

Community-based participatory research for urban regeneration: Bridging the dichotomies through the exp-EIA method

Nicola Rainisio¹  | Marco Boffi¹ | Barbara Piga² | Gabriele Stancato² | Natalia Fumagalli³

¹Department of Cultural Heritage and Environment, University of Milan, Milan, Italy

²Laboratorio di Simulazione Urbana Fausto Curti, Department of Architecture and Urban Studies (DASU), Politecnico di Milano, Milan, Italy

³Department of Agricultural and Environmental Sciences, University of Milan, Milan, Italy

Correspondence

Nicola Rainisio, Department of Cultural Heritage and Environment, University of Milan, 20122 Milan, Italy.
Email: nicola.rainisio@unimi.it

Funding information

European Commission

Abstract

Urban environment design profoundly influences citizens' health and well-being. Despite the aim of urban regeneration initiatives to enhance community well-being and social connections, they often struggle to ensure a balance of power among stakeholders, effectively involve citizens, and accurately assess subjective urban experiences. New methodological approaches in community-based participatory research (CBPR) are advocated to facilitate interactions among social actors and overcome the digital versus real dichotomy. This article introduces the Experiential Environmental Impact Assessment (exp-EIA) method as a novel research and intervention tool to address these challenges. Grounded in psychology, exp-EIA aims to integrate emotional, cognitive, and community identity dimensions to capture the nuanced experiences of urban environments. Through digital data collection and visualization tools, exp-EIA could facilitate participatory decision-making processes across various stages of urban regeneration projects. Furthermore, its adaptability enables significant integration with existing participatory methods, fostering inclusive engagement and innovative design solutions. The theoretical framework of exp-EIA, its application in CBPR, and its potential to bridge the gap between technological

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2024 The Author(s). *Journal of Community & Applied Social Psychology* published by John Wiley & Sons Ltd.

innovation and citizen engagement in urban regeneration processes are discussed. A blended case study conducted in the metropolitan area of Milan (Italy) is presented, highlighting a promising pathway towards more inclusive and effective approaches to community revitalization.

KEYWORDS

citizen engagement, community-based participatory research, exp-EIA, experiential assessment, methodology, urban experience, urban regeneration

1 | INTRODUCTION

The complex interplay between the fundamental characteristics of urban environments and the mental health or well-being of citizens has been extensively recognized in scholarly research. Although some scholars consistently emphasize the impact of *urbanicity* on the heightened prevalence of psychiatric and anxiety disorders (Krabbendam & Van Os, 2005; Peen et al., 2010; Sui et al., 2022), there is also a burgeoning acknowledgment of the potential to improve subjective mental health (Jongeneel-Grimen et al., 2016; Mehdipanah et al., 2014) and cultivate social connections (Kuo et al., 1998; Wood et al., 2017) through improving housing conditions and designing more supportive environments.

In light of this, the social and psychological revitalization of communities stands as a primary objective declared by numerous urban renewal initiatives, aligning with the widespread adoption of *community-led* urban policies on local and supranational levels (e.g., Commission of the European Communities, 1998), mainly focused on revitalizing disadvantaged neighbourhoods and engaging residents in these initiatives.

In this regard, scholars have repeatedly emphasized (Heath et al., 2017) how, in many instances, despite initial intentions, top-down approaches have been implemented. These approaches often lead to typical gentrification-driven phenomena, such as real or perceived displacement and the loss of social diversity (Lees & Hubbard, 2020; Thurber, 2018). They can also result in negative or uncertain psychological outcomes, including loss in place attachment and shared feelings of distress (Alroy et al., 2023; Tran et al., 2020) and powerlessness (Allen, 2000). Also, top-down approaches may have little or no effects on citizens' mental health and well-being (Huxley et al., 2004; Kearns et al., 2020).

Furthermore, it has also been argued (Glasson & Wood, 2009; Ploegmakers & Beckers, 2015) that, despite significant public and private economic investments, the short-term and long-term impacts of the spatial transformations introduced have been variable or inadequately assessed, making it challenging to ascertain whether, and to what extent, the employed approaches have been successful in generating change in the socio-economic landscape and the well-being of residents. Summarizing the urban regeneration effects on human health and well-being, Curtis et al. (2002) emphasized that their potential may be limited or negated by recurring aspects of the regeneration schemes themselves, including: a focus on the symptoms of inequality rather than the root causes, a too narrow target, the inability to counterbalance the historical causes of disparities among social groups, the difficulty in establishing a common partnership among stakeholders and genuinely engaging citizens, and the power imbalance in flexible collaborations between the public and private sectors. Conversely, it was also highlighted how (at least partially) top-down approaches are, on the one hand, necessary in guaranteeing public control over large economic flows and activities over time (Wang et al., 2021), and on the other hand they can have decidedly positive outcomes if properly designed by integrating environmental aspects with economic, cultural and social ones (Ferilli et al., 2017; López-Contreras et al., 2021) Critical examinations of top-down models and their associated side effects has

frequently coincided with an emphasis on more bottom-up or community-based approaches. These practices have demonstrated greater effectiveness in reconciling positive transformations within social dimensions, such as cultivating a sense of community (Gatti & Procentese, 2021; Heath et al., 2017), enhancing perceptions of social support, and triggering empowerment at both individual and community levels (Baba et al., 2017).

The overemphasis on the dichotomy between top-down and bottom-up approaches may have led to an oversight of the hybrid dimension inherent in many urban regeneration processes. These processes frequently involve stakeholders with diverse interests that cannot always be neatly categorized within a binary perspective. This complexity is particularly evident when examining the roles of urban designers, who often find themselves balancing multiple commissions driven by the demands of real estate stakeholders, political relationships, expressed community needs, and even the objectives of the public administration itself, which is motivated to support participatory action processes to mitigate social conflicts and stimulate the positive effects associated with citizen engagement.

Furthermore, when considering power distribution and citizens' empowerment as inherently dynamic processes, such a rigid dichotomy can potentially result in a 'reified' interpretation of fluid and non-linear scenarios. This risks oversimplifying the models of interaction among stakeholders and, in turn, underestimating the active role that citizens themselves can play in decision-making processes.

Finally, the complexity and scale of urban regeneration projects often give rise to a variety of goals within the stakeholders themselves, also according to the different project steps (Wang et al., 2021) and various forms of citizen participation within a single project. These forms of engagement may not adhere to a simple binary categorization (power vs. powerlessness), but instead respond to nuanced classifications of influence (Gaete Cruz et al., 2023), which can coexist or evolve over the course of a project. This makes it challenging to fit them into a rigid binary framework or the classic 'ladder' approach inspired by Arnstein (1969), which some scholars (e.g., Collins & Ison, 2009) suggest overcoming in favour of a reconceptualization of participatory processes as collective social learning paths within which differentiated power dynamics are co-present.

In such hybrid scenarios, characterized by a differential and changeable distribution of power rather than a linear and static relationship among stakeholders, the issue of having methodologies that can serve as platforms for dialogue among actors and sensitize partners with more power to the voices and needs coming from others, primarily the citizens, becomes crucial. The useful methodologies can thus become a practice of interaction among social entities, fostering more balanced and productive relationships while being integrated into sector policies (Piga et al., 2023). Moreover, they can contribute to enhancing the level of mutual trust among stakeholders, a necessary condition for building inclusive and successful participatory processes (Aitken, 2015). Not by chance, calls for the creation of innovative tools for mediating between stakeholders and fostering community engagement strongly stem from the field of collaborative urban planning. In this domain, the pressing need to recalibrate power dynamics in urban regeneration processes and implement approaches that resonate with the preferences of contemporary citizens is readily apparent (Evans-Cowley & Hollander, 2010; Sæbø et al., 2008).

Among these, the need for new approaches that favour the technological adaptation of working methods with the community is highlighted. While acknowledging critiques associated with the potential digital divide linked to age or socio-economic conditions (Condie & Richards, 2022), the essential role of digital tools is emphasized in enriching engagement, expanding the participant base, and ensuring cost-effectiveness (Desouza & Bhagwatwar, 2012). This significance is further underscored by the redefined constraints of time and space. Moreover, digital tools can contribute to the alignment between community-based processes and contemporary realities, where aggregation and participation predominantly occur within an online framework (Floridi, 2015), namely, a social environment seamlessly integrating digital and human, face-to-face dimensions. Recent research (Gatti et al., 2021; Gatti & Procentese, 2021) highlighted how ties with the community and places are not necessarily weakened by the progressive digitalization of human existence, but rather new ways of representing their communities and the bond with them emerge, inextricably intertwined to the daily use of digital platforms and social media.

Scholars (Greijdanus et al., 2020; George & Leidner, 2019) have also argued how those emerging hybrid scenarios can contribute to strengthening community ties and fostering collective transformative action, supporting new

forms of activism able to bridge the gap between online and offline mobilization activities and creating additional social value (Gatti & Procentese, 2022). A crucial element is represented by the 'locativity' of platforms (Schwartz & Hochman, 2014), that is, the tendency of some of them (e.g., Instagram) to favour a neo-spatialized and geolocalized approach, somehow bringing the physical and symbolic place back to the centre of public discourse.

Within the context of urban regeneration, digital platforms can assume a pivotal role for this purpose, providing decisive support for visualizing and representing changes. This could also be achieved using virtual and augmented reality, encouraging informed exchange among stakeholders and equitable sharing of information. Even more pertinent is the potential utilization of digital technologies in engaging with citizens to design shared evidence-based design solutions. This approach could effectively guide the design process, enabling informed decision-making that enhances the ultimate outcome, not only in terms of minimizing environmental impact but also in triggering citizens' satisfaction and well-being.

In this regard, it is once again crucial to move beyond a binary (online vs. offline) and oppositional approach, which fails to align with the complexities of social reality. Instead, a reflective and dynamic conception is advocated, evaluating the integration of technological tools based on the specific context and involved actors (Figueroa Sarriera & González Hilario, 2017). Furthermore, a paradigm shift regarding the fundamental inseparability between physical and digital environments can be invoked, accepting the substantial 'phygitalization' of daily reality and exploring its potential in terms of knowledge, communication, and citizens' participation.

The present article introduces a novel community-based research and intervention methodology designed to bridge the dichotomies outlined above. This is achieved through the digital collection and sharing of spatialized psychological data, capturing the subjective and collective experiences of urban space within the context of urban regeneration processes. The forthcoming chapters will delve into both the practical and theoretical dimensions of our methodology, presenting its utility as a versatile tool applicable across various stages of regeneration processes. Furthermore, its fruitful potential for integration with existing practices within the realm of community psychology will be underscored.

2 | THE EXPERIENTIAL ENVIRONMENTAL IMPACT ASSESSMENT

2.1 | Theoretical framework and assessed variables

Environmental impact assessment is a widely acknowledged and applied practice in the realm of extensive urban transformations, to the extent that it is governed by specific legislation within the European Parliament and Council (2011). This encompasses the incorporation of citizen engagement practices, employing diverse methodologies. Traditionally, these activities are predominantly tokenistic, involving formal consultations within bureaucratic frameworks, while the psychological aspect of environmental impact often takes a back seat compared to socio-economic variables. Despite its recognized importance for individual and community well-being, the experiential dimension of the relationship with a place—encompassing cognitive, emotional, and identity components—is frequently treated as peripheral or addressed through traditional qualitative research tools, primarily interviews and focus groups. As indicated earlier, relying solely on the aforementioned methodologies may not always be appropriate, particularly in situations where citizens have limited time availability or when a broader engagement of the population is necessary. In such instances, there is a potential risk of confining the participatory process to a select group of 'professionals' (Ferilli et al., 2016) as well as a risk of failing to implement involvement strategies better tailored to the intended target audiences.

The experiential Environmental Impact Assessment method (exp-EIA) was developed with the primary objective of mitigating potential risks while simultaneously introducing technological innovations into the engagement processes associated with urban regeneration initiatives. Its overarching goal is to foster evidence-based decision-making that is collectively embraced by the various stakeholders engaged in these processes.

Furthermore, it addresses the fundamental necessity for collecting data that thoroughly captures the subjective and collective experiences within urban spaces. This emphasis is vital, as these are often oversimplified through episodic or limited forms of consultation. Acknowledging the inherent challenge of fully grasping the totality of these experiences, the exp-EIA method aims to weave together key constructs integral to them, drawing from the literature in environmental and community psychology. As argued by Boffi and Rainisio (2017), the objective is to model the lived experience of the *person-in-environment* from a phenomenological perspective, considering this *entity* as a generative and socially contextualized unity.

In greater detail, the constructs embedded in the model pertain to three dimensions: emotional, cognitive, and community/identity (Piga et al., 2023). The emotional dimension involves discerning the emotional state linked to specific locations by situating it along two orthogonal axes (pleasantness/unpleasantness, and activation/deactivation), derived from the circumplex model of emotions (Russell & Lianui, 1984). The cognitive dimension involves mapping the place by detecting four fundamental factors (coherence, legibility, complexity, and mystery), derived from one of the most recognized theories on environmental preference (Kaplan, 1987). It also includes identifying the individual and social activities that the place can primarily inspire, such as cultural, recreational, and sports activities, among others.

Finally, the community and affective aspects are assessