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Neighborhood Care and Neighborhood Bonds: An Unequal Relationship

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Abstract

Research in environmental psychology has found a positive relationship between place bonds and behaviors related to care and maintenance of place. Although this relationship has been analyzed in natural environments, it has been less frequently studied in urban environments and has yielded contradictory results. The aim of this study is to analyze behavior related to care and conservation of neighborhood and its possible relationship to place bonds, as well as to other variables that we think may be important in explaining this behavior. The participants were 407 residents from eight different neighborhoods with different sociodemographic characteristics in one Spanish city. The results indicate that the relationship between attachment and behavior is significant only in residents with higher socioeconomic levels. These findings may help to explain the contradictory results found in the literature. Other variables which are significant in explaining neighborhood care are social norms, residential satisfaction, and support for protection policies. Place identity was not found to be significantly correlated with neighborhood care.

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place attachment, pro-environmental behavior, neighborhood care, social norms, residential satisfaction

Research examining the conservation of urban environments is surprisingly limited in environmental psychology, despite the fact that the care and conservation of public space is an issue of interest for environmental psychologists, as well as for urban designers, municipal governments, civil society organizations, and of course for individual citizens. It is difficult to find studies that specifically focus on behavior related to the care and conservation of urban spaces, and the psycho-social variables that can be related to this behavior. In this study, we want to contribute to overcoming this deficit by analyzing behavior related to care and conservation of urban spaces and looking at the factors that contribute to the preservation and protection by individuals of their immediate environment, specifically, their neighborhood.

Other disciplines have analyzed neighborhood physical upkeep and its relationship with crime reduction. Crime prevention through environmental design (CPTED; Jeffery, 1971; Mihinjac & Saville, 2020; Saville, 2018), has shown that a higher level of neighborhood maintenance, along with structural design measures, contributes to the prevention of violence in urban settings. However, the role of social and environmental psychological variables is less clear and have been less well researched. In this study, we will focus on these types of variables.

Although in this study we use a comprehensive concept of neighborhood as a physical and social space (Guo & Bhat, 2007), we understand neighborhood care to be the sum of direct behaviors that are carried out with the explicit intention of conserving and maintaining the physical space of the neighborhood. Such behaviors include respecting green spaces and street furniture, placing garbage in containers and/or wastebaskets, and cleaning up after dogs. Although other ways of protecting or caring for urban public space exist (e.g., through community participation: voting, participating in conservation and awareness campaigns, etc.), in this study we are interested in actions that are carried out in a direct, intentional and localized way in the neighborhood itself, and which have the aim of contributing to its optimal physical conservation.

Neighborhood Care and Neighborhood Bonds

It has been argued that one of the aspects that can influence neighborhood care is the affective bond that we can have with our neighborhood (e.g., Carrus et al., 2014; Halpenny, 2010; Manzo & Perkins, 2006; Scannell & Gifford,

2010a; Walker & Chapman, 2003). The research literature suggests that place attachment, and in general, different affective bonds with the environment, such as place identity or sense of community influence the ideas, values, attitudes and behaviors of individuals in relation to that environment, and in particular toward caring for and conserving it (e.g., Manzo & Perkins, 2006; Scannell & Gifford, 2010a). As demonstrated by Carrus et al. (2014) in their review of this issue, the literature provides theoretical and empirical evidence for the positive link between place attachment and behavioral predispositions to the protection of a place. Among the theoretical arguments in favor of this relationship we find, for example, the theory of mother–child attachment. According to this theory, one of the main behaviors that emerges from parents' feelings of attachment toward their children is taking care of them (Ainsworth & Bowlby, 1965; Bowlby, 1969). Likewise, positive affective bonds with one's place might be associated with systematic behavioral tendencies to take care of that place. Other theories developed in this field regarding place attachment also support this connection; thus, Scannell and Gifford (2010a), in their tripartite model, suggest that the behavioral dimension of place attachment can lead to care and conservation of place, for example in the reconstruction of a neighborhood after a natural disaster or in other protective behaviors. In addition, the studies by Perkins et al. (e.g., Manzo & Perkins, 2006; Perkins & Long, 2002) suggest that, from the perspectives of environmental psychology and community psychology, affective bonds with places promote action since individuals are motivated to protect and improve the places which are meaningful to them. We also find empirical support for this relationship.

Several studies have tested whether place bonds are related to interest in protecting and preserving a place (e.g., Carrus et al., 2005; Halpenny, 2010; Scannell & Gifford, 2010b; Stedman, 2002; Uzzell et al., 2002; Vaske & Kobrin, 2001; Walker & Chapman, 2003; Walker & Ryan, 2008). In this regard, when the variables examined are related to natural surroundings, the bond with those surroundings seems to strengthen responsible behaviors. Halpenny (2010), Walker and Chapman (2003), and Walker and Ryan (2008) have found that place attachment was a precursor of individual choice to protect a particular place, such as a national park or a rural environment. Vaske and Kobrin (2001) found that place identity has a positive influence on ecologically responsible behavior among young people. Stedman (2002) found that place identity of residents in a natural setting has a positive effect on their involvement in activities which protect that setting. In further studies, Carrus et al. (2005) confirmed that both pro-environmental attitudes and regional (place) identity are predictors of support for protected natural areas. Also, Bonaiuto et al. (2008) found the highest levels of voluntary cooperation in water conservation behavior among persons with a strong local identity.

Studies have evaluated different types of neighborhood bonds. In some cases, researchers have focused on place attachment, while others refer to place identity. There is no consensus on the theoretical or empirical differences between these two concepts, as discussed in other studies (e.g., Hernández et al., 2014). In accordance with Hidalgo and Hernández (2001), we understand place attachment to represent a positive affective connection with a place, while we see place identity as referring to a cognitive process related to individual identity. Following the Person, Process, Place (PPP) model (Scannell and Gifford, 2010a), these concepts are connected to each other on an equal footing as well as with a behavioral component, so both can be expected to be related to neighborhood care. It is difficult to determine which of these may have the greater influence due to existing confusion regarding both concepts as well as the lack of empirical research in this area.

