

REVIEW ARTICLE

Health Psychology

Editor

Raquel Souza Lobo Guzzo

Conflict of interest

The authors declare that there is no conflicts of interest.

Received

May 6, 2023

Final version





February 22, 2024

Approved

October 2, 2024

Environmental Psychology in Brazil: bibliometric study of scientific production in open access

Psicologia Ambiental no Brasil: estudo bibliométrico da produção científica em acesso aberto

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How to cite this article: Diniz, R. F., Pinheiro, J. Q., Moisés, J. B., Gomes, V. C. O., & Mendes, T. M. A. S. (2025). Environmental Psychology in Brazil: bibliometric study of scientific production in open Access. *Estudos de Psicologia* (Campinas), 42, e230043. <https://doi.org/10.1590/1982-0275202542e230043>

Abstract

Objective

Our objective was to analyze the scientific production of Environmental Psychology in Brazil.

Method

We conducted a bibliometric documentary research, focusing on articles published by Brazilian authors in open access Latin American journals. Using the descriptor environmental psychology, in the RedALYC, SciELO and PEPsic databases.

Results

We identified 160 publications that met the inclusion criteria, published between the years 1997 and 2021. Evidence indicates that national production and communication of scientific knowledge in the area have been carried out with national partnerships, written mostly in the Portuguese language and published in Brazilian journals.

Conclusion

Finally, we found that empirical research has frequently incorporated qualitative or mixed approaches, as well as an emerging interest in investigations close to the human-environmental experiences of groups with specific characteristics, such as traditional peoples and in rural contexts, representative of the Brazilian and Latin American realities.

Keywords: Bibliometrics; Environmental psychology; Scientific publication indicators.

Resumo

Objetivo

Nosso objetivo foi analisar a produção científica da Psicologia Ambiental no Brasil.

Método

Conduzimos uma pesquisa documental de caráter bibliométrico, tendo como objeto artigos publicados por autorias brasileiras em periódicos latino-americanos de acesso aberto. Com o uso do descritor psicologia ambiental, nas bases RedALYC, SciELO e PEPsic.

Resultados

Identificamos 160 publicações que atenderam aos critérios de inclusão, publicados entre os anos de 1997 e 2021. As evidências indicam que a produção e a comunicação do conhecimento científico da área no país têm se dado com parcerias nacionais, ocorrendo majoritariamente em língua portuguesa e em periódicos brasileiros.

Conclusão

Finalmente identificamos que as pesquisas empíricas têm incorporado com frequência abordagens qualitativas ou mistas, bem como um interesse emergente por investigações próximas às experiências humano-ambientais de grupos com características específicas, como povos tradicionais e em contextos das ruralidades, representativos da realidade brasileira e latino-americana.

Palavras-chave: *Bibliometria; Psicologia ambiental; Indicadores de produção científica.*

There is no need to spend effort justifying the interest in the relationships established between people and their environments, given that at all times we influence and experience the influence of the multiple spaces with which we interact throughout our lives, directly or indirectly, consciously or not. However, after decades of development, it still sounds innovative to talk about Environmental Psychology, a branch of Psychology that is dedicated to the study of “the relationship between people and the sociophysical characteristics of the built and natural environment, in order to improve human well-being and improve people-environment relationships” (Bonnes & Carrus, 2004, p. 801).

The origins of Environmental Psychology (EP) is grounded in Europe, and dates back to the first decades of the 20th century; however it gained recognition and took shape as a specific discipline, in the Anglo-Saxon context from the 1960s onwards. Spreading across different countries in the following decades, it has sought to meet the demands of different disciplines, beyond Psychology itself, establishing interdisciplinary dialogues with areas focused on built spaces and the urban environment, such as Architecture and Urbanism, Geography; as well as areas that address environmental issues and sustainability, such as Environmental Education and Ecology (J. Pinheiro, 1997a; Moser, 2018; Pol, 2006, 2007).

In addition to its interdisciplinary vocation, some characteristics mark the specificity of that area in scientific works. The first of these refers to the definition and approach of its object; the people-environment relationship is seen as a whole and must be understood in its natural context. By aiming at a holistic approach to the phenomenon, as a second characteristic, it seeks different investigation methods, combining strategies for data collection and analysis. A third element concerns its theoretical-epistemological variety, aiming to contemplate the social dimension of these relationships. Finally, EP is recognized as an applied area, with an interest in promoting the improvement of human-environmental relationships (Bonnes & Carrus, 2004; Hodecker et al., 2019; Wiesenfeld, 2005).

According to Moser (2018), the knowledge produced by EP is structured around three classic approaches. The first refers to the physical and social conditions to which the person (or group) is disposed, having as its object cognitions and behaviors (e.g. effects of noise, density, temperature, aggressive behaviors, cooperation, etc.). In a second approach, the natural or built environment is considered as an object of perception, evaluation and representation, with studies that also focus on an affective and emotional dimension. The last approach pointed out by the author has a systemic or transactional character, and refers to the relationships with the place of everyday life, encompassing concepts such as privacy, personal space, territoriality, as well as identity processes and space appropriation.

These notes made so far, in general, make up the scenario of the area at an international level, in the centers already identified as emerging poles of the area. According to Wiesenfeld (2005), the European EP was marked by its social vocation, a product of the social and housing crisis of the post-war period. The North American EP was characterized by its focus on the person, aiming at optimizing people relationship with the environment. Also according to the author “the beginnings of Environmental Psychology in Latin America were, in a marked way, influenced by the themes and approaches adopted in the United States, regardless of their relevance in our region” (Wiesenfeld, 2005, p. 55). Something evidenced by the prevalence of the use of bibliographical references outside the Latin American continent in analyses related to scientific production in the 1990s (Corral-Verdugo & Pinheiro, 2009; Diniz et al., 2023; J. Q. Pinheiro & Corral-Verdugo, 2007).

In an analysis of the scientific production in the area in our continent in the first decade of the 2000s, Wiesenfeld and Zara (2012) identified an increase in psycho-environmental production, referring to the deepening of its diversification (theoretical, thematic, contextual methodological, population-based, etc.). The authors also pointed out the tension between an EP of a local nature, which pointed to the openness to different directions perspectives, with a view to expanding its theoretical-methodological perspectives, and an EP of a universalizing nature, closer to the affirmation of a single identity (aligned with international agendas), with sustainability as an integrating axis.

Considering the regional literature, we believe that the development of Latin American and, specifically, Brazilian EP has followed different paths in relation to the initial influences (Corral-Verdugo & Pinheiro, 2009; J. Pinheiro, 1997b; J. Q. Pinheiro, 2004). In this connection, we pose the following question: considering the particularities of our framework, marked by historical, geopolitical, and socio-environmental processes that are quite distinct in relation to the EP centers of origin and consolidation, are there specificities in EP scientific production? In particular, what are such characteristics at local level? For the present review, we take Brazil as the analysis framework, as a starting point for further analyses that take into account the Latin American continent (Diniz et. al, 2023).

In order to situate the area in the Brazilian framework, J. Q. Pinheiro (2001) identified three periods between the 1990s and the early 2000s. The first, from 1970 to 1985, was still in its infancy and was marked by the translation of some European and North American manuals and the offering of some isolated courses taught by psychology professionals to an architectural audience. The second period, from the mid-1980s to the early 1990s, saw the publication of a few papers by Brazilian scholars, either in partnerships within the emerging research groups themselves or with investigators in training centers abroad, a period in which an academic enhancement began to be observed. Finally, the post-1990s to the early 2000s was marked by the holding of scientific events that enabled exchanges and the beginning of some initiatives between research groups. The first guidelines for master’s and doctoral degrees in postgraduate programs in Psychology started burgeoning, and interest in topics related to the environment and sustainability emerged.

As indications that we are entering a fourth phase in the history of Brazilian PE, we notice initiatives such as the Environmental Psychology Working Group, linked to the Associação Nacional de Pesquisa e Pós-Graduação em Psicologia (ANPEPP, National Association of Research and Postgraduate Studies in Psychology), and the *Rede de Psicologia Ambiental Latino-Americana* (REPALA, Latin American Environmental Psychology Network), a virtual discussion list coordinated by Professor José Pinheiro at the Federal University of Rio Grande do Norte (H. Günther & Pinheiro, 2008). In 2018, the Brazilian Association of Environmental Psychology & Person-Environment

Relations was set up; this is an autonomous association focused on the development of EP scientific and professional practices in this country. In 2022, the *Conselho Federal de Psicologia* (CFP, Federal Council of Psychology), in order to promote acknowledgement of this domain, issued a public call for the development of a practices catalog; the CFP indicated that “Environmental Psychology, one of the newest areas of Psychology, has built, in recent decades, an increasingly consistent scientific field in the national scenario” (Conselho Federal de Psicologia, 2022, p. 194).

Focusing on the EP scientific production in this country, Passig et al. (2013) reviewed theses and dissertations produced in the first decade of the year 2000. They identified 42 papers, developed in nine postgraduate programs to which groups and laboratories dedicated to the EP field are linked, revealing an increase in scientific production throughout the period in question, with prospects for continued growth in the following decade. They concluded that, despite the evident effort to advance research, taking into account the diversity of themes and variables investigated, it would be necessary to expand interests beyond the most researched axes at that time (school, hospital and traffic).

Based on an integrative review of Brazilian psychoenvironmental literature, Hodecker et al. (2019) enhance the aspects previously highlighted about this scenario and raised new questions for the area. They highlighted that, from a methodological point of view, empirical production has been successful in incorporating the use of combined data collection and analysis techniques (multimethods), with methods centered on people and places. Regarding onto-epistemological approaches, a materialist view of reality was identified, in which the subject is an agent and interacts actively with its surroundings. They also enhanced the multidisciplinary nature of EP, working in collaboration with other fields of knowledge that focus on the physical environment, as well as biological and organic aspects, and the social dimension.

Given the particularities of the EP paths in Brazil, the present work aimed to contribute towards the understanding about the EP development in this country, with view at assessing indicators of its scientific production. Thus, we carried out a bibliometric study, a modality that encompasses the collection and analysis of objective information about the scientific knowledge produced and shared in a given field, paying attention to the distribution of authorship in publications, the increase in literature and the milestones for the historical understanding of this field, among others (A. L. M. F. Santos et al., 2021).

