ARTICLE

Privacy and housing: research perspectives based on a systematic literature review

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Abstract

Grounded in psychological and social constructs, the need for privacy is reflected in human socio-spatial behaviour and in our own home. To discuss housing privacy, this article presents a systematic literature review (SLR) that identified theoretical and methodological aspects relevant to the topic. The research was based on consolidated protocols to identify, select and evaluate articles published between 2000 and 2021 in three databases (Web of Science, Google Scholar and Scielo), with 71 eligible articles identified for synthesis. The results showed a concentration of studies in the American, European and Islamic context, and the increase in this production since 2018. This was guided by the inadequacy of architectural and urban planning projects, by new forms of social interaction and, recently, by the COVID-19 pandemic. From a theoretical point of view, the SLR demonstrated the importance of investigating privacy in housing from a comprehensive perspective, observing its different dimensions (physical, social and psychological) and characterizing the issues involved and the context under analysis. Methodologically, the main instruments identified were: (i) to behavioural analysis, questionnaires, interviews and observations; (ii) to built environment evaluation, in addition to the previous ones, space syntax analysis, architectural design and photographs analysis; (iii) for the general characterization of users, the data collection regarding the socio-demographic and cultural context and the meanings attributed to spatial organizations; (iv) to characterize the participants of the investigations, the analysis of personality traits, the ways to personalize the space, user satisfaction/preferences and the influence of social interactions on these perceptions.

Keywords Privacy · Territoriality · Personal space · Crowding · Solitude · Housing

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1 Introduction

Understanding privacy, as a basic human need inserted in a psychological and social concept, implies delving into discussions related to different fields of knowledge, especially in studies related to behaviour and its forms of expression in the built environment. In this field, since the separation of public and private, started in the seventeenth century and consolidated in the beginning of the twentieth century, the house has been understood as the core of private life, offering the prospect of family interaction and guaranteeing privacy for the individual.

In view of this, several studies have emerged to conceptualize and identify the factors associated with privacy as a phenomenon to be carefully investigated, whether about the theories that support the concept (Altman, 1975; Hall, 2005; Warren & Brandeis, 1890; Westin, 1967), or the current reviews on the topic (Burgoon, 1982; Dienlin, 2013; Leino-Kilpi et al., 2001; Magi, 2011; Margulis, 2003a, 2003b, 2011; Solove, 2006; Westin, 2003). However, there is still a small number of specific studies on the problem regarding the privacy needs of users in their homes, although various studies have drawn attention to the users' dissatisfaction in terms of home related privacy issues, such as those carried out in Brazil by Kowaltowski et al. (2006), Mendonça (2015), Reis and Lay (2003), Villa (2008) and Zago and Villa (2017).

Such problems became even more evident at the start of the coronavirus pandemic (Coronavirus Disease—COVID-19), especially in small sized apartments, which due to the available space, have restricted carrying out daily activities, particularly in relation to larger families occupying this space. The increase of the severe acute respiratory syndrome of the coronavirus 2 (SARS-CoV-2) required adopting measures to prevent and control the spread of the virus (Dietz et al., 2020), such as the known "quarantines", advocated by the World Health Organization (WHO), which emphasized the importance of social distancing between individuals. Different countries have adhered to these measures by suspending classes and face-to-face work (replaced by remote activities) and restricting access to non-essential activities (such as bars, restaurants, beaches and shopping malls.)

The sudden use of full-time housing (or almost) has prompted the mainstream media and the real estate market to address the impacts of the built environment on housing and on people's quality of life, many of which have emphasized aspects related to mental health and environmental comfort, including issues related to privacy and different forms of sociability (Fragoso, 2020; Garber, 2020; Garcia, 2020; Hipwood, 2020; Jornal Nacional, 2020; Kornhaber, 2020; Lampert, 2020; Moraes, 2020). In the academic context, discussions about the relationship between the pandemic and the built environment also increased, with arguments regarding, among others, urban insertion, densities, presence of green areas, housing dimensions and spatial organization (Avetisyan, 2020; Barbosa & Neis, 2020; Cunha, 2020; Dietz et al., 2020; Elali, 2020a, b; Grupo [MORA], 2020; Hosseini, Fouladi-Far & Aali, 2020; Keenan, 2020; Megahed & Ghoneim, 2020; Tendais & Ribeiro, 2020).

In the domestic space, the new reality has changed the forms of sociability inside and outside the home (Nguyen, 2020), indicating greater contact between members of the house/family and interaction through non-face-to-face means with those who are outside (neighbourhood/society). As a result, the problems of privacy in the daily lives of families have become even more evident, especially those associated with the lack of space (Merino et al., 2021), the ways of negotiating the use of spaces and the division of time (Mcneilly & Reece, 2020; Pasala et al. 2021) in new domestic activities, such as: work,

education and physical activity (Bezerra et al., 2020; Goldberg, McCormick & Virginia, 2021; Silva et al., 2020) and the perceptions of stress, anxiety and solitude (Benke et al., 2020; Buecker et al., 2020; Gaeta & Bridges, 2020; Losada-Baltar et al., 2020; Soga et al., 2020; Takashima et al., 2020).

In view of the dissatisfactions and the worsening of domestic problems due to the pandemic context and starting from a broad notion of privacy that involves human socio-spatial behaviour[1] (especially aspects related to territoriality,[2] personal space,[3] crowding[4] and solitude,[5] the theoretical and methodological aspects of the environment and behaviour, which are relevant to the assessments of the housing space, were investigated. To this end, a Systematic Literature Review (SLR), using bibliometric techniques was carried out on the subject. To present this work, this article begins with a return to the concept of privacy in order to support the discussion; then the details of the method used are reported; continuing with the main results obtained by SLR and its brief discussion.

2 Privacy concept: a look at previous reviews

Academic discussions on privacy gained relevance at the end of the nineteenth century, with the publication of the article *The Right to Privacy*, by jurists Samuel Warren and Louis Brandeis (1890), when privacy came to be understood as a fundamental right to be preserved. Since then, the concept has been discussed by different areas of knowledge and, despite the evolution of the processes, functions and perceptions that involve privacy, the concepts proposed by Alan Westin (1967) and Irwin Altman (1975) continue to stand out as the core of contemporary theories on the subject.

Westin (1967) defined privacy as the right of individuals, groups or institutions to determine when, how and to what extent their information can be communicated to others. In this regard, the author argued that people would continually be involved in a personal adjustment process to balance their desire for privacy with their desire for disclosure and communication with others; these desires vary both in relation to the scale of need (individual, family group or society), as well as the desired state (solitude, intimacy, anonymity and reserve). For him, the adequate regulation of privacy would combine the three scales with the four desired states, allowing the individual to achieve the goals of self-realization and (intra) psychic balance.

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[1] Human socio-spatial behaviour: a generic term to indicate human behaviour related to the use of space "*as part of the interpersonal communication process and as one of the mediators of person-environment interaction*" (Pinheiro & Elali, 2011, p. 148).

[2] Territoriality: concept derived from ethology, concerns the feeling related to an area (physically defined) in relation to when the person experiences a feeling of possession, even if it is subjective and transitory (Sommer, 1973; Pinheiro & Elali, 2011) .

[3] Personal space: "*emotionally charged area around each person, sometimes described as a soap bubble or aura, and which helps to regulate the spacing between individuals*" (Sommer, 1973, p. X).

[4] Crowding: "*an experiential state in which the restrictive aspects of spatial limitation are perceived by the individuals exposed to them*" (Stokols, 1976, p. 50); situation in which the person experiences the need for a larger space than what is actually available to him (Hall, 2005); "*Knowing one is observed*" (Tuan, 1983, p.69).

[5] Solitude: non-reciprocity in search for the other; although the person desires a closer contact (or a relationship), the other does not favour him—it cannot be considered synonymous with isolation (a situation in which the person does not seek contact) – (Altman, 1975).