The majority of existing studies which have analyzed the relationship between attachment and behavior have been carried out in natural environments, many of them in protected spaces, such as national parks. In contrast, studies that measure place bonds in urban areas provide less conclusive results. For example, Uzzell et al. (2002) assessed social cohesion and place identification,¹ which are two other types of place bond for two different neighborhoods and found contradictory results. In one neighborhood with lower socioeconomic status, residents with greater social cohesion and place identification showed more intention of becoming involved in pro-environmental behaviors regarding energy consumption and recycling, whereas, in the other neighborhood, the relationship between identity and pro-environmental behavior was negative. Another study by Moser et al. (2002) revealed that identification with neighborhood is related to the improvements made in it. Scannell and Gifford (2010b) classified two dimensions of place attachment: civic and natural. The results showed that natural place attachment predicted pro-environmental behavior when controlling for gender, age, education, municipality, and length of residence. However, these findings did not extend to civic place attachment. It seems that it is more likely that individuals with strong place attachment will engage in more responsible environmental behavior in natural places but not in urban places. In this study, they evaluated 51 ecological behaviors in seven domains: garbage removal, garbage inhibition, water and power conservation, ecological consumer behavior, volunteering in nature, automobile use, and non-environmental pro-social behavior.

Furthermore, various authors discuss how the scale of the place associated with attachment may differ (e.g., Giuliani, 2003; Hidalgo & Hernández, 2001; Lewicka, 2010). It may be a room, house, neighborhood, city, region, country, or even a continent. The main focus of research has clearly been on the level of neighborhood (70% of studies), followed by 20% of studies which have focused on attachment to home. A minimal percentage have focused on other scales,

such as region, country, or natural environments like national parks (Lewicka, 2010). Hidalgo and Hernández (2001) and Lewicka (2010) found a curvilinear, U-shaped, relationship between scale of place and strength of attachment to place, with neighborhood demonstrating the highest levels of attachment to place. However, despite the large number of studies on attachment to residential place, the role of attachment to urban neighborhoods has rarely been analyzed in terms of its impact on behavior related to caring for and maintaining the neighborhood (neighborhood care). This is confirmed by Longhinotti-Felippe and Kuhnen (2012a), who purport that the focus of the literature has been on the issue of conservation of the natural environment as opposed to the constructed environment. These authors carried out one of the few studies on this topic, focusing on the school environment and analyzing place attachment and caring behavior for different areas within a school (e.g., playgrounds, classrooms, bathrooms) among a sample of adolescents. The results showed positive and significant correlations between place attachment and the level of conservation of different spaces in the school, although the authors point out the need for further studies to confirm this relationship. Given the lack of studies that specifically analyze this issue, we seek empirical support in other indirectly related studies. The relationship between emotional bonds with a place and caring for that place has been indirectly affirmed in studies on natural disasters and the willingness of individuals to return to places affected by such disasters (Berroeta et al., 2015; Chamlee-Wright & Storr, 2009; Smith & Cartlidge, 2011). These studies have found that people who possess a strong bond to a place are more likely to return and rebuild, in association with the availability of resources, infrastructures, and institutional support. However, we also found empirical evidence against the hypothesis of positive relation between place attachment and neighborhood care. Although a high level of community attachment has been found in well-cared towns of Iowa (United States), high levels of attachment have also been found in deteriorating neighborhoods (Rice & Miller, 1999). For example, Brown and Perkins (1992), Brown et al. (2003, 2004b), and Lewicka (2005, 2011) have shown that poorly conserved neighborhoods with low socioeconomic status tend to have high levels of attachment. The empirical support for the assumption that place attachment leads to conservation behavior of said space is not clear and needs further research.

Other Variables Influencing Neighborhood Care

In addition to place attachment and place identity, other variables may play a significant role in the care and conservation of residential environments. The lack of specific studies on this issue makes it difficult to identify the most relevant variables. However, based on a literature review, we have chosen the

following: residential satisfaction, social norms, and support for public protection policies that foster neighborhood care. Hereunder, we briefly review the main studies that justify the inclusion of these variables.

Residential satisfaction has been related to the level of maintenance of a neighborhood (e.g., Amérigo & Aragonés, 1990). Authors such as Ramkissoon et al. (2012) have found that one of the principal mechanisms linking place satisfaction to place attachment is pro-environmental behavioral intention. The majority of studies in this field have analyzed how the perception of neighborhood maintenance influences residential satisfaction, although the results are again contradictory, as high levels of satisfaction have also been found in deteriorating neighborhoods. Residential satisfaction is the outcome of multiple factors, including but not limited to structural and material elements. Residential satisfaction also requires positive social interactions that can be enhanced by urban design. In this regard, observations show that family and social ties in conjunction with improved structural redesign can increase satisfaction (Ruiz et al., 2019). However, we found little research exploring the contribution made by residential satisfaction to the care and conservation of the neighborhood.

The social norm, another social component of neighborhoods, may also contribute to maintenance behaviors. Social norms have often been identified in social psychology as strong determinants of behavior. For our purposes, we focus on descriptive social norms, which refer to perceptions regarding typical behaviors and which provide evidence on what is effective and adaptive; in other words, they are what most people do (Reno et al., 1993). In their classic study on littering, Cialdini et al. (1990) showed that people litter more when the street is dirty as opposed to when it is clean. More recently, social norms have also appeared as a promising strategy for promoting pro-environmental behavior (Collado et al., 2018; Schultz & Kaiser, 2012; Thøgersen, 2006; see also Corral-Verdugo et al., 2002 regarding wasting water). In a study by Hernández et al. (2010) descriptive social norms were seen to have a direct effect on anti-ecological behavior, regardless of any other type of norm; however, the strongest predictors of environmental transgression are personal norms. In studying behavior related to care and conservation of neighborhood, it is likely that the perception of what neighbors do in this respect has particular importance.

It is clear that care and conservation of a public space, such as a neighborhood, does not depend only on the individual behavior of its population. Public policies and the resources municipal governments invest in these places are factors that clearly affect their level of conservation. Thus, we also propose to analyze how support for these measures can be related to residents' behavior regarding care of their neighborhood. Regarding protection policies, a higher level of attachment predicts increased support for protecting highly valued landscapes (Walker & Ryan, 2008). In this regard, Devine-Wright (2005) pointed out that place attachment is associated with public responses to low

carbon technologies. The author noted that high levels of place attachment can motivate both public support for and opposition to proposed technological developments, depending on the evaluation (positive or negative) of the proposal. A similar conclusion was drawn from a study that indicated how support for a hydro-power development project was positively associated with attachment to the place (Vorkinn & Riese, 2001): attachment to the natural areas affected by the hydro-power project was the strongest predictor of attitudes toward the project. This was not true of attachment to the municipality. A study by Kaltenborn (1998) illustrated that place attachment played a role in reactions to environmental impacts. As a result, we think that the residents most involved in the conservation of their environment will be in favor of public policies that protect said spaces, such as the use of monetary fines, increased taxes and educational and awareness campaigns among local populations.

