

Psychometric properties of the Portuguese version of place attachment scale for youth in residential care

Eunice Magalhães and Maria Manuela Calheiros
Instituto Universitário de Lisboa (ISCTE-IUL), Cis-IUL, Lisboa (Portugal)

Abstract

Background: Although the significant scientific advances on place attachment literature, no instruments exist specifically developed or adapted to residential care. **Method:** 410 adolescents (11 - 18 years old) participated in this study. The place attachment scale evaluates five dimensions: Place identity, Place dependence, Institutional bonding, Caregivers bonding and Friend bonding. Data analysis included descriptive statistics, content validity, construct validity (Confirmatory Factor Analysis), concurrent validity with correlations with satisfaction with life and with institution, and reliability evidences. The relationship with individual characteristics and placement length was also verified. **Results:** Content validity analysis revealed that more than half of the panellists perceive all the items as relevant to assess the construct in residential care. The structure with five dimensions revealed good fit statistics and concurrent validity evidences were found, with significant correlations with satisfaction with life and with the institution. Acceptable values of internal consistence and specific gender differences were found. **Conclusions:** The preliminary psychometric properties of this scale suggest it potential to be used with youth in care.

Keywords: psychometric properties, place attachment, residential care.

Resumen

Propiedades psicométricas de la versión portuguesa de la escala de apego lugar para los jóvenes en acogimiento residencial. Antecedentes: a pesar de los significativos avances científicos en la literatura del apego al lugar, no existen instrumentos específicamente desarrollados o adaptados para el acogimiento residencial. **Método:** 410 adolescentes (11-18 años) participaron en este estudio. La escala de apego al lugar evalúa cinco dimensiones: Identidad al lugar, Dependencia al lugar, Vinculación institucional, Vinculación a cuidadores y Vinculación a amigos. El análisis de datos incluyó estadística descriptiva, validez de contenido, validez de constructo (análisis factorial confirmatorio), validez concurrente con la correlación con la satisfacción con la vida y con la institución, y evidencias de fiabilidad. La relación con las características individuales y duración del acogimiento también fue verificada. **Resultados:** el análisis de validez de contenido reveló que más de la mitad de los miembros del panel perciben todos los ítems como relevantes para evaluar el constructo en acogimiento residencial. La estructura con cinco dimensiones reveló buen ajuste estadístico y se encontraron evidencias de validez concurrente con correlaciones significativas con la satisfacción con la vida y con la institución. Se encontraron valores aceptables de consistencia interna, y fueron encontradas diferencias específicas de género. **Conclusiones:** las propiedades psicométricas preliminares de esta escala sugieren su potencial para ser utilizado con jóvenes en acogimiento residencial.

Palabras clave: propiedades psicométricas, apego al lugar, acogimiento residencial.

Place attachment has been studied in different scientific fields (e.g. environment psychology, sociology) over the past decades with diverse conceptual frameworks (Hidalgo & Hernández, 2001). A set of constructs have been explored in this field (place attachment, community attachment, sense of place) contributing to an exhaustive discussion about the nature of the individual's relationship with a place (for a review see Giuliani, 2003; Manzo & Perkins, 2006; or Lewicka, 2011). In this study, place attachment is viewed as a symbolic and functional connection established

with a place including dimensions of natural/physical and social environment (Raymond, Brown, & Weber, 2010).

A range of theoretical and measurement models have been developed, including one-dimensional (Lewicka, 2010) and multidimensional models (Kyle, Graefe, & Manning, 2005). Multidimensional models are sometimes focused on two dimensions (Kyle, Graefe, Manning, & Bacon, 2004), or on three or more (Kyle et al., 2005). Place identity and place dependence are the more consistent dimensions across the different theoretical models. These dimensions refer to how the attachment to the place contributes to how people define themselves and how the place provides conditions to enable individual life objectives (Williams & Vaske, 2003).

Nevertheless, the one and two-dimensional models neglect aspects of the social and natural context, which are explored in multidimensional models. In fact, Raymond and colleagues (2010)

developed and tested an integrated model of personal, community and environmental issues of place attachment. This model includes four dimensions: (a) Place Identity; (b) place dependence; (c) nature bonding, and, (d) social bonding. Thus, in addition to the first two dimensions, already explored in previous models (place identity and dependence), the authors propose the relevance of social and natural aspects. The social dimension includes the sense of belonging to a particular group, in terms of familiarity and having a secure connection to a community with a shared set of interests and concerns. In addition, nature bonding reflects an individual affinity with nature and an identity related to a particular environmental context. From a measurement point of view, the authors found that social bonding comprises two dimensions: friends and family (Raymond et al., 2010). The distinctiveness of this model compared with previous two-dimensional models is related to its focus on social and nature bonding. Indeed, some aspects related to family and friends relationships and bonding with the physical environment cannot be captured by merely assessing place identity and dependence. Moreover, the literature suggests that more important than the physical context itself, it is the individual's perceived experience of the environment/community that has a significant impact on well-being (Rollero & De Piccoli, 2010).

This present study will apply an adaptation of this model to the residential setting of a place for the development of children and youths at risk. In fact, place attachment has been widely studied with different samples – for example, older people, college students, university students (Chowa & Healey, 2008; Wiles, Allen, Palmer, Hayman, Keeling, & Kerse, 2009). Nonetheless, to the best of our knowledge, no studies were developed focusing on young people in residential care. Similarly, the focus of attachment includes a range of places, namely, home, cities, neighborhood, regions, or countries (Lewicka, 2011); however, it seems that there are no studies exploring attachment to a residential setting. The present adaptation of the Raymond and colleagues' model (Figure 1) contains the same three poles: Community, environment and personal contexts. The pole of *community context* includes the *social bonding* which comprises the feeling of belonging to the group of people that are part of the residential care place, specifically, friends and staff. This is congruent with the theoretical assumptions underlying the original model that suggest this group of people have affective ties based on their shared experience and history. The *environment context* includes the *institutional bonding* which involves a connection with the physical environment in which the institutional setting is located, specifically, the neighborhood and the whole surrounding environment of the institution. Finally, the pole of *personal context* is the same as was suggested by the original model, and includes the *place identity* and the *place dependence*. The first one involves the symbolic connection with the residential setting and how the institution contributes to the self-identity, and the second refers to the relationship with the institution based on the conditions that this setting could provide for an individual youth's routines and life.

The study of youths' attachment to the residential setting is theoretically relevant considering the challenges for healthy development of these youths who were at risk previously. In fact, analyzing the literature with the different places and samples, studies have been suggesting that there is an association between place attachment and individual and social well-being as well as with life satisfaction (Lewicka, 2011; Rollero & De Piccoli,

2010). This is of importance since there is clear evidence for the difficulties experienced by youths in care in terms of well-being, mental health and quality of life (Sawyer, Carbone, Searle, & Robinson, 2007; Van Damme-Ostapowicz et al., 2007).

The importance of assessment of place attachment in residential care is grounded on previous research focused on youths' perceived satisfaction with out-of-home placement (Johnson, Yoken, & Voss, 1995). For instance, there is evidence suggesting that generally youths in out-of-home care are satisfied with their placement experience and with social workers' practices (e.g. in terms of living environment and resources provided; Delfabro, Barber, & Bentham, 2002; Gallagher & Green, 2012; Johnson et al., 1995; Wilson & Conroy, 1999). Also, there are studies revealing the importance of youths' perceived belonging to the community (in residential care) relating to their life satisfaction (Lipschitz-Elhawi, Itzhaky, & Michal, 2008).

This possibility of assessing the multidimensional construct of place attachment in care, which is focused not only on the personal dimension (i.e., identity and dependence) but also on social bonding (i.e., with peers and staff in care) reinforces the potential contribution of this scale to be used in care. Considering the practical implications of the use of this scale, there is substantial literature reporting the importance of residential care staff practices to a youth's well-being, namely, in terms of emotional and developmental support (Bastiaanssen, Kroes, Nijhof, Delsing Engels, & Veerman, 2012). Also, there is evidence of the importance of a strong social network of these youths to their individual well-being (Dixon, 2008). As such, the possibility of using this scale with youths in care would allow the development of further research that can contribute to our understanding of what types of factors can explain youths' attachment to the residential setting

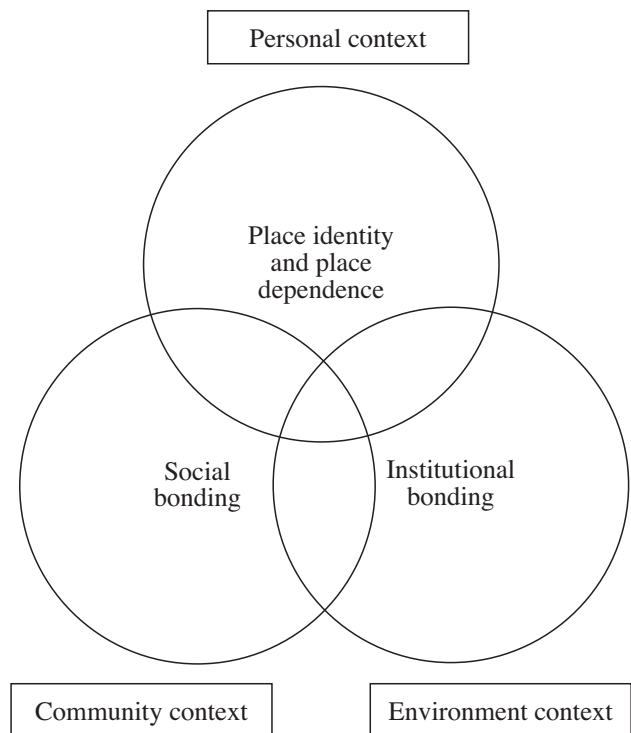


Figure 1. Model of place attachment applied to the youth residential care

and their well-being (for example, in terms of physical conditions, social relationships or stability in placement history).

The present study aims to explore place attachment in residential care, through the adaptation of a scale from Raymond and colleagues (2010). As such, the aims of this study are: 1) to adapt the scale for youths in residential care in Portugal and 2) to provide evidence of the validity and reliability of the scale.

Method

Participants

In the present study, 410 adolescents (54% males) aged from 11 to 18 years ($M= 14.70$; $SD= 1.82$) were included, simply because these were the participants who completed the anonymized self-report questionnaire necessary for the present study (representing 59 institutions). These youths came from vulnerable families characterized mainly by unemployment (43%), parental divorce/separation (34%) and alcohol abuse (32%); and the majority of youths was neglected (59%) and exposed, directly or indirectly, to behaviours seriously affecting their protection (40%). Analyzing the placement history, 64% of young people are in residential care for the first time and the mean placement time in the present institution is 40 months.

Procedures

This study is part of a wider project in which the sampling procedure was: 1) All 18 district centers of the Ministry of Welfare were contacted in order to get them to facilitate contact with institutions across the country; 2) two of them agreed to collaborate (i.e., they indicated 10 institutions) and others answered that the institutions have autonomy to decide; in which cases we contacted those institutions directly. A request for collaboration was sent to all institutions ($N = 340$), from which 38 refused to participate, 249 did not reply and 53 accepted (i.e., a positive response rate of 16%). It is important to note that, 168 of those institutions that did not reply typically host children up to 12 years old and are designated in our context as “temporary care” units (for placements no longer than six months). As the broader project was planned to include adolescents aged from 11 to 18 years old, we hypothesize that these non-responses could derive from the fact that these institutions did not meet the age criteria of the participants. It is also important to note that residential care is the most frequent (89%) out-of-home service in Portugal (while foster care represents only 5%; Social Security Institute, 2012). These residential care settings included in the project are not therapeutic, correctional or autonomy residences, and their structure varies significantly (i.e., smaller and larger institutions exist, ranging from approximately 12 to 100 young people). Typically, a social worker, a psychologist, as well as institutional caregivers working in shifts comprise the team of professionals in these institutions.

In terms of sampling procedure for the participants, staff from the institutions invited all adolescents from 11 to 18 years old to take part in this study. Those adolescents that had previously participated in other studies from the broader project and those that have some significant cognitive impairment (that could impede them filling out a self-reported measure) were excluded by the staff from participation in this study (i.e., from a total sample

of 1,259 children and adolescents hosted in these institutions, 438 adolescents were accepted to participate in the project).

Data were collected safeguarding the ethical principles of the study. Firstly, permission was requested from the directors of the institutions and then consent was required from the youths. The consent form included information about the study, the voluntary nature of participation, the possibility to withdraw from participating at any time and the confidentiality of the data collected. The adolescents stated that they understood the terms and conditions of the study, agreed with them and wanted to participate.

Instruments

The Place Attachment Scale

In this study a translated and adapted version of the scale provided by Raymond and colleagues (2010) was used. The scale was originally tested in two studies based in Australia, with slight differences in the items, one version focused on the Adelaide and Mount Lofty Ranges region and a second dedicated to the Northern and Yorke and SAMDB regions. In the present study the first version was adapted for psychometric and theoretical reasons. The adapted version showed better reliability evidence for the *friend bonding/belongingness* dimension (first version= .83; second version= .65), with the content of one item reflecting a sense of belonging that is not present in the second version. Considering that this adaptation involves adolescents, this dimension is even more relevant since theoretically the sense of belonging to the peer group is part of their process of development (Erwin, 1998). The original version was tested in terms of principal components analysis, and the 19 items were organized in five dimensions, explaining 69% of the variance: *Place identity* (6 items), *nature bonding* (4 items), *place dependence* (4 items), *family bonding* (3 items) and *friend bonding* (2 items). The items are answered in a 5 point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). In terms of reliability, the following values of *Cronbach's Alpha* were found: *Place identity* (.87), *nature bonding* (.81), *place dependence* (.81), *family bonding* (.72) and *friend bonding* (.83).

The adaptation of the Place Attachment Scale for youth in residential care was performed according the guidelines from the International Test Commission (2010) as well as under advisement from the literature (Muñiz, Elosua & Hambleton, 2013). Firstly, before starting the adaptation of the scale, an authorization was requested to the author of the original version, thus respecting the right of intellectual property. Next, the context of application was carefully considered. The characteristics of residential care as a specific context of development were taken into account in this adaptation, as well as the population who are the target of this scale (i.e., adolescents), since developmental issues are important in terms of understanding and appropriateness of those items. Moreover, our analysis of the literature revealed that, to the best of our knowledge, no other instruments focused on this construct were developed or adapted in this context.

In terms of the test adaptation phase, linguistic and cultural differences were considered in the translation and adaptation of the items to the Portuguese language and considering that the adolescents in question are living in residential care. This process of adaptation involved: a) The items from *place identity*, *place dependence* and *friend bonding* were translated and simply the “place” was adapted for the institutional setting (e.g. the item

“*The Adelaide and Mount Lofty Ranges is very special to me*” was adapted to “*This institution is very special to me*”); b) the items from the *nature bonding* were adapted to consider the whole surrounding environment of the institution (e.g. the item “*I learn a lot about myself when spending time in the natural environment in the Adelaide and Mount Lofty Ranges*” was adapted to “*I learn a lot about myself during the time I spend at the institution and its surroundings (neighborhood, natural setting around)*”); c) the items from *family bonding* were adapted considering the main caregivers in the institution: Two items focused on social workers and the same two items focused on educators; (e.g. “*My relationships with family in the Adelaide and Mount Lofty Ranges are very special to me*” was adapted for “*My relationships with the educators/ social workers of this institution are very special to me*”). Finally, the item “*I live in the Adelaide and Mount Lofty Ranges because my family is here*” was not included nor adapted in the present study since it is not applicable to the context of youth in residential care. Moreover, the item “*When I spend time in the natural environment in the Adelaide and Mount Lofty Ranges, I feel a deep feeling of oneness with the natural environment*” was slightly adapted in terms of content since this item seems to be difficult to be understandable for adolescents. The adaptation was performed maintaining the consistency of the item content with the conceptualization of the dimension as well as with the formulation of the remaining items in the scale – “*The time I spend in this institution and its surroundings (for example, the neighborhood, natural setting around) makes me feel unique*”).

This translation was developed and discussed in order to guarantee that the adaptation preserves the equivalence of the original conceptual dimensions of this construct, as well as this adapted version being adequate to this specific context and population. Moreover, each item's equivalence was also assured with a back-translation procedure, which was performed in order to guarantee that the original meaning remains following the translation (Cf. Table 1). It is important to note that there are some items in the present version that could be viewed as not completely equivalent with the original version; however, this was performed in order to enhance the content validity in residential care (for instance, in terms of caregivers bonding or institutional bonding; International Test Commission, 2010).

The translated and adapted version included 20 items that were then discussed with four youths in residential care, in order to guarantee that the items are understandable and to improve the Portuguese formulation, if deemed necessary. This phase of the adaptation cannot be viewed as a real pilot study since this was not developed to collect data to examine the items in terms of psychometric information. This discussion was performed to assess how young people in care react to this scale, as well as to ensure that either the items or the instructions are understandable. This methodological option was adopted since this is a specific sample, where the access is more restricted than with normative samples, and the number of available subjects is also more limited. Also, we aimed to ensure that any further data collection in terms of confirmation could include a larger sample to enable the use of appropriate statistical techniques. This discussion resulted in the removal of an item from the scale because it was considered of little relevance in this context and vague in terms of content (i.e., “*The time I spend in this institution and its surroundings (for example, the neighborhood, natural setting around) makes me feel unique*”).

The translated and adapted version used in the analysis of the psychometric properties is organized in the following way: Place identity (it refers to how the symbolic attachment with the residential setting contributes to self-definition; items 1, 3, 5, 10, 11, 14), place dependence (referring to how the perceived bonding with the institution is based on the conditions provided to the youth's life; items 4,7,16,18), institutional bonding (involving a connection with the larger context of the institution, including the neighborhood and the surrounding environment; items 8, 15, 17), caregivers bonding (involving the perceived attachment based on the feeling of belonging and bonding specifically with the staff; items 2, 6, 13, 19) and friends bonding (involving the perceived belonging to the group of peers in care, which contribute to their attachment to the institution; items 9, 12). In terms of punctuation and interpretation, the score of each dimension results from the sum of those items, as well as in the case of the global dimension. There are no items reversed, and higher scores mean higher levels of place attachment to the institutional context.