As a primary environmental phenomenon, the privacy was also interpreted by different relevant scholars. Simmel (1971) stated that privacy is associated with the boundaries around ourselves and also by a periodic opening of these boundaries to personal learning and to intimacy. Sommer (1973) discussed privacy from the concept of the personal space, or the imaginary space bubble area around individuals which communicate desired levels of interaction and protect individual from outside intrusion, which if entered by another person without agreement, implied on a privacy violation. Pedersen (1979, 1997) relying on Westin's states of privacy, identified another two states of privacy and classified it into: solitude, isolation, anonymity, reserve, intimacy with friends and intimacy with family. Wolfe (1978) linked privacy to choice and control, and defined it as the ability to choose how, under what circumstances, and to what degree an individual relates or does not relate to another. Sundstorm et al. (1996) found that privacy regulation theory, which included spatial behaviour, crowding and territoriality, suggests a human tendency to seek social interaction partly through use of the physical environment, as many coping behaviour relies on the physical setting (boundaries demarcation).

From the perspective of Environmental Psychology, according to Gifford et al. (2011), researchers work at three levels of analysis: (i) fundamental psychological processes, like perception of the environment, spatial cognition and personality, as they filter and structure human experience and behaviour, (ii) the management of social space, as personal space, territoriality, crowding, privacy and the physical setting, and (iii) human interactions. From this perspective, Altman (1975) defined privacy as a dialectical process of regulating interpersonal barriers, varying in relation to time, context, length of contact, and the receiver of the interaction (groups or individuals), with a desired ideal level. For the author, the definition of the desired levels is based on previous experiences and is part of the cognitive process of individual development, so that the ability to control interactions would be closely related to self-development and vice versa. Through an in-depth study of concepts such as permeability of barriers, territoriality, personal space, crowding and solitude, the author presented the mechanisms and behaviours related to the regulation of privacy and the consequences of failures in this system.

Considering the various contemporary views on social interactions and privacy, several studies have been reviewed, compiled and systematized the issues associated with the theme, with the following emphasized by: Leino-Kilpi et al. (2001), Margulis (2003a, 2003b, 2011), Westin (2003), Solove (2006), Magi (2011) and Dienlin (2013). As they promote updating the concept and create different privacy classifications, some of these reviews are briefly presented below.

Leino-Kilpi et al. (2001) reviewed the literature on the relationship between privacy and the hospital environment. Based on the seminal concepts, they presented ways of approaching privacy and included other theoretical contributions, as the Burgoon model (1982), based on how they indicated two viewpoints for investigating the subject: a) the perspectives on the concept—which involves social interactions, the level of privacy desired and obtained, and control over communication and information; and b) the privacy dimensions – physical, psychological, social and information.

Also reflecting what was observed in the literature, the authors highlighted the four dimensions for the phenomenon: i) physical—represents the degree of physical accessibility from one person to another; ii) psychological—addresses the human cognitive and affective process and its capacity to form values (associated with the self); iii) social—skills and efforts to control social interactions with a strong cultural connotation, and

related to human socio-spatial behaviour, particularly to proxemics[6] patterns (Hall, 2005), states of privacy (Westin, 1967) and their control (Altman, 1975); iv) information – the right to determine how, when and to what extent information is available to the other or others (Westin, 1967).

Margulis (2003a, 2003b, 2011) reviewed privacy with regard to the evolution of the concept of Westin's (1967) and Altman's (1975) theories. The author presented privacy as being "*an abstract skeleton*" of meanings and functions, which implies the definition of access barriers to the individual or group and social and cultural expressions, including those that are not as obvious, such as social power. Regarding the functions of privacy, he stated they reflect its purposes and benefits, appearing as a basis for personal development (formation of the self) and interpersonal relationships. The author also emphasized the dominance of European and American views, which normally emphasize privacy issues. Finally, he pointed out that studies that intend to use behavioural theories about privacy, must determine whether the existing definitions meet their objectives, warning that they must also include social, environmental, cultural, and social-developmental factors.

Westin (2003) reviewed the protection of informational privacy, in the light of political-social relations, the evolution of technology and the existing legislation. Regarding the proposed conceptual updates, he reaffirmed privacy as a basic need for human life and an individual right to decide what information should be revealed to others, also ratifying the four privacy states developed by him in the 1960s. Faced with a scenario marked by the excessive use of information technologies, with high data storage capacity, the author emphasized that managing personal states of privacy (from healthy solitude to the intimacy of positive self-disclosure) and balancing democratic forms of access to personal data (in a globalized world with threats coming from encrypted systems) will be the greatest challenges for citizens and governments.

Solove (2006) reviewed privacy from the perspective of activities that can affect it, identifying what they are, how and why they can cause problems or non-trivial damage to people's lives and well-being. The author validated the concept of privacy as an inherent quality of life in society, and which holds a multiplicity of meanings, varying between individuals and contexts. Based on identifying the problems related to privacy and socially recognized in the legal sphere, the author identified the existing connections and divergences between the different privacy problems, understanding what was essential in people's perceptions of privacy and which, therefore, could not be violated.

Magi (2011) reviewed the literature on privacy in the social and human sciences, in order to identify its inherent benefits. Based on this review, privacy is relevant to the scale of the individual, interpersonal relationships and society. According to the author, the benefits of privacy are reflected in: i) protection against overreached social interaction, affirming individual autonomy, freedom of choice, ability to control interactions and make judgments; ii) possibility of individual redemption, with the development of self-confidence and preserving interpersonal relationships; iii) support for a more just, democratic and tolerant society. Regarding the concept, she considered that privacy should be used as a general term (umbrella) to describe a set of other concepts that are interrelated with various behaviours and that depend on the culture studied.

Dienlin (2013) reviewed the concept of privacy associated with communication processes and social network sites. By combining different understandings, he defined

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[6] Proxemics: study of the relationships of proximity and distance between people during their interactions, understanding the environment as a fundamental component of this process (Hall, 2005).

privacy as a degree of separation from others (Warren & Brandeis, 1890), which can be characterized by different states (Westin, 1967), by a continuous adjustment of individual barriers (Altman, 1975), which occur in four different dimensions (Burgoon, 1982). From this perspective, he proposed that privacy should be analysed in relation to the context, the perception of individuals, the behaviour and the available forms of regulation and control.

The results of the review revealed that studies on privacy must consider: (i) the socio-cultural and political context in which the study population is inserted (Dienlin, 2013; Hall, 2005; Margulis, 2011; Westin, 2003), the functions of privacy (Altman, 1975; Magi, 2011; Westin, 1967) and the privacy dimensions (Burgoon, 1982; Dienlin, 2013; Leino-Kilpi et al., 2001); (iii) the definitions and demarcations of territorial boundaries and personal space (Altman, 1975; Hall, 2005); (iv) the types of privacy violation issues (Altman, 1975; Solove, 2006; Westin, 2003); (v) perceptions of solitude and crowding (Altman, 1975; Hall, 2005; Westin, 1967). The results also reinforce the relevance of the research by Altman (1975) and Westin (1967), reaffirming that their ideas have stood the test of time.

Actually, the literature shows that find a closed concept of privacy is still far from being achieved as it involves multiples viewpoints (as seen: nursing, political sciences, law), varied context (social, political, demographical, informational) and complex social interactions. Despite this, the different viewpoint of the literature also revealed some relations on privacy that must be considered in any study of the theme. When addressing privacy, we are probably also talking (directly or indirectly) about interpersonal boundaries and their demarcation, territoriality, personal space, intimacy, proxemics patterns and perceptions of solitude and crowding. In turn, such phenomena are expressed by the physical environment, by the cultural, social, demographics and political context, and by the personality traits and individual behaviours. Having reverberation in problems and invasions of privacy, availability of regulation mechanisms and control, and similar situations, these different facets of the question could be revealed by the dimensions of privacy (to be selected in function of the objectives of each study).