In an exploratory study, researchers (Hidalgo, Hernández & Moreno, 2015) analyzed these variables in four neighborhoods with different socio-economic characteristics in the city of Malaga, testing this hypothesis through regression analyses. Their results showed that attachment and identification with the neighborhood were not significant. Social norms, social class, and support for public policies were found to be better predictors of behavior related to care and conservation of the neighborhood, these three variables accounting for 20% of the variance. Based on the results of this study, neighborhood attachment does not appear to be associated with neighborhood care; however, due to the limited variability of the neighborhoods analyzed, as well as the small sample size, the results cannot be generalized. In addition, the lack of other studies along the same lines has led us to analyze behavior related to neighborhood care with a larger number of neighborhoods and residents. The aim of this study is therefore to clarify the role played by neighborhood bonds (place attachment and place identity), along with other social, affective and cognitive factors, (i.e., residential satisfaction, social norms, and support for measures of public protection), in behavior related to the care and conservation of the physical conditions of the neighborhood.

Method

Participants

Four hundred and seven residents from eight neighborhoods in the city of Malaga (Spain) participated in this study. Participants represent the different existing socioeconomic levels in the region where this study was carried out, and the neighborhoods represent different states of public maintenance. A majority of the participants, 54.3%, were women, and the average age was 38.64 ($SD=14.45$). Distribution by education level was: 6.9% without formal

education, 23.5% with primary school education, 32.3% with secondary education, 32.1% with university education, and 5.2% other. The average time living in the neighborhood was 16.41 years ($SD=13.69$). The eight neighborhoods examined in the study were chosen by a group of experts to guarantee the inclusion of different socioeconomic levels, as well as different states of neighborhood maintenance. The criteria considered to qualify neighborhoods as high/low maintenance were based on protocols from the studies by Bonaiuto et al. (1999), Hur and Nasar (2014), and Longhinotti-Felippe and Kuhnen (2012a; 2012b); in which features such as physical observational measures (e.g., broken features, graffiti or litter in public areas, perceived physical upkeep, paper or cigarette butts on the ground, respecting green areas) were considered along with other perceptions of physical care of the neighborhood. The neighborhoods were:

1. Las Cuevas: Urban, low socioeconomic level and low level of neighborhood maintenance. Currently, self-built houses predominate in Las Cuevas, with houses being different in terms of design, color, and exterior elements. They often have few windows. Housing in poor conditions is demonstrated by broken windows and graffiti on facades. Other features of the neighborhood include broken sidewalks, illegally parked cars, broken urban furniture, and garbage outside of containers. Residents in this neighborhood have participated in protests demanding improvements in the physical state of the place and the establishment of a comprehensive urban plan for the neighborhood, as it has been more than 25 years since any improvements to sidewalks, sewage or parks were carried out. There are few leisure or recreational services or facilities in the neighborhood and little green space; in addition, those that exist are in poor condition, and signs of vandalism are common.
2. Huelin: Urban, middle to low socioeconomic level and middle to low level of neighborhood maintenance. Part of the neighborhood runs along the city's seafront. A neighborhood designed for workers, where the first industrial factories were built in Malaga in the 19th century and where textile, tobacco, metal working, milling, and rail industries were located. Currently, it is comprised of a mix of modest single-family houses, originally the homes of fishermen, along with apartment blocks on the seafront, which have high social and economic value. The neighborhood is most commonly known for being more modest and for having a very well-known food market. There is some deteriorating housing with narrow sidewalks and no green spaces. The socioeconomic and educational level of residents is low. Despite being a neighborhood with predominantly residents of middle and lower

- socioeconomic status, it has many services (e.g., schools, gyms, stores, cafes, and restaurants), facilities and good access to the city center.
3. Nueva Málaga: Urban, middle socioeconomic level and middle level of neighborhood maintenance. This neighborhood features major inequalities in terms of infrastructure, accessibility, parking, and quality of the environment. The construction of this neighborhood began in the 60s as a result of the urban expansion of the city. The neighborhood is now consolidated and all of its developable land has been built on, leaving no space available for new construction. It consists primarily of apartment blocks of between 6 and 12 stories, closely built with few green spaces (some trees but no parks). The sidewalks are narrow and with many cars parked alongside them. There is a school, leisure and sports facilities, clothes shops, many bar-restaurants, and other services. This neighborhood has an intermediate level of cleanliness in public spaces.
 4. Teatinos: Urban, middle to high socioeconomic level and middle to high level of neighborhood maintenance. This is a new neighborhood built on the western outskirts of the city, an area experiencing considerable growth in recent years. It is characterized by wide boulevards, green areas, and residential complexes. Due to its close proximity to the campus of the University of Malaga, many students live in the area alongside young families with children. It is a neighborhood with new apartment buildings, good facilities (e.g., clothes shops, food shops, banks and cafes, bars and restaurants), wide sidewalks, and green spaces around the buildings. Building facades are well cared for and clean and there are no signs of vandalism.
 5. Avenida Cervantes, Álora: Suburban, middle to high socioeconomic level, middle to high level of neighborhood maintenance. It was built approximately 25 years ago with housing in apartment blocks of two or three stories, and all with well-painted facades in good condition. It is well lit and the sidewalks are wide. Most of these buildings constitute a single *comunidad de vecinos*, and include a community swimming pool and garage. The neighborhood is near the city center, and there are a great number of retail businesses (e.g., clothes shops, food shops). There are also banks, and leisure activity amenities. There are green spaces and trees all along the main avenue.
 6. Pocas Aguas, Álora: Suburban, low socioeconomic level and low level of neighborhood maintenance. This neighborhood is characterized by its subsidized two-story housing built in the nineties. Families dwelling in this neighborhood live in the subsidized housing as their incomes tend to be low. Aesthetically, all the houses have the same architectural style and color. However, many of them are currently in poor condition, with crumbling facades, although some residents have fixed their facades and