The Satisfaction with Life Scale

The Portuguese version of this scale was used in this study, specifically, the scale that was previously adapted for adolescents in Portugal (Neto, 1993). The original version was developed by Diener, Emmons, Larsen & Griffin (1985) with an aim to assess an individual's perception about his/her life circumstances on a comparison basis with his/her criteria. The scale consists a five item measure answered in a 7 point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Evidence of construct validity was presented for the original version, with a single factor structure found with Principal Components Analysis (PCA), explaining 66% of the variance (Diener et al., 1985). The study with the Portuguese adolescent sample revealed a one-dimensional structure (with PCA) explaining 53% of the variance (Neto, 1993). Evidence of divergent and concurrent validity was also reported considering measures of personality or subjective well-being (Diener et al., 1985). In terms of reliability data, a *Cronbach' Alpha* of 0.87 was found on the original version (Diener et al., 1985) this was 0.78 in the Portuguese version (Neto, 1993).

The Satisfaction with Institution Scale

In the present study the five items of the Portuguese version of the Satisfaction with Life Scale (Neto, 1993) were adapted to the institution target in order to use a short measure focused on the individual youth's satisfaction with the institution (“*The conditions of my life are excellent*” were adapted to “*The conditions of this institution are excellent*”). Evidence of validity and reliability was analyzed in terms of the broader project with a Confirmatory Factor Analysis (CFA) (maximum likelihood estimation method) revealing good values of adjustment ($\chi^2 = 6.72$, $df(5)$, $p = .243$; GFI = .99; CFI = .99; RMSEA = .030, CI90% [.000; .082]). In terms of reliability data, a *Cronbach' Alpha* of 0.89 was found.

Data analysis

Statistical programs IBM SPSS Statistics for Windows (IBM Corp. Released, 2010) and AMOS 20 (Arbuckle, 2011) were used to perform the data analysis.

A descriptive analysis was performed in order to examine the symmetry of the distribution and to identify missing values. No items had more than 5% of data missing (cf. Table 2), and therefore the missing values imputation was performed with the series mean method. Univariate and multivariate normality were explored based on skewness and kurtosis values. Analyzing the items and

dimensions of place attachment (Cf. Table 2), results revealed no severe normality violations, since absolute skewness (Sk) and kurtosis (K) values were lower than 3.0 and 8.0, respectively (Kline, 2005).

The content validity was performed with an evaluation panel of five experts, who are psychologists with practical and/or research

Table 1
Description of original version, Portuguese version and back translation

Original version ¹	Back-translation	Portuguese version
Place identity		
The Adelaide and Mount Lofty Ranges is very special to me	This institution is very special to me	Esta instituição é muito especial para mim
The Adelaide and Mount Lofty Ranges mean a lot to me	This institution means a lot to me	Esta instituição significa muito para mim
I am very attached to the Adelaide and Mount Lofty Ranges	I am very attached to this institution	Estou muito ligado a esta instituição
I identify strongly with the Adelaide and Mount Lofty Ranges	I strongly identify with this institution	Identifico-me fortemente com esta instituição
Living in the Adelaide and Mount Lofty Ranges says a lot about who I am	Living in this institution says a lot about who I am	Viver nesta instituição diz muito sobre quem eu sou
I feel the Adelaide and Mount Lofty Ranges is a part of me	I feel that this institution is a part of me	Sinto que esta instituição é uma parte de mim
Nature bonding		
I would feel less attached to the Adelaide and Mount Lofty Ranges if the native plants and animals that live here disappeared	I would feel less attached to this institution if the surrounding environment was not like this anymore	Sentir-me-ia menos ligado a esta instituição se o ambiente à volta deixasse de ser assim
I learn a lot about myself when spending time in the natural environment in the Adelaide and Mount Lofty Ranges	I learn a lot about myself during the time I spend at the institution and its surroundings (neighborhood, natural setting around)	Aprendo muito sobre mim próprio (a) durante o tempo que passo na instituição e no seu meio envolvente (bairro, ambiente natural à volta).
I am very attached to the natural environment in the Adelaide and Mount Lofty Ranges	I feel very attached to the neighborhood and physical space where this institution is	Sinto-me muito ligado(a) ao bairro e ambiente à volta da instituição
Place dependence		
No other place can compare to the Adelaide and Mount Lofty Ranges	There is no other place that can match / resembles this institution	Não há nenhum outro lugar que se possa comparar com esta instituição
I would not substitute any other area for the activities I do in the Adelaide and Mount Lofty Ranges	I would not replace this institution for any other place to do the activities I do here	Não substituiria esta instituição por outro lugar qualquer para fazer as actividades que faço aqui
Doing my activities in the Adelaide and Mount Lofty Ranges is more important to me than doing them in any other place	Developing my activities in this institution is more important to me than developing them anywhere else.	Realizar as minhas actividades nesta instituição é mais importante para mim do que realizá-las num outro lugar qualquer
The Adelaide and Mount Lofty Ranges is the best place for the activities I like to do	This institution is the best place for me to do the activities that I like	Esta instituição é o melhor lugar para eu fazer as actividades que gosto
Family bonding²		
My relationships with family in the Adelaide and Mount Lofty Ranges are very special to me	My relationships with the educators/social workers of this institution are very special to me	As minhas relações com os técnicos/educadores desta instituição são muito especiais para mim
Without my relationships with family in the Adelaide and Mount Lofty Ranges, I would probably move	If I did not have the relationships I have with the educators/ social workers of this institution, I would probably leave	Se não tivesse as relações que tenho com os técnicos/ educadores desta instituição, eu teria mais vontade de ir embora
Friend bonding/belongingness		
Belonging to volunteer groups in the Adelaide and Mount Lofty Ranges is very important to me	Belonging to the youth group of this institution is very important for me	Pertencer ao grupo de jovens desta instituição é muito importante para mim
The friendships developed by doing various community activities strongly connect me to the Adelaide and Mount Lofty Ranges	The friendships I have made through activities in the institution strongly connect me with this institution	As amizades que fiz através de actividades na instituição ligam-me muito a esta instituição

¹ Raymond and colleagues (2010, p. 427).

² Both original items were translated and adapted to the Portuguese version considering the staff of the institution. Each item was duplicated in the Portuguese version, since we were interested in assessing the staff bonding considering social workers and educators separately. In order to avoid repeating the same items in the table, two items were described as "educators/social workers".

experience in child protection and welfare. A form was provided to each expert with a brief description of each sub dimension and the items listed. Each item was to be classified as “relevant” or “not relevant” to assess those dimensions in care. In order to quantify the consensus from these judgements, the approach provided by Lawshe (1975) was adopted.

The construct validity was tested performing firstly a second-order CFA of the five theoretical dimensions and secondly a one-dimensional CFA (both with maximum likelihood method). The significance of multivariate normality was not provided by AMOS, and the multivariate kurtosis was higher than 10 (Kline, 2005). However, we proceeded with the analysis since the literature suggests that ML is relatively robust in the case of violating the assumption of normality (West, Finch, & Curran, 1995).

The adequacy of the models was analyzed based on a set of fit indices. Specifically, a relative χ^2 index (χ^2/df) below 3, a CFI higher or equal to .95 and a GFI higher or equal to .90 and an RMSEA lower than .08. Lower values of AIC and ECVI are thought to represent a better model as well as higher values of PGFI and PNFI (Hu & Bentler, 1999; Schermelleh-Engel, Moosbrugger, & Muller, 2003).

The concurrent validity was tested correlating the place attachment scores with life satisfaction and institution satisfaction. Finally, the reliability was verified by the *Cronbach’s Alpha* and the relationship between place attachment, individual characteristics (age, gender) and placement length were also analyzed.

Results

Content validity

All items were considered relevant by all experts, except two items (i.e., “Living in this institution says a lot about who I am” and “The time I spend in this institution and its surroundings (for example, the neighborhood, natural setting around) makes me feel unique”) which were considered non-relevant by one expert. Since more than half of the panellists perceived the items as relevant, we assume that there is some degree of content validity (Lawshe, 1975) that justifies retaining all items.

Construct validity

Results from the CFA of the original theoretical model of five dimensions (Model 1) revealed weak fit indices (Table 3). The modification indices were analysed in order to understand if the model fit could be improved. This analysis revealed that there were errors from items in the same dimension (sharing a similar formulation and content) with high modification indices (i.e., items 13-19 and 2-6 from caregivers bonding; items 3-5 and 10-11 from place identity), and for that reason the trajectories on

these pairs of errors are theoretically justified (Byrne, 2010). Next, a second model was tested allowing correlations between these pairs, and the model then showed a better and adequate fit (Model 2 - Table 3).

