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ARTICLE

A systematic review to determine the role of public space and urban design on sense of community

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Abstract

The aim of this research is to determine the effect that the physical characteristics of public spaces and their perceived quality have on residents' sense of community (SoC). A systematic review was carried out following the protocol of the PRISMA guidelines; a systematic search was conducted in the Web of Science Core Collection, resulting in the retrieval of 637 records. After several screenings, 23 studies were identified. The results suggest that the perceived quality of public spaces exerts positive effects, but of moderate intensity, on SoC (range = 0.13–0.4, $M_\beta = 0.24$, SD = 0.1), as does the possibility of walking to public spaces within the neighbourhood (range = 0.02–0.57; $M_\beta = 0.22$; SD = 0.21). The results indicate that designing public spaces that facilitate social interaction is the main factor for enhancing SoC. The main findings of this review justify the design of public spaces and built environments that favour interpersonal relationships between residents, serve as contexts for socialization and community participation and can be used to celebrate cultural and recreational events for promoting social capital in urban contexts.

1 | INTRODUCTION

For decades, those responsible for urban planning have sought to reinforce social cohesion through the design of public spaces. According to Friedkin (2004), 'Groups are cohesive when group-level conditions are producing positive membership attitudes and behaviors and when group members" interpersonal interactions are operating to maintain these group level conditions." (p. 410). The social doctrine of new urbanism (Katz, 1994) has been one of its principles facilitating social interaction and social cohesion, with the objective of reversing the decline of social capital (Cabrera, 2013) and strengthening the notion of *community*. From this perspective, social capital is conceptualized as the

set of norms and collaboration networks that support civic engagement (Putnam, 1993). As Talen (1999, p. 1362) pointed out, the roots of the new urbanism are based on designing public spaces that become settings of interaction capable of promoting Sense of Community (SoC). The most widespread definition of SoC is the one proposed by McMillan (1976), who pointed out that SoC is

> A feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together. (McMillan, 1976, cited in McMillan & Chavis 1986, p. 9)

The interest in designing public spaces that facilitate interaction can be explained by different disciplines such social psychology, anthropology and urban studies. First, the empirical evidence shows that interpersonal relationships, even those considered weak (Granovetter, 1973; Sandstrom & Dunn, 2014), in an aggregate way, strengthen social cohesion in within geographically defined communities (Riger & Lavrakas, 1981). Second, when the design of public space offers opportunities to strengthen social ties, this increases the levels of social support, improving the subjective well-being and mental health of the population (Fleming et al., 1985). Finally, gentrification and increases in high rise apartments and population density contribute to the perception of anomie and social isolation (Fischer, 1973).

A first assumption regarding to new urbanism consists of promoting open and accessible spaces that allow interaction, interpersonal proximity and different types of social exchange (Fleming et al., 1985; Talen, 2000). Thus, public spaces go from being considered mere architectural constructions to becoming behavioural settings (Barker, 1978), where the social fabric is born and reproduced (Netto, 2017). When public spaces facilitate social contacts, interaction between neighbours is increased, and a network of intra-community relations is woven, producing a social structure that constitutes an essential requirement for the emergence of social capital.

The social capital that flourishes from intra-community relations is called *bonding* and is based on interpersonal trust, commitment, reciprocity, respect for norms and networks that articulate civic participation (Putnam, 1995; p. 67). A latent construct shared by social capital and SoC is participation. Considering that social relations affect the SoC and that this in turn acts as a catalyst for community participation (Chang et al., 2022; Talò et al., 2014), it is accepted that public spaces that facilitate social interaction will reinforce the SoC, pro-sociality and social capital.

A second assumption that underlies the social doctrine of new urbanism emphasizes the effect that the design of public space exerts on psychosocial well-being and mental health to the extent that the configuration and accessibility of spaces facilitate interaction and emotional connection with the physical environment (Audirac, 1999). There are many studies that show that social support is a crucial factor in the promotion of positive mental health (Harandi et al., 2017). Therefore, designing public spaces that facilitate social interaction and that, in parallel, reinforce SoC is a key element for physical and mental health (Hooper et al., 2020; Michalski et al., 2020). At the same time, the positive relationship between SoC and subjective well-being has been consistently identified in the literature (Prati et al., 2016), which suggests that the design of public spaces that promote SoC is a prominent way to promote psychosocial well-being.

Since the end of the 1960s, several disciplines have sought to understand the individual consequences attributed to living in large cities. The mobility processes that occurred in previous decades produced increases in population density and increases in the size and complexity of cities. The eminent social psychologist Stanley Milgram (Milgram, 1970) highlighted that the increase in the size of cities, population density and heterogeneity of inhabitants increased cognitive demands and caused overlapping of social roles acting as psychosocial stressors. Recently, there has been an increasing social perspective in the way of understanding the experience of urban life, assuming that designing public spaces that include green areas, parks and spaces for socializing contributes to improving psychological health (Hartig & Kahn, 2016). This fact is confirmed in studies that show that designing neighbourhoods that facilitate social interaction impacts the well-being of residents

(Ige-Elegbede et al., 2022) and in the SoC that they experience with respect to territorial setting (Francis et al., 2012).

The third assumption is based on the idea that the current structure of cities, characterized by the high concentration of population in residential blocks and by the relative scarcity of spaces for recreation and interaction, contributes to the perception of social isolation (Fischer, 1973). In fact, in densely populated areas where the interpersonal distance that separates individuals is reduced, psychological distance tends to increase, affecting the feeling of loneliness (Lai et al., 2021). Therefore, the characteristics of public space determine behaviour patterns and social dynamics (Mehta, 2019).

A natural way to combat the perception of social isolation is to design accessible public spaces such as parks, squares and green areas that are suitable for social exchange. This allows expanding the network of contacts within the community setting and contributes to strengthening the SoC and responsibility towards the community itself. Activating interpersonal relationships by creating public spaces that become settings of pro-social behaviour makes it possible to reduce the perception of isolation and reinforce the affective and emotional dimensions of attachment to the place, which are essential to consolidating the SoC (Glynn, 1986; McCunn, 2020; Plas and Lewis, 1996; Riger & Lavrakas 1981; Talen, 1999).

Several studies have evidenced the importance of experience feeling of membership towards social groups. Individuals satisfy affiliative needs through ongoing positive interactions with other members of the community. But social contacts simultaneously constitute social support resources that contribute to improving quality of life and subjective well-being and reduce the perception of loneliness (Chung & Kim, 2022). When people interact frequently with their neighbours, social cohesion is reinforced, and opportunities to satisfy social, material and emotional needs are amplified. This phenomenon produces direct and indirect effects on physical and mental health, and recent studies even show that the SoC contributes to making people feel happy (Ross et al., 2019). The founding principle of the new urbanism social doctrine is that the design of buildings, public spaces and walkable areas should favour interpersonal contact between community members (Katz, 1994; Kim & Kaplan, 2004). Urban planning can contribute in multiple ways to the activation and intensification of social exchanges, which, in turn, will strengthen the SoC.

From this perspective, a recent study showed that when the design of neighbourhoods includes transit zones that facilitate walking between areas of interest in the community, interpersonal relationships are promoted, increasing the sense of belonging to the community (Carson et al., 2023). Another recent proposal found that communities that have friendly public spaces for children to play foster relationships between parents and neighbourhood cohesion and the SoC are strengthened (Ross et al., 2020). Finally, recent research suggests that public spaces can become contexts for artistic co-creation with the potential to publicize community demands, give voice to underrepresented groups and promote community resilience. Thus, the work developed by Robazza (2020) points in that direction, showing that art is a powerful instrument for appropriating public space, increasing the sense of belonging to the community.

