



Psychometric testing of the Persian version of the Belongingness Scale – Clinical Placement Experience

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SUMMARY

Background: Belongingness has been identified both as a fundamental human need and as a prerequisite for nursing students' clinical learning. Belongingness has also been associated with students' academic achievement, retention, self-esteem, self-directed learning, and self-efficacy. The Belongingness Scale – Clinical Placement Experience is a valid and reliable measure of nursing students' belongingness scores; however, a Persian version of this scale is not currently available.

Aim: This study aimed to translate the Belongingness Scale – Clinical Placement Experience into Persian, to evaluate its psychometric properties, and to measure the belongingness experiences of Iranian nursing students.

Methods: Following translation and initial validity and reliability testing of the scale, 300 nursing students from three universities in Iran completed the survey. Further psychometric testing was undertaken followed by analysis of descriptive statistics.

Results: Based on the results of confirmatory factor analysis two items were removed from the scale. The mean score of Persian version of the Belongingness Scale – Clinical Placement Experience was 3.21 (0.57). The whole scale had a high internal consistency (Cronbach's alpha = 0.92). The alpha coefficients of the subscales of “self-esteem”, “connectedness”, and “efficacy” were 0.85, 0.86, and 0.80 respectively.

Conclusion: Similar to previous versions of the Belongingness Scale – Clinical Placement Experience, the Persian version demonstrated strong psychometric properties with strong validity and reliability, indicating its utility and appropriateness when measuring Iranian nursing students' belongingness experiences. Further testing with other cohorts would strengthen these results.

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Introduction

Few would debate the importance of clinical placement experiences to contemporary nursing education (Levett-Jones et al., 2007). Clinical

placements provide experiential learning opportunities in authentic clinical environments (Kim and Jung, 2012; Croxon and Maginnis, 2009); allow for application of theory to practice (Sharif and Masoumi, 2005); and facilitate nursing students' professional socialization (McKenna et al., 2013; Levett-Jones et al., 2007). Although quality clinical placement experiences are pivotal to nursing students' success and their attainment of competence, poor clinical education experiences undermine their learning, confidence, self-esteem and commitment to a career in nursing (Henderson et al., 2006; Levett-Jones and Lathlean, 2009). One of the key factors that play a crucial role in determining quality clinical experiences is the extent to which students experience a sense of belonging during their placements (Courtney-Pratt et al., 2011). This paper profiles the quantitative results from a mixed methods study that explored the belongingness experiences of Iranian nursing students. Levett-Jones (2007) Belongingness Scale – Clinical

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Placement Experience (BES–CPE) was translated into Persian, its psychometric properties evaluated, and the belongingness scores of Iranian nursing students measured.

Background

Discussions about the importance of creating responsive, supportive and nurturing clinical environments and the importance of belongingness to nursing students' professional growth are not new (Kim and Jung, 2012). Levett-Jones (2007) conducted an extensive mix-method study of belongingness and concluded that "belongingness" is a prerequisite for students' learning, professional self-concept and attainment of clinical competence. An outcome of Levett-Jones (2007) doctoral research was the following definition of belongingness:

A deeply personal and contextually mediated experience that evolves in response to the degree to which an individual feels (a) secure, accepted, included, valued and respected by a defined group, (b) connected with or integral to the group, and (c) that their professional and/or personal values are in harmony with those of the group.

Based on a wide body of empirical studies belongingness has been identified as key to effective clinical learning (Kim, 2010); academic achievement and retention (Metsälä et al., 2012; Levett-Jones and Lathlean, 2008; Sedgwick and Yonge, 2008); social identity formation (Nolan, 2011); mental health (McLaren et al., 2007); positive placement experiences (Kim and Park, 2011); self-esteem (Gailliot and Baumeister, 2007); resilience (Levett-Jones et al., 2009; Kim and Park, 2011); capacity for self-directed learning (Kim and Park, 2011; Kim, 2010); and self-efficacy (Kim and Park, 2011; Levett-Jones et al., 2009). Given these extensive outcomes it is evident that the measurement of nursing students' belongingness experiences is an important way of determining the effectiveness of clinical education programs and potentially of identifying the factors that impact upon these experiences (Levett-Jones et al., 2007).