Linking those findings with the environmental point of view, this research focuses privacy in a human socio-spatial behaviour perspective, that must involves: (i) the physical dimension, expressed by the elements of physical space, personal space and territoriality; (ii) the psychological dimension, indicated mainly by personality traits, behaviours and perceptions of individual, especially those related to solitude and crowding; (iii) the social dimension, represented by the management of social space, including proxemics patterns, culture, social, demographics and political context, social interactions, control, coping strategies; (iv) the informational dimension, corresponding to the right to determine how, when and to what extent information is available to the other or others.

Based on this understanding, authors such as Newell (1995), Petronio (2002), Margulis (2011) and Dielin (2013) comment on the emergence of several models for the study and understanding of privacy, some centred on physical space, others centred on people's behaviour and, still, those that prioritize the relationship between the two. In the first perspective, privacy is usually discussed in terms of its visual and physical elements. The second perspective involves a personal and a synesthetic perception (Hall, 2005). The third perspective seeks to address privacy in a comprehensive sense since it involves an imbricated relation between physical space, psychological perceptions and social relations and interactions. In this last view, our research chose and adapted the Burgoon model (1982) to our goals, as the model fitted on a socio-spatial behaviour perspective.

Table 1 Summary of research protocols	Objective of the SLR	Identify the theoretical and methodological aspects relevant to housing privacy, in relation to human behaviour and the built environment
	SLR research questions	(1) Which dimensions are relevant to understand the phenomenon of housing privacy?
		(2) What aspects of the built environment and human behaviour were used to have privacy in the home?
		(3) What research methods and approaches were used to investigate housing privacy?
	Database	Web of Science, Google Scholar and Scielo
	Languages	English and Portuguese

3 Method

To understand the state of the art about the phenomenon of housing privacy, the SLR was carried out, using bibliometric techniques. In order to clarify the selection criteria of articles, the method is based on two references: (i) the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), developed by Moher et al. (2009); (ii) the Sample, Phenomenon of Interest, Design, Evaluation, Research Type (SPIDER), developed by Cooke et al. (2012).

The PRISMA diagram quantifies the selected articles and is divided into four stages: 1) identification – selection of databases and initial search of key words; 2) screening – definition of exclusion criteria and selection of article by titles and abstract; 3) eligibility – definition of inclusion criteria and identification of papers of interest by reading full article; 4) included—presents the works chosen for the qualitative and quantitative syntheses (meta-analysis).

The SPIDER tool, in turn, proposes the systematization of qualitative syntheses in the form of a table with information on: the sample, the phenomenon of interest, the research design (methods), the evaluation measures and the research type. Due to the subjective and contextual nature of the research theme, some information was also included, as the: journal that published the paper, the research's objectives and the geographical location of the sample. Furthermore, in order to align the research with the context of existing reviews, the phenomenon of interest used on the SPIDER tool, have been converted into the four dimensions of privacy from Burgoon model (1982).

The objective of this SLR (Table 1) was to identify the theoretical and methodological aspects relevant to housing privacy, and their relationship with human behaviour and the built environment. In this regard, the questions answered were of a conceptual and methodological nature, namely: (1) Which dimensions are relevant to understand the phenomenon of housing privacy? (2) What aspects of the built environment and human behaviour were used to have privacy in the home? (3) What research methods and approaches were used to investigate housing privacy?

The English and Portuguese languages were defined as search criteria and the main database chosen was the Web of Science. Since it mainly contains publications in the English language and, as a consequence of the specific interest in the Brazilian reality,

the search for articles in the Portuguese language was also carried out on the Google Scholar and Scielo platform.

As the nature of the investigation involves the intersection between the themes of housing and privacy, the searches were carried out by combining the keywords related to each theme. For the Web of Science database, the keywords for each theme were searched by the Boolean operator "OR", with the combination of the terms related to "housing" and "privacy" made by the Boolean operator "AND". The keywords were searched in the "TOPIC" field, including the search by title, abstract, author's keywords and keyword plus. Searches for articles in Portuguese were carried out by searching the keywords related to *"habitação"* and *"privacidade" (*"housing" and "privacy") with a Boolean operator "*E*" (AND). In Scielo, the option "All indexes" was used, whereas in Google Scholar, as it is a very comprehensive search engine, the search was restricted by "title" (Table 2).

The identification, screening and eligibility stages were executed considering the searches carried out on the Web of Science, and it was decided to include the results of Google Scholar and Scielo searches as manual additions in the included stage. Other publications, from the references cited by the selected articles, of prior knowledge, as well as articles related to COVID-19, were also included in the diagram as manual additions.

In the first search,[7] carried out on the Web of Science database with the combination of keywords, 40,933 results were identified, which reveals the scope of the theme. To obtain relevant data in the screening stage, results were filtered by related areas, namely: architecture, environmental sciences, environmental studies, behavioural sciences, family studies, psychology (development, multidisciplinary or social), social problems. With this restriction, 1,060 articles were selected and their titles and abstracts were read to screening stage.

After that, the exclusion criteria were defined (Table 3), indicating the non-incorporation of papers that the object of study were not related with home environment (such as offices or hospitals) or were not related with our main goal (such as territorial planning, energy efficiency, clinical psychology).

Finally, inclusion criteria (Table 3) were defined. Criteria to selected one paper as part for our study were: (i) have been produced since the 2000s; (ii) had samples related to urban housing; (iii) had clear methodological instruments related to the built environment or user behaviour; (iv) had the related themes (privacy, territoriality, personal space, crowding and solitude) as the main objective, and not only as one of the criteria of analysis or evaluation.

4 Results

After defining the inclusion criteria of the 58 articles listed in the eligibility stage, 50 articles were selected for the included stage, to which the articles in the manual additions were added (Fig. 1).

The Brazilian articles (7 articles), articles in English related to the COVID-19 pandemic (6 articles) and the others cited in publications (8 articles) were included in the SLR as manual additions, totalling 21 additions. At the end of the full reading, 71 articles were selected for quantitative and qualitative synthesis (Fig. 1).

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[7] Search conducted in August/2020. After this first identification, an alert was created on the Web of Science website with the established criteria and restrictions, and the publications that appeared after that date were added to the study as manual additions.
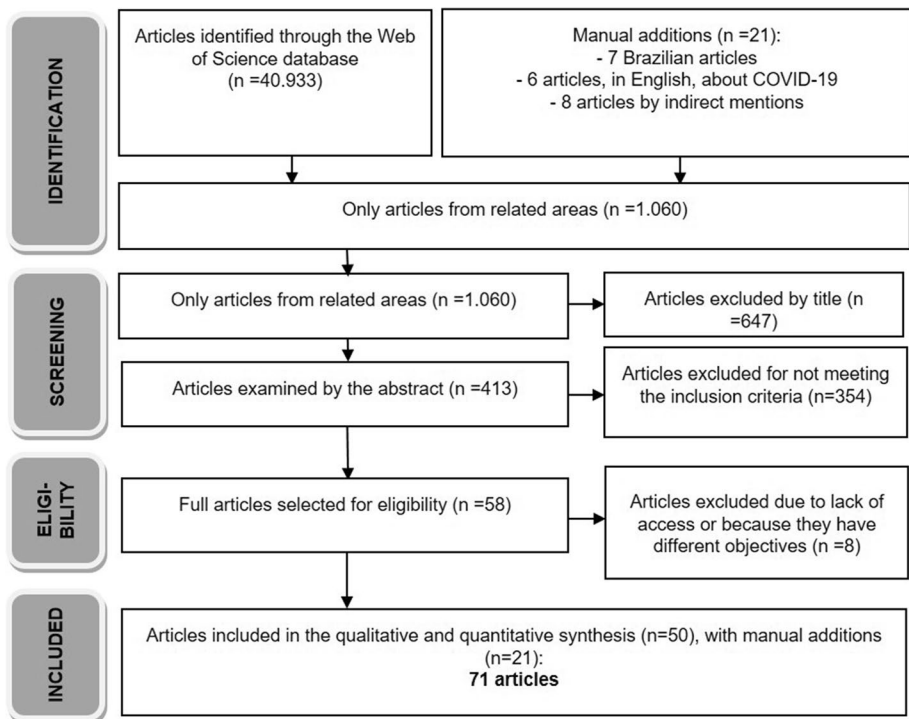
Table 2 Summary of search terms