Although scientific literature highlights positive associations between features of urban physical environment and the SoC, this evidence is commonly fragmented and arises from different academic disciplines. This fact makes difficult to identify a precise picture about how public spaces and physical environments shape social interaction patterns, and in turn, the experience of being a member of a broader community. For example, studies from community psychology point out the cognitive, attitudinal and behavioural dimensions that are associated with the SoC (Davidson & Cotter, 1986; Doolittle & MacDonald, 1978). Studies adopting this perspective exhibit the effects of neighbourhood-level variables on SoC and frequently include community-level variables related to the characteristics of the urban design, neighbourhood heterogeneity and the utilization of public space for community initiatives (Davidson & Cotter, 1986; Douglas, 2022; Nasar & Julian, 1995). A key goal of this line of studies is to understand how public spaces trigger participatory behaviours in community action. On the other hand, urban planning research mainly focuses on the impact that built environment produce on population health indicators, social behaviour and perceptions about urban design (Cattell et al., 2008; Hooper et al., 2020).

A second aspect is referred to how is conceptualized and measured the SoC. Research framed in community psychology tends to use the theory of SoC (McMillan, 1976; 2011) as a central axis. From this approach, the SoC is understood as a multidimensional construct (McMillan & Chavis, 1986), and its measurement is carried out using standardized instruments capable of evaluating the compositional dimensions of the SoC (Douglas, 2022; Peterson et al., 2008). Studies applying this type of instrument are capable of accurately capturing the behavioural, emotional, attitudinal and instrumental factors that characterize the SoC. On the other hand, research that falls within urban design and planning tends to use adaptations of instruments designed to capture the sense of belonging, attachment to place or neighbourhood cohesion (French et al., 2014; Hooper et al., 2020; Kim & Kaplan, 2004) that can be considered approximations to the SoC but differs in the foundational roots of the SoC. Studies that fall within this tradition sometimes use a single dimension or to assess the SoC and some even use a single item to assess the sense of belonging to the neighbourhood as a measurement system for the SoC (Whalen et al., 2012). Considering jointly the heterogeneity observed in the studies that examine the impact that the characteristics of public space and urban design produced in the SoC, it seems justified to study the accumulated empirical evidence to know the procedures, measurement instruments and the main findings reported in the research that explores the relationships between urban design and public space features and a sense of belonging to geographically delimited communities.

The SoC is considered a value itself and a core point for enhancing multiple domains of social life. At individual level, the feelings of being part of a broader community allows one to satisfy affiliative needs which are essential for subjective well-being and mental health (Hooper et al., 2020; Rugel et al., 2019; Terry et al., 2019). At group level, the SoC allows one to reinforce social cohesion, reciprocity in social exchanges and respect for shared norms and values that serves for maintaining groups together (Wilkinson, 2007). At community level, the SoC serves as social 'glue' for communities and for the society. At this level, many studies find out that the SoC is closely related to social capital (Perkins et al., 2002), and when people feel that members of upper order collectivities are willing (a) to engage in social actions (Terry et al., 2019); (b) to invest their time and efforts for the community benefit (Taló et al., 2014); (c) to feel responsibility regarding to other community members (McMillan, 2011); and (d) to fight against external threats (Boyd & Martin, 2022). Taking together all these elements, understanding the environmental factors, such as evaluated in this work, that are contributing to explain the variability of the SoC constitutes a pertinent task for community development and for the promotion of social capital.

To date, no systematic review has compiled all peer-reviewed evidence related to the impact of the perceived quality and existence of public spaces on SoC. The objective of this review is to compile that evidence, assess its quality and summarize the findings of that evidence. Based on the antecedents presented and taking as reference the behavioural settings theory (BST) (Barker 1978) and the theory of SoC (McMillan 2011; McMillan & Chavis 1986), the objective is to determine the impact that perceived quality and existence of public spaces on the SoC that residents experience with respect to the residential setting. To achieve this objective, a systematic review of the empirical evidence was carried out following the procedure of the PRISMA guidelines (Liberati et al., 2009).

1.1 | Definition of concepts relevant to this review

First, it is necessary to conduct a brief analysis of the term *community*. In general, the scientific community assumes that the notion of community includes both geographically delimited communities (neighbourhoods and cities) and the links that shape social groupings regardless of the place in which such relationships take place (McMillan & Chavis, 1986, p. 8). However, it is not mutually exclusive (Gusfield, 1975, p. 16); in contrast, to the extent that physical spaces facilitate social interaction, and on other occasions, the relational communities, for example through associations, are the ones that contribute to modifying the physical environment to facilitate interpersonal relationships.

McMillan and Chavis (1986) developed the four-factor model formed by the fulfilment of needs, membership, influence and shared emotional connection. The *fulfilment of needs* examines the extent to which communities facilitate the adjustment between the individual and the setting of interaction that guarantees that the subjects can fulfil different types of needs. *Membership* refers to the degree to which individuals are integrated into a higher order social structure. This dimension describes the investment of time and resources that people dedicate to the community and implies an implicit differentiation of the members of the community from those who are not. *Influence* explores the degree to which members of the community perceive that they can influence social dynamics, and at the same time, they become aware that they are also susceptible to being influenced by other members. Finally, *shared emotional connection* is based on the individuals' contacts and the perceived quality of the interactions and on the number of social events that facilitate interpersonal proximity.

The dialectical relationship between SoC and participation has been demonstrated through the meta-analytic review carried out by Talò et al. (2014), in which data from 106 studies were included. The results showed that the relationship between SoC and participation is positive, statistically significant, and strong in the case of the adult population. Similar results have been identified in studies conducted in populations with mental health problems (Terry et al., 2019), university students (Procentese et al., 2019) and populations in situations of forced mobility (Ramos-Vidal, 2017, 2018).

1.2 | The impact of public space on SoC

The BST first developed by Barker (1978) proposes that individuals tend to exhibit similar behaviours in certain locations within neighbourhoods and cities. This behavioural similarity describes the degree to which people who coincide in the same physical space tend to adopt the same social role. This assumes that although the people who occupy a physical space are different at each moment and in each interaction, social roles tend to be reproduced without appearing to be an implicit norm that determines the behaviour of the actors who coincide in those spaces. Figure 1 describes the suggested theoretical model.

The BST suggests that the repetition of social roles and behaviour patterns are largely due to the characteristics and how the settings in which socialization occurs are perceived. Other authors suggest that social regularities that tend to (*re*)produce systematically in different settings constitute vehicles for collective action (Seidman, 2012). The additional value of public spaces, when they become settings of behaviour that promote social interaction, is precisely their ability to mobilize collaborative action (Carmona, 2019).

Although public spaces can become behavioural settings, there are few studies that identify the characteristics of these settings and establish typologies. Among the rare exceptions to this assumption is the early work of Price and Blashfield (1975), which proposes a taxonomy of behavioural settings based on different variables such as the size, frequency and duration of interactions, the type of users and the volume of people gathered (Price & Blashfield 1975, p. 345). In this preliminary study, the authors identify as behavioural setting organizational environments that it is not common to include within the category 'public space', for example educational centres and local businesses, but they do include other environments that fit within the category of public space, such as green areas and recreation areas where neighbourhood gatherings are held.