We focused on the scientific articles published in Latin American journals (including Brazilian journals), since they are a key part of the process of evaluating science – or a specific area, as in this case – becoming an object of central importance, as are the journals themselves and their publication metrics, citations, and bibliometric indicators (Ricarte, 2018). Finally, we gave priority to open access publications, since, in Latin America, most scientific journals are published by public universities and scientific societies, and adhere to open access policies, which means they are freely available on the internet to be searched, accessed, read, saved, distributed, printed, and referenced (Silva, 2019).

Method

We conducted a bibliometric documentary research, reviewing the Brazilian scientific production in the area of Environmental Psychology, published in Latin American journals indexed in open access databases. Although we acknowledge the diversity of possible formats for the scientific communication of said production, the option for the article format is justified by the fact that it is a type of periodical production, subject to peer review, widely accessible by the academic

community, and predominantly used as an object of evaluation of scientific research among the different areas of knowledge (Ricarte, 2018).

We searched Latin American collections included in databases that adopt evaluation criteria for indexed journals and adhere to open access policies (Sampaio & Serradas, 2009), including journals in psychology and related fields. The databases accessed were: the Network of Scientific Journals of Latin America and the Caribbean, Spain and Portugal (Redalyc - <https://www.redalyc.org/>); the Scientific Electronic Library Online (SciELO - <https://scielo.org/>); and the Electronic Journals of Psychology (PEPSIC - <http://pepsic.bvsalud.org/>).

Regarding the term used in the searches, among the different options that could serve as a label for studies in the area (e.g. person-environment studies; person-environment relationships), we adopted as a descriptor one of Passig et al. (2013) indications – environmental psychology – because it is recognized as a representative expression of this production; in addition EP refers more directly to the field of Psychology. Thus, taking into account the differences in the advanced search options in each database, we used the term “environmental psychology” (in quotation marks) in the Redalyc database, and with the Boolean operator “and” environmental psychology in the SciELO and PEPSIC databases, in Portuguese, Spanish and English. The term was searched throughout the body of the text (from the title to the list of references).

The criteria that guided the selection of the material found focused on: (a) authorship: the first author (commonly recognized as being intellectually responsible for the work) should have training and/or experience in the area of Psychology and institutional affiliation in Brazil; (b) thematic scope: addressing topics related to the area of environmental psychology and person-environment relationships; (c) type of paper: a theoretical work an empirical research report or an experience report. As no time frame was previously defined for the survey, the publications covered the period between 1997 and 2021, which corresponds to the first case identified in the databases used and the last case found at the time the collection was concluded (second half of 2021).

Based on the reading of the title, abstract, keywords and list of references, as well as checking the authorship data, publications that did not fit the established criteria were excluded, as well as articles that did not include anywhere the term environmental psychology. To refine the process of applying the material selection criteria, at least two surveyors from the research team assessed the relevance of including the cases selected during the searches. In cases of dubiousness a third surveyor helped in the joint assessment.

The material was also checked to identify repetitions (e.g., cases that were available in more than one database). Finally, the selected articles were included in an electronic spreadsheet, in which the following information was categorized: 1) bibliometric data (year of publication, journal, country of the journal, keywords or descriptors); 2) thematic scope, type of work and, in the case of empirical research reports, the type of methodology used (qualitative, quantitative or mixed); and; 3) authorship and co-authorship (number of authors, name, gender, country of origin, institutional affiliation). This information was assessed using univariate descriptive statistics, which allowed us to identify trends, regularities and concentrations, and will be presented and discussed in light of the theoretical framework in the following section.

Results and Discussion

A total of 160 scientific articles that fully met the inclusion criteria were included in our review. The papers were issued by Brazilian authors and are available in open access Latin American

journals indexed in the databases used. We emphasize from the outset that, although the results of the assessments refer more directly to this restricted set of data, the interpretations seek to provide evidence and dialogue with broader reflections on the developments and consolidation of Environmental Psychology in Brazil and in Latin America. In this section, we present and discuss three axes of analysis: (a) bibliometric characterization of EP production in Brazil; (b) theoretical-methodological aspects of this production; and (c) who produces knowledge in the Brazilian EP.