A number of instruments have been developed to measure belongingness (for example Hagerty et al., 1992; Metsälä et al., 2012; Kim and Park, 2011). Most measure belongingness in relation to families, social groups, communities or work environments (Malone et al., 2012). Measuring nursing students' belongingness experiences requires a specific instrument and we selected Levett-Jones (2007) BES–CPE. This instrument has been used in a number of different countries including Korea, Finland, Australia, England and Japan (Honda et al., under review; Kim and Jung, 2012; Levett-Jones, 2007; McKenna et al., 2013; Metsälä et al., 2012) and has strong evidence of validity and reliability. The BES–CPE consists of 34 items and uses a 5-point Likert scale ranging from 1 (never true) to 5 (always true). Higher mean scores are indicative of higher levels of belongingness. Four of the items (10, 14, 22 and 26) are reverse scored to minimize response bias. The subscales of the BES–CPE include 'self-esteem' (the extent to which one feels they are held in esteem by one's nursing colleagues) (13 items), 'connectedness' (a sense of interpersonal connection with colleagues) (10 items), and 'efficacy' (efficacious behaviors undertaken to enhance one's experience of belongingness in the clinical environment) (8 items). The BES–CPE has a Cronbach's alpha of 0.92 and 0.90 for the self-esteem subscale, 0.82 for the connectedness subscale, and 0.80 for the self-efficacy subscale (Levett-Jones, 2007).

Given the importance of the concept of belongingness to clinical education, the cultural and linguistic differences between countries, and the lack of a valid and reliable Persian belongingness instrument, we considered it necessary to investigate whether Levett-Jones (2007) BES–CPE could be adapted for use with Iranian nursing students. The present study was therefore conducted to translate the scale, test its psychometric properties, and measure Iranian students' belongingness scores.

Research Design

The overall aim of this study was to develop a valid, reliable, and culturally appropriate belongingness instrument for use in Iran. Specifically we aimed to:

1. Translate the BES–CPE into Persian
2. Test the psychometric properties of the Persian version of the BES–CPE
3. Measure Iranian students' belongingness scores.

Prior to commencing the study ethical approval was sought and provided by the Ethics Committee of the Shahid Beheshti University of Medical Sciences.

Phase 1. Scale Translation

With permission of the original developer of the scale (Levett-Jones, 2007) the BES–CPE was translated into Persian (also called Farsi, the official language of Iran) based on Wild et al.'s (2005) approach. The scale was independently translated into Persian by two translators fluent in both Persian and English. The research team then discussed and compared each of the items in the two translated versions, identified and corrected contradictions and differences, and merged the two versions into one. The final translated version was back-translated by two translators fluent in both English and Persian, one of whom was a native English speaker. The back-translation was revised, and the original developer (Levett-Jones) was asked to clarify some aspects and confirm the degree of similarity between the original and the back-translated versions.

Phase 2. Testing the Psychometric Properties of the Persian Version of the BES–CPE

Content Validity

To determine the content validity index Polit et al. (2007) advise that an expert panel consisting of 8–12 people based on clearly defined criteria should be selected. In this study, a panel of nine experts (an instrument design expert, six nursing instructors, a psychologist, and a clinical psychologist) were asked to rate each statement in the BES–CPE using a four-point Likert scale in terms of 'relevance to the intended construct', 'clarity' and 'simplicity'. As belongingness is a psychological construct inclusion of a psychologist and a clinical psychologist as expert panelists was considered worthwhile. The content validity index of the scale was calculated as 0.93 for relevance, 0.93 for clarity and 0.94 for simplicity. Face validity of the scale was simultaneously evaluated by the expert panel.

In order to further enhance face validity, determine the clarity of language and meaningfulness of the scale six nursing students representative of the target population were asked to review the scale. The students' comments on each item were obtained and the necessary corrections made. The final version of the scale was then reviewed once more by the researchers to correct grammatical and typographical errors.