There are studies that examine the role of public space in the SoC (Audirac, 1999; Francis et al., 2012; French et al., 2014; Glynn, 1986; Talen, 2000). The study developed by Audirac (1999) showed that residents who live in urban settings that have walkable, safe and passable sidewalks that connect subjects with places of interest, such as shopping centres, schools and areas for sports practice, tend to experiment higher SoC. In another proposal, French et al. (2014) demonstrated that the ease of walking to the means of transport and the positive perception of the quality of public space act as predictors of SoC. In contrast, the same study identified negative associations between demographic density and SoC.

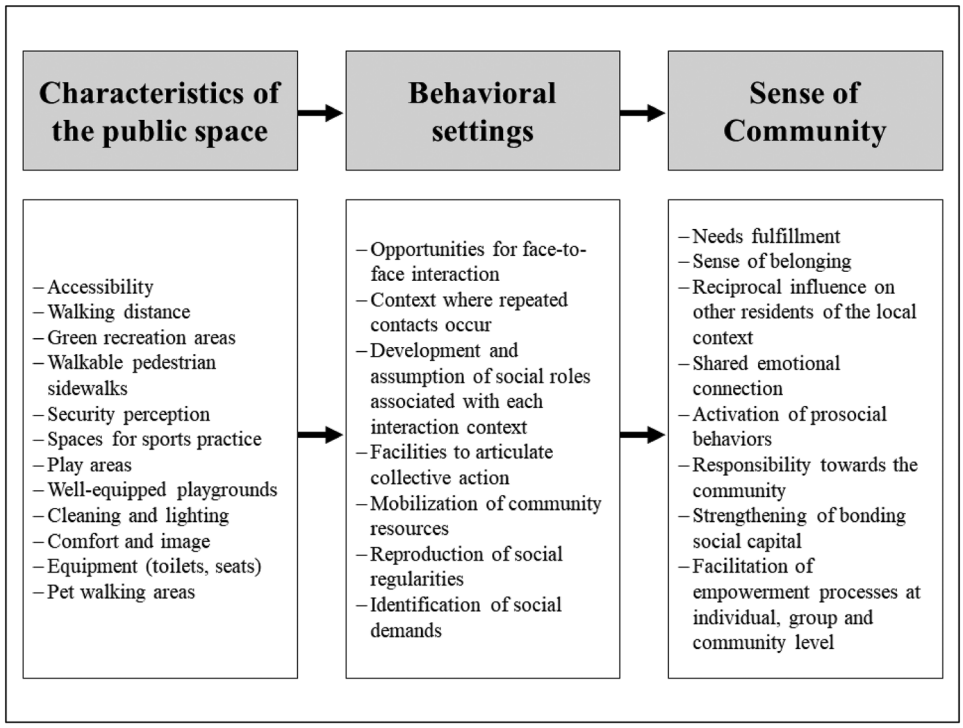

FIGURE 1 Illustration of the proposed theoretical model. *Source*: Own elaboration based on Baker (1978) and Talen (1999, 2000).

The authors conceive of public space in a differential way; however, the definitions share a common denominator that public space should facilitate interpersonal relationships. Talen (2000, p. 346) used the term 'public realm' to identify physical spaces in geographic settings that are open and physically accessible and that provide opportunities for contact, interpersonal proximity and the appropriation of these spaces by users. This definition is inspired by the literature on social support, emphasizing the role that physical spaces play in the establishment of affective bonds that can contribute to improving psychosocial well-being and mental health (Cattell et al., 2008; Fleming et al., 1985). Other authors argue that public spaces reinforce intra-community cohesion and social justice (Latham & Layton 2019). Public spaces can become settings to expose, make visible and defend social rights through the mobilization of collective action, positively affecting perceived social justice (Mitchell, 2003). The objective of this review is to compile evidence related to the impact of the perceived quality and existence of public spaces on SoC, assess its quality and summarize the findings of that evidence.

2 | MATERIALS AND METHODS

A systematic review of the scientific literature that adheres to the principles of the PRISMA guidelines was carried out (Liberati et al. 2009). The protocol of the systematic review was registered in the PROSPERO repository (International Prospective Register of Systematic Reviews under the Pre-register identification code: CRD 42022306972). The search for manuscripts was performed in the Web of Science (WoS) Core Collection, Current Content Connects, SciELO Citation Index, MEDLINE, KCI-Korean Journal Database and Russian Science Citation Index which are considered relevant databases to develop systematic reviews and meta-analyses (Pranckutė, 2021). Following the recommendations of previous studies (Dickersin et al., 1994), a complementary hand search was per-

TABLE 1 Search terms and identified records.

Search terms	Records identified
'SENSE OF COMMUNITY' AND 'PLANNING'	169
'SENSE OF COMMUNITY' AND 'PUBLIC SPACE'	29
'SENSE OF COMMUNITY' AND 'BUILT ENVIRONMENT'	77
'SENSE OF COMMUNITY' AND 'URBAN DESIGN'	25
'SENSE OF COMMUNITY' AND 'ARCHITECTURE'	37
'SENSE OF COMMUNITY' AND 'PUBLIC REALM'	8
'SENSE OF BELONGING' AND 'PLANNING'	152
'SENSE OF BELONGING' AND 'PUBLIC SPACE'	48
'SENSE OF BELONGING' AND 'BUILT ENVIRONMENT'	38
'SENSE OF BELONGING' AND 'URBAN DESIGN'	16
'SENSE OF BELONGING' AND 'PUBLIC REALM'	3
'SENSE OF BELONGING' AND 'ARCHITECTURE'	35
Total	637

Note: Only search terms that return any results are included in the table.

formed in the first twenty journals within the categories 'Urban studies' and 'Social psychology' of the WoS, introducing the same search terms, and in the most relevant Environmental Psychology journals identified by the Canadian Society of Psychology (https://cpa.ca/sections/environmentalpsychology/publications/).

Various combinations of search terms were introduced (e.g. 'SENSE OF COMMUNITY' and 'PUBLIC SPACE'). The search terms used and the results obtained with each combination of words are available in the protocol registered in the PROSPERO repository (ID: CRD42022306972). The WoS categories included in this review are *Environmental Science Ecology, Geography, Architecture, Psychology, Urban Studies, Sociology, Social Science, Public Administration, Public Environmental Occupational Health, Anthropology, Behavioural Sciences* and *Social Issues*. The application of these criteria was done to identify research items that fall into the objective of this study.

To select the manuscripts finally included after the initial screening, the following selection criteria were considered. Only empirical studies that (a) apply quantitative methodology; (b) use some standardized measure to assess the SoC; and (c) incorporate a description of the built environment (i.e. the characteristics, the perceived quality and the frequency of use of public spaces) in urban settings were included. This decision was made considering the basic principles of the new urbanism social doctrine and the research background that addresses the effect that the architectural environment produces on psychosocial processes (Evans, 2003; Katz, 1994; Talen, 1999; 2000). Table 1 shows the search terms included and the records retrieved.

The synthesis of the data will include the extraction of the reference indicators (odds ratio, standardized beta coefficients). Only those studies that include sample sizes that guarantee the adequacy of the analyses will be included in the descriptive analyses will be evaluated. Sample size, number of public space features included in the analysis, range for public space use frequency, odds ratios, confidence intervals, *p*-values and beta coefficient standardized. Regarding risk bias and study quality assessment, the research team examined whether the studies include control variables, moderating or mediating variables in the analyses. Also was examined if the size of the sample is adequate to carry out the analyses described.