Database	Keywords (housing)		Boolean operator	Keywords (privacy)	
Web of Science	Topic: title, summary, author's keywords and key-word plus	housing OR home OR house, dwelling OR resident OR residential OR apartment OR flat OR condominium	(combine) AND	Topic: title, summary, author's keywords and key-word plus	privacy OR boundary OR proxemics OR personal space OR territoriality OR intimacy OR solitude OR solitude OR crowding
Google Scholar	Title	Housing, dwellings, house, houses, residence, residences, residential, apartments, condominium, dwelling[a]	E	Title	Privacy, territoriality, crowding, overcrowding, solitude, isolation[b]
Scielo	All indexes			All indexes	

[a] In Portuguese: "habitação (ões), habitacional (is), casa (s), moradia (s), residência (s), residencial (is), apartamento (s), condomínio (s)"

[b] In Portuguese: "privacidade, territorialidade, espaço pessoal, aglomeração, superlotação, solidão e isolamento"

Table 3 SLR Exclusion and inclusion criteria

Exclusion criteria	Housing studies little correlated to socio-spatial behaviour perspective
	Study objects different of housing
	Text unavailable for access via the journals of the Coordination for the Improvement of Higher Education Personnel (CAPES)
Inclusion criteria	Produced since the 2000s
	Having as sample any typology of urban housing
	Having the study of the phenomena of interest as the main objective: privacy, territoriality, personal space, crowding and solitude or address the literature review of one of the topics of interest
	Have clear methodological tools for analysis, measurement and/or evaluation of the built environment and/or user behaviour

Fig. 1 PRISMA flow diagram. Adapted from: Moher et al. (2009)

4.1 Qualitative synthesis

To facilitate the data collection and to understand the concepts and variables that involve housing privacy, the articles included were separated into four key themes, namely:

privacy, territoriality and personal space,[8] crowding and solitude.

For the qualitative synthesis, the articles of each theme were systematized in tables, originated by the SPIDER tool, which contained information about the journal, authors, year of publication, title, objective, geographic location of the study, studied sample, privacy dimensions, research design (methods), evaluation measures and type of research, as seen in the example (Table 4).

The systematization of articles in the tables revealed a variety of studies in different journals and in geographic regions of the planet. The objectives of the studies addressed different natures, with approaches in different scales of coverage such as: individual perception or internal organization of the house and neighbourhood. The samples were also quite variable depending on the cultural context or subjectivity of the topics covered, including qualitative studies with a sample of two families or quantitative studies with more than a thousand participants.

Although most publications focus on a specific theme, in many cases there was an intersection between them, whether related to privacy and personal space, through the assessment of personal objects, or between the correlations of crowding perceptions and levels of user satisfaction with their privacy, for example.

Regarding the privacy dimensions, the physical dimension was largely identified by discussions about spatial organization, architectural elements,[9] housing typology, neighbourhood, density and personal objects. The social dimension by social interactions, accessibility hierarchy, culture, control, spatial boundaries and coping strategies. Finally, the psychology dimension was recognized by user satisfaction and preferences, stress, meaning of home, social support and personality traits.

Regarding the methodological instruments, in general, the studies sought to capture the users' perception and the specialists' technical impressions on the environments. The surveys were mostly qualitative, with the combined use of two or more instruments, such as: document analysis,[10] direct and indirect observations (with capture or analysis of photographs), questionnaires, interviews, focus group, analysis of architectural designs, space syntax analysis and others.

Finally, as regards the evaluation criteria, the studies sought to identify the residents data (social, demographics or both), user satisfaction or preferences, the layout of the spaces and its implicit social relations, distribution of the architectural elements (doors, windows, green areas, etc.), housing density, domestic activities, visuals, smells, noises and objects perceived as relevant by residents, site plan, territories and physical characteristics of the neighbourhood, social interactions (between family, neighbours, visitors or passers-by) inside and outside the houses, personality traits and the levels of control, stress and solitude.

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[8] Although territoriality and personal space are different concepts, this joint is justified by two main reasons: (i) in daily life, people seem to see those meanings close together, depending on situations; (ii) specifically about housing studies, both themes deal with personal objects, rooms feature and/or residents' behaviours associated with primary territories demarcations (Altman, 1975).

[9] Although they address the organizational structure of the house, it was decided to distinguish the criteria of spatial organization and the architectural elements, the first related to the spatial distribution of the environments considering the complete composition of the house, while the architectural elements primarily cover isolated items such as doors, windows, curtains.
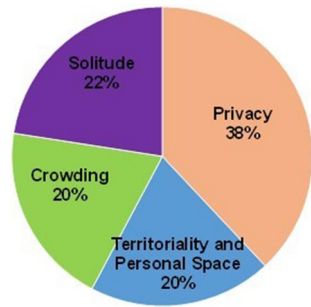
[10] Document research is inherent in the production of articles and, therefore, was present in all articles. However, in the tables, the item document analysis stood out as an instrument, when the evaluation of the samples was based exclusively on these analyses.

Table 4 Example of systematization of articles by key theme

PRIVACY

Journal	Author	Year	Title	Objective	Loca-tion	S	PI	D	E	R
						Sam-ple	Privacy dimension	Design	Evaluation	Re-search type
Journal of Housing and the Built Environment	Willems et al	2020	Seeking a balance between privacy and connectedness in housing for refugees	Contribute to understand the social meaning of the home and how it relates to the material appearance of a home, addressing its impact in the context of housing for refugees	Cross-cultural	3 families	Physical, psychological and social	Interviews, activity diary with photos and walk-through	Satisfaction, user preferences, meaning of home, culture, domestic activities, personal effects	Multi-method

Adapted from: Cooke et al. (2012)

4.2 Quantitative synthesis

The quantitative synthesis of the selected articles sought to demonstrate the general outlook of empirical studies on the subject of housing privacy from the 2000s to the present period. Considering the key themes of the 71 publications, it is observed that (Fig. 2 and Table 5): 27 are about privacy (38%), 14 about territoriality and personal space (20%), 14 about crowding (20%) and 16 about solitude (22%).

Regarding the periodicity (Fig. 3), it was decided to use three-year bands[11] to visualize the frequency of publications by key theme. Discussions about housing privacy, which declined at the beginning of the period (between 2003 and 2008), started to increase after 2012 and are more pronounced in the current period.

The larger production in the early 2000s coincides with the spread of computers and effects on individual perceptions resulting from their use. The period after 2008, and especially since 2012, is consistent with the consolidation of social networks by cell phones and with the expansion of discussions on the protection of personal data, which, despite dealing particularly with the internet, also resonate in daily activities and, consequently, in the home and in the privacy of users.

In the studies from 2018 onwards, the greatest publication period of articles, the themes about crowding, territoriality and personal space are equivalent or surpass those of privacy, a trend that may indicate greater concern regarding the perceptions and demarcations of individual boundaries. The impact of the COVID-19 pandemic period is emphasized in the 2020 and 2021 studies that focus more on the theme of solitude, revealing that this may have been the main challenge encountered by people at home, the quarantine period—a trend that could be accentuated in 2021.

Regarding the data sources, 51 journals were identified, of which 20 were in the area of psychology and 16 in the area of architecture, urbanism and design. Despite the relevant number of journals, 41 present only one published article, while the other 30 articles were published among 10 journals (Fig. 4). Although there is a dominance of publications in two journals in the field of psychology, the theme is increasingly relevant in specific journals in the area of architecture, urbanism and design (Fig. 4).

Regarding the geographical context (Fig. 5), discussions on privacy were found in 25 different countries and another 5 in cross-cultural contexts. The countries with the most

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[11] As the period considered is 22 years and this article was produced in the beginning of 2021, it was decided to include the year 2021 in the temporal range from 2018.