Study Sites and Participants

The study population consisted of third and fourth-year bachelor of nursing students from three groups of type-one, type-two, and type-three universities in Iran. Universities in Iran are ranked according to specific criteria developed by the Ministry of Health and Medical Education and based on levels of quality in terms of autonomy and leadership, potentiation, and knowledge production (student research for example). The three universities were first selected through non-random sampling, and then stratified random sampling was applied to select the students. Considering the sample size in each stratum, proportional allocation method was used to distribute the sample size among the strata. Inclusion of three universities was designed to increase the

generalizability of the study results. A minimum sample size of 200 is recommended for confirmatory factor analysis (Hinkin, 1995); for our study a sample size of 300 nursing students was recruited. Stratified random sampling was applied, and proportionate allocation was used to distribute the sample size among the strata of the population based on the size of each stratum. From the type-one, type-two, and type-three universities 79, 87, and 134 students were recruited respectively.

All third and fourth year nursing students in the target universities were eligible for inclusion in the study. The aim of the study was verbally explained to potential participants, a written information statement was provided and anonymity was assured. Voluntary consent was then obtained. A questionnaire eliciting demographic information (age, gender, marital status, semester of enrolment, residential state, prior experience of working in health care, concurrent clinical experience while studying nursing, and family members or relatives with nursing experience) and the Persian version of the BES–CPE were used to collect data. Survey completion took approximately 10 minutes.

Reliability Testing

The reliability of the Persian BES–CPE was assessed through internal consistency and test–retest reliability measurement. The Cronbach's alpha coefficient for the whole BES–CPE was 0.92; and 0.85, 0.86, and, 0.80 for the subscales of self-esteem, connectedness, and efficacy respectively. In the test–retest method, reliability was evaluated by examining correlation coefficients for 25 nursing students following a two-week interval. The reliability coefficient of the scale was 0.95 ($p < 0.001$).

Validity Testing

To assess the validity of the Persian version the BES–CPE factor analysis was performed using AMOS 22 software. The maximum likelihood method was applied. Confirmatory factor analysis is the application of structural equation modeling (Munro, 2005) to determine the goodness of fit between a hypothetical model and the data collected from the study participants (Kline, 2010). In structural equation modeling, various parameters known as “indices of fit” are applied to assess the fit of the model and its quality (Bentler, 1990; Rice et al., 2010). It has been recommended that a variety of fit indices should be used (Cabrera-Nguyen, 2010). Therefore, the present study employed the fit indices of chi-square, ratio of chi-square to degrees of freedom, comparative fit index (CFI), goodness of fit index (GFI), root-mean-square error of approximation (RMSEA), normal fit index (NFI), Tucker–Lewis index (TLI), and Akaike information criterion (AIC) (refer to Table 1).

Based on the result of the confirmatory factor analysis the chi-square was calculated. Chi-square has been traditionally considered as the most commonly reported fit statistic (Munro, 2005). However, as the chi-square test is sensitive to sample size (Martinez Vizcaino et al., 2010) other fit indices were considered. Normed chi-square, or ratio of chi-square to degrees of freedom, as the informal fit index, was used, with values less than 3 considered desirable (Munro, 2005).

Regarding root-mean-square error of approximation (RMSEA), values between 0.05 and 0.10 are indicative of relatively good fit and values more than 0.10 are poor fit (Hooper et al., 2008). Another important index is comparative fit index (CFI); with values close to 1 indicative of goodness of fit (Hooper et al., 2008). Goodness of fit index (GFI) is the calculation of the relative amount of variance and covariance

