



# Place Attachment and the Neighborhood: A Case Study of Israel

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## Abstract

Increased interest has been shown in the study of attachment to place of residence. In this work, we adopted the comprehensive model of Scannell and Gifford (2010) to gain further insights into people's attachment to their neighborhoods by means of the psychological elements of affect, cognition, and behavior. Our objectives were to: (1) verify the suitability of the structure of the three processes of attachment to the neighborhood; (2) identify differences in these processes based on reasons for living in the neighborhood, their perception of the neighborhood, and residential wellbeing and city size where the neighborhood is located; and (3) verify whether differences in the processes of place attachment are due to sociodemographic variables such as gender, religiosity, and length of residence. For this purpose, Israel was selected as a case study. A two-component structure of (1) behavioral component and (2) cognitive-emotional component was observed. It was found that reasons for living in a neighborhood are affected not only by the behavioral component, but mainly the cognitive-emotional component. People who perceived their neighborhood as high quality showed higher levels of attachment in these two components. The important aspects affecting development of cognitive-emotional place attachment were residential well-being, perceiving the neighborhood as high quality, and city size. Our findings can contribute to enhancing understandings of place attachment, in general, and the neighborhood, in particular.

**Keywords** Place attachment · Neighborhood · Emotion · Cognition · Behavior

## 1 Introduction

Recent years have witnessed a growing interest in the study of place attachment in a range of disciplines, including architecture (Najafi and Mohd Shariff 2011), urban design (Shamsuddin and Ujang 2008), urban planning (Casakin et al. 2015), human geography (Maguire and Klinkenberg, 2018), gerontology (Smith 2009), environmental psychology (Brown 1992; Altman and Low, 1992) and sociology (Trentelman 2009). A common interest in

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these fields is understanding the bonds that people develop with places and how they can be influenced by the way a place is perceived and interpreted (Brown et al. 2003; Rollero and De Piccoli, 2010).

Place attachment is defined as the emotional ties that individuals establish with those places to which they feel attracted and usually have close and familiar bonds (Hidalgo and Hernández 2001; Manzo 2003; Shumaker and Taylor 1983). For researchers such as Jorgensen and Stedman (2006), this bond is also concerned with the actions, behaviors, and cognitions that people have with a particular place. These processes and emotional ties can be quite compelling in promoting pro-environmental behaviors (Song and Soopramanien 2019) and the intentions of people to continue living in their place of residence for a long period of time (Altman and Low 1992; Clark, Duque-Calvache and Palomares-Linares 2017; Lewicka 2005). Nevertheless, failure to develop strong bonds with a place of residence or inability to feel at ease can enhance a tendency to leave (Hernández et al. 2007; Twigger-Ross & Uzell, 1996). Residential mobility may be caused by adverse social and economic factors combined with place features and a negative perception of the environment (Kim et al. 2015).

Partly because place attachment has been researched broadly from many disciplines and perspectives, there is a lack of agreement on what place attachment exactly is. Attempts to define place attachment have veered into terminological and conceptual ambiguity (Hernández et al. 2014; Lewicka 2011; Scannell and Gifford 2014). In not a few occasions, this term was confused with other related concepts such as place identity, place dependence or sense of place, making consistent empirical advances in this field of study difficult. Some attempts to integrate these concepts have generated different theoretical approaches, with three categories that can be distinguished: (1) those that consider place attachment as a one-dimensional concept related (at the same level) with other concepts such as place identity and place dependence (Giuliani 2003; Rollero and De Piccoli 2010); (2) the ones that see place attachment as a multidimensional construct that incorporates the same concepts but as subordinate factors (Hesari et al. 2019; Kyle et al 2005; Raymond et al. 2010; Scopelliti and Tiberio 2010; Williams and Vaske 2003); and (3) those that view place attachment as a subordinate dimension of a more general concept such as sense of place (Droseltis and Vignoles 2010; Jorgensen and Stedman 2006; Lalli 1992).

The above approaches largely privilege the relationship of place attachment with other links to the environment such as place identity, place dependence or sense of place, but pay less attention to variables related to physical context and people. An exception is Scannell and Gifford (2010a, b), who proposed a three-dimensional model of place attachment aimed at organizing the plethora of definitions in the literature encompassing person, place, and psychological process. Consequently, further work is necessary to clarify the concept of place attachment and make more progress in its theoretical and empirical development. Considering this objective, research was carried out in different cities of Israel, which, given its cultural, religious and immigration diversity, makes it an appropriate setting for this research topic.

## 2 The Tripartite Model of Place Attachment

Accordingly, the first dimension of place attachment suggested by Scannell and Gifford (2010a, b) focuses on who is attached and what are the personal and collective connections to a place. At the individual level, it comprises the personal experiences with place,

whereas at a group level it refers to the symbolic meanings of a place that are shared among the members as a basis for place attachment.

The second dimension centers on the object of attachment, the place, and formulates questions such as what are the characteristics of the place to which people relate. It concerns different geographic scales (e.g., house, neighborhood, city, nation), and is classified into social and physical place attachment. In such a way, Scannell and Gifford (2010a, b) gained a better insight into the personal and group variables associated with place attachment, while learning about the features that turn those places into objects of attachment.