Table 5 Identified articles (by author) in each key topic (in chronological order)

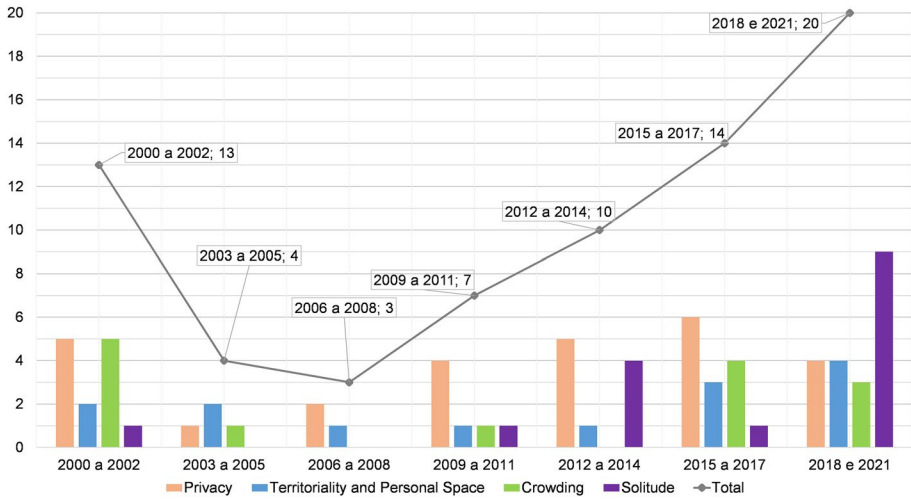| Ket theme	Identified articles	Quanr(%)
Privacy	Pourvahidi (2020), Willems et al. (2020), Elmansuri & Goodchild (2019), Yaylali-Yildiz, Ek & Can (2018), Alitajer & Nojoumi (2016), Tomah et al. (2016), Al-Thahab, Mushatat & Abdelmonem (2014), Othmann, Aird & Buys (2015), Fallah, Khalili & Rasdi (2015), Rahim (2015), Nejadriahi & Dincyurek (2015), Razali & Talib (2013), Givisiez & Oliveira (2012), Lindsay, Williams & Dair (2012), Pable (2012), Cetkovic (2011), Sobh & Belk (2011), Mustafa, Hassan & Baper (2010), Daniels (2008), Hashim et al. (2006), Reis & Lay (2003), Ozaki (2002), Kaya & Erkip (2001), Al-Kodmany (2000), Chan (2000), Day (2000)	27 (38%)
Territoriality Personal space	Nguyen (2020), Connellan (2019), Morrison et al. (2018), Poggio et al. (2018), Perez-Lopez, Aragones & Amerigo (2017), Wang et al. (2017), Farkisch et al. (2015), Maia (2012), Kintrea et al. (2010), Giorgi et al. (2007), Gosling et al. (2005), Dunstan et al. (2005), Brunson et al. (2001), Paiva & Mendes (2001)	14 (20%)
Crowding	Thornock et al (2019), Rollings & Evans (2019), Chambers, Bafna & Machry (2018), Fisher-Gewirtzman (2017), Khacha-turova & Nartova-Bochaver (2017), Tomas, Amerigo & Garcia (2016), Campagna (2016), Williams (2009), Amole (2005), Gomez-Jacinto & Hombradas-Mendieta (2002), Corapci & Wachs (2002), Evans et al. (2001), Sinha & Nayyar (2000), Evans et al. (2000)	14 (20%)
Solitude	Merino et al. (2021), Bezerra et al. (2020), Silva et al. (2020), Buecker et al. (2020), Losada-Baltar et al. (2020), Soga et al. (2020), Takashima et al. (2020), Moeller & Seehuus (2019), Matthews et al. (2019), Arpin, Mohr & Brannan (2015), Oishi et al. (2013), Beadle et al. (2012), Ruiz-Casares (2012), Vasconcelos, Próchno & Silva (2012), Stepanikova et al. (2010), Pinquart & Sorensen (2001)	16 (22%)

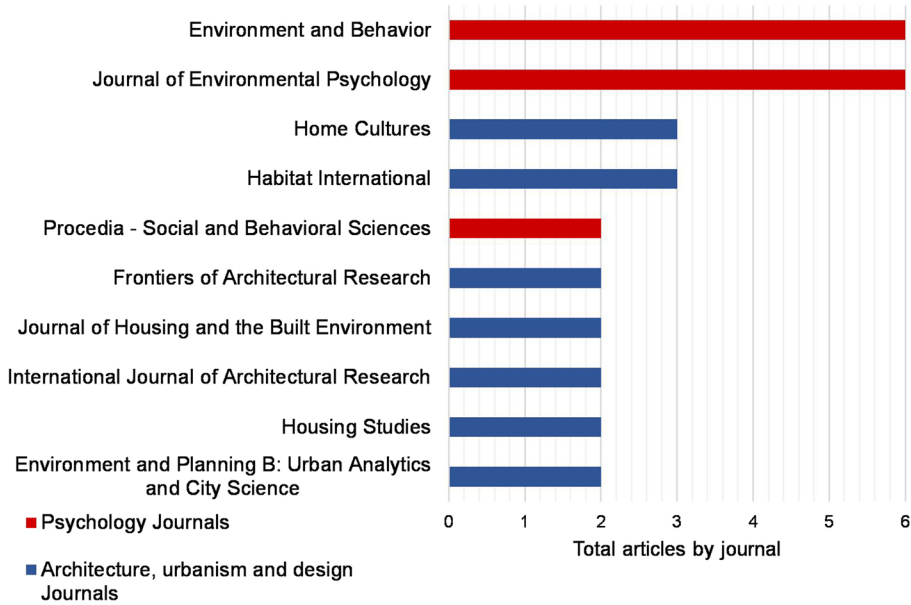**Fig. 3** Publications per year on key topics (total articles: 71)

Fig. 4 Total articles by relevant journals (total articles: 30)

published articles were: USA (18), Brazil[12] (7), Spain (5); Iran (5), United Kingdom (4), Malaysia (3), Japan (3), Iraq (2), Turkey (2) and China (2). The other countries presented 1 publication each.

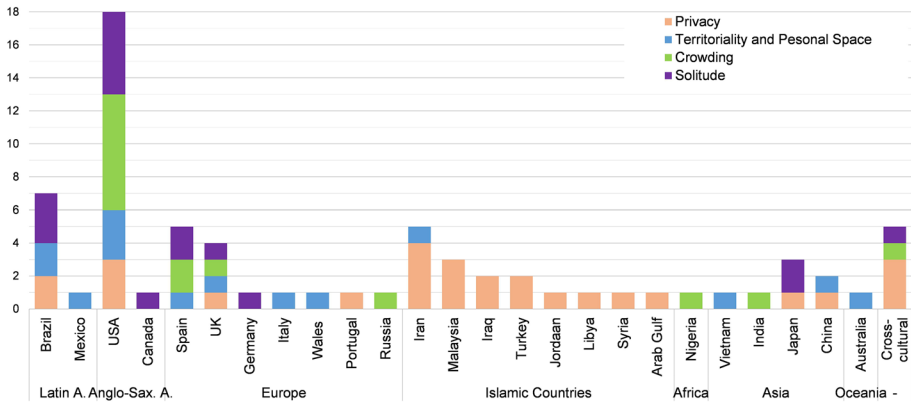[12] The studies identified in Brazil are relevant to the context of researchers and that is why they were treated with special emphasis in the work.

Fig. 5 Total articles by countries and key theme (total articles: 71)

Table 6 Key themes and privacy dimension

Key theme/ Privacy dimension	Privacy		Territoriality and Personal Space		Crowding		Solitude	
	Total articles (27)	%	Total articles (14)	%	Total articles (14)	%	Total articles (16)	%
Physical dimension	25	93	14	100	12	86	5	31
Social dimension	25	44	8	57	7	50	12	74
Psychological dimension	12	44	12	86	14	100	15	94
Informational dimension	2	7	0	0	0	0	0	0

Given the diversity of countries, the relationship between the approaches given to each key theme and the region where the studies are inserted are noteworthy. The correlations between countries and themes were drawn by cultural similarity, to the detriment of continental division, given the importance of culture related to privacy issues. In this perspective, the countries that dealt with Islam, were grouped as Islamic countries, while Mexico was incorporated into South and Central America. The regional context was divided into: Latin America, Anglo-Saxon America, Europe, Africa, Islamic Countries, Asia and Oceania.