explained by the model (Figueiredo-Ferraz et al., 2013). Comparative fit index (CFI) and Tucker–Lewis index (TLI) indicate the amount of variance and covariance of a particular model as the result of the comparison between the relative fit of the hypothesized model and the fit of the base model (Figueiredo-Ferraz et al., 2013). Values over 0.70 in CFI and GFI indices, and those over 0.90 in TLI are considered to be acceptable indices of fit (Loehlin, 1998; Figueiredo-Ferraz et al., 2013). Differences between the models were evaluated by Akaike information criterion (AIC). The model with the minimum AIC value is selected as the best model that fits the data (Figueiredo-Ferraz et al., 2013). There is no agreement regarding the cut-off values of Akaike information criterion (AIC). In model comparisons, the model with lower AIC value is regarded as the better and parsimonious model (Schumacker and Lomax, 2004). The chi-square of the Persian BES–CPE was 1209.535 (degree of freedom = 431, $p < 0.001$), suggesting the insignificance of the model, while normed chi-square was 2.80 (CFI = 0.80, RMSEA = 0.078), indicating the acceptable fit of the model (refer to Table 1).

The scale-item correlation coefficient was low (less than 0.3) for item 10 of the self-esteem subscale and item 26 of the connectedness subscale. Therefore, these two items were removed, and the fit of the revised scale was reassessed. The results showed relative improvements in the fit indices of the model (refer to Table 1).

Phase 3. Measuring Iranian Nursing Students' BES–CPE Scores

Descriptive statistics (means and standard deviations) were calculated using SPSS version 16. A total of 300 questionnaires were completed and analyzed. The mean age of participants was 22.7 and just over half were females ($n = 171$, 57%). Most of the participants were single ($n = 260$, 87.2%) and lived in dormitory style accommodation ($n = 200$, 67.6%). Participants were in their 5th, 6th, 7th or 8th semester of enrolment in the nursing program and only 12 (4.3%) had previous nursing experience. Further demographic information of the participants is presented in Table 2.

Table 2
Demographic characteristics of participants ($n = 300$).

Variables	M $\pm$ SD	Range
Age (year)	22.73 $\pm$ 2.41	20–44
	N	Percent ^a
Sample composition ($n = 300$)		
Site 1	79	26.3
Site 2	87	29.0
Site 3	134	44.7
Gender ($n = 298$)		
Female	171	57.4
Male	127	42.6
Marital status ($n = 298$)		
Single	260	87.2
Married	38	12.8
Residential status ($n = 296$)		
Dormitory	200	67.6
With family	96	32.4
Semester ($n = 300$)		
5	80	26.7
6	70	23.3
7	90	30.0
8	60	20.0
Concurrent clinical experience while studying nursing ($n = 296$)		
Yes	83	28.0
No	213	72.0
Prior experience of working in healthcare ($n = 298$)		
Yes	12	4.3
No	286	95.7
Family members with nursing experience ($n = 293$)		
Yes	98	33.4
No	195	66.6

^a Missing data: excluded.

Table 1
Confirmatory factor analysis fit indices for the full and revised version (without items 10 and 26) of Persian BES–CPE.

Model	χ^2 (df)	χ^2/df	CFI	GFI	RMSEA	NFI	TLI	AIC
Full model	1209.535 (431)	2.80	.80	.77	.078	.71	.76	1401.535
Revised model	1030.551 (374)	2.75	.82	.80	.77	.74	.78	1210.551

Note: df = degree of freedom; CFI = comparative fit index; GFI = goodness of fit index; RMSEA = root-mean-square error of approximation; NFI = normal fit index; TLI = Tucker–Lewis index; AIC = Akaike information criterion.

Table 3
Mean and standard deviation of the items for the Persian BES–CPE.