- remodeled the interiors. This neighborhood has a small park in an unhygienic condition and only a small supermarket and clothing store, so residents must leave the neighborhood to do most of their shopping or any formal leisure activities such as going to the cinema, restaurants, attending sporting and cultural events, or visiting a park.
7. La Fuensanta, Coín: Suburban, low socioeconomic level and middle to low level of neighborhood maintenance. This neighborhood lacks the necessary services and resources meaning that inhabitants must leave the neighborhood to cover their basic needs. In addition, it is poorly connected to the rest of Malaga. Regarding housing, there are many apartment blocks that are all the same in form, design, and color (white); the majority is subsidized housing. The residents are primarily individuals with few resources; many of them are immigrants or persons of Roma ethnicity. The buildings are in good condition as a result of a recent renovation of the neighborhood carried out by the municipal government. Despite this, it displays a lack of street lighting, sidewalks in poor condition, graffiti, and signs of vandalism. There are not enough garbage containers either for mixed trash or for packaging trash and there is general dirtiness in various places in the neighborhood, on the streets, and on the sidewalks. There are few green spaces in the neighborhood and those that exist are in poor condition. Residents have to go to other areas of the city for formal leisure and recreational activities as such facilities are lacking in the neighborhood.
 8. El Rodeo, Coín: Suburban, middle to high socioeconomic level and high level of neighborhood maintenance. The houses in this neighborhood are one or two stories, designed for a single-family and are well cared for. Many constitute part of a single residential development with a pool and common area for organizing family and social events. This is a neighborhood with good facilities including a pharmacy, a sports center, a daycare center, cafes, bars and restaurants, and a public pool. Regarding construction, there are different types of housing: town houses and chalets, with their own individual exterior designs. The facades are clean and well cared for and with no signs of vandalism.

According to these profiles, which are summarized in Table 1, a high degree of consistency exists between the different descriptors of each neighborhood. Therefore, the socioeconomic level of the neighborhoods, the maintenance conditions, housing conditions, and the presence and shape of green zones receive a consistent evaluation in each neighborhood. In this sense, we consider that each unit of spatial analysis (the neighborhood) is a good example of the category for which it was selected. Figure 1 shows the geographical distribution of each Malaga neighborhood. Figures 1 through 5 shows representatives examples of these neighborhoods.

Table 1. Summary table: neighborhoods.

Neighborhood	Size (K.m ²)	Socioeconomic level	Neighborhood conditions	Type of Houses	Conditions of the houses	Green Spaces
1. Las Cuevas	.03	Low	Poor (broken urban furniture)	Self-built houses	Poor (graffiti, broken windows)	Few and in poor condition
2. Huelin	.21	Low/middle	Mixture of conditions	Single-family houses/ apartment blocks. Overcrowded areas	Mixture of conditions	Few and in poor condition
3. Nueva Málaga	.07	Middle	Modest conditions (working class neighborhood), well maintained	Apartment blocks. Overcrowding	Average maintained	Few and in poor condition
4. Teatinos	.31	Middle	Well maintained	Apartment blocks	Well maintained	Many green areas
5. Avda Cervantes	.03	Middle/ high	Well maintained, rural	Apartment blocks (2-3 stories)	Well maintained	Trees and a small park
6. Pocas Aguas	.02	Low	Poor, rural	Single-family houses Subsidized housing	Poorly maintained	A small park, poor condition
7. La Fuensanta	.02	Low	Poor, rural	Single-family houses Subsidized housing	Poorly maintained	Little and in poor condition
8. El Rodeo	.25	Middle/ high	Well maintained, rural	Single-family houses	Well maintained	Green spaces

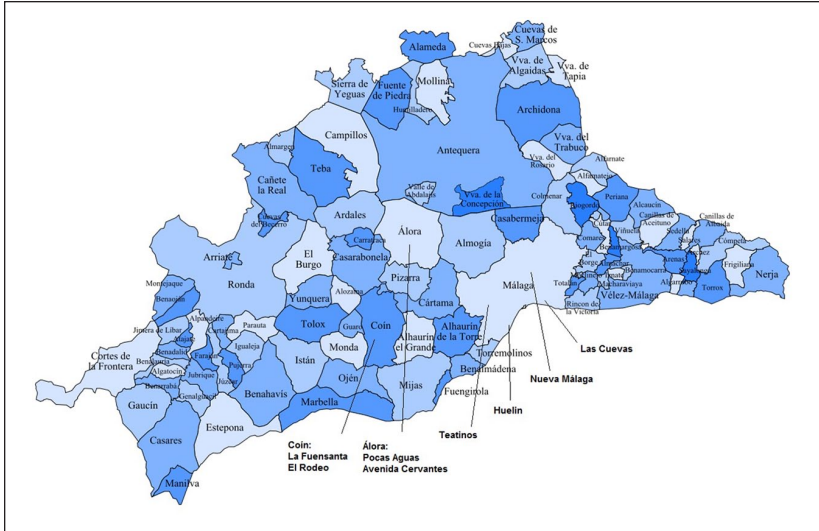


Figure 1. Map of the eight participating neighborhoods.

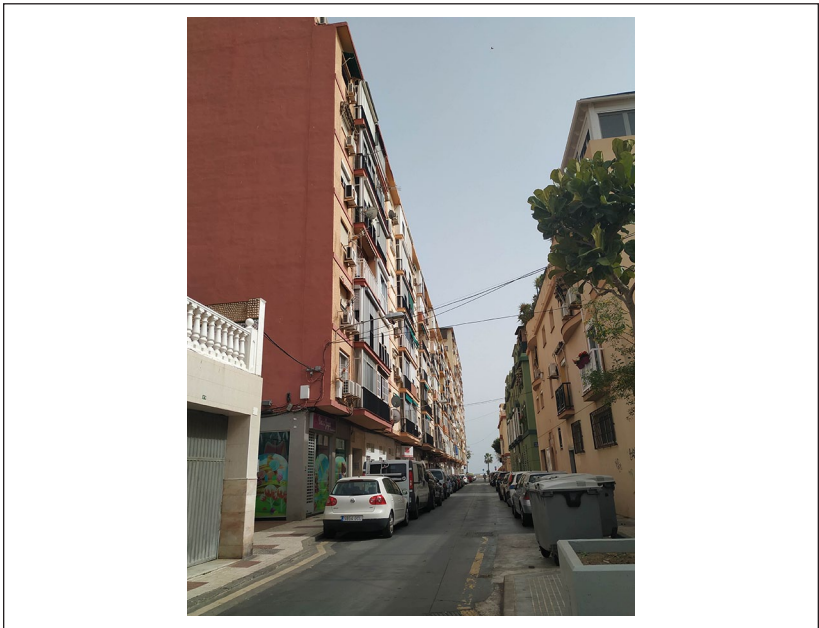


Figure 2. Urban, middle to low socioeconomic level (Huélin).



Figure 3. Urban, middle to high socioeconomic level (Teatinos).