After the research team agreed on the inclusion criteria (e.g. that they are empirical studies), two evaluators independently carried out an analysis of the articles that the initial search yielded ($N = 637$). The level of inter-judge agreement was evaluated using the Cohen kappa index (Landis

& Koch, 1977), which yielded acceptable values ranging between 0.4 and 0.6. The following section presents the screening process of the articles and the characteristics of the studies that met the inclusion criteria.

3 | RESULTS

The systematic search in the databases yielded an initial result of 637 records. Once different screenings were performed, the sample was reduced to 316 records from which the abstract, the methodology section and sometimes the results were reviewed to verify if they met the inclusion criteria. After this second screening process, 23 records were identified that met the inclusion criteria and constituted the sample of this research (see Figure 2).

Once the studies that met the inclusion criteria were identified, the information of the selected studies was systematized in the following sections: (a) participants and study setting; (b) research design and statistical analysis; (c) instrument used to measure SoC; and (d) main results and conclusion of the research. The presentation of the results will follow the same sequence that has just been mentioned. Table presents the information of the analysed articles.

The participants of the studies examined respond to different profiles. Although studies conducted with the general adult population older than 18 years ($n = 16$) predominate, studies focused on the population older than 55 years ($n = 5$) and, to a lesser extent, the youth population ($n = 2$). The average number of participants in each study was 989.6 (SD = 899.8), although there was wide variability in the sample sizes. Four studies have representative samples at the regional level, and one has a representative sample at the national level. The rest of the studies either do not indicate the sampling strategy or apply simple random sampling.

Most of the research is conducted in North America (six in the United States and three in Canada) and Asia ($n = 8$) and, far behind, comes research conducted in Australia ($n = 4$), in Europe ($n = 1$) and in Africa ($n = 1$), and no investigations with samples from South America were found. The geographical distribution of the research reflect the settings in which the social doctrine of new urbanism expanded more rapidly (Grant 2005); however, few empirical studies are identified in the European context, whereas the large number of studies developed in Asia, and to a lesser extent in Australia, showing a growing interest in determining the effect that the characteristics of the physical setting produce on SoC in those latitudes. The large number of studies from the Asian setting may be due in part to the interest in understanding the effect that the perception regarding the quality and use of public space produces on SoC, particularly in older people.

3.1 | Research design and statistical analysis

All the studies examined present cross-sectional designs so that, although it is possible to establish covariant relationships between the characteristics of public spaces or how it affects the perception of the quality of these spaces on SoC, it is not possible to establish causal relationships. Most studies use multivariate statistics, among which different types of regression analysis ($n = 16$) and structural equation models ($n = 7$) stand out. A small proportion of studies ($n = 3$) combined multivariate statistics with geographic positioning techniques. Only one investigation uses multi-case analysis, one of which is an experimental investigation with manipulation of variables.

3.2 | Instruments applied to measure SoC

A wide variety of instruments are used to evaluate SoC. Several studies ($n = 10$) use different versions of the SCI. This scale evaluates the four dimensions of the McMillan and Chavis (1986) seminal work,

TABLE 2 Analysis of the articles included in the sample ($n = 23$).

Author(s) and year of publication	Participants and study setting	Research design and statistical analysis	Instrument used to measure SoC	Main results and conclusion
Abdullah et al. (2021)	255 subjects (53.7% men) with a mean age of 46.67 years (SD = 16.22) residing in a neighbourhood of the city of Penang (Malaysia)	Cross-sectional study using partial least squares structural equation modelling	To evaluate SoC, a one-dimensional Likert-type scale of six items developed by the same authors of the research was used. The scale presents an acceptable reliability ($\alpha = 0.70$)	The main result of the research is that the quality of neighbourhood maintenance positively affects the residents' SoC ($\beta = 0.137$, $p < 0.05$; CI: 90%: −0.009, 0.260). The study shows that SoC is affected by the characteristics of the physical environment, and that maintaining the neighbourhood in adequate conditions inhibits criminal and antisocial behaviour
Du Toit et al. (2007)	2194 participants aged between 20 and 65 years living in 32 communities in Australia	Cross-sectional study that uses a multilevel regression model to examine the relationships between the ease of walking to public spaces and sociability	SoC scale consisting of three items that are evaluated with a five-point Likert scale according to the degree of agreement. It has a low reliability ($\alpha = 0.65$)	No significant interaction effects were observed between the socio-demographic variables and the ease of walking on SoC, informal social control and local social interaction. A significant but small interaction effect was observed within the traceability of walking around the neighbourhood on SoC ($\beta = 0.002$; $p = 0.013$)
Filipović (2008)	Representative sample of 4009 subjects (67.6% women) aged between 15 and 65 years residing in Slovenia	Cross-sectional study that applies logistic regressions	A Likert-type scale of five questions was used that examines three dimensions of SoC that measure social interaction, attachment to place and community identity. Reliability is not reported	Regression analyses indicate that the low perceived quality of neighbourhoods and public spaces negatively affects SoC ($\beta = -0.150$, $p < 0.001$). The authors conclude that characteristics of the physical environment, in particular the height of buildings, have a negative impact on SoC ($\beta = -0.62$, $p < 0.001$)
[a]Francis et al. (2012)	911 participants (62.5% women) older than 18 years residing in the metropolitan area of Perth (Australia)	Cross-sectional study, using linear regressions and multivariate models	Sense of community index (SCI) of 12 items (Chavis et al. 1986). Presents optimal reliability ($\alpha = 0.80$)	SoC was higher in people who lived less than 5 min from their park and who reported a high quality of the public space ($p < 0.001$). The relationship between SoC, the subjective perception of the public space and the quality of the shops showed significant values ($p < 0.01$). The objective evaluation of public space was not significantly associated with SoC. Using the public space to relax was the only activity that remained positively associated with SoC ($p < 0.05$)

(Continues)

TABLE 2 (Continued)