Items	N	M	SD
02 It is important to feel accepted by my colleagues	300	4.20	1.00
18 I make an effort when on placements to be involved with my colleagues in some way	299	3.90	0.96
32 I ask my colleagues for help when I need it	299	3.72	0.97
19 I am supportive of my colleagues	299	3.69	0.94
05 I make an effort to help new students or staff feel welcome	297	3.60	1.09
14 On placements I feel like an outsider	296	3.56	1.14
24 Feeling “a part of things” is one of the things I like about going to placements	298	3.55	1.04
22 I am uncomfortable attending social functions on placements because I feel like I don't belong	298	3.55	1.14
20 I ask for my colleagues' advice	299	3.53	0.99
01 I feel like I fit in with others during my placements	300	3.50	0.97
06 I view my placements as a place to experience a sense of belonging	300	3.50	1.08
31 I let my colleagues know that I appreciate them	297	3.47	1.05
03 Colleagues see me as a competent person	299	3.42	0.99
10 I feel discriminated against on placements	298	3.32	1.30
25 There are people on placements with whom I have a strong bond	298	3.31	1.22
27 It seems that people I work with on placements like me	295	3.27	0.95
04 Colleagues offer to help me when they sense I need it	298	3.25	1.13
15 There are people that I work with on placements who share my values	297	3.24	0.87
33 I like where I work on placements	299	3.22	1.07
23 When I walk up to a group on a placement I feel welcomed	295	3.21	0.95
12 It is important to me that someone at my placement acknowledges my birthday in some way	296	3.18	1.29
09 I like the people I work with on placements	297	3.17	1.07
21 People I work with on placements accept me when I'm just being myself	296	3.16	1.00
28 I let colleagues know I care about them by asking how things are going for them and their family	297	3.16	1.11
07 I get support from colleagues when I need it	296	3.10	1.05
29 Colleagues notice when I am absent from placements or social gatherings because they ask about me	297	3.05	1.14
11 I offer to help my colleagues, even if they don't ask for it	295	2.96	1.19
17 I feel understood by my colleagues	299	2.90	1.19
34 I feel free to share my disappointments with at least one of my colleagues	300	2.84	2.21
30 One or more of my colleagues confides in me	298	2.75	1.29
16 Colleagues ask for my ideas or opinions about different matters	299	2.62	1.14
13 I invite colleagues to eat lunch/dinner with me	296	2.16	1.21
26 I keep my personal life to myself when I'm on placements	298	2.14	1.06
08 I am invited to social events outside of my placements by colleagues	298	2.12	1.23

Means and standard deviations of each of the items of the BES–CPE are listed in descending order in Table 3. Item 2 – “It is important to feel accepted by my colleagues” – had the highest mean score (4.2, SD 1.00); and item 8 – “I am invited to social events outside of my placements by colleagues” had the lowest mean score (2.2, SD 1.23).

The mean scores and standard deviations of the entire BES–CPE and its subscales are listed in Table 4 along with comparisons between Levett-Jones' original BES–CPE and the Persian version. The efficacy subscale had the highest mean score and the connectedness subscale the lowest. Scores for the Persian BES–CPE and subscales are lower than those in the original study undertaken in Australia and England.

Table 4
Comparison of mean scores for the original BES–CPE and its subscales with the Persian version of the BES–CPE.

	BES–CPE mean $\pm$ SD	Self-esteem mean $\pm$ SD	Connectedness mean $\pm$ SD	Efficacy mean $\pm$ SD
Persian BES–CPE	3.21 $\pm$ 0.57	3.28 $\pm$ 0.65	2.74 $\pm$ 0.77	3.63 $\pm$ 0.67
Original BES–CPE	3.60 $\pm$ 0.43	3.68 $\pm$ 0.52	3.11 $\pm$ 0.70	4.33 $\pm$ 0.43

Discussion

In spite of the importance of belongingness to nursing students, this concept had not been investigated in Iran prior to the present study and no contextually appropriate instrument was available. As Levett-Jones (2007) BES–CPE had been successfully used in a number of different countries including in Australia (Levett-Jones, 2007; McKenna et al., 2013), England (Levett-Jones, 2007), Finland (Metsälä et al., 2012), and South Korea (Kim and Park, 2011; Kim and Jung, 2012), we considered it appropriate to translate, adapt and psychometrically test a Persian version of the scale. Therefore, this study investigated the reliability and validity of the Persian version of Levett-Jones (2007) BES–CPE on a group of 300 third- and fourth-year nursing students from three medical universities in Iran.