Bibliometric Characterization of EP Production in Brazil

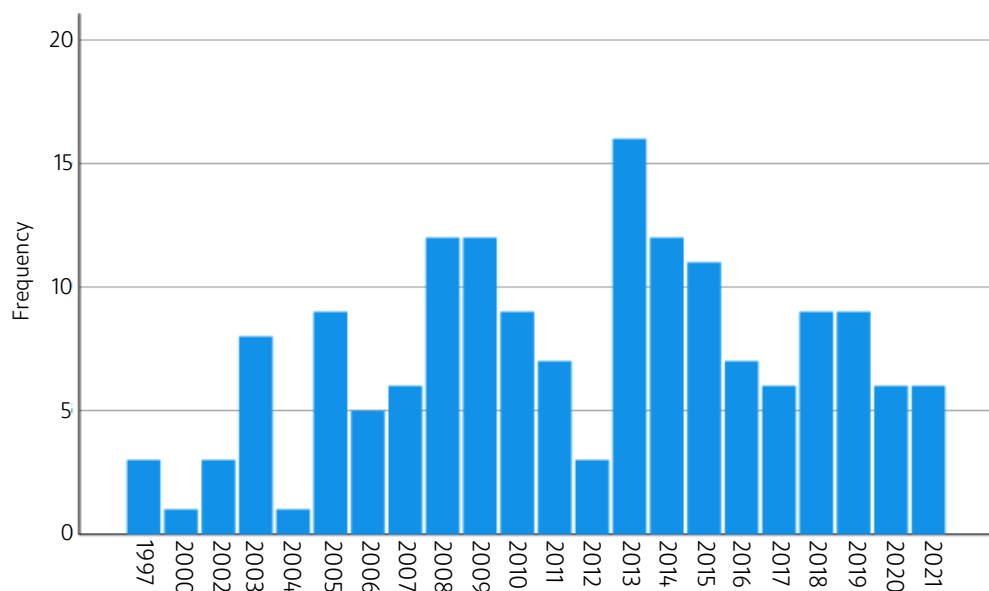
As mentioned above, the time period in which these papers were issued was between 1997 (the first case identified) and 2021 (the end of data collection) (Figure 1). Regarding this period, it is worth noting from the outset that between the late 1990s and early 2000s, a process of transition from printed journals to electronic format began, driven, among other factors, by the expansion of internet access. Therefore, the material reviewed does not accurately reflect the beginning of this production, since it does not cover publications in exclusively printed versions of the journals from that period. Searches carried out in databases not used in this study (e.g. Google Scholar) make it possible to access productions prior to the period covered here, still in the late 1980s and early 1990s. Although they are beyond our review dateline, they indicate possible earlier emergence of EP studies in our country.

During the period reviewed, we observed variations in the number of publications. There were phases in which there was an increase in production in contrast to a previous period, or a decrease in the number of papers. To understand these variations, we paid attention to different factors that refer to a process of recognition and enhancement of EP in this country.

If we look closely at the EP production periods, we can observe that although in some points in time it does not prominently stand out in quantitative terms, they reveal EP constitutive milestones in Brazil.

Figure 1

Frequency of publications of articles with the descriptor "environmental psychology" in the RedALYC, SciELO and PEPSIC databases, between 1997 and 2021



This is the case of the first year identified in the survey: the three articles published in 1997 comprised the first dossier on Environmental Psychology in this country, published by the journal *Estudos de Psicologia* (Natal), with the editorship of José Q. Pinheiro. In his introduction to this dossier, the author stated that, at that time, “Environmental Psychology is still a more or less foreign body in the Brazilian Psychology scenario”, concluding that EP “is present among us, yes, but still in its infancy” (J. Pinheiro, 1997b, p. 329). In our assessment, considering the following decades, we are able to glimpse a promising EP journey.

As in the previous case, but with an increase in the number of articles by Brazilian scholars, the years 2003 ($N = 8$) and 2005 ($N = 9$) were also marked by the release of two special issues: issue 8.2 of the journal *Estudos de Psicologia* (J. Q. Pinheiro, 2003), and double issue 1-2 of the journal *Psicologia USP* (Tassara, 2005). Furthermore, in 2014 ($N = 12$) a new dossier was released in the journal *Psico* (Bolzan de Campos & Cruz Bomfim, 2014). Although these special issues and dossiers were edited by Brazilian authors and published in Brazilian journals, the relevance of these productions is enhanced by the presence of publications from Latin America, Europe and North America. The year 2013 deserves attention because it concentrated the largest volume of publications in this survey ($N = 16$). Among the articles published that year, 5 were part of a special issue on the subject launched by the *Revista Latinoamericana de Psicología* (Colombia), signaling efforts to engage with a wider audience on the continent.

In order to understand the variation in Brazilian production during this period, it seems pertinent to us to pay attention to the convergence between the increase in production in certain years and the occurrence of scientific events and academic meetings, since they provide spaces for recognition, sharing of knowledge and articulations between researchers in this field, which gain expression in the publications of the respective year and the following ones, something already alluded to in previous analyses (J. Pinheiro, 2001; J. Q. Pinheiro, 2004; Passig et al., 2013).

As examples of this convergence between events and growth in scientific production stand the 34th Inter-American Congress of Psychology in the city of Brasília (BR) in 2013, which, due to the large and diverse number of papers presented (Alchieri & Porto, 2013), proved to be not only a national but also an international milestone in this field. In 2014, something similar occurred at the 5th International Conference on Community Psychology held in the city of Fortaleza (CE), which dedicated a section of the event to socio-environmental issues and Environmental Psychology (Ximenes et al., 2016). In 2019, the 1st Congress on Environmental Psychology and Person-Environment Relations was held, promoted by the recently created Brazilian Association of Environmental Psychology & Person-Environment Relations. Although these examples do not exhaust the list of academic-scientific activities that may have had an impact on EP production over the last three decades, we emphasize the importance of promoting such events.

A second aspect assessed was the language used in the aforementioned production: 145 articles were published in Portuguese, which corresponds to 90% of this production; 13 articles were published in English (8%); and 3 were published in Spanish (2%). The predominance of publications in Portuguese is noteworthy, especially in comparison to publications in Spanish, given our expectation regarding the existence of greater dialogue within the Latin American continent, which is predominantly Spanish-speaking. We also observed the occurrence of articles in Portuguese published in journals from other Latin American countries.