Author(s) and year of publication	Participants and study setting	Research design and statistical analysis	Instrument used to measure SoC	Main results and conclusion
[a]French et al. (2014)	1655 subjects aged between 18 and 75 years residing in the metropolitan area of Perth (Australia)	Cross-sectional study applying multivariate linear regressions	Adaptation of the Neighbourhood Cohesion index scale consisting of 16 Likert-type items that are answered according to the degree of agreement. Reliability is not reported	The study identifies negative effects of the surface of the commercial area present in the neighbourhood ($\beta = -0.13$; $p < 0.01$) and population density ($\beta = -0.01$; $p < 0.05$) on SoC, and positive effects of walkable access to public spaces ($\beta = 0.57$; $p < 0.001$), infrastructure for walking and cycling ($\beta = 0.19$; $p < 0.001$) and the aesthetic aspects of public spaces and green areas ($\beta = 0.31$; $p < 0.001$)
Guo et al. (2021)	1553 participants (22.73% women) adults older than 60 years residing in Hong Kong	Cross-sectional design using a multilevel model of structural equations	The brief SoC scale was used (Peterson et al., 2008). It consists of eight items. It is scored on a 5-point Likert scale with excellent reliability ($\alpha = 0.94$)	The study examines the effect produced by the objective and perceived design of public spaces (density, design, diversity and amenities) on SoC. The results show that mixed land use ($\beta = 0.335$; SE = 0.213) and the existence of green and recreational areas of public access ($\beta = 0.131$; SE = 0.064) predict SoC and subjective well-being
[a]Hooper et al. (2020)	644 participants (61% women), with a mean age of 43 years, SD = 11.7, distributed in 36 suburban neighbourhoods of Perth (Australia)	Cross-sectional study that develops logistic regression models with generalized estimation equations	Adaptation of the Neighbourhood Cohesion Index consisting of 18 Likert-type items. It measures the attraction to stay in the neighbourhood and the quality of the interactions. Reliability is not reported	The study uses an aggregate variable called Livable Neighbourhoods that include several dimensions such as community design, walking facilities, housing layout and characteristics of public spaces that positively affect SoC (OR = 1.211; 95% CI: 1.043, 1.408; $p < 0.012$). The results show that the characteristics of the design of the environment that includes the ease of access to public spaces affect SoC (OR = 1.064; 95% CI: 1.001, 1.131; $p < 0.045$)
Jaafar et al. (2015)	175 young people enrolled in school (64% women) aged between 16 and 17 residing in the city of Lenggong (Malaysia)	Cross-sectional study using partial least squares structural equation models	They use three questions to measure SoC, through statements with respect to which the respondents must indicate their degree of agreement. No reliability is reported	The study examines the effect of positive and negative perceptions regarding the characteristics of the physical setting of the city on SoC. Contrary to the theoretical expectation, the results show that negative perceptions produce positive effects on SoC ($\beta = 0.160$, $p < 0.05$), whereas positive perceptions do not affect SoC. The study concludes that community involvement is a mediating factor in the relationship between positive perception and SoC

(Continues)

TABLE 2 (Continued)

Author(s) and year of publication	Participants and study setting	Research design and statistical analysis	Instrument used to measure SoC	Main results and conclusion
Jabareen and Zilberman (2017)	361 subjects (44% women) with a mean age of 48.4 years (SD = 18.4) residing in the city of Beer Sheva (Israel)	Cross-sectional design using geographic information systems (GIS) and multiple regressions	An adaptation of the SCI, a 12-item scale that evaluates the multidimensional model by McMillan and Chavis (1986) is used. The complete scale presents an adequate reliability ($\alpha = 0.83$)	The results show that the characteristics of the design (e.g. existence of green areas, areas for walking, aesthetics of public spaces) have a significant impact on SoC of residents ($\beta = 0.40$, $p < 0.001$). In addition, other aspects of the design of the city such as the compaction of the facilities and the characteristics of public transport explain in an aggregate way 13% of the variability of SoC
Kim and Kaplan (2004)	730 residents in two neighbourhoods of the city of Washington, DC (USA)	Comparative cross-sectional design applying linear regression analysis and means contrast	The authors propose a model of four dimensions (attachment to the community, community identity, social interaction, and opportunities to move on foot). Each dimension is measured by three or four items. Reliability is not reported	The possibility of walking to public spaces predicts SoC in the two neighbourhoods examined ($\beta = 0.17$, $p < 0.001$) and ($\beta = 0.21$, $p < 0.001$), respectively. The analyses show that different physical characteristics of public spaces (e.g. green areas, pedestrian areas, public squares and shopping centres) affect the four dimensions of the model suggested by the authors
Li et al. (2021)	786 participants from 24 communities of the metropolitan area in Wuhan (China)	Cross-sectional study, applying multilevel regression analysis	Adaptation of the SCI (Chavis et al., 1986). The most relevant elements of the construct were modified. Presents optimal reliability ($\alpha = 0.84$)	The intra-class correlation coefficient shows that 12.31% of the total variability of SoC was due to variations in the physical characteristics of community settings. The three independent variables at the individual level had a positive influence on SoC ($p < 0.05$). The variable community ties ($\beta = 0.367$, $t = 12.338$) was the most powerful predictor. The perceived quality of the physical environment produced significant effects on SoC ($\beta = 0.222$, $t = 4.881$; $p < 0.05$)
Pendola and Gen (2008)	670 residents (48.6% women) with an average age of 38.1 years from four neighbourhoods with different urban models of San Francisco (USA)	Cross-sectional study using hierarchical regressions	An 11-item scale adapted to measure SoC with respect to the neighbourhood and a question to evaluate the number of contacts in the neighbourhood was used (Glynn 1986). The full scale has adequate reliability ($\alpha = 0.76$)	Participants from neighbourhoods with features of the new urbanism model (e.g. possibility of walking to public spaces) have a significantly higher SoC than respondents from densely populated neighbourhoods with lower quality public spaces. In the neighbourhoods that respond to the new urbanism model, the characteristics of the physical environment of the neighbourhood and of the public spaces explain a large proportion of the variability of SoC

(Continues)

TABLE 2 (Continued)

Author(s) and year of publication	Participants and study setting	Research design and statistical analysis	Instrument used to measure SoC	Main results and conclusion
Ross and Searle (2019)	625 subjects (62.1% women) older than 18 years, residents in Phoenix, AZ (USA)	Cross-sectional design applying structural equation modelling	SoC was measured using a scale based on the multidimensional model of McMillan and Chavis (1986) and presented optimal reliability indices ($\alpha = 0.84$)	The highest levels of physical activity in public spaces were positively associated with SoC ($\beta = 0.273$; $p < 0.01$); the physical characteristics of the neighbourhood are positively associated with SoC ($\beta = 0.336$; $p < 0.001$). The study concludes that the characteristics of public spaces and the possibilities to interact in these spaces positively affect SoC
Rugel et al. (2019)	The participants were 1930,048 subjects (52.4% women) residing in Vancouver (Canada)	Cross-sectional research that executed conditional logistic regression models	The variable SoC was measured with a single question: 'How do you describe your sense of belonging to your local community?' with response options from 'very strong' to 'very weak'	In adjusted regression models, for each 1% increase in the accessible natural space of 500 m, there was a 5% increase in the probability of reporting a 'very strong' SoC (OR = 1.05; 95% CI: 1.01, 1.10) and a 4% increase in the probabilities of a 'somewhat strong' SoC (OR = 1.04; 95% CI: 1.01, 1.08) compared to the reference category of 'very weak', with an OR of 1.029 (95% CI: 0.991, 1.067) for 'somewhat weak' in SoC. Similar results were observed for green space accessible at 500 m and the effect sizes for both measures were like those reported in studies with unadjusted models
Saadallah (2020)	112 residents of two neighbourhoods in the city of Alexandria (Egypt)	Comparative cross-sectional study using multiple regressions and GIS	The research uses the instrument developed by Kim and Kaplan (2004), see in this table. Reliability is not reported	The characteristics of the physical setting and of the public space, which include the aesthetic aspect of the neighbourhood, the quality of the buildings and streets and the possibility of walking have a positive impact on SoC ($\beta = 0.314$, $p < 0.001$). The effect is of greater intensity in the neighbourhood that is identified with social doctrine of the new urbanism
Stroope (2021)	Representative sample of 1700 residents (51.1% women) with a mean age of 48.66 years (SD = 0.89) in urban areas of Wisconsin (USA)	Cross-sectional design using structural equation modelling	The reduced version of the SCI is applied (Peterson et al. 2008). The scale exhibits optimal psychometric properties ($\alpha = 0.89$)	The existence of multiple public spaces that can be accessed by walking acts as a powerful predictor of SoC ($\beta = 0.40$; CI95%: 0.30–0.40; $p < 0.001$). The study concludes that the possibility to interact is increased when neighbourhoods provide opportunities for walking, and that this also affects participation, SoC and social capital