Islamic and Asian countries focused their discussions on the key theme of privacy, probably due to the religious and social importance the phenomenon can assume in the daily life of this culture. Specifically, in the Asian context, there are also studies on solitude in Japan, which may indicate greater westernization in the country. Anglo-Saxon and European countries focus their discussions on the problems of privacy, highlighting crowding and solitude. In Europe, studies on territoriality and personal space are also relevant. Brazilian studies primarily deal with privacy inside the homes and aspects of territoriality, with current studies addressing solitude, the Nigerian studies mention crowding, and the Australian studies mention solitude. However, the sample is limited to trace cultural trends in the discussions of these situations. Finally, cross-cultural studies deal mainly with differences in perceptions of privacy when nationalities or ethnicities differ.

The dimensions of privacy were also correlated to the key themes (Table 6). In the privacy-oriented texts, the social and physical dimensions predominated, with less relevance for the psychological dimensions. In turn, due to the nature of the concept, all texts on territoriality and personal space addressed the physical dimensions, with an emphasis also on the psychological dimension and, finally, the social dimension. The psychological dimension predominated in studies on crowding and solitude, indicating its intrinsic condition to both concepts. The articles about crowding also emphasized the physical dimension, with some emphasis on the social dimension, while those related to solitude emphasized the social dimension, with the physical dimension being less relevant. Finally, the information dimension was not relevant to any of the key themes and was observed in only 2 studies (Cetkovic, 2011; Chan, 2000).

With regard to the criteria and evaluation measures (Table 7), 19 variables were identified with four or more occurrences in the total of studies surveyed: spatial organization, architectural elements, neighbourhood, density, personal objects, housing typology, social interactions, culture, hierarchy of accessibility, domestic activities, control, boundaries demarcations, coping strategies, user satisfaction, user preference, stress, meaning of home, social support and personality traits. The other variables, which appear in three studies or less, were not listed.

The main items evaluated (Fig. 6) in the physical dimension were: spatial organization (27%), architectural elements (17%), neighbourhood (14%), density (14%), personal objects (11%), housing typology (6%). In the social dimension they were: social interactions (27%), culture (21%), hierarchy of accessibility (17%), domestic activities (11%), control (11%), boundaries demarcation (6%), coping strategies (6%). In the psychological dimension they were: user satisfaction (24%), stress (15%), user preference (13%), meaning of home (10%), social support (8%) and personality traits (8%).

Finally, the research instruments used were highlighted to identify the methods and techniques used in the field of research on screen. 27 different instruments were identified (Fig. 7), the most relevant being: questionnaire (54%), interview (25%), observations (17%), space syntax analysis (13%), document analysis (11%), analysis of photos (8%) and analysis of architectural design (7%).

The use of focus groups (6%) and image cards (4%) were identified but with less relevance, while 18 other instruments (25%) such as walkthrough and DNA collection appeared in only one or two articles.

5 Discussion of results

The SLR carried out showed that the housing privacy studies published between 2000 and 2021 focus mainly on the physical, psychological and social dimensions of the phenomenon, and that the information dimension is not relevant to the discussions found. Regarding the key theme of privacy, the physical and social dimensions stand out, revealing greater influence from aspects beyond the individual and linked to culture. For the key themes of territoriality and personal space, the physical and psychological dimensions predominate, demonstrating greater proximity to the self and the individual needs for personalized spaces and sense of belonging. In the case of crowding, the physical and psychological dimensions were also more relevant, especially focusing on the influence of space on users' satisfaction and stress. Finally, in studies on solitude, the social and psychological

Table 7 Relationships between privacy dimensions and evaluation measures by authors (in chronological order)

Privacy dimension	Evaluation measures	Authors
Physical dimension	Spatial organization	Ozaki (2002), Reis & Lay (2003), Hashim et al. (2006), Giorgi et al. (2007), Mustafa, Hassan & Baper (2010), Sobh & Belk (2011), Maia (2012), Razali & Talib (2013), Fallah, Khalili & Rasdi (2015), Nejadriahi & Dincyurek (2015), Alitajer & Nojoumi (2016), Tomah et al. (2016), Fisher-Gewirtzman (2017), Chambers, Bafna & Machry (2018), Yaylali-Yildiz, Ek & Can (2018), Elmansuri & Goodchild (2019), Rollings & Evans (2019), Nguyen (2020), Pourvahidi (2020)
	Architectural elements	Al-Kodmany (2000), Day (2000), Evans et al. (2000), Kaya & Erkip (2001), Daniels (2008), Williams (2009), Rahim (2015), Campagna (2016), Fisher-Gewirtzman (2017), Rollings & Evans (2019), Bezerra et al. (2020), Silva et al. (2020);
	Neighbourhood	Day (2000), Evans et al. (2000), Brunson et al. (2001), Dunstan et al. (2005), Daniels (2008), Kintrea et al. (2010), Coelho (2011), Lindsay, Williams & Dair (2012), Matthews et al. (2019), Soga et al. (2020)
	Density	Sinha & Nayyar (2000), Evans et al. (2001), Corapci & Wachs (2002), Gomez-Jacinto & Hombradas-Mendieta (2002), Campagna (2016), Tomas Amerigo & Garcia, 2016), Fisher-Gewirtzman (2017), Thornock et al (2019), Rollings & Evans (2019), Bezerra et al. (2020)
	Personal objects	Gosling et al. (2005), Giorgi et al. (2007), Sobh & Belk (2011), Perez-Lopez, Aragones & Amerigo (2017), Poggio et al. (2018), Connellan (2019), Elmansuri & Goodchild (2019), Willems, De Smet; Heylighen (2020)
	Housing typology	Reis & Lay (2003), Coelho (2011), Vasconcelos, Próchno & Silva (2012), Morrison, Poulin (Holman, 2018)

Table 7 (continued)

Privacy dimension	Evaluation measures	Authors
Social dimension	Social interactions	Chan (2000), Sinha & Nayyar (2000), Brunson et al. (2001), Paiva & Mendes (2001), Gomez-Jacinto & Hombradas-Mendieta (2002), Corapci & Wachs (2002), Hashim et al. (2006), Giorgi et al. (2007), Daniels (2008), Kintrea et al. (2010), Vasconcelos, Próchno & Silva (2012), Pable (2012), Oishi et al. (2013; Arpin, Mohr & Brannan (2015), Matthews et al. (2019), Moeller & Seehuus (2019), Thornock et al (2019), Nguyen (2020), Takashima et al. (2020)
	Culture	Al-Kodmany (2000), Chan (2000), Evans,Lepore & Allen (2000), Ozaki (2002), Hashim et al. (2006), Daniels (2008), Sobh & Belk (2011), Razali & Talib (2013), Othmann, Aird & Buys (2015), Fallah, Khalili & Rasdi (2015), Rahim (2015), Nejadriahi & Dincyurek (2015), Alitajer & Nojoumi (2016), Elmansuri & Goodchild (2019), Willems, De Smet; Heylighen (2020)
	Accessibility hierarchy	Reis & Lay (2003), Mustafa, Hassan & Baper (2010), Coelho (2011), Razali & Talib (2013), Othmann, Aird & Buys (2015), Fallah, Khalili & Rasdi (2015), Nejadriahi & Dincyurek (2015), Alitajer & Nojoumi (2016), Tomah et al. (2016), Yaylali-Yildiz, Ek & Can (2018), Elmansuri & Goodchild (2019), Pourvahidi (2020)
	Domestic activities	Merino et al. (2021), Buecker et al. (2020), Willems; De Smet; Heylighen (2020), Wang et al. (2017), Stepanikova et al. (2010), Corapci & Wachs (2002), Pinquart & Sorensen (2001), Al-Kodmany (2000);
	Control	Chan (2000), Sinha & Nayyar (2000), Paiva & Mendes (2001), Amole (2005), Pable (2012), Farkisch et al. (2015), Tomas, Amerigo & Garcia (2016), Wang et al. (2017)
	Boundaries demarcations	Brunson et al. (2001), Paiva & Mendes (2001), Dunstan et al. (2005), Wang et al. (2017
	Coping strategies	Evans,Lepore & Allen (2000), Amole (2005), Ruiz-Casares (2012), Khachaturova & Nartova-Bochaver (2017)

Table 7 (continued)

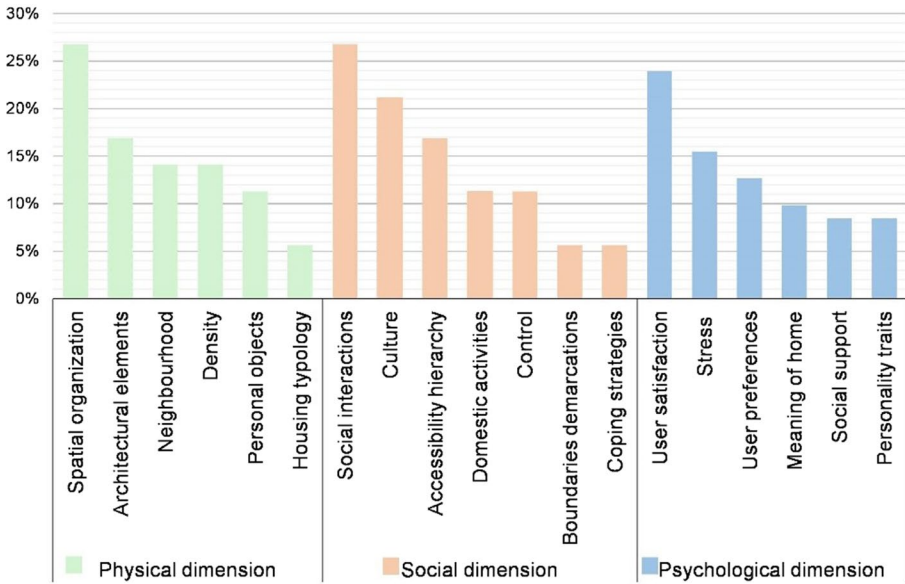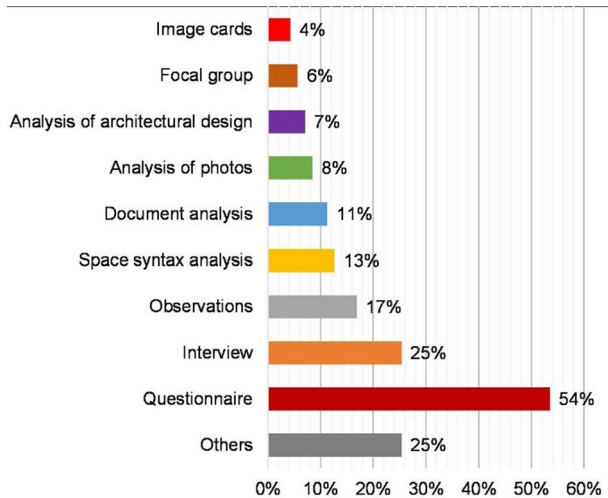| Privacy dimension	Evaluation measures	Authors
Psychological dimension	User satisfaction	Al-Kodmany (2000), Day (2000), Pinquart & Sorensen (2001), Kaya & Erkip (2001), Gomez-Jacinto & Hombradas-Mendieta (2002), Reis & Lay (2003), Amole (2005), Williams (2009), Stepanikova et al. (2010), Lindsay, Williams & Dair (2010), Pable (2012), Ruiz-Casares (2012;Rahim (2015), Campagna (2016), Elmansuri & Goodchild (2019), Bezerra et al. (2020), Willems, De Smet; Heylighen (2020)
	User preferences	Day (2000), Sinha & Nayyar (2000), Kaya & Erkip (2001), Ozaki (2002), Daniels (2008), Sobh & Belk (2011), Farkisch et al. (2015), Wang et al. (2017), Willems), De Smet; Heylighen (2020)
	Stress	Evans,Lepore & Allen (2000), Kaya & Erkip (2001), Gomez-Jacinto & Hombradas-Mendieta (2002), Pable (2012), Oishi et al. (2013), Campagna (2016), Morrison, Poulin, Holman (2018), Moeller & Seehuus (2019), Rollings & Evans (2019), Bezerra et al. (2020), Losada-Baltar et al. (2020)
	Meaning of home	Giorgi et al. (2007), Sobh & Belk (2011), Maia (2012), Vasconcelos, Próchno & Silva (2012), Connellan (2018), Elmansuri & Goodchild (2019), Willems; De Smet; Heylighen (2020)
	Social support	Arpin, Mohr & Brannan (2015), Thornock et al (2019;Buecker et al. (2020), Losada-Baltar et al. (2020), Merino et al. (2021
	Personality traits	Gosling et al. (2005), Beadle et al. (2012), Tomas, Amerigo & Garcia (2016), Khachaturova & Nartova-Bochaver (2017), Perez-Lopez, Aragones & Amerigo (2017), Merino et al. (2021)

Fig. 6 Main evaluation measures (in%), by privacy dimension (total articles: 71). *Note* Each article can have more than one measure

Fig. 7 Main instruments (in%) used in housing privacy surveys (total articles: 71). *Note* Each article can have more than one instrument

dimensions predominated, revealing the influence of domestic activities and social interactions on the perceived social support, user satisfaction and stress.

With regard to aspects relevant to the discussion about housing privacy, the studies raised showed they are related to links between human behaviour and the built environment, and must recognize, among others: the meanings of home and privacy of residents, their cultural and personality traits, relations with the family and neighbours; users preferences, satisfaction and expectations regarding the house where they live and the one they

would like, the layout of the design attributes and available control resources; the spatial organizational of the house and domestic activities, the personal spaces and objects, the existing territories and neighbourhood; the type and frequency of privacy invasions and the coping strategies adopted by users to protect it, the level of stress, crowding and solitude that can be perceived in their homes.

Regarding the methods and techniques used to investigate housing privacy, the material analysed emphasized the users' perspective, with higher recurrence of using questionnaires and interviews, followed by *in loco* observations. The instruments used to assess the built environment were also relevant in the samples analysed and, in addition to those mentioned, consisted of technical analysis of architectural designs and photographs and of space syntax analysis. The other instruments were used for more specific purposes and varied according to the objectives of each study.

On the key theme of privacy, mainly questionnaires, interviews, analysis of architectural designs and space syntax analysis were used. The questionnaires and interviews highlighted topics related to socio-demographic data, user satisfaction and preferences, their concepts of home and privacy, and their perceptions about spatial organization of the house and its architectural elements, the invasions of privacy, available facilities (mechanisms regulation) and associated behaviours, family relationships and daily activities. The analyses of architectural designs, photographs and space syntax analysis, in turn, addressed privacy related to the possibilities of physical or visual access to spaces, expressed by the spatial organization, layout of the design attributes and the existing accessibility hierarchies.

On the topic of territoriality and personal space, the most used instruments were questionnaires, observations and interviews. For territoriality, the studies dealt primarily with the neighbourhood scale, with assessments of demarcation and control of territories and the resulting sense of belonging. The personal space assessments addressed the housing interior design, with questions and observations related to characteristics of the individuals and their ways of personalizing the spaces.

With regard to crowding and solitude, the questionnaires were more frequent, and an interview with open-ended questions for evaluations on these themes was identified in only one study (Ruiz-Casares, 2012). Regarding crowding, the questionnaires were related to the level of stress, the size and density of the home or specific rooms, especially addressing the internal characteristics of the dwellings and satisfaction of users. Regarding solitude, the questionnaires presented little association with the physical aspects of the home, containing questions more associated with feelings of solitude and social isolation (stress, anxiety and depression), and with perceptions of social support of the family and the community.