In this connection we found that 94% of the production is published in Brazilian journals ($N = 151$). This production was distributed among 43 journals, 13 of which are outside psychology,

originating from areas such as Social Sciences, Education, Ethology, Geography, Health and Human Development. The use of journals from other areas reflects the recognized interdisciplinary vocation of EP itself, and the openness to dialogue with other fields of knowledge (Bonnes & Carrus, 2004; Hodecker et al., 2019; J. Pinheiro, 1997a; Moser, 2018). Out of the remaining articles, five were published in a Colombian journal, and the others in journals from Argentina, Chile, Uruguay and an International Organization (one article each).

Some journals stood out for concentrating a greater number of publications or for presenting special sections focusing EP. The first of these, *Estudos de Psicologia* (Natal), included 23 publications. It is also worth mentioning the journals *Psico* ($N = 9$) and *Psicologia USP* ($N = 8$) which, like the first journal, had special issues and dossiers addressing this subject. A similar case is that of the journal *Paidéia* ($N = 8$), which included a special section in 2008 focused on the interface between EP and Developmental Psychology as a result of a round table presented at the 5th North-Northeast Congress the previous year, in the city of Maceió (AL) (I. A. Günther, 2008). The quantitative prominence of the journal *Psicologia & Sociedade* ($N = 18$), the second most used journal, may be related to its affiliation with the *Associação Brasileira de Psicologia Social* (ABRAPSO, Brazilian Association of Social Psychology), as this is an important arena for EP researchers (J. Pinheiro, 2001). And, like the journal *Psicologia em Estudo* ($N = 12$), it is dedicated to publications that adopt critical perspectives and qualitative methodological approaches (something to be discussed later).

In a broader view, in relation to the languages and journals used to share EP scientific knowledge by scholars in Brazil, the data suggest a certain isolation of national production in relation to the rest of the Latin American continent. Apparently, according to our analysis, Brazilian authors have chosen to communicate with national peers almost exclusively in Portuguese and in Brazilian journals.

These results are further supported when considering the production of EP in the broader framework of the Latin American continent. Diniz et al. (2023) identified the Brazilian protagonism in production – in open access – in the region, followed by Mexico, Colombia, Chile and Argentina. This aspect was similarly evident with the prevalence of Latin American publications in Brazilian journals, and the number of publications in Portuguese (51.8%) was higher than that of articles published in Spanish (41.3%) (Diniz et al., 2023).

Finally, although it goes beyond the purpose of this study, it seems advisable to consider that bibliographic production resulting from international cooperation work between groups and researchers may be included in closed-access foreign journals. This aspect could represent a result of national policies for the internationalization of postgraduate studies and scientific research, or of research funding by international bodies or institutions.

Theoretical-Methodological Aspects of Production

Regarding the types of work that made up the literature production reviewed, they are mostly constituted by empirical studies corresponding to 63% of the published works ($N = 101$), as can be seen in Table 1. As to the methodologies used in these studies, we highlight that the majority used qualitative methods ($N = 46$), about one third used quantitative methods ($N = 29$), and a little less ($N = 26$) used mixed methods.

The predominant use of qualitative methods points to a research practice that differs from the hegemony of hypothetical-deductive models and quantification, which are characteristic

Table 1

Absolute frequency and percentage of the types of articles found with the descriptor 'environmental psychology' in the RedALYC, SciELO and PEPSIC databases, between 1997 and 2021

Job category	Absolute frequency	Percentage frequency
Empirical research	101	63.12
Qualitative methods	46	28.75
Quantitative methods	29	18.12
Mixed methods	26	16.25
Theoretical	39	24.37
Bibliographic review	13	8.12
Methodological	6	3.75
Experience report	1	0.62
Total	160	99.98

of the field in the international scenario (Wiesenfeld, 2005). In this connection we glimpse the existence of a particular way of conducting research in the Brazilian and Latin American framework, marked by a greater diversification in the approaches to the phenomena investigated and by the openness in the development of analyses closer to local realities (Wiesenfeld, 2001; Wiesenfeld & Zara, 2012). More than a decade ago, Corral-Verdugo and Pinheiro (2009) already announced that several incipient environmental psychologies could be developing in Latin America as a response to the particularities of the region, contributing to the understanding of the people processes of adaptation to the cultural and physical environments on the continent.

Still regarding the methodological peculiarities of the literature production in question, we can associate them to the prominence of the Brazilian journals found in our study. All the journals that stood out make way – some being explicit about their scope, such as *Psicologia & Sociedade* and *Estudos em Psicologia* – for works that contemplate alternative methodologies to the exclusive use of quantification; something rare and discouraged by foreign and closed-access journals, which could justify the slanted choice towards national journals.

We identified 39 works of a theoretical nature (25%), which contributed with discussions on theories (e.g., theory of social representations), on psycho-environmental concepts (e.g., rootedness, affordance, pro-environmental behavior), or on EP historical aspects and characterizations (e.g., interdisciplinarity, milestones of EP development within a context).