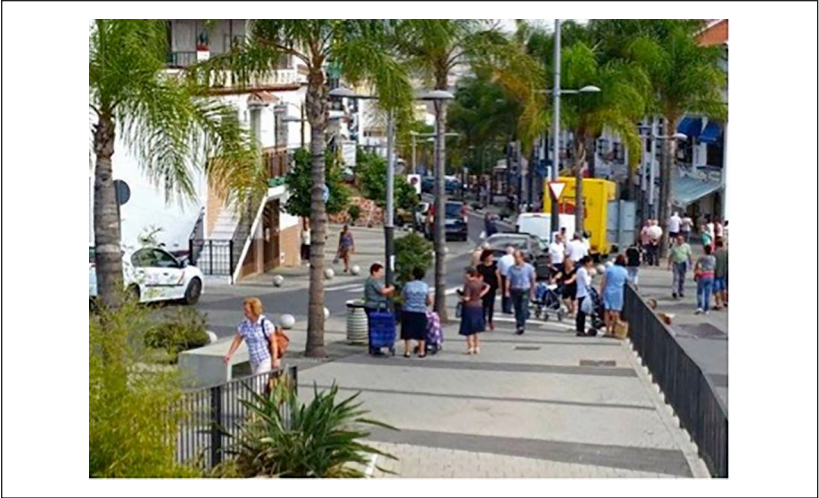


Figure 4. Suburban, middle to high socioeconomic level (Avenida Cervantes, Álora).



Figure 5. Suburban, low socioeconomic level (Pocas Aguas, Álora).

Table 2. Neighborhood description.

	Las Cuevas	Huelin	Nueva Málaga	Teatinos	Alora Cervantes	Alora Poca Agua	Coin Fuensanta	Coin Rodeos
Age								
Age mean (SD)	37,06 (14,57)	43,09 (15,84)	38,85 (14,95)	34,16 (12,37)	37,43 (14,34)	40,17 (14,96)	36,97 (12,29)	42,93 (12,61)
Gender								
Women	48,60%	50,00%	54,70%	54,30%	60,00%	56,70%	60,00%	63,30%
Education								
No studies	21,40%	2,80%	4,10%	0,00%	0,00%	6,70%	13,30%	6,70%
Primary	24,30%	22,50%	14,90%	7,10%	3,30%	36,70%	76,70%	36,70%
Secondary	27,10%	42,30%	45,90%	17,10%	46,70%	46,70%	10,00%	16,70%
University	21,40%	25,40%	31,10%	74,30%	43,30%	3,30%	0,00%	26,70%
Other	5,70%	7,00%	4,10%	1,40%	6,70%	6,70%	0,00%	13,30%
Economic status								
Lower	30,90%	1,40%	5,50%	2,90%	0,00%	13,30%	26,70%	0,00%
Mid-lower	30,90%	26,40%	38,40%	17,40%	33,30%	50,00%	20,00%	0,00%
Mid	35,30%	69,40%	54,80%	52,20%	60,00%	36,70%	53,30%	73,30%
Mid-Higher	2,90%	1,40%	1,40%	27,50%	6,70%	0,00%	0,00%	23,30%
Higher	0,00%	1,40%	0,00%	0,00%	0,00%	0,00%	0,00%	3,30%
Income								
Less than 700€	47,10%	10,30%	26,80%	8,70%	13,30%	36,70%	66,70%	0,00%
700€-1200€	35,30%	52,90%	50,70%	33,30%	23,30%	53,30%	26,70%	10,00%
1200€-2200€	17,60%	32,40%	14,10%	39,10%	50,00%	6,70%	6,70%	63,30%
2200€-3500€	0,00%	4,40%	7,00%	11,60%	13,30%	0,00%	0,00%	16,70%
More than 3500€	0,00%	0,00%	1,40%	7,20%	0,00%	3,30%	0,00%	10,00%

Instruments

Participants completed anonymous self-report questionnaire comprised of five scales measuring the constructs included in the study and initial part with sociodemographic data (see Appendix A in the Online Supplemental Material). Participants used a 10-point rating from 1 (*not at all/never*) to 10 (*very much/always*) to respond to all the measurements. The questionnaire measured these variables:

1. Neighborhood care: We used the scale by Hidalgo et al. (2015), based on the maintenance/care sub-scale by Bonaiuto et al. (1999). It consists of 11 items measuring maintenance behaviors in the neighborhood. It begins with the phrase: "Next, indicate how often you carry out each of the following actions": For example, throw papers, cigarette butts or remains from food on the ground, paint graffiti in neighborhood streets, etc.
2. Neighborhood attachment and identity: We used an adapted version of the scale by Ruiz et al. (2011), which includes six items for evaluating place attachment (e.g., I like living in this neighborhood) and three items that measure place identity (e.g., I feel like I belong to the neighborhood). Following the recommendation of Hidalgo (2013), the inverse formulation of some items has been used to avoid *acquiescent responses*.
3. Social norms: The scale used to measure social norms includes the same items as the neighborhood care scale, but the questions refer to the behavior of neighbors. The scale starts with "How often your neighbors carry out each of the following actions:". It is made up of 11 items, including reference to recycling and using recycling containers and wastebaskets.
4. Residential satisfaction: We adapted our scale from the Amerigo (1995) scale, which has three items on general satisfaction regarding three residential satisfaction levels: the neighborhood, one's housing and one's neighbors, and one global item. In general, how satisfied are you with your neighborhood?
5. Support for public protection policies: We developed our own scale consisting of four items which assess support for preventive or punitive policies for acts of vandalism in the neighborhood. The first refers to educational campaigns that encourage caring for the neighborhood in (a) Implementation of campaigns to increase awareness and (b) Establishment of educational programs in the schools. The punitive policies refer to such things as "Impose fines for littering on the streets" or "pay more taxes."

Procedure and Data Analysis

The surveys were carried out in each of the neighborhoods by trained interviewers. The participants voluntarily agreed to respond individually to the interviewers. Only 15% refused to respond to the questionnaire, primarily saying they did not have time to do so. Participants were asked to answer some questions about their neighborhood and were informed that their answers would be anonymous. They were asked to give honest answers to the questions, as they were a part of a psychology study. Filling the questionnaires took place between 10 AM and 7 PM. The interviewers went to public places in each neighborhood (e.g., entrances of schools, supermarkets, cafes, stores or parks), covering virtually every public space in each neighborhood. The participants filled out the questionnaire with the interviewers available to assist if any doubts emerged. Residents with low education levels were asked the survey questions orally. The average time to complete the questionnaire was 15 min.