(Continues)

TABLE 2 (Continued)

Author(s) and year of publication	Participants and study setting	Research design and statistical analysis	Instrument used to measure SoC	Main results and conclusion
Toohey et al. (2013)	Random sample of 884 people (60.1% women) over 50 years ($M = 62.6$ years; SD = 9.5) residing in Calgary (Canada)	Exploratory cross-sectional study using binary logistic regression analysis	The one-dimensional scale of SoC in the Neighbourhood was applied. The instrument consists of 15 items and presents optimal reliability indices ($\alpha = 0.86$)	The results show that the characteristics of public spaces such as the existence of green areas (OR = 1.010, 95% CI: 0.68–1.51; $p < 0.001$) and the design of the streets that facilitates interaction (OR = 1.22, CI95%: 0.82–1.84; $p < 0.01$) positively affect SoC
Trawalter et al. (2021)	312 university students residing in urban areas of the state of Virginia (USA)	Four studies were conducted, from 1 to 3 were correlational and the fourth was experimental where the variable public space was manipulated	A survey with six graded items on a scale was used to measure SoC. The scale presents an optimal reliability ($\alpha = 0.84$)	In the first analysis, it was examined whether socio-economic status predicts SoC, and the results revealed a significant effect ($\beta = 0.27$; $p < 0.0001$; 95% CI: 0.014, 0.11). When examining whether the use of space on campus was related to SoC, it was found that contrary to the prediction, the distance with respect to public spaces did not predict SoC
Whalen et al. (2012)	1230 university students residing in the city of Hamilton (Canada)	Cross-sectional design based on the application of an ordered probit model and GIS	The authors use a single statement 'There is SoC in my neighbourhood' with respect to which the interviewees should indicate their degree of agreement	Different physical characteristics of the city (pedestrian sidewalks, parks, squares, shopping centres and green areas) that facilitate social interaction with neighbours produce positive effects on SoC ($\beta = 0.0246$; $t = 5.19$ $p < 0.05$). The conclusion of the study is that neighbourhoods whose designs facilitate alternative travel to the motor vehicle, facilitate contact among neighbours, positively affecting SoC
Wood et al. (2010)	609 participants (54% women, 34.3% were fifty years or older) residing in the metropolitan area of Atlanta (GA, USA)	Cross-sectional design applying generalized linear models and univariate and multivariate regression analysis	A one-dimensional scale of six items developed by the authors of the research is applied. The instrument presents adequate levels of internal consistency and reliability ($\alpha = 0.84$)	The results show that the objective characteristics of the neighbourhood such as mixed land use ($\beta = 3.133$, $p < 0.002$) and the ratio of retail space ($\beta = 3.102$, $p < 0.006$) positively affect SoC. The perception of the neighbourhood and interacting with people while walking ($\beta = 0.690$, $p < 0.001$) and that there are public spaces ($\beta = 0.635$, $p < 0.0001$) also produce positive effects of wide magnitude in SoC

(Continues)

TABLE 2 (Continued)

Author(s) and year of publication	Participants and study setting	Research design and statistical analysis	Instrument used to measure SoC	Main results and conclusion
[b]Yu (2021)	257 adults (49.1% women) older than 55 years residing in Hong Kong (China)	Cross-sectional study executing hierarchical regression analysis	SoC was measured with a modified version of the SCI based on the model of McMillan and Chavis (1986). The scale has low reliability ($\alpha = 0.653$)	The quality of public spaces explains 26.5% of the variance of SoC ($R^2 = 0.265$; $F = 11.789$; $p < 0.0001$). Different characteristics of public spaces such as recreational amenities and social interaction ($\beta = 0.093$; $t = 2.085$ $p < 0.05$), the quality of the physical environment ($\beta = 0.200$; $t = 4.488$ $p < 0.001$), the location of the public space ($\beta = 0.115$; $t = 2.796$ $p < 0.005$) significantly predict SoC. However, neither the number of public spaces nor open green areas predict SoC. The study concludes that the perceived quality of public space is more determinant in the prediction of SoC than the quantity of public spaces
[b]Yu et al. (2019)	The study included 1798 older people (54.3% women: mean age = 71.7 years) residing in Hong Kong (China)	Cross-sectional design using multivariate regression analysis and structural equation modelling	The brief SoC scale based on the multifactorial model of McMillan and Chavis (1986) is used. The scale has eight items and reliability is not reported	The results indicate that the perceived characteristics of the neighbourhood positively affect SoC. Specifically, the quality of public outdoor spaces ($\beta = 2.72$; $p < 0.001$) and transportation and walking options to areas of interest in the neighbourhood ($\beta = 2.95$; $p < 0.001$) act as powerful predictors of SoC
Zhang et al. (2022)	The participants in the research were 302 subjects (82.1% women) older than seventy years living in two urban areas of Hong Kong (China)	Cross-sectional design using hierarchical regression analysis	A brief version of the SCI (Peterson et al., 2008) adapted to the Asian setting is applied, composed of thirteen items that evaluate the social dimension (seven items; $\alpha = 0.83$) and attachment to the physical environment (six items; $\alpha = 0.82$)	The regression analyses show that the possibility of walking to public spaces in a comfortable, accessible, and safe way has a positive impact on SoC referring to the dimension of belonging to the physical environment ($\beta = 0.075$, $p < 0.0001$), but not to the social dimension of the construct ($\beta = -0.003$, $p =$ ns). The findings highlight the importance of high-quality pedestrian infrastructure to promote social interaction that positively impacts SoC

Abbreviation: SoC, sense of community.
[a]Articles identified with this symbol describe research from the same study.
[b]Ibidem.

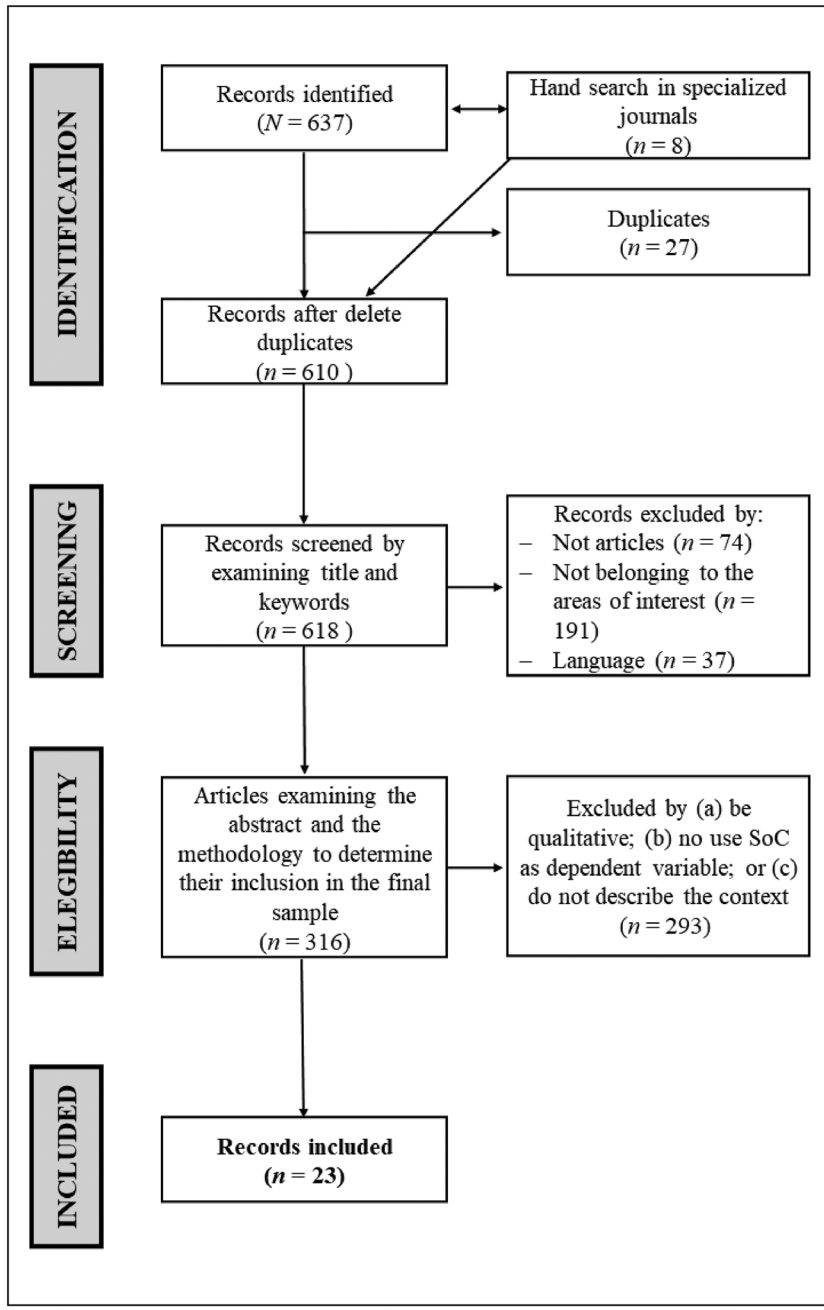

FIGURE 2 PRISMA flow diagram. *Source*: Own elaboration.

which constitutes the reference model in the theory of SoC. There are also studies ($n = 6$) in which the authors design their own instrument without relying on any previous theoretical model. In other cases ($n = 3$), they use items from several instruments to test their own model of SoC, or they adapt instruments ($n = 3$) that are based on other constructs (e.g. neighbourhood cohesion index) to evaluate SoC. In one case, a single question is used to evaluate SoC.

Considering that most studies use different versions of the SCI, it can be assumed that the predominant theoretical model to evaluate SoC is the most accepted in community and environmental psychology, which makes it the reference model to understand the role that the characteristics of public spaces perform in the configuration of SoC.

The studies that indicate the reliability of the scales ($n = 14$) report optimal indices, generally above 0.70. However, a considerable number of studies that apply scales to measure SoC ($n = 6$) do not report the reliability of the instruments, which can constitute a serious validity problem considering that these are the studies in which the authors make adaptations of other instruments or develop their own scales, in several cases without starting from a previous theoretical model on SoC.

3.3 | Main results of the studies reviewed

One of the studies (Jaafar et al., 2015) identified negative effects of the perceived quality of public space on SoC, whereas the study by Yu (2021) showed that the perceived quality of public spaces does not affect SoC. The rest of the studies suggest that the characteristics and the positive perception regarding the attributes of the physical space produce positive effects on SoC. Given the diversity of methods, it has only been possible to quantify the variability of the effect on SoC in the cases in which the studies indicate the standardized regression coefficients (β), the p value and in specific cases the adjusted R^2 value. In the rest of the cases, approximations are made based on the statistical procedure developed.

The first factor that produces effects on SoC is the perceived quality of the physical characteristics of public spaces (e.g. design, aesthetics and accessibility). In this sense, several studies were identified ($n = 8$). On average, a statistically significant effect is observed, but of a slight intensity of the perceived quality of public space on SoC (range = 0.13–0.4; $M_\beta = 0.24$; SD = 0.1). This finding indicates that the perception that residents develop regarding the physical qualities of the neighbourhood, and particularly, of public spaces, acts as an explanatory factor of SoC.

The second element examined is that the physical setting of the territorial unit has an infrastructure that facilitates walking to public spaces and areas of interest of the community. Several studies ($n = 7$) are identified that demonstrate significant effects of moderate intensity of the possibility of walking on SoC (range = 0.02–0.57; $M_\beta = 0.22$; SD = 0.21). These results support the thesis that the ease of walking facilitates the possibilities of regular encounters among residents, which allows strengthening interpersonal bonds and simultaneously reinforcing SoC (Audirac 1999; Wood et al. 2010) and the bonding social capital.

Two studies are identified that examine the role played by the frequency of use of public space on SoC. It is necessary to take these results with caution as they have only been reported in two studies. However, the reported effect is of a wide magnitude (range = 0.31–0.69; $M_\beta = 0.5$; SD = 0.26), which seems to indicate that making frequent use of public spaces and the possibilities of increasing the frequency of social interaction in these spaces can be a powerful precursor of SoC. Table 2 synthetizes the main findings of the studies reviewed.

4 | DISCUSSION

In general, the results of the studies examined are in-line with the theoretical expectation, showing that the characteristics of public spaces and their perceived quality produce positive and statistically significant effects on SoC. Social doctrine of the new urbanism is based on designing residential areas and creating inserted public spaces that build *community* (Katz, 1994; Talen, 1999), with the objective of reversing the generalized decline of social capital that has been taking place in developed countries for several decades (Putnam, 1995). Facilitating social interactions between inhabitants of residential areas becomes a central objective to strengthen social cohesion, combat the anomie produced by the population density of large cities, improve psychosocial well-being and reinforce SoC. In short, the

new urbanism aims to rebuild the community fabric by promoting social exchange that the architectural design prior to this trend has limited by not considering the relational needs of the population and the impact of intra-community links on the generation of social capital.

What has just been mentioned to some extent explains the interest on the part of urban planning experts in evaluating the impact that the design of the physical setting exerts on the promotion of SoC (Audirac, 1999; French et al., 2014; Glynn, 1986; Hooper et al., 2020; Kim & Kaplan, 2004). The empirical evidence indicates that the key to creating community is to facilitate that the inhabitants (a) recognize each other; (b) maintain regular pro-social interactions; (c) strengthen social ties and (d) have greater provision of social support (Fischer, 1973). The research included in this review offers evidence that supports to some extent the postulate of new urbanism, having identified in most studies that the characteristics – objective and perceived – of public spaces that favour social interaction have a positive and significant influence on SoC.

However, it is necessary to point out different theoretical, methodological and applied considerations to be able to make an adequate appropriation of the results of this review.

4.1 | Theoretical aspects

Many of the studies reviewed use the concept of SoC in a generic and often biased way and sometimes use other definitions, such as 'sense of place', 'residential attachment' or 'neighbourhood cohesion', to refer to this construct that present some similarities that do not fully respond to SoC theory (McMillan, 1976, 2011; McMillan & Chavis, 1986), which is widely accepted by the scientific community. For this reason, it is advisable to clearly define the concept of SoC, preferably from a multidimensional perspective, which includes the evaluation of subjective membership, the needs fulfilment, or the perceived quality of the links with other community members.

Another theoretical consideration that must be addressed with care in this type of study is the definition of the concept of *community*. It is observed that many studies make a diffuse use of the construct, which is not clearly established if the term refers to geographically defined communities (e.g. a neighbourhood), communities of interests (e.g. associations) or relationships that are maintained within geographically delimited communities (e.g. the links with neighbours of the same neighbourhood). Although previous studies (Gusfield, 1975) justify that SoC can be evaluated with respect to local and relational communities, it is necessary that the studies clearly explain which is the reference unit with respect to which SoC is being evaluated, something that would contribute to differentiate this construct from other concepts with which SoC may share some aspects.

The last theoretical point has to do with the role social relationships play in the operationalization of SoC and with the function that public spaces unfold as behavioural settings facilitating interpersonal contact (Barker, 1978). SoC theory (McMillan & Chavis 1986, p. 13) explicitly alludes to the quantity and perceived quality of social contacts on shared emotional connection dimension. Given that social doctrine of the new urbanism seeks to promote socialization by creating public spaces that act as (*pro*)social behaviour settings where social fabric is reproduced, to verify the effectiveness of these actions, it is essential to be able to objectively evaluate social networks that emerge in these settings. From this approach, it is recommended to include methods of social network analysis capable of capturing both the links that the subjects establish with the behavioural settings, as well as the relationships that are maintained with other users in those settings. The incorporation of this perspective would make it possible to obtain an in-depth view of the role that public spaces play in socialization and the effect that this produces on psychosocial well-being, social support and SoC.

4.2 | Methodological factors

The diversity of instruments used to evaluate both the characteristics of public spaces and SoC makes it difficult to establish comparisons among the studies identified. However, the inclusion of variables

that measure the objective elements of the physical space, their perceived quality, the frequency of use and the type of use that they are given can be an adequate strategy to highlight the variety of dimensions that configure these spaces. In this review, five studies are identified in which the aspects are combined, whereas the rest of the proposals focus on exploring how the objective characteristics of public spaces affect SoC. To determine the effect that public space exerts on SoC, it is necessary to incorporate not only variables that show the objective characteristics and the pattern of use of these spaces but also the perception that residents have of these, because regardless of whether they are active users, developing a positive perception of the physical setting of the neighbourhood seems to positively affect psychosocial well-being and SoC (Guo et al., 2021).

The instruments used to evaluate SoC are equally heterogeneous and in many cases are limited to using a small number of questions to evaluate SoC. To measure the complexity and richness of the construct, it is necessary to use instruments that are adapted to each population and each setting but at the same time present optimal psychometric properties. This would allow the research replicability and the development of comparative studies to determine how different characteristics of public spaces can produce variable effects in different populations. This recommendation is necessary to broaden and generalize the findings and endorse social function derived from new urbanism social doctrine (Talen, 1999, 2000).

Finally, some considerations should be made about the methodological designs of the studies reviewed. First, no studies have been detected that apply longitudinal designs, so that, although covariance relationships can be established between the variables, it is not possible to establish causal relationships. Second, it is necessary to develop methodological triangulations that contribute to interpreting the results, particularly in the case of the subjective experience of SoC experienced by residents and how this experience varies depending on the objective characteristics, perception, frequency or type of use made of public spaces. Finally, the complete description of the characteristics of the physical settings evaluated in the reviewed investigations contrasts with the summary and description of the characteristics of the participants. Considering that the new urbanism is based on the result of the interaction between the subjects and the physical space they inhabit (Grant, 2005; Katz, 1994), both elements should deserve the same attention.

4.3 | Practical implications

From the studies analysed, recommendations can be extracted to inform the design of public spaces that become behavioural settings that facilitate sociability and strengthen SoC. One of the most relevant findings is how important the walkable route to public spaces and recreational areas of the neighbourhood is, as well as the objective characteristics, the perception or the use made of them. Several studies show that the mere fact of being able to travel to the areas of interest of the community in alternative ways to the car (walking or cycling) increases the opportunities to interact with neighbours and produces positive effects on SoC (Audirac, 1999). In addition to designing public spaces that adequately fulfil their social function, it is necessary that, in parallel, resources are invested in creating walkable paths that allow moving towards them without the need to use the car or public transport (French et al., 2014).

A second recommendation has to do with the location and characteristics of public spaces within each local setting. Some of the studies reviewed show that it is advisable to include multiple smaller public spaces that are easily accessible to each other (a feature of the new urbanism), instead of large spaces located in the centre of neighbourhoods (Kim & Kaplan 2004). This recommendation is since having comparatively small spaces can facilitate social interaction between residents who live near said space, strengthening the bonding social capital. The existence of a certain variety of mutually accessible public spaces can favour intra-community mobility, increasing recognition among neighbours who live in different locations, which would strengthen social cohesion of the neighbourhood to some extent. Regarding the characteristics of the spaces, it is necessary that they present different

characteristics (e.g. versatility, accessibility and comfort) that guarantee the satisfactory development of positive interactions (Carmona, 2019). Involving the community in the design of public spaces is considered a good practice to promote the use of these spaces by residents and that decision-making regarding the design of these spaces considers the preferences and needs of the residents. For example, an experience developed in the metropolitan area of Barcelona (Spain) has shown that actions related to co-creation and using public space to carry out artistic activities foster community participation and identification with the community (Remesar, 2021).

In recent years, movements have been developed that are committed to activating the participation of neighbourhood residents to design public spaces and streets that are more accessible, safe, and walkable, and that reduce travel times within and between residential communities. A recent experience developed in a neighbourhood located in the north of Milan (Italy) serves as an example to illustrate the positive impact produced by the involvement of the community in the design of public spaces and walkable areas. The work documented by Moro (2022) shows that the organization of artistic and educational micro-activities serves to take advantage of abandoned public spaces, improving neighbourhood safety and increasing the use of green areas and gardens by disadvantaged groups. This type of pilot project contributes to simultaneously increase social exchange, community participation and favours the creation of social networks among community members, which is a sign of the genesis of social capital.

The objective characteristics of public spaces, the perception of their quality, the frequency, the type of use made of them and the possibility of walking towards them are factors related to the physical characteristics of residential areas that have a positive, significant and moderate impact on SoC. Consequently, the results of this review offer partial support for the role played by social doctrine of new urbanism in combating the decline of social capital. However, to understand the relationship between public spaces and the creation of community, it is necessary to carry out longitudinal studies, clearly define the concept of community, properly operationalize SoC variable and facilitate the replication of research in different geographical and cultural settings and with heterogeneous populations.

This work has some limitations that must be pointed out. First, the search was carried out in a single database, so it is possible that this decision prevents the identification of research that falls within the framework of the review. Second, the review is focused on quantitative studies, so it is possible that this decision excludes relevant research that uses qualitative or even mixed methods. Finally, most of the research identified corresponds to studies conducted in the United States, Australia and Asia. Due to this fact, it is difficult to extrapolate the results and recommendations to the European, Latin American and African context.

CONFLICT OF INTEREST STATEMENT

None.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in Web of Science Core Collection at https://urldefense.com/v3/ https://www.recursoscientificos.fecyt.es/__;!!N11eV2iwtfs!t1zsvROCFPD1eHQal4ndhjT0P_XFe0X0-Q5CljO7mB6Yn7pZNAlVsmhZ-TFkVNVgan2KJc52W1Rqf9XX0CP1sUXZ$

PEER REVIEW

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The asterisk are used to identify manuscripts that are included in the systematic review.

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