The third dimension refers to the ways that people connect to a place by means of three psychological elements of place attachment: affect, cognition, and behavior. Place attachment as affect is concerned with an emotional connection to a certain place. The key role of affect in person-place ties is reflected in an array of terms commonly used in attachment literature: pride, well-being, love, sadness, nostalgia, and longing. For example, anxiety can manifest due to possible separation (the prospect of moving) and fear or rejection of strangers, who can alter the relationship with the place. Person-place bonds also comprise cognitive aspects such as memories, knowledge, and beliefs. Knowledge and beliefs are essential parts of the cognitive schemas that people create to perceive a place in a coherent way. For example, beliefs that a certain place provides security. Memory, on the other hand, acts as a trigger for the creation of place meaning, contributing to a positive perception of place. Place attachment as behavior is manifested through actions, and is characterized by a desire to remain in or close to a certain place. Attempts to return to a desirable place are good indicators of closeness-maintaining behavior.

Research in this direction may facilitate the unification of place attachment as an integrated scale. However, scales of place attachment do not always include clear behavioral items. In most cases, thoughts and emotions are more common (See, for example, the review carried out by Hidalgo 2013).

### 3 Place Attachment and Behavior

Behavior is a process that requires large effort to be carried out, and its relationship with other processes such as thoughts and emotions is not always evident. As in the case of research on attitudes, the behavioral component presupposes a high degree of involvement and commitment. It is also subjected to restrictions and limitations concerned with circumstances, context, and opportunities, whereas the emotional component develops with less dependence on external limitations (Ajzen and Madden 1986).

Behavior is also considered as a defining dimension of place attachment generally associated with place dependence (Gu and Ryan 2008; Jorgensen and Stedman 2006; Stokols and Shumaker 1981). In these studies, place dependence implies that a place is perceived as necessary or appropriate to achieve certain goals or carry out certain activities. For Altman and Low (1992), place attachment implies both affection and emotions, as well as behaviors and actions related to a place. Place attachment has also been defined as the existing relationship between people and environments that is affected by behaviors like social action, local participation and civic behavior (Lewicka 2005). Hence, behaviors such as looking for physical proximity, staying in place, and exploration of and mobility through the environment can be considered as clear manifestations of place attachment.

Therefore, exploring more behavioral items in studies of place attachment could be beneficial to increase the variability of the measure and its discrimination among residents, who tend to score high in place attachment (Casakin et al. 2013; Hernández et al. 2007). Moreover, adopting the three processes proposed by Scannell and Gifford (2010a, b) can serve as a basis to gain a better understanding of place attachment as both a physical and social process (Kyle et al. 2005; Wo et al. 2019). In this regard, researchers such as Hidalgo and Hernández (2001) demonstrated that the development of social ties in no way reduces the influence that the physical component such as neighborhoods has on attachment. In fact, neighborhood attachment reflects a general feeling of well-being with the residential area (Brown and Werner 1985) that is developed through daily social interactions among neighbors.

#### 4 Structural and cultural factors of place

Research not only aimed at discussing theoretical concerns about place attachment but also at exploring its relation to different-sized environments has been carried out in different physical scales such as the home (Cuba and Hummon 1993; Hidalgo and Hernández 2001; Merdjanoff 2013), the city (Bonaiuto et al. 1999; Casakin et al. 2015) and the neighborhood (Brown et al. 2003; Cuba and Hummon 1993; Wu et al. 2019). These works showed that the size of the environment can influence the emotional ties that people develop as well as their perceptions and motivations, sense of belonging and responsibility towards it (Smith 2000; Syme et al. 2002). In particular, attachment to neighborhood has been recognized as a process characterized by powerful, intense, and dynamic social interactions (Brown and Perkins, 1992; Brown et al. 2003, 2004; Mannarini et al. 2006). Neighborhood attachment reflects positive attitudes and a broad feeling of well-being with the local environment that is constructed daily through the exchanges maintained among neighbors (Brown et al. 2003; Brown and Werner, 1985). The large number of studies about place attachment focusing on the neighborhood environment suggests the importance of this geographical scale over others (Giuliani 2003; Lewicka 2010).

The meaning that an individual gives to places such as neighborhoods is related to a slow and progressive cultural process, which generally develops with time (Moore 2000). Neighborhoods provide the physical context where socio-cultural influences act on the individual (Proshansky 1978). Studies from fields such as geography, architecture and anthropology acknowledged the existence of strong associations between the physical context and the culture of people (Pandey 1990). People develop their processes of place attachment not only from their personal experiences, but also from the group to which they belong. Together with the physical properties of the neighborhood, social, cultural and religious features of a group can serve to differentiate the place attachment of one group from another (Proshansky et al. 1983; Twigger-Ross and Uzzell 1996).

In this regard, religion is a factor highly related to culture that in many cases makes a difference in the manner that people relate to a place. Researchers like Mazumdar and Mazumdar (1993, 2004), who investigated the role played by religion in relation to the experience of attachment, focused on the design and features of a place that contribute to enhance devotion. They showed the different ways through which religion helps to express the emotional links of the believers to the specific place. In another study that included Jewish settlers living in the conflictive Gaza region, Billig (2006) explored whether place attachment motivated by religion or ideology differed from place attachment that

originated by other reasons. She demonstrated that religious residents had a higher place attachment, a lower risk perception, and were more prone to stay in place than secular residents. Moreover, Hay (1998) found that individuals from the Maori tribal group, characterized by ancestral place connections represented by divine and spiritual ties, proved to have a stronger place attachment than residents belonging to modern society. A common denominator in the above studies is that place becomes an integral part of religion, and, in turn, religion becomes an essential component of place attachment. However, how religiosity affects the process of neighborhood attachment has yet to be investigated.