To understand the uncertain relationship between place attachment and neighborhood care, we first analyzed the distribution of the variables and the association between them. Then, we studied this relationship in three different steps; first, (a) how attachment and care are more or less related depending on the different neighborhoods. Once the community role was clarified, (b) we explored the way socioeconomic status can be a meaningful moderator for the relationship between attachment and care. Finally, based on the analyses of community and socioeconomic status, (c) we confirmed the effects of individual psychological variables (i.e., public policies, residential satisfaction, and social norms) to conclude the exploration of the relationship between place attachment and neighborhood care.

Results

First, an analysis of the internal consistency of each of the scales was carried out. In Table 1, we can see the descriptive data for each of the scales. Cronbach's alpha scores corresponding to neighborhood attachment, social norms and support for public measures are adequate. The degree of internal consistency for the scale measuring neighborhood care is somewhat low, but not excessively so. Given that all the scales have a sufficient alpha, we calculated their averages and standard deviations. We estimated the correlation among the variables used in the study below. In Table 1, we can see the corresponding value of each bivariate relationship.

Table 3. Descriptive values, internal consistency and correlations between the scales used.

Scale	Mean	SD	Alpha	1	2	3	4	5	6
1. Neighborhood care	8.53	1.19	.64	—					
2. Neighborhood attachment	7.00	2.37	.91	.16***	—				
3. Place identity	6.65	2.71	.95	.10	.74***	—			
4. Social norms	5.94	1.86	.84	.29***	.42***	.39***	—		
5. Support for measures	6.92	1.94	.75	.33***	.07	.04	.07	—	
6. Residential satisfaction	7.46	1.60	.67	.23***	.66***	.56***	.42***	.05	—

* $p < .05$. ** $p < .01$. *** $p < .001$.

The means for the different variables, as seen in Table 3, are quite high, except in the case of social norms, which have an intermediate score. Therefore, residents consider that they themselves take care of their neighborhood, have a high level of residential satisfaction, place attachment and place identity, and they support the public policies taken to improve or maintain the neighborhood, while they consider the behavior of their neighbors (social norms) to be moderate in this regard. Regarding the correlations, we can see that taking care of the neighborhood is positively correlated with all the other variables except for place identity.

We found a positive significant relationship between neighborhood attachment and neighborhood care ($r = .16$; $p < .01$), although the relationship is not very strong. Considering the role that the specific neighborhood might play in the relationship between neighborhood attachment and care, we calculated the correlation between them for each neighborhood separately (Table 4).

Table 4. Distribution and correlations between place attachment and neighborhood care by neighborhood.

Neighborhood	<i>n</i>	<i>r</i>	<i>p</i>	Attachment		Care	
				<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Teatinos	70	.44	<.01	7.41 ^b	1.59	8.85 ^b	0.76
Alora Cervantes	30	.37	.04	7.94 ^b	1.22	8.73 ^b	1.08
Huelin	72	.36	<.01	7.51 ^b	2.21	8.81 ^b	1.09
Coin Rodeos	30	.15	.44	8.63 ^c	1.28	8.93 ^b	1.07
Nueva Málaga	75	.12	.32	6.95 ^a	2.31	8.63 ^b	1.20
Coin Fuensanta	30	.05	.79	4.66 ^a	2.97	8.43 ^{ab}	1.05
Alora Poca Agua	30	-.09	.65	6.67 ^a	1.94	7.88 ^a	1.44
Las Cuevas	70	-.19	.12	6.14 ^a	2.82	7.89 ^a	1.34
Total	407	.16	<.01	7.00	2.37	8.53	1.19

Note. There are no significant differences between those neighborhoods that have the same superscript in column *M*. There are significant differences ($p < .05$) between neighborhoods with different superscript.

In Table 3 we can see that the association between neighborhood attachment and neighborhood care was significant in only three of the neighborhoods (i.e., Teatinos, Alora Cervantes, and Huelin), while we did not find any relationship for the other five neighborhoods. In fact, the correlation between neighborhood attachment and neighborhood care was no longer significant (partial $r_{(398)} = .09$; $p = .07$) after we controlled for the effect of the neighborhood through dummy variables.

This result may be due to different levels of attachment and care among residents of different neighborhoods. In order to check if there are differences between neighborhoods for attachment and care, we carried out an ANOVA. The results showed that both the level of place attachment ($F_{(7, 399)} = 10.56$; $p < .01$) and neighborhood care ($F_{(7, 399)} = 6.84$; $p < .01$) differ depending on the neighborhood. With the aim of identifying which specific neighborhoods are significantly different from each other, we carried out a multiple comparison using Dunnett C (this statistic was chosen as the variances are significantly different). In Table 3, the neighborhoods with different superscripts in column *M* are those that have a significantly different score from the others ($p < .05$). These differences may be at least partially responsible for the different results found in previous studies.

In analyzing the characteristics of the three neighborhoods in which the relationship between attachment and behavior is significant, we see few factors in common, as two are urban neighborhoods, one with a middle to low economic level (Huelin), another middle to high (Teatinos), and the third (Alora Cervantes) is suburban and with a middle to high economic level. We see that these three neighborhoods have scores which differ significantly from the others in terms of neighborhood attachment, with a moderately high level of attachment. For example, Huelin is an important neighborhood in Malaga, with a strong identity, while Teatinos is a new creation, with many residents who are living there temporarily (e.g., university students, young families).

These results suggest that it may be social and economic characteristics of the individuals rather than characteristics of the neighborhood that play an important role in the relationship between place attachment and taking care of the neighborhood. Thus, we explored whether sociodemographic variables have an impact and change the relationship between neighborhood attachment and neighborhood care. To do this, we carried out a moderation analysis in which the behavior is explained by attachment and by the interaction between attachment and the sociodemographic variables (i.e., sex, age, and socioeconomic level). Socioeconomic level was constructed using three individual indicators: self-perceived social class, income, and education level. This interaction is calculated by multiplying the standardized score of the independent variable (i.e., attachment) by the standardized score for each of

the sociodemographic variables. If the new interaction variable is significant, we conclude that the sociodemographic variable has a moderating effect (Hayes, 2013) on the relationship between attachment and neighborhood care. In this case, we found a significant moderating effect in the relationship between attachment and neighborhood care for socioeconomic level but not for sex or age. The moderating coefficient was $\beta = .12$ ($p = .01$), which means that the higher the socioeconomic level, the stronger is the relationship between attachment and neighborhood care. Following the Johnson–Neyman technique to find the “significance region” with $p < .05$, we found that the relationship between attachment and neighborhood care is significant starting at the 23rd percentile of socioeconomic level, which indicates that there is an association between the two variables for 77% of the participants with higher socioeconomic status. In Graph 1 we see a visual representation of the relationship between attachment and behavior based on socioeconomic level. We also conducted a moderation analysis for each separate factor of the socioeconomic level (i.e., self-perceived social class, income, and education level) and we found that they do not individually have a significant moderating effect, with only self-perceived social class having a marginally significant effect ($p < .10$). It is when they are combined in an index that the moderation effect actually appears. Therefore, place attachment seems to be related to neighborhood care where the person has a high enough socioeconomic level; whereas, this relationship is not significant for persons with lower income. This result does not imply or exclude a direct effect of socioeconomic level on place attachment or on neighborhood care. Our results indicate that the higher the economic level the stronger is the relationship between place attachment and neighborhood care. This moderation effect means that being more or less attached is not directly linked to neighborhood care in participants with lower socioeconomic status, not that these participants take more or less care of the neighborhood (Figure 6).

Finally, we analyzed the impact of the remaining variables on neighborhood care. The correlation with place identity, as previously illustrated, is not significant, for either the total sample or for the neighborhoods. In contrast, it is significant for social norms, support for public policies and residential satisfaction. To verify the weight of each of these variables that were significant in the correlation analysis, we carried out a hierarchical multiple regression analysis in three steps (see Table 5). In the first step we introduced sociodemographic variables to control their effects: specifically, sex, age, socioeconomic level, and time residing in the neighborhood. Of these, only age and socioeconomic level had a significant effect. In a second step we introduced place attachment, which did not significantly improve the proportion of the variance explained of neighborhood care. In the third step we introduced

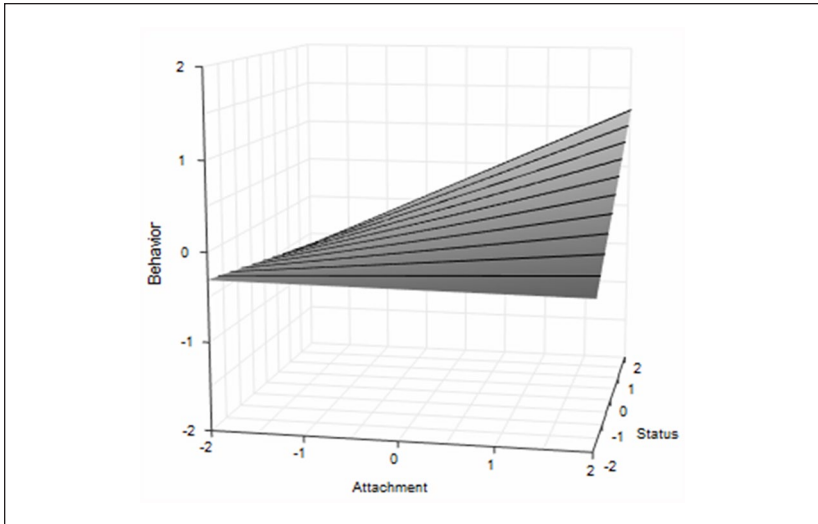


Figure 6. Relationship between attachment and neighborhood care moderated by socioeconomic level.

Table 5. Hierarchical multiple regression analysis to predict neighborhood care.

Predictor	ΔR^2	β
Step 1	.13***	
Age		.21***
Socioeconomic level		.28**
Step 2	.01	
Age		.21***
Socioeconomic level		.27***
Attachment		.09
Step 3	.13***	
Age		.20***
Socioeconomic level		.14**
Sex		.10*
Social norms		.23***
Support for measures		.28***
Residential satisfaction		.14*
R^2 total	.27***	
n	383	

* $p < .05$. ** $p < .01$. *** $p < .001$.

support for public policies, residential satisfaction, and social norms, which do show significant predictive capacity. The model, in this last step, explains 26.7% ($p < .001$) of the variance in neighborhood care.

Discussion and Conclusions

This study is a contribution to the field of environmental psychology, adding to our knowledge about environmental behavior in urban areas. It is one of the first studies to specifically analyze the relationship between neighborhood care and place bonds and other psycho-social variables, such as social norms, support for public policies and residential satisfaction.

The results provide clarification on certain meaningful facts. First, based on bivariate correlations, we were able to confirm that neighborhood attachment is positively correlated, though only moderately, with neighborhood care. The results are consistent with those obtained by Longhinotti-Felippe and Kuhnen (2012a) for school environment. Our study examined neighborhoods with different socioeconomic characteristics. When this relationship was analyzed in each neighborhood, we found that it was significant in only three out of the eight; in fact, when we controlled for the effect of the neighborhood, the relationship between attachment and care was no longer significant. Thus, it appears that socioeconomic status can have an important impact on this relationship. Curiously, when both the physical and social characteristics of these three neighborhoods were analyzed, we could not find clear commonalities among them, which suggests that perhaps individual characteristics and not those of the neighborhood account for this relationship. The results from our analysis of moderation confirmed this, revealing that the relationship between attachment and care is significant only for residents with higher socioeconomic level, specifically for 77% of the participants. In contrast, when the socioeconomic level is lower, neighborhood attachment does not correlate with neighborhood care. In addition to having more resources to put toward neighborhood care and action, there is the distinct possibility that those with higher socioeconomic status are also more able to exercise greater freedom of choice in where and how they live. These findings can help to explain the contradictory results found in the literature.

Thus, when we analyze attachment along with other variables, its effects disappear. Hierarchical regression analysis showed that the significant variables in predicting neighborhood care are sociodemographic (age, socioeconomic level, and sex), social norms, support for public measures, and residential satisfaction; together they explain 27% of the variance for neighborhood care. In contrast, neighborhood attachment did not enter into the regression equation. We found, therefore, a model formed by

psycho-social-environmental variables which can be useful for explaining different types of behavior regarding the neighborhood. This model associates variables related to personal interaction and normative variables. In other words, for residents to take care of their neighborhood it is not enough that they perceive the reality of their neighborhood and that socio-economic conditions in the neighborhood permit it. Only if individuals feel satisfied with their neighborhood and at the same time observe their neighbors behaving similarly will they support policies to improve the neighborhood. To the extent that these circumstances exist, they will engage in actions to take care of the neighborhood. Based on our findings, neighborhood attachment does not necessarily lead to care and maintenance of the urban space, however, these results need to be confirmed in further studies with other populations. It is other variables, such as sociodemographic characteristics and social norms, which have greater impact on civic behavior and responsibility toward the environment.

Regarding place identity, our data shows no significant correlation with neighborhood care, which may suggest that identity does not affect this behavior. However, neighborhood care appears linked instead to other connections with place, such as attachment and satisfaction. The absence of a relationship between place identity and neighborhood care may be due to processes of identity not generating specific behaviors in relation to the environment of reference. Feelings of identification with a place do not generate caring behavior or maintenance of the place. In fact, when place identity is analyzed from the perspective of social identity theory, we find that not only the evaluation of a neighborhood and perceived safety are positively related to greater identity with place, but also that there is a greater perception of homogeneity amongst group members (Bernardo & Palma-Oliveira, 2016a). Therefore, it seems that place identity affects representational elements more than behaviors and interactions related with place. Future studies should analyze whether perception of security directly influences neighborhood care, given that authors such as Lewicka (2010) or by Valera et al. (2018) have found that perceptions of unsafety directly contribute to the deterioration of urban spaces. Following the evidence of crime prevention through environmental design, a good design and a good maintenance of the neighborhood contributes to crime prevention and reduction, which in turns increases security (Mihinjac & Saville, 2020; Saville, 2018).

In addition, place identity is positively and significantly related to place attachment. The finding is consistent with those obtained in the majority of studies, particularly when average length of time residing in a neighborhood is high (Hernández et al., 2007). However, we also find the relationship that

these two variables have with neighborhood care is different, revealing that both ties with place are related but the processes are different.

Our results are in line with those obtained by Uzzel et al. (2002), as well as Scannell and Gifford (2010b), with respect to pro-environmental behavior in general. The former found contradictory results in the relationship between social identity and pro-environmental behavior in two neighborhoods with different socioeconomic characteristics, although in our study this occurs with place attachment and not with place identity, and in addition appears in the opposite direction (the relationship is significant only for residents with higher socioeconomic levels). As we have seen, in both studies different place bonds were analyzed, and effectively the results do not coincide, although both point to the effect of socioeconomic variables, suggesting the need for further study. Scannell and Gifford (2010b), for their part, found that natural but not civic place attachment predicted pro-environmental behavior. Our findings are also consistent with studies that have shown high levels of place attachment in neighborhoods in poor states of conservation and maintenance (e.g., Brown & Perkins, 1992; Brown et al., 2003, 2004b; Lewicka, 2005, 2011). However, based on this study it is not possible to explain why, as numerous studies have shown, attachment to natural places is significantly related to pro-environmental behavior in such places. More research that compares both natural and urban environments is necessary to understand the differences between both types of environments with regard to this relationship.

Regarding other variables analyzed, social norms are an important predictor of behavior, as found in many studies in other fields (Cialdini et al., 1990; Corral-Verdugo et al., 2002; Reno et al., 1993). How an individual behaves depends to a great extent on how she or he perceives what others do. This variable can also help us to understand why, despite the existence of a strong attachment to neighborhood, individuals do not take care of their neighborhood. Support for public policies to protect the neighborhood also has a significant effect on neighborhood care, as was found in the study by Hidalgo et al. (2015). Being involved in taking care of the surrounding environment is related to support for other public actions, such as educational campaigns, increasing fines and/or taxes, and not just to individual behaviors, which reflects a general concern for maintaining public spaces. Regarding the role of residential satisfaction, we see that although the mean level of satisfaction is moderate, it also contributes to explaining neighborhood care: greater satisfaction predicts greater care. Previous studies have pointed out how the state of maintenance of the neighborhood contributes to greater residential satisfaction, which seems to indicate the existence of a feedback loop between these variables. It would be interesting to analyze this relationship in future studies.

Among the main contributions of this study, we should first mention the analysis of a previously under-researched variable: the care and maintenance of urban spaces, and the relationship that this behavior has with place bonds. Relating socioeconomic factors to both neighborhood care and place attachment is another major contribution. Future study is needed to confirm this relationship.

A further contribution is the incorporation of both environmental and psycho-social factors in this analysis. It is common to find research that examines one or the other; though, as it is clear that these factors occur alongside each other, we believe they should be analyzed together. Regarding the limitations of our study, we have pointed out the lack of homogeneity among and within the neighborhoods, which makes comparison difficult. Within the same neighborhood we found areas with different socioeconomic levels, different access to social equipment, and different levels of maintenance, making it difficult to classify these neighborhoods. Future studies should consider homogeneity of these characteristics when choosing neighborhoods.

Another feature that we would like to highlight is the neighborhood size. The size is a key factor linked with place identity, place attachment, and other ties, even if some results are not conclusive. Casakin et al. (2015) found that place attachment was stronger in large and small-sized cities than in medium-sized cities, whereas place identity was higher in large rather than small or medium-size cities. There is also evidence (e.g., Bernardo & Palma-Oliveira, 2016b; Casakin & Billig, 2009) indicating that smaller neighborhoods reported higher identification and satisfaction with the place of residence, as well as higher discrimination of other neighborhoods. However, in spite of the heterogeneous profile of the neighborhoods that we included in this study, their sizes are very similar.

In addition, neighborhood care was evaluated in this study through self-reporting, and given the social desirability of such behavior, it would be better to use a more valid procedure to evaluate this behavior. Lastly, despite having identified certain significant variables, the percentage of explained variance was not very high, which suggests that new studies are necessary that will contribute to the understanding and explanation of care and maintenance of urban spaces. It may be that this study has been carried out from an essentially individualistic perspective. The inclusion, in future studies, of measures that evaluate political, structural, and psychological factors can increase the percentage of variance explained. Some studies have shown that the relationship between place attachment and household wellbeing is stronger among owner than among tenants, which can contribute to the regeneration of the neighborhoods (Brown et al., 2004a; Smith et al., 2017).

In addition, in line with the studies of Dixon and Durheim (2000, 2004), variables related to individuals' world views, ideology and, above all, the representation that residents of a neighborhood have constructed and shared and the relationships among different groups that form it, are all likely to influence residents' behavior with respect to care and maintenance of the neighborhood. This knowledge can be of use in the planning and implementation of urban renewal and urban design projects.



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Supplemental Material

Supplemental material for this article is available online.

Note

1. As mentioned, the conceptual framework for the study of place bonds is very broad. To describe the relationship, similarities and/or differences between these concepts is beyond the objectives of this study. For further clarification see: Uzzel et al. (2002) and Hernández et al. (2014).

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