We found 13 literature review articles that focused on EP scientific production, addressed a particular concept (e.g., restorative environments, pro-environmental behavior, etc.) or a specific research topic (e.g., drought, use of urban space by children, etc.). These studies began to appear in 2008, which points to a more recent need for efforts to assess and synthesize the accumulation of knowledge produced in a given area, as well as the development of panoramas that favor the advancement of production. We also observed that six publications were of a methodological nature, that is, they discussed something related to methodologies in person-environment studies, addressed the proposal of a measurement instrument, or reported psychometric studies on scales developed in other frameworks.

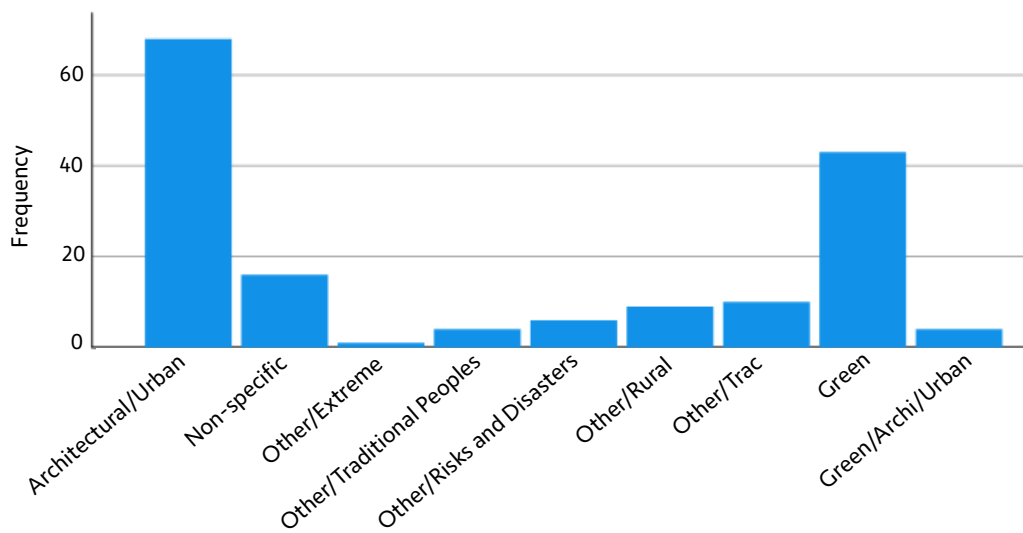
Finally, we identified only one article with a report on an intervention experience. The subsidiary focus given to publications that address EP theoretical and interventional aspects enhances the evidence of their vocation for research, while there remains a gap in reflections on the theoretical-epistemological bases, something already pointed out with respect to Latin American production (Wiesenfeld, 2005; Wiesenfeld & Zara, 2012). Regarding the knowledge gap surrounding intervention experiences in our context, the *Conselho Federal de Psicologia* (CFP, Federal Council of

Psychology) justified the public call for the development of a PE practices catalog by stating that “the discipline is not always valued or even known in undergraduate courses. Furthermore, little is known regarding professional practices in environmental issues identified under the perspective of the person-environment relationship” (Conselho Federal de Psicologia, 2022, p. 194).

One last aspect assessed concerns the thematic focus of this article. To define this category, we looked at the object and/or central concept for the work, considering Pol’s (2007) proposition about two aspects of PA: one architectural (and urban), and another focused on themes related to sustainability (we used the label “green”). In cases where the object or context of the work was close to interface areas, we used the label “Other” followed by the relevant area. And the works with no specific EP focus or aspect we labeled as “Non-specific” (Figure 2).

Figure 2

Absolute frequency of topics covered in publications with the descriptor ‘environmental psychology’ in the RedALYC, SciELO and PEPSIC databases, between 1997 and 2021