This article aims to expand previous research in territories where demographic aspects such as religion and reasons related to ties of belonging are critical for the process of place attachment. Such is the case with the State of Israel, where the population is composed of immigrants from a variety of countries and cultures from all over the world. For some, the main reasons to live in the country are concerned with the feeling of belonging to the Land due to ideological, cultural, religious or ancestral reasons (DellaPergola 2012). For many religious Jews, the act of immigration (*Aliyah*) is viewed as a return to the Promised Land, and is considered as the fulfillment of God's Biblical promise to the descendants of the Hebrew patriarchs Abraham, Isaac, and Jacob (Golinkin, 2008). Additional reasons for immigration include reunion of separated families and attraction of a prosperous economic situation, offering a wide range of job opportunities that resulted from the development of the high-tech industries during the nineties and the beginning of the 21<sup>st</sup> century (Zilberfarb 2006). Churchman and Mitrani (1997) also examined the concept of place attachment in the context of student immigrants coming from the former Soviet Union to Israel. They found that attachment to Israel was higher among those who immigrated due to a Zionist motivation than among those who had come escaping anti-Semitism or due to other personal reasons.

While the motives for place attachment may differ, Israel is considered a unique case of a country that had to develop fast and with scarce resources to absorb massive immigration waves within short periods of time (Halamish 2018). Therefore, as maintained by Scannell and Gifford (2010a, b), it is not only important how attachment manifests itself, but also who gets attached and what are the features of the places that are most likely to promote attachment. The theory of social attachment may serve as a basis to anticipate places that provide security and satisfaction, allow exploration, offer confidence, and promote bonds of attachment and search for proximity (Hesari et al. 2019; Scannell and Gifford 2014). Even so, not all people are equally attached to their environments. Hence, representations about the place, length of residence, or the reasons for living in a place can lead to different ways of attachment, as found in a study carried out on residential satisfaction and quality of life in neighborhoods (Ruiz et al. 2019). In this sense, residents with a positive perception of their neighborhood showed greater residential satisfaction and life satisfaction, whereas residents living in neighborhoods with fewer resources claimed to have less social support (Ruiz et al. 2019; Williams and Kitchen 2012). In this study, we aim at analyzing the perception that residents may have on the different processes of place attachment.

Consequently, the main objectives of the present study are to:

1. Verify the suitability of the structure of the three psychological processes proposed by Scannell and Gifford (2010a, b) for attachment to neighborhood measuring cognitive, emotional, and behavioral manifestations.
2. Confirm whether differences in the processes of place attachment may exist as a consequence of sociodemographic / cultural variables such as gender, religiosity and length of residence, focusing on the person dimension.

3. Verify potential differences in the processes of attachment focusing on the place dimension based on resident reasons for living in their neighborhoods, level of perception they have of their neighborhood, their residential wellbeing, and the city size where the neighborhood is located.

## 5 Methods

### 5.1 Participants

The sample consisted of 304 students, 56% women, with an average age of 24.56 years ( $SD=2.95$ ), representative, with a confidence interval of  $\pm 5\%$ , to 95% of the university students. The participants resided in 123 different cities in Israel, with 145,659 the average number of inhabitants (448 the minimum and 882,204 the maximum). One third of the participants lived in small cities with an average of 4,800 inhabitants, another third in medium-sized cities with an average of 55,000 inhabitants, and the last third in medium-large cities with an average of 376,000 inhabitants.

Students were chosen as a study sample due to their high variability regarding place of residence, and also because it offered us a homogeneous population in terms of age and education.

The typology of the most frequent constructions was one or two-story family houses and four-story buildings. The average length of residence in the neighborhood was 16.6 years ( $SD=8.75$ ). Half of the sample claimed to be religious and the other half secular, whereas the number of religious women was higher than men, as can be seen in Fig. 1.

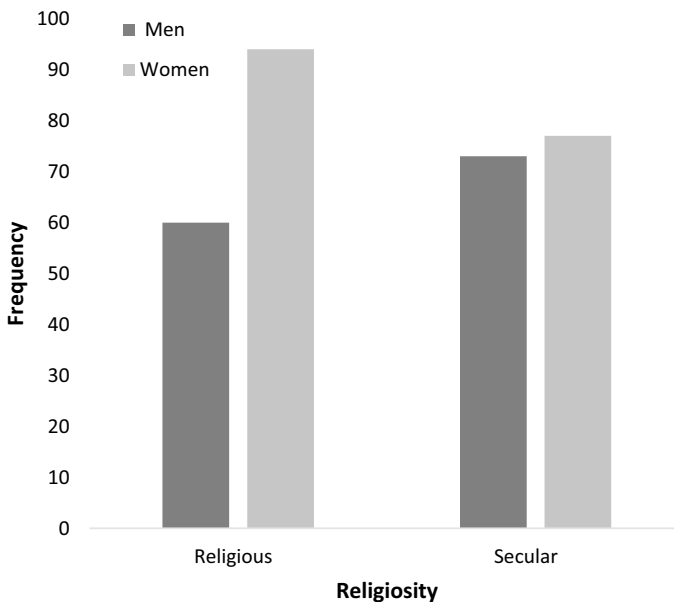


Fig. 1 Distribution of religiosity\*gender

## 5.2 Instruments

A questionnaire composed of four scales and a socio-demographic information section were used, which are described as follows:

1. Place Attachment Scale: This was based on the original scale by Hernández et al. (2007), but for this study new items were elaborated to reflect cognitive, emotional and behavioral processes collected by Scannell and Gifford (2010a, b). Following the proposal of Hidalgo (2013), the scale was written in both positive and negative valence to avoid acquiescence. A total of 25 items were selected: eight to measure the cognitive manifestation of place attachment (e.g., "I imagine myself living in another neighborhood"); eight to measure the emotional manifestation (e.g., "After I've been away from my neighborhood, I'm happy to return to it"); and nine to measure the behavioral manifestation (e.g., "I spend my free time in the neighborhood") (See Appendix).

2. Perception of the Neighborhood Scale: This included 23 items with a response interval of 1 to 10 (Ruiz et al. 2019). Residents had to assess the extent to which different characteristics related to the following dimensions were present or frequent in their neighborhood: resources available, architecture of buildings, maintenance and care, accessibility, existence of leisure areas and green areas, environmental health, and social interactions. Examples of the items are: "Maintenance and care of public places (e.g., streets, squares, parks)", "Ease to walk around the neighborhood", "Availability of spaces where neighbors can perform leisure activities and / or sports", "Existence of positive social relations between neighbors". As with previous studies (Ruiz et al. 2019), the internal consistency obtained for the total scale was 0.87.

3. Residential Wellness Scale: This contained 4 questions about the desire to stay in the neighborhood and the perception of the neighborhood as a safe place with a standard quality of living (internal consistency of 0.87).

4. Sociodemographic variables: This comprised information about age, religiosity, gender, type of building, length of residence and reasons for residing in the neighborhood. This last question presented four alternatives in reference to reasons for residents to live in their neighborhoods: 1) family; 2) environment; 3) economy; and 4) accessibility to other places such as work, school, etc.

## 5.3 Procedure

The survey was carried out in a university located in a central area in Israel. Students were approached at the main library of the campus by one of the researchers. Those who agreed to participate were sent an internet link via SMS to fill out an online questionnaire using their mobile phones. Regardless of whether they live in students dormitories on campus during the week, on weekends all students return to their cities of residence. Hence, they were asked to respond to the survey by considering their city of permanent residence, i.e., where their home is located. The average duration of the survey was about 30–45 min.

## 5.4 Data Analysis

Confirmatory factor analysis was used to test how well variables represented the measured place attachment components. Model fit by item response theory (IRT) was used to

test item validation. IRT provided invariant estimates of the psychometric properties of the items, as well as of the characteristics of the subjects. Split-plot ANOVA was used to check differences in place attachment components among residents, based on the reasons they live in, and their perception of, their neighborhoods. All statistical analyses were conducted using the R-Studio tool with the ULLR Toolbox libraries (Hernández-Cabrera 2011).

## 6 Results

The three-factor model was tested based on the proposal of Scannell and Gifford (2010a, b) through both exploratory factor analysis and confirmatory factor analysis. However, either the items belonging to cognition and emotion processes did not separate into different factors when we carried out the exploratory analysis or, while forcing the separation of the items into two factors to test the theoretical model by means of a confirmatory analysis, the correlation between the cognitive and emotional factor was 1. Hence, we decided to check the items when grouped in two scales: cognitive-emotional and behavioral using IRT, which provides estimates invariant of the psychometric properties of the items, and allows to improve measurement accuracy and reliability (Hidalgo-Montesinos and French 2016). By using IRT, the two scales were refined; only those items with a discrimination index higher than 1.39 were included, suggesting a "high" function (Baker 2001), and with an Omega Hierarchical higher than 0.7. Consequently, the cognitive-emotional subscale and the behavioral subscale were composed of 9 and 5 items, respectively (see Table 1 depicting descriptive statistics).

**Table 1** Means, ST and IRT results for the selected items

Item	Mean	SD	Min	Max	Dscrmn
<i>Cognitive-emotional subscale</i>					
A_01. I like to live in this neighborhood	7.79	2.32	1	10	3.50
A_07. I would like to live in another neighborhood (R)	6.78	2.84	1	10	2.41
A_11. After I'm away from my neighborhood, I'm happy to return to it	6.26	2.72	1	10	1.57
A_16. This is a good neighborhood to live in	7.83	2.22	1	10	3.63
A_17. I should move to another neighborhood (R)	7.32	2.22	1	10	1.83
A_13. I imagine myself living in another neighborhood (R)	6.00	2.91	1	10	1.39
A_19. The idea that I will always live here overwhelms me (R)	7.83	2.61	1	10	1.48
A_20. This neighborhood represents for me the "ideal neighborhood"	5.57	2.67	1	10	1.63
A_25. My neighborhood allows me to have excellent living conditions	7.42	2.41	1	10	2.49
<i>Behavioral subscale</i>					
A_03. If I have to meet with someone, I usually do it in my neighborhood	4.72	2.81	1	10	2.91
A_04. I carry out many activities in my neighborhood	4.10	2.60	1	10	3.76
A_05. As soon as I can, I go to another place to spend the day (R)	5.24	2.81	1	10	1.48
A_09. I spend my free time in the neighborhood	4.39	2.72	1	10	3.86
A_14. I used to walk through my neighborhood	4.92	2.69	1	10	3.88