Regarding the geographic location of the studies analysed, the results found reinforced Margulis' point about the European and American predominance in privacy-related research (Margulis, 2003a, 2003b, 2011). American studies lead the discussions on all the topics considered, with a total of 18 publications, more than double of the country, in second place, in this case Brazil, with 7 studies, followed by Spain and Iran, both with 5 articles. It should be noted that the relevance of Spain has grown with recent studies on the impacts of the COVID-19 pandemic.

The growing discussion about privacy in the context of Islamic housing should also be highlighted. Over the last decades, intensified globalization inserted the western housing design model in these contexts, causing discrepancies between the desired privacy, based on religious customs, and that obtained, expressed by the organization of the Western house. In other words, the physical dimension of privacy does not reflect the social and psychological dimension desired by users. Also on the privacy dimensions, we saw that studies on housing privacy focus on the physical, psychological and

social dimensions, with the need to also include the social and/or economic data of residents (Dienlin, 2013; Margulis, 2003a, 2003b(a), (b), 2011; Westin, 2003).

In housing studies, the privacy problems were addressed by levels of satisfaction, by questions about the types of privacy issues and inconveniences faced, about where and when invasions took place, or about what the ideal home would be like. Thus, it is observed that Solove's (2006) legal view that understanding privacy protection includes identifying and characterizing the problem is also valid for discussions on housing privacy. Regarding the relationship between the use of technology and impacts on privacy (Westin, 2003), only two studies (Cetkovic, 2011; Stepanikova et al., 2010) address the theme of using automation or time spent on the internet for housing-related discussions, revealing a gap in the studies about the relationships between technology, privacy and ways of living.

Regarding behaviours, research on housing privacy reinforces contemporary assumptions (Dienlin, 2013; Magi, 2011; Solove, 2006) that users' behaviours vary according to contexts and perceptions of privacy. This is expressed by variations in the hierarchies of accessibility to the environments, by the different meanings of home and privacy associated with the cultural practices and perceptions of the users, but especially by the variations of thematic approaches by region. In Islamic and Eastern countries, it is important to discuss privacy as an essential concept for the formation of society, and it is important to address the means to keep it protected inside the houses or families. In the European and American contexts, on the other hand, it is relevant to understand it from the perspective of individual needs, discussing the consequences of when it is violated, whether in the sense of feeling crowded or isolated.

The benefits of privacy, raised by Magi (2011), were considered mainly in the introduction of the studies, but not very relevant as evaluation measures. Only in comparative studies on traditional and modern houses or on the addition of space control items, questions related to the benefits that privacy can provide were evaluated in the application of methodological instruments.

Corroborating previous reviews in this field and reinforcing the subjectivity involved in its study, the results of the SLR carried out reaffirm the need to discuss the topic of housing privacy:

- Consider a comprehensive perspective, with aspects that involve the social dynamics of the context where housing is inserted and the residents' individual perceptions (Altman, 1975; Dienlin, 2013; Hall, 2005; Margulis, 2003a, 2003b (a), (b), 2011; Solove, 2006).
- Include social and demographic factors (Altman, 1975; Dienlin, 2013; Hall, 2005; Margulis, 2003a, 2003b (a), (b), 2011; Solove, 2006; Westin, 1967), considered as evaluation criteria in all studies that use questionnaires and interviews.
- Highlight the privacy role in the development of culture (Dienlin, 2013; Hall, 2005; Margulis, 2011; Westin, 1967 e 2003) and in the human cognitive and affective processes, especially those associated with individual development and communication modes, perceiving and revealing the social environment in which residents are inserted (Altman, 1975; Burgoon, 1982; Dienlin, 2013; Leino-Kilpi et al., 2001; Margulis, 2003a, 2003b, 2011).

In addition to alignment with previous reviews, the findings of this research advance in relation to existing studies, bringing as contributions the discussions on housing privacy:

- Identifying the importance of the meanings of home, family, neighbourhood (neighbours, neighbourhood features and social support), spatial organization (including its architectural elements and domestic activities), as well as its hierarchy in terms of accessibility, and the satisfaction and preferences of users.
- The ever-expanding concern with issues of social isolation due to the pandemic, an essential dimension to understand contemporary times, especially in view of the current multifunctionality assumed by housing.
- Clearly demonstrating the recent increase in the interest on privacy as a research topic.

This is, therefore, an open field for new studies, which may expand understanding privacy in the context of housing and increase the consistency and comprehensiveness of these approaches for the housing context.

6 Conclusion

Due to the research criteria, most studies found by conducting the SLR address the privacy key-theme, with productions on territoriality and personal space, crowding and solitude that have almost equivalent quantities of publications, which demonstrates relevance parity between the themes. Regarding temporal terms, there has been a recent increase in studies on crowding and solitude. On the one hand, the growth of studies on crowding may reflect the low quality of housing spaces, which, due to poorly dimensioned internal spaces, inadequate urban insertions or not being culturally adapted to the context of residents, increase the perceptions of users' stress and dissatisfaction. On the other hand, the growing interest in the topic of solitude seems to be a consequence of new forms of social interaction, associated with digital media and the pandemic.

Regarding the areas of knowledge in which these articles were published, journals in the field of psychology were the most recurrent, although there is an increasing participation of journals in architecture, urbanism and design, especially in the key themes associated with the physical dimension (privacy, territoriality and personal space). This demonstrates that the issue of housing privacy is an expanding approach for the area – which justifies the interest in SLR.

The results obtained also suggest that although the concepts of privacy, territoriality, personal space, crowding and solitude have been widely discussed and conceptualized in different areas of knowledge. Although they are still far from being exhausted as an object of study in discussions about housing, given the subjective characteristics that surround them and the contextual nature of the application of results, which prevent broad generalizations or design recommendations applicable to different contexts.

The SLR on housing privacy has shown it is vital these types of studies evaluate both the context in its broadest form, raising data on the socio-demographic and cultural context of users, and the social meanings attributed to existing space organizations, as well as on the scale close to the individual, evaluating their personality traits, their forms of personalization, their satisfaction and preferences and the influence of social interactions and physical attributes on these perceptions.

It is also important to highlight the limitations of the study. The first refers to the database chosen, only one for studies in English and two for texts in Portuguese. The inclusion of more databases (in relation to the Brazilian context, for example), can expand discussions on the themes, allowing more consistent conclusions on these fields or on the cultural

differences of the approaches by countries. Another limitation concerns the type of publication. In this study, we chose to limit the results to scientific articles published in peer-reviewed journals, so future research may include, in addition to other databases, works published in congresses, theses and dissertations. Finally, as the study evaluated mainly the housing unit and its neighbourhood, issues directed primarily at urbanism and housing policies were excluded, and as observed in a UK (Lindsay, Williams & Dair, 2012) and American (Day, 2001) study, they may interfere in housing privacy relationships. Thus, it is recommended that future works in this area should consider the urban context and public policies in their analysis.

Regarding future works, even in studies inserted in the scope of architecture and urbanism, few presented the implications of how the research results could be adapted to the conception of new architectural projects. The architectural design adjustment propositions or guidelines found included: i) descriptions of what an ideal home should be (Day, 2000; Willems et al., 2020); ii) a proposition for the use of environmental control resources (Pable, 2012); iii) explicit design recommendations (Al-Kodmany, 2000; Fallah, Khalili & Rasdi, 2015). Therefore, future research studies could outline guidelines on how to apply the users' perceptions in the design of new projects, or in reforms of existing spaces. Despite the scarce studies, they are of great value for the context of housing projects, especially in the pandemic or post-pandemic period.

Housing privacy permeates different dimensions, analysis variables, research methods and approaches, with research that addresses both the generic characteristics of the context under study, as well as individual physiological or behavioural responses. Therefore, it is recommended that research in the area could present a clear definition of what should be effectively evaluated and the relationships that can be established.

Declarations

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