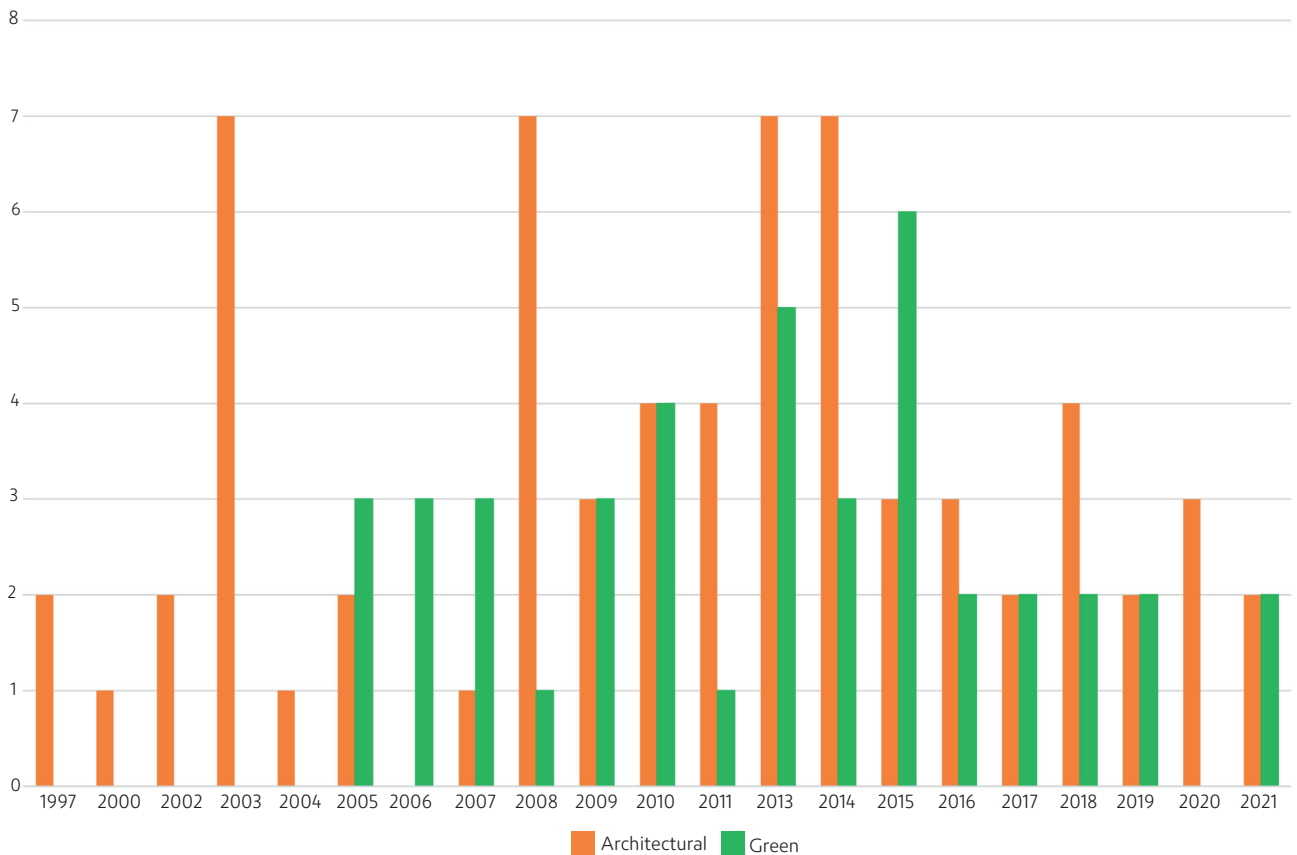
Thus, we identified a predominance of works whose themes, concepts and/or objects were situated in an EP architectural/urban aspect ($N = 67$), corresponding to 42% of the publications, which reinforces previous findings (J. Pinheiro, 1997a; Passig et al., 2013). The most commonly addressed themes are the use and experience in school environments, at home, institutional spaces, as well as in urban areas and in the city. We observed that this aspect marks the first years of the publications identified in our survey, being exclusive until 2004, as can be seen in Figure 3.

Publications that fit into the “green” aspect began to gain space from 2005 onwards (Figure 3), representing 26% of the works ($N = 42$). They express the alignment with the maturation of the debates around environmental and sustainability themes that had gained prominence in the previous decade (J. Pinheiro, 1997a). Among the most frequent themes in this area, we find empirical works on pro-environmental behaviors, beliefs, values and attitudes (and their terminological and conceptual variants), as well as studies that addressed human-environmental relations and sustainability.

Furthermore, we highlight some cases that associated directly architectural themes with themes related to sustainability ($N = 5$), addressing contact and care for nature in urban

Figure 3

Number of articles with Architectural/Urban and Green themes, in articles with the descriptor 'environmental psychology' in the RedALYC, SciELO and PEPISIC databases, between 1997 and 2021



and/or built environments (e.g., green spaces in the city, sustainable cities). The interest in sustainability-related topics reflects international scientific production, which demonstrates a convergence with the broader contemporary debate on environmental preservation, especially with a focus on urban contexts (Santos et al., 2019). As for the “Other” category, we observed a more common interface with Traffic Psychology ($N = 10$) which, like Risk and Disaster Psychology ($N = 9$), has a greater proximity to themes of the urban environment and life in cities (e.g., use of transportation modes, housing, etc.), enhancing this aspect in our context and corroborating the understanding that, like Psychology itself, EP is markedly urban (Olivera-Méndez, 2015). However, the focus on traditional peoples ($N = 4$) and rural areas ($N = 9$) would be more related to a specificity in our green aspect, since they address groups and phenomena characteristic of the Brazilian reality (e.g., indigenous people, riverside communities, rural settlements).

Who Produces Knowledge in Brazilian Environmental Psychology?

In the analysis of authorship, we mapped EP references and possible centers of knowledge production in Brazil. From the outset, we gave priority to the first author of the works, as there is an understanding in the scientific field regarding the first author intellectual responsibility for the work (Costa et al., 2012). However, we thought it was important to also pay attention to the second author, since, in our context, the scientific production of students under training or recent graduates (at the scientific initiation, master’s and doctoral levels) commonly occurs in co-authorship with

the people responsible for supervising the works, and who have a consolidated trajectory of activity in the area.

Thus, the first element observed concerns the gender of the authors: production was performed mostly by women, who represented 72% of the first authors in the publications ($N = 115$), and 59% considering the second author ($N = 79$). Regarding the number of publications per person (considering the productions of the first and second author), two authors stood out with more than a dozen publications each: José de Queiroz Pinheiro with a total of 14 articles retrieved in this survey, being 5 as first and 9 as second author; and Ariane Kuhnen also with a total of 14 articles, being 4 as first and 10 as second author. Subsequently, women continued to stand out in quantitative terms in production, since considering the sum of the works of the first and second author we identified: Gleice Azambuja Elali with 6 publications, followed by Gislei Mocelin Poli, Mara Ignez Campos-de-Carvalho, Sylvia Cavalcante and Zulmira Bomfim, with 5 publications each, as well as the author Hartmut Günther.

