would you like to live in your current neighborhood?	2.87	52	159	182	123	34
	How much good memory do you have in your neighborhood?	2.91	47	153	190	123	37
	How many are the special places in your neighborhood that gets your attention?	2.84	56	152	190	126	26
Place dependence	How much do you feel relaxed in this neighborhood?	3.03	46	137	183	123	61
	How much do you feel sad, if you have to leave your neighborhood?	3.01	49	145	175	116	65
	How much do you feel responsible for cleaning your neighborhood?	3.10	38	137	178	124	73
Social relations in the neighborhood	How much do you have a friendly relationship with your neighbors?	2.97	53	150	174	106	67
	How much do you help your neighbors when they are having trouble?	3.05	50	135	173	119	73

Discussion

The present study was designed to determine the validity and reliability of PAS among Iranian older adults. The findings of this study showed that PA scale had good reliability and construct validity and discriminant validity for evaluating this concept in elderly people. It can determine how much the elderly are satisfied with where they live.

The principal component analysis showed that the PAS had three interrelated components, and, in confirmatory factor analysis, the presences of these three components were confirmed in the measurement model. In the original study, Cronbach's alpha was 0.71, indicating good internal consistency of the instrument (14). In this study, the Cronbach's alpha was 0.95, indicating that PAS had good internal consistency in the elderly population, too.

The dimensions of PA at the personal level include place identity, place dependence, and social relations in the neighborhood. These three dimensions are interconnected. Shenk et al. found that the person's sense of identity was dependent on their living place and that if the elderly had a good sense to the place where they live, they would feel more connected to the society (17). But the place attachment is time-related, that is, the place attachment is likely to increase with the length of stay there (15). This study showed that there was a positive correlation between length of residence in the current place and PA. Other results showed that place attachment was significantly different between sexes, which could be due to the traditional pattern of Iranian society and the less social role and social involvement of women in society. It was also found that PA was significantly different in the self-reported socio-economic different levels (two groups: income > expenditure and income < expenditure). This finding shows that the person's level of welfare probably plays a role in his/ her degree of belonging to the place that he/ she lives.

In this study, construct validity was evaluated by exploratory and confirmatory factor analysis. Due to the correlation of the components indicating the measurement of a structure, direct oblimin rotation was used to prevent the components from being merged and accordingly, three components were extracted and confirmed in confirmatory factor analysis. Based on the findings, the validity of the instrument was confirmed and it was found that the instrument correctly measured the construct.

At the personal level, PA is influenced by the interaction of three factors (the person, the psychological aspect, and the place). It is stated that these are not places that deserve attention, but rather what is called experience-in-place which shapes the meaning of place. This means that one's place becomes meaningful in terms of experience and memories (18). The second factor is the psychological state that emerges from one's emotions, perceptions, and behaviors. Finally, the last factor affecting PA is the place itself. It is the qualities of places that make people interested in them. It is stated that the places facilitate social communication and identity formation attracts people to themselves (19). It is therefore important to consider all factors that influence the

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formation of attachment between the persons and places. The various studies found that PA has a positive effect on social well-being (6, 20). PA is the emotional relationship between a person and a place, such as where he or she lives (21). Elderly people are sensitive to changes in their environment (4). Therefore, health care providers and policymakers should pay attention to the PA of the elderly, as it is an indicator of their satisfaction and well-being with the place where they live.

Study limitations

The limitation of the present study was the lack of a tool as a standard tool for the evaluation of the convergent validity of the Persian version of PAS, and sampling was done only in one city.

Conclusion

This study showed that the PAS was a suitable tool for assessing attachment and satisfaction with one's neighborhood in the elderly people. This scale had three factors and had good internal consistency. Therefore, its use is recommended as a tool to examine the construct of comfort and satisfaction of the elderly with their place of residence.

Conflict of interest

The Authors declares that there is no conflict of interest.

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Authors' contributions

All authors have participated in the design and implementation of the study. All authors have participated to draft or modify the manuscript, read and approved the final version of the article.

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