Moreover, the reliability analysis revealed three dimensions with values around .70 and a very high alpha of global scale. These results lead us to hypothesize if a one-dimensional structure of the construct of place attachment could fit better with adolescents and, specifically, in the context of residential care (Model 3 - Table 3). This model revealed weak fit indices, and the previous procedure of model fit improvement (allowing the correlations) was performed (Model 4 - Table 3). Comparing the multidimensional models with one-dimensional ones we found that: the ratio of χ^2/df was lower for the multidimensional models, suggesting higher appropriateness of these models. In terms of overall model fit, lower values of RMSEA and higher values of GFI and CFI were found for the multidimensional models. Finally, the descriptive measures of model parsimony revealed lower values of AIC and ECVI for the multidimensional models. Comparing qui-square statistics on

Table 2
Descriptive statistics – means, standard deviation, skewness and kurtosis

Items and dimensions	Percentage of missing values	Mean	Std. deviation	Skewness	Kurtosis
1	0.49	3.11	1.29	-0.21	-0.96
2	0.73	3.43	1.15	-0.40	-0.44
3	0.98	3.07	1.24	-0.19	-0.83
4	0.49	2.95	1.23	-0.05	-0.79
5	1.22	3.13	1.28	-0.22	-0.88
6	0.98	3.38	1.13	-0.35	-0.42
7	0.73	3.01	1.22	-0.08	-0.83
8	1.46	3.44	1.15	-0.55	-0.23
9	0.00	3.48	1.16	-0.54	-0.36
10	0.73	3.17	1.26	-0.24	-0.87
11	0.98	3.16	1.27	-0.24	-0.93
12	0.73	3.22	1.20	-0.27	-0.69
13	0.98	3.39	1.28	-0.36	-0.80
14	1.95	3.10	1.28	-0.13	-0.92
15	1.95	3.15	1.10	-0.24	-0.32
16	1.22	2.99	1.28	-0.06	-0.98
17	2.44	3.04	1.16	-0.19	-0.55
18	0.73	2.88	1.27	-0.01	-0.91
19	0.49	3.25	1.27	-0.27	-0.81
Place identity	0	18.75	6.50	-0.22	-0.61
Place dependence	0	11.83	4.08	-0.03	-0.51
Institutional bonding	0	9.63	2.67	-0.44	0.24
Caregivers bonding	0	13.45	3.67	-0.36	-0.05
Friends bonding	0	6.70	2.11	-0.39	-0.29

Table 3
Fit statistics from the confirmatory factor analysis

	$\chi^2(df)$	χ^2/df	GFI	CFI	RMSEA [90% CI]	PGFI	PNFI	AIC	ECVI
Model 1	551.190 (147)	3.75***	.86	.92	.082[.075;.089]	.67	.77	637.190	1.558
Model 2	402.183 (143)	2.81***	.90	.95	.067[.059;.074]	.68	.77	496.183	1.213
Model 3	741.098 (152)	4.88***	.83	.89	.097[.090;.104]	.66	.76	817.098	1.998
Model 4	460.260 (148)	3.11***	.89	.94	.072[.064;.079]	.69	.79	544.260	1.331

nested multidimensional models, the model with correlated errors (2nd model) was significantly better ($p < .001$).

Concurrent validity

The concurrent validity was tested correlating place attachment with life satisfaction and institution satisfaction. The results revealed positive and significant correlations between the five dimensions of place attachment with life satisfaction and institution satisfaction (Table 4). Also, determination coefficients revealed explained variances ranging from 17% (caregivers bonding predicting life satisfaction) and 45% (global place attachment predicting institution satisfaction).

Reliability

The reliability analysis revealed that all dimensions showed adequate values of *Cronbach's Alpha*: Place identity (.93), place dependence (.83), caregivers bonding (.75), friends bonding (.74) and institutional bonding (.69). A global dimension of place attachment revealed a *Cronbach's Alpha* of .95.

The relationship between place attachment and gender, age and placement history

Analyzing the relationship between place attachment and placement history, the results revealed significant and positive correlations between place attachment and the length of placement in the residential setting: Global dimension ($r = .231$, $p < .001$; $R^2 = .053$), place identity ($r = .263$, $p < .001$; $R^2 = .069$), place dependence ($r = .181$, $p < .01$; $R^2 = .033$), caregivers bonding ($r = .113$, $p < .05$; $R^2 = .013$), friends bonding ($r = .233$, $p < .001$; $R^2 = .054$) and institutional bonding ($r = .189$, $p < .001$; $R^2 = .036$). Considering the individual characteristics, significant gender differences were found on the place dependence ($t(408) = -2.47$, $p < .05$; $d = 0.24$; $F = .531$, $p = .467$), place identity ($t(408) = -1.76$, $p < .10$; $d = 0.17$; $F = .091$, $p = .763$) and global dimension ($t(408) = -1.77$, $p < .10$; $d = 0.18$; $F = 2.14$, $p = .145$). Specifically, young males ($N = 221$) tended to report higher levels of place attachment than females ($N = 189$) in these three dimensions: place dependence (females: $M = 11.30$, $SD = 3.94$; males: $M = 12.29$, $SD = 4.16$), place identity (females: $M = 18.14$, $SD = 6.37$; males: $M = 19.27$, $SD = 6.58$) and global dimension (females: $M = 58.79$, $SD = 15.74$; males: $M = 61.71$, $SD =$

17.36). Finally, no significant correlations were found between place attachment and age, considering the global dimension as well as each of the five dimensions.