Content validity, face validity, construct validity, and reliability of the Persian version of the BES–CPE were assessed and evidence of good validity and reliability was established. The standard for excellent content validity is 0.90 (Polit and Beck, 2012), and the Persian BES–CPE had a content validity of 0.93. Confirmatory factor analysis was performed to verify construct validity. The results of fit indices indicated acceptable construct validity of the 34 item scale. However, for a better fit, removal of items 10 (*I feel discriminated against on placements*) and 26 (*I keep my personal life to myself when I'm on placements*) resulted in a 32 item scale and slight improvements in fit indices. These items were also considered to be culturally inappropriate. This approach aligns with Kim and Jung's (2012) validation of the BES–CPE in Korea where items 10 and 26 were also removed from the scale.

The reliability of the Persian version of BES–CPE was 0.92 for the whole scale and 0.80 to 0.86 for its subscales. A Cronbach's alpha of 0.70 is considered adequate and greater than 0.80 is considered to be indicative of high internal consistency (Polit and Beck, 2012). The alpha coefficient of the Persian BES–CPE was similar to that of the original version and slightly higher than Kim and Jung's Korean version (2012). According to the obtained values, the subscales had acceptable internal consistency. Therefore, the results of the present study were compatible with previous studies and indicative of high reliability of the Persian BES–CPE. The results of test-retest provided further evidence of reliability.

The mean BES–CPE in this study was 3.21. This is lower than the mean BES–CPE score in Levett-Jones (2007) original study (3.60) and Kim and Park's (2011) Korean study (3.40). It is possible that the lower mean BES–CPE score in our study was influenced by the low number (4.3%) of the participants with previous nursing experience as 60.2% of Levett-Jones participants and the majority (98.0%) of Kim and Park's participants had prior or concurrent nursing experience.

Among the scale items, item 2 (*It is important to feel accepted by my colleagues*) had the highest mean score (4.20). This is consistent with previous studies; in Levett-Jones' (2007) research item 2 had a mean score of 4.56; and in Kim and Jung's (2012) study item 2 had a mean score of 4.20. In McKenna et al.'s (2013) study of midwifery students, this item ranked third with a mean score of 4.81. These results emphasize the importance of nursing students feeling accepted by clinical staff and the integral nature of acceptance to a sense of belonging. These results also confirm the universal nature of the phenomenon of belongingness (Maslow and Lowery, 1998; Baumeister and Leary, 1995).

Item 8 (*I am invited to social events outside of my placements by colleagues*) had the lowest mean score. Two other items with the low mean scores were item 26 (*I keep my personal life to myself when I'm on placements*) and item 13 (*I invite colleagues to eat lunch/dinner with me*). In this study, the relationship between the nursing students and clinical staff was limited to their working relationships and did not extend to social interactions. This result is similar to Levett-Jones' et al. (2009) research who concluded that these scores were influenced by the relatively short duration of clinical placements and the fact that students are regarded as short-term guests rather than colleagues. These results are consistent with the low mean scores for the connectedness

subscale (2.74) and suggest that many students, despite wanting to be accepted by their nursing colleagues, may have difficulties in establishing strong interpersonal relationships.

The efficacy subscale scale had the highest mean score (3.63); a result that is consistent with Levett-Jones' research (efficacy subscale 4.33) and Kim and Park's (2011) (efficacy subscale 3.80) and indicative of students' determination to engage in behaviors designed to enhance their acceptance and inclusion while on clinical placements.

Limitations

A limitation of this study is that BES–CPE data were based on self-report. Responses obtained in this manner may be subject to social desirability that may bias answers towards more acceptable norms. However, it is likely that participant anonymity improved the likelihood of participants responding candidly to the survey.

Conclusion

This study has confirmed that the BES–CPE, previously used to measure belongingness in a range of countries, is also applicable to the Iranian context. The results of the psychometric testing confirmed the validity and reliability of the Persian version of the scale and its subscales, attesting to the appropriateness of the Persian BES–CPE for use in measuring the belongingness experiences of nursing students undertaking clinical placements in Iran. It is recommended that the scale be assessed with larger and more diverse sample sizes. Additionally, a more complete and richer understanding of the factors that influence Iranian nursing students' belongingness experiences could be obtained through the collection of complementary qualitative data.

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