Regarding institutional affiliation, considering the sum of publications of the first and second authors, we identified some centers that concentrate the largest amounts of production. The first center highlighted was the Federal University of Santa Catarina (UFSC) with 44 articles, followed by the Federal University of Rio Grande do Norte (UFRN) ($N = 37$), University of Brasília (UnB) ($N = 26$), University of São Paulo (USP) ($N = 26$) and Federal University of Ceará (UFC) ($N = 20$).

It is no coincidence that these (public) universities are the centers where the researchers highlighted in this survey founded and led research groups, and have been active since the first EP developments in this country. J. Q. Pinheiro (2004), in his analysis of EP research groups in the directory linked to the Lattes Platform (CNPq, Conselho Nacional de Desenvolvimento Científico e Tecnológico), highlighted at that time the presence of groups with respective bibliographic production at UnB, UFRN, UFC, USP and UFSC, some already with lines of research and guidance. In our analysis, we identified the protagonism of these groups, evidenced by the continuity of their production (Passig et al., 2013).

One last finding that seemed relevant to us was the number of co-authors with institutional ties outside Brazil. Considering all the co-authorships identified in this production (some works had up to 6 co-authors), we observed only 7 publications that included the participation of researchers from other Latin American countries (Chile and Ecuador), European countries (Spain, Portugal and the United Kingdom), and New Zealand. Although this evidence refers exclusively to the open access production reviewed in this study, it suggests that the research developed in Brazil is not linked to international cooperation networks. This evidence differs from other moments in Brazilian production, in which such articulation contributed to the consolidation of the area in this country (J. Pinheiro, 2001), and may compromise its internationalization process within and outside the continent, a strategy increasingly valued in the national scientific community and in Psychology itself (Costa et al., 2020).

Conclusion

Since its origins, Environmental Psychology has been gaining ground in different parts of the world, preserving several characteristics that give it its own contours as a branch of Psychology, as well as a specific area in the interdisciplinary field of studies of person-environment relationships. However, it also presents particularities based on the contexts in which it develops, as already pointed out in the Latin American and Brazilian cases (Corral-Verdugo & Pinheiro, 2009; Diniz et al., 2023; J. Pinheiro, 1997a; Wiesenfeld & Zara, 2012). In this connection, confirming and adding

evidence to the existing literature, we demarcate and discuss characteristics of the EP scientific production in Brazil.

Based on the bibliometric study carried out, focusing on scientific articles by Brazilian authors published in open access Latin American journals, we gathered objective information about the knowledge produced and shared in the area. The outlook presented makes us believe that EP is no longer in its infancy, but has already taken firm steps on Brazilian soil, and presents particularities in relation to literature production on our continent.

As main considerations, we corroborate findings from previous analyses in relation to some aspects. Firstly, we identified the growth of scientific production in recent decades, converging with the enhancement of academic-scientific actions, as well as corroborating the enhancement and protagonism of some pioneering centers that continue to lead the formation and production of EP knowledge (Hodecker et al., 2019; Passig et al., 2013), adding evidence that this production is mostly performed by women. In general, coinciding with other contexts, we observed its theoretical, epistemological and methodological diversification, with the adoption of combined strategies for data collection and analysis. We also identified the prevalence of the architectural and urban aspect, as well as empirical studies, to the detriment of theoretical-epistemological reflections and experience reports (Bonnes & Carrus, 2004; Wiesenfeld, 2005; Wiesenfeld & Zara, 2012).

Furthermore, we bring up notes that can (and should) have an impact on the continuity of EP developments in the Brazilian context. Despite the limitations caused by the inclusion criteria adopted in this survey, the evidence found indicates a certain confinement of national production, especially considering the rest of the Latin American continent, since both the production and communication of scientific knowledge have been carried out through partnerships and in national media, in Portuguese and in Brazilian journals.

Regarding the emphasis on the choice of national journals, it seems relevant to us to highlight the probable relationship with the type of work that represents the majority of this production: empirical research that used qualitative or mixed approaches. In this sense, Brazil can represent efforts in the search for producing psychoenvironmental knowledge in a more contextual and situated way, since it differs from the current EP scenario when considering scientific production on the continent (Diniz et al., 2023). This aspect gains relevance when we consider a possible rupture movement with the hegemonic way of doing research in the area, both in the Latin American context and beyond, which favors the import of theoretical models and quantification (Wiesenfeld, 2005) tending towards greater theoretical-methodological diversification, and approximations with local demands, although still restricted to the practice of research (Wiesenfeld, 2001; Wiesenfeld & Zara, 2012).

Finally, although we have corroborated the still markedly urban and constructed character of the themes investigated, we have noted the emergence of interest in investigations close to the human-environmental experiences of groups with particular characteristics, such as traditional peoples and in rural contexts, representative of our Brazilian and Latin American reality. Something that we believe has the potential to expand the movement of diversification and rupture already mentioned, towards a genuinely Brazilian EP (Diniz, 2021).

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