Discussion

The present study aimed to present an adaptation of the place attachment theoretical and measurement model provided by Raymond and colleagues (2010) to young people in residential care. The CFA revealed better model fit statistics of the second order model with the five dimension structure than a probable one-dimensional model. This result reinforced the dimensionality of this scale, previously proposed by Raymond and colleagues (2010). In fact, the authors performed two studies in order to refine the scale and to obtain simply one dimension from the social bonding pole. However, their analysis revealed that family bonding and friends bonding appeared as separate dimensions in both studies. Considering that this study is focused on place attachment with adolescents, this result is even more significant as the relationships established by adolescents with peers and caregivers are different. In fact, adolescents tend to get companionship and intimacy in their peer relationships and a safety support from their caregivers; similarly, the friendship seems to be more intense and important in adolescence than at any period of the life cycle (Papalia, Olds, & Feldman, 2007). In addition, the studies propose that there is a positive role of peers in terms of a youth's well-being and adaptation (Buhrmester, 1990) and that the feelings of belonging with close friends are very important contributors to the attachment to a place (Hammit, 2000). As such, the results provided in the present study propose that the five-dimensional model fits well in the context of youth care and protection.

The reliability analysis revealed higher values of *Cronbach's Alpha* for place identity, place dependence, and caregivers bonding compared with those obtained by Raymond and colleagues (2010), but lower values for friends bonding and institutional bonding. Nevertheless, since this is an exploratory or preliminary study on this construct in this population, these values (around .70) could be viewed as acceptable (Nunnally, 1978).

Since the literature suggests that a positive relationship exists between place attachment and individual life satisfaction (Lewicka, 2011), additional evidence of validity was found. Also, since the place analyzed in this study is the residential setting, satisfaction with the institution was used as a criterion too. Results revealed that the more the youth feels attached to the institution the more satisfied they are with life and with the institution. Considering the results concerning the relationship between place attachment and individual and placement variables, the length of placement in the institution is positively correlated with all dimensions of place attachment, which could reveal that over time young people adapt to the institution and, consequently, feel more connected to the place, in terms of personal, social and institutional dimensions. This result is congruent with data from literature on place attachment and residence length (Brown, Perkins, & Brown, 2003). Similarly, young males reported higher scores of place attachment than females, specifically in terms of dependence and identity. As such, young males seem to feel more than females that there is a close connection with the residential setting that contributes to their self and that the institution provides the necessary conditions to enable their routines and activities. The literature which looks at gender differences on place attachment

Table 4
The relationship between place attachment, satisfaction with life, and satisfaction with the institution

	Satisfaction with life		Satisfaction with the institution	
	r	R ²	r	R ²
Place identity	.59***	.353	.65***	.424
Place dependence	.58***	.334	.60***	.359
Institutional bonding	.51***	.258	.56***	.311
Caregivers bonding	.42***	.172	.49***	.242
Friends bonding	.52***	.271	.56***	.309
Global dimension of place attachment	.61***	.374	.67***	.449

Note: *** $p < .001$; r = Correlation coefficient; R² = Coefficient of determination

is not consistent since some studies found differences (Gillis, 1977) and others did not (Lewicka, 2010; Scannell & Gifford, 2010). Those studies that found gender differences revealed non-consistent results, with some of them revealing higher attachment for females (Hidalgo & Hernández, 2001), and others for males (Sinkkonen, 2013).

In sum, the literature suggests that place attachment is associated with some indicators of individual well-being and life satisfaction (Lewicka, 2011). As such, a range of measurement and conceptual models emerged without an integrative model of place attachment. Raymond and colleagues (2010) provided a new conceptualization of place attachment, considering the interaction between the place as a social and natural context and the personal context of identity and dependence associated with that place. This theoretical and measurement model fit the data with youth in residential care, recommending this scale as a valid and reliable measure for future assessments of this construct in this sample. Although these results are interesting, it is important to note some

limitations. Specifically, the sample was not randomly extracted, and there were no data focused on convergent and discriminant validity. Moreover, the internal consistency of the institutional bonding dimension appears to be weaker which suggests the need for further analysis and studies.

Despite these limitations and given the satisfactory psychometric characteristics that were found, it is important to note that these results highlighted the potential application of this tool in this population.

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