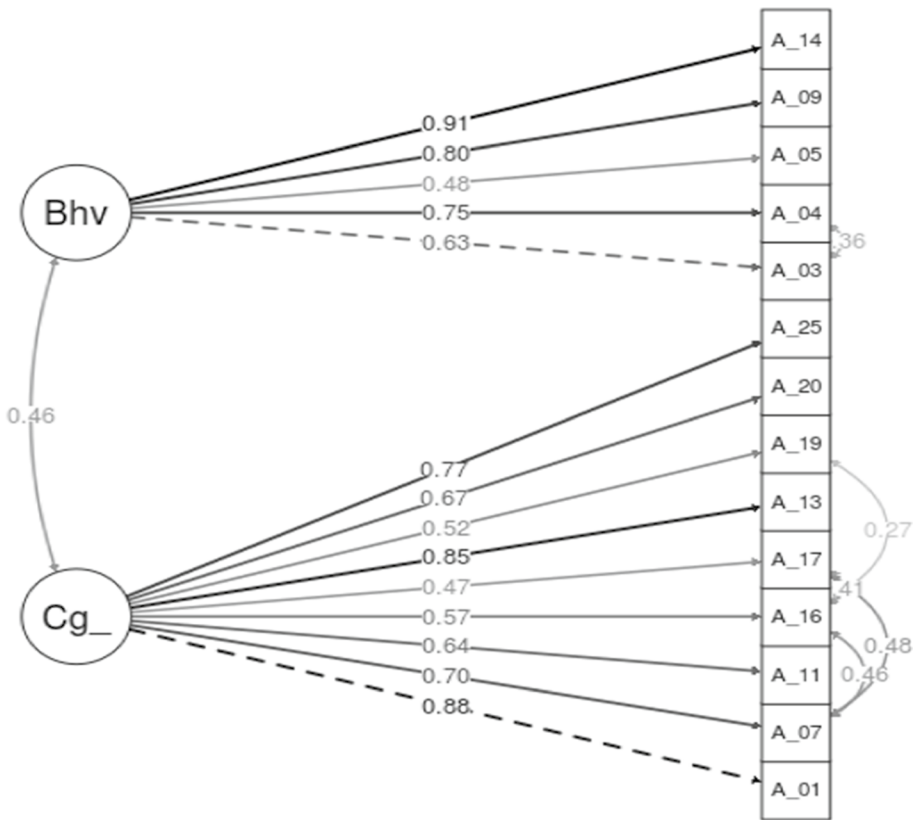
(R): reversed items



A confirmatory analysis was carried out with these items, and after releasing five of the covariances between items within the same subscale, a model with a moderate adjustment index was obtained. Although the values of the NFI, NNFI and CFI adjustment indices are above 0.9, the RMSEA value would be at the upper limit of a reasonable adjustment (values between 0.05 and 0.08) according to Browne and Cudeck (1993) (see Fig. 2).

### 6.1 Differences in attachment according to reasons for neighborhood living and level of perception

Considering the Cognitive-emotional and Behavioral subscales obtained after debugging the Place attachment scale and confirming the measurement model, an average score was calculated for each participant in each attachment process, with the differences verified according to two factors measuring the other two dimensions of the model by Scannell and Gifford (2010a, b). In relation to place, the Reasons for living in the neighborhood and the assigned level of Perception were taken into account. It was not possible to carry out a joint Anova with the two inter-subject factors since in some of the cells the number of subjects was not high enough. The effects of Gender and Religiosity were the two



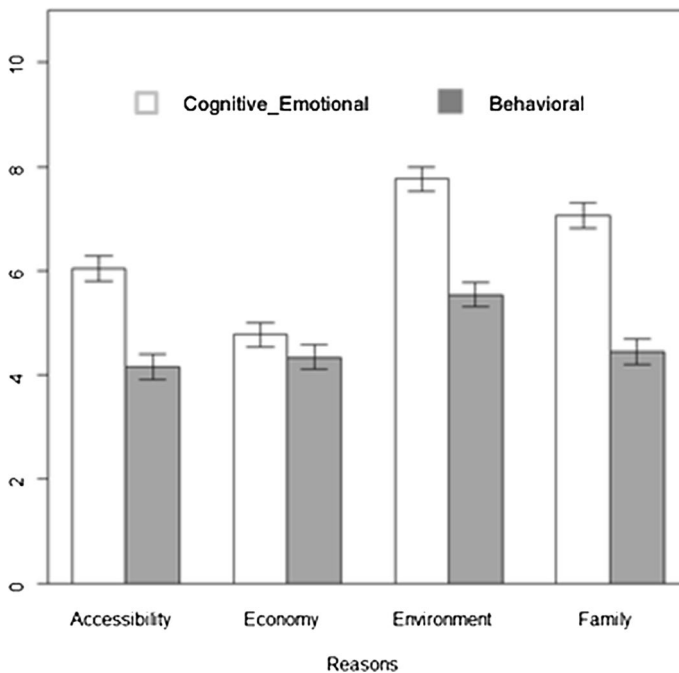
(NFI= .9; NNFI= .905; CFI= .926; RMSEA= .089 (.077-.101))

Fig. 2 Measurement model according to confirmatory factorial analysis

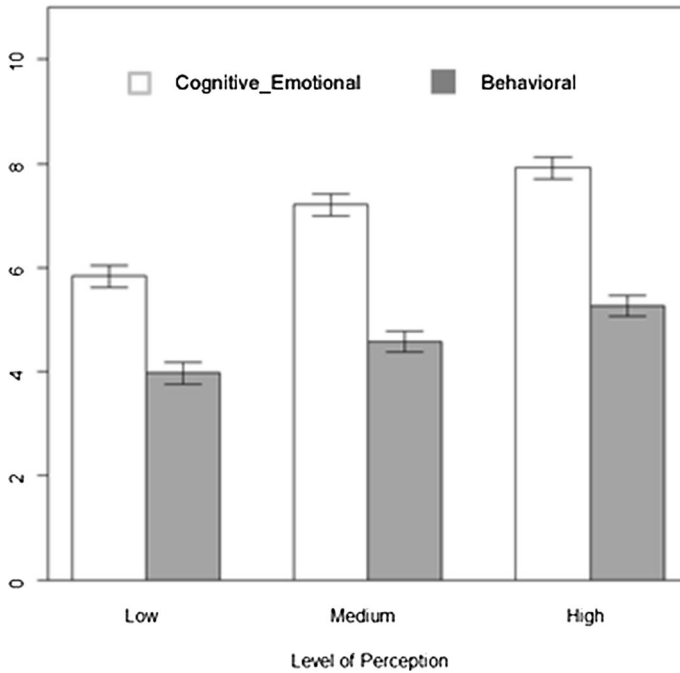
variables related with Person, but no significant results were found. In both cases, non-significant *F*s were obtained in Anova, and similar means were found in Place attachment in men (mean=5.6) and women (mean=5.9), as well as in the religious (mean=5.9) and non-religious (mean=5.8). Regarding the Reasons for living in the neighborhood, the interaction with the process of attachment was found to be significant ( $F(3, 295)=5.92, p<0.001, \eta^2=0.05$ ). As can be seen in Fig. 3, only for those participants who chose the neighborhood due to economic reasons were there no differences between the two processes of attachment. This is in contrast with the other three conditions in which the Cognitive-emotional process is higher than the Behavioral one. Moreover, choosing to live in the neighborhood due to environmental and family was shown to increase level of attachment in terms of both Cognitive-emotional and Behavioral processes. Therefore, the opportunities that neighborhoods offer have an influence on the type of attachment process that can be developed.

In order to divide the participants into different levels of Perception about their neighborhoods, the overall score on the Perception scale was considered with an alpha of 0.87, and a discretization of the variable was carried out in three percentiles (low, medium and high).

The interaction between level of Perception and Attachment processes was significant, although with a probability and a power lower than in the previous case ( $F(2, 301)=4.65, p=0.05, \eta^2=0.02$ ). In Fig. 4, a clear difference can be observed between the three levels of Perception of the neighborhood such that participants with a high level of Perception also have a higher level of attachment. However, this difference is higher for the



**Fig. 3** Differences in the cognitive-emotional and behavioral attachment processes according to the reasons for living in the neighborhood



**Fig. 4** Differences in the cognitive-emotional and behavioral attachment processes according to the perception of the quality of neighborhood

Cognitive-emotional process than for the Behavioral one. The level of care and maintenance that is perceived in the place where one lives increases the development of the different processes of place attachment.

**6.2 Regressions on the two processes of place attachment**

Finally, we wanted to verify the extent to which the variables related to people’s satisfaction with their neighborhoods, the perceived quality level of the neighborhoods and their size, and length of neighborhood residence as good predictors of the Processes of attachment:

**Table 2** Correlations for place attachment factors

	Number_Residents	Length of residence	Perception	Wellbeing	Cognitive_Emotion
Number_Residents					
Length of residence	-.03				
Perception	-.23 ***	.10			
Wellbeing	-.18 **	.16**	.55 ***		
Cognitive_Emotion	-.25 ***	.15**	.48 ***	.49 ***	
Behavior	-.08	.00	.33 ***	.11	.42 ***

\*\*  $p < .01$ ; \*\*\*  $p < .001$

i.e., Cognitive-emotional and Behavioral. To this end, two regression analyses were carried out. Table 2 shows the correlations between the variables that were considered.

For the Cognitive-emotional process, an  $R^2$  of 0.31 ( $F(3,282)=44.16, p<0.001$ ) was obtained, retaining the variables of Residential well-being ( $\beta=0.30, p<0.05$ ), Perception ( $\beta=0.28, p<0.001$ ) and Number of inhabitants ( $\beta=-.12, p<0.001$ ). Therefore, 31% of the variance of the cognitive-emotional process is explained by the combination of these three variables. This implies that emotions and cognitions associated with place attachment increase as residents feel comfortable living in the neighborhood, have a positive perception of the neighborhood, and the number of residents of the place decreases. For the Behavior process, an  $R^2$  of 0.10 ( $F(1,284)=34.66, p<0.001$ ) was obtained. This is because only the Perception variable was retained ( $\beta=0.32, p<0.001$ ) and explains only 10% variance of this attachment process. This implies that the behavioral process of attachment increases as residents perceive the neighborhood more positively.

Based on the above results, in no case was Length of residence found to be significant, as it can be observed in the regression analyses where the contribution of this variable to the variance of both dimensions of place attachment (i.e., cognitive-emotional and behavioral) was not significant. Likewise, as proved by the Anova, neither Gender nor Religion were shown to explain differences among the processes of place attachment. Therefore, it cannot be concluded that place attachment increases due to these variables associated with the person dimension. However, according to the previously shown statistical results, an increase of place attachment was found to depend on perception, satisfaction or motivation for place of residence.

## 7 Discussion

Our findings do not support the first research objective aimed at testing the model proposed by Scannell and Gifford (2010a, b), where place attachment is configured by the three different processes of cognitions, emotions, and behaviors. However, a two-component structure with a high degree of relationship was moderately confirmed. One is the behavioral component, while the other is the cognitive-emotional structure, in which the traditional separation between cognitions and emotions fades away. A main reason for the new factor structure could be that the items used for cognitive and emotional processes may not serve to split these two factors adequately, at least at the neighborhood scale. The results from IRT led to a larger removal of items from the cognitive factor due to their low capacity for discrimination. This may be seen as a study limitation to be considered in future research. However, in terms of measures it suggests the importance of including indicators reflecting behaviors associated with place attachment, together with the most frequent measures concerned with emotions and cognitions (Hidalgo 2013).

Another remarkable finding is that although the two components identified in this study were related, the cognitive-emotional component reached higher values than the behavioral one. This difference can explain the high scores found in studies on place attachment (e.g., Casakin et al. 2015; Hernández et al. 2007), where cognitive-emotional indicators were frequently used to the detriment of behavioral ones. Other studies also showed that whereas cognitive and emotional components can develop with relatively few dependencies on external constraints, the behavioral component demands large involvement and commitment, and can also be limited by issues such as the physical context, circumstances in which place attachment develops, etc. (Ajzen and Madden 1986).

The second objective consisted in exploring possible disparities in the processes of place attachment based on person characteristics. The findings suggest that, independently of whether a neighborhood may satisfy the needs of its residents, the level of place attachment will not be differently affected in terms of gender. Importantly, differences were not found between secular and religious residents for any kind of attachment process. Our results contrast with Billig (2006), who found that place attachment was higher for religious people than for secular ones. In this regard, it should be noted that participants of that study were living in a conflictive and dangerous border area. In contrast to secular residents, the religious residents were characterized by having strong faith, motivation, and ideological conviction, which proved to be determinant factors in dealing with stressful situations and reducing risk perception. For religious Jews, living in such areas is largely concerned with ancestral reasons that positively affect their sentiments of belonging to the Land of Israel (DellaPergola 2012). For many of them, attachment feelings are experienced even before emigrating, since being part of a religious group allows them to establish the affective link with a specific place (i.e. Israel) even from a remote distance. Reasons like these turn out to be idealistic and ultimately detached from daily life in less risky places, as in our study. Moreover, the idea of the neighborhood as a sacred place, considered by some researchers as the environment where religious people would like to live (Mazumdar and Mazumdar 1993, 2004), did not show a significant effect on the process of attachment. It can be inferred that in contrast to other environmental scales such as holy city (e.g., Jerusalem) or holy place (e.g., the Western Wall), neighborhoods are seen as non-sacred places.

The third objective consisted in examining differences in the processes of place attachment based on reasons for residents to live in their neighborhoods and on the level of perception they have of their neighborhoods, bearing in mind differences in place of residence. The results showed that reasons for living in a neighborhood affect both cognitive-emotional and behavioral components. However, besides the motivations chosen for residing in a neighborhood (i.e., closeness, surroundings, or family), the cognitive-emotional process was significantly higher than the behavioral one. An exception was the case of those who stay in the neighborhood for economic reasons, where no significant differences were found between the two processes of attachment. The above findings suggest that the behavioral component always demands a greater effort than the other processes, and, therefore, neighbors are most likely to develop cognitive-emotional components of attachment. Thus, achieving behavioral changes through place attachment may require the development of specific intervention programs. According to Clark et al. (2017), the presence of relatives in the neighborhood, local connections, interactions with neighbors, and the existence of neighborhood facilities contribute to enhanced place attachment.

It is noteworthy that, regardless of the gender or religiosity of neighbors and the process of attachment under consideration, those people living in a neighborhood due to environmental or family reasons exhibited higher attachment than those who reside in the same environment as a result of economic or closeness reasons. In line with Lewicka (2011), people tend to become more attached as long as they are satisfied with the place where they were born and raised (place attachment inherited) or when they chose their place of residence (place attachment discovered). Rootedness, community, using resources from the neighborhood and satisfaction with the neighborhood are manifestations of the bond of attachment that increases the chances that people will decide to continue living in the same place (Clark et al. 2017). It is remarkable that, irrespective of religious background or geographical location, physical and social elements were the stronger reasons affecting the attachment process.

In addition to the reasons for living in a specific place, the perception of the physical features of the neighborhood were shown to be another important factor affecting the cognitive-emotional and behavioral processes of attachment. However, regardless of the demographic variables considered in this study, and the level of perception of the neighborhood, the cognitive-emotional process was significantly higher than the behavioral one. This reinforces the previous claim that the development of the latter is more effortful. It was also found that people who perceived their neighborhood as having higher levels of quality showed higher levels of attachment, in both the cognitive-emotional and behavioral processes. Previous studies showed that the positive features of the built environment make a contribution to the perception and experience of place (Hummon, 1992; Manzo and Perkins, 2006). In this regard, Casakin and Neikrug (2012) found that residents experienced greater place attachment in well-maintained compared to less-maintained neighborhoods, and that place attachment was strongly correlated with physical and service quality. From a similar perspective, the present findings suggest the need for investing in the quality of the neighborhood (e.g., general maintenance and care, green areas, entertainment areas, services, accessibility, aesthetics, architecture, etc.) in order to contribute to an enhanced positive place attachment process.

The contributions of length of residence, residential well-being, physical characteristics of the environment, perception of the neighborhood, and city size to the two processes of place attachment confirm that the variables related to place explain the highest percentage of variance of the processes of place attachment. The findings showed that the important aspects affecting the development of cognitive-emotional place attachment are residential well-being, the perception of the quality of the neighborhood, and city size—the latter with a negative influence. Whereas the first two aspects indicate once again the necessity to assign resources for improving the infrastructure of the neighborhood, the latter suggests that living in smaller cities may contribute to enhance the cognitive-emotional attachment process to the neighborhood. This last finding is aligned with the Casakin et al. (2015), who found that city size has a direct influence on the intensity of attachment that residents develop with their environments.

Finally, additional findings showed that the single variable affecting the development of behavioral place attachment is the perception of the quality of the neighborhood. This reconfirms that in order to develop behavioral attachment, above all, the neighborhood must offer to its residents good physical conditions – e.g., gardens, pleasant building architecture, facilities for leisure and sport activities, etc. In any case, length of residence was found to be significant. This finding is aligned with prior studies indicating that in contrast to other kinds of emotion bonds such as place identity, place attachment develops relatively fast (Hernández et al. 2007). Consequently, in the present study sample no differences were found between old and relatively new residents.

## 8 Limitations and Next Steps

While findings from this study support the existence of two components in the process of place attachment—i.e., behavioral and cognitive-emotional components, some limitations must be considered. First, while the population is representative of a diversity of settlements, cities and neighborhoods, it is a rather small sample of convenience. Moreover, the results correspond to a segment spanning 20 to 25 years of age that may not necessarily reflect what people of different ages feel in relation to their place of residence. Therefore,

the findings should be taken with caution and should not be generalized beyond this age range and level of education.

Second, in another study that used this same scale but focused on a different sample, a similar structure was found (Ruiz et al. 2017). However, it is possible that the lack of separation between the cognitive and emotional dimensions was due to the fact that, in the purification process of the elements of the scale, the most clearly cognitive items were reduced to a very small number. In fact, it is probably difficult to find many items that clearly and exclusively refer to cognitive processes stressing emotional elements, despite the fact that an equivalent number of cognitive and emotional items were included in the initial scale (See Appendix).

In future research, the composition of the cognitive-emotional factor should be tested, adding new items that may have larger validity to measure the cognitive dimension, also differentiating itself from the emotional one. Likewise, different cultural groups, and a larger diversity of architectural and urban features in the neighborhoods should be considered in order to explore how a greater variability of these aspects may affect the different processes of place attachment.

## 9 Conclusion

1. A two-component structure of Place attachment with a behavioral component and a cognitive-emotional component was observed, and a measure for both components was developed (i.e., a cognitive-emotional subscale composed by 9 items and a behavioral subscale by 5 items).
2. Behavior was identified as a defining dimension of Place attachment. In this sense, behavioral aspects of Place attachment can be measured more reliably than the other aspects. Hence, future measurements should include items referring to this dimension.
3. Reasons for living in a neighborhood affected the level of behavioral and cognitive-emotional components of Place attachment,
4. Participants with a high level of positive Perception of the neighborhood were related to those who have high levels of attachment to it.
5. The variables associated with the Person dimension (i.e., Length of residence, Gender and Religion) do not allow for the conclusion that Place attachment increases due to them. However, it can be said that Place attachment depends on Perception of, Satisfaction with and Motivation for the neighborhood.

## Appendix 1. Place Attachment scale.

1	I like living in this neighborhood	Emotion
2	My neighborhood has little to do with the image I have of myself	Cognitive
3	If I want to meet someone, I usually do it in my neighborhood	Behavior
4	I do a lot of activities in my neighborhood	Behavior
5	As soon as I can I'm going somewhere else to spend the day	Behavior
6	I feel anxious when I think about leaving my neighborhood	Emotion
7	I would like to live in another neighborhood	Emotion
8	My needs remain unmet by the conditions of my neighborhood	Cognitive

9	I spend my free time in my neighborhood	Behavior
10	My neighborhood means little to me	Cognitive
11	When I've been away, I'm glad to be back in my neighborhood	Emotion
12	I would regret having to move to another neighborhood	Emotion
13	This is a good neighborhood to live in	Cognitive
14	I walk around my neighborhood	Behavior
15	I leave my neighborhood only when I have no choice	Behavior
16	I should move to another neighborhood	Cognitive
17	I imagine my self living in another neighborhood	Cognitive
18	I miss my neighborhood when I'm not here	Emotion
19	The idea that I will always live in my neighbourhood overwhelms me	Emotion
20	My neighbourhood represents for me the "ideal neighbourhood"	Cognitive
21	I go to free time activities only if they are organized in my neighborhood	Behavior
22	I go out with my friends/partner in my neighborhood	Behavior
23	I spend time outside my neighborhood without a problem	Behavior
24	I am ashamed that others know what my neighborhood is	Emotion
25	My neighborhood allows me to have excellent living conditions	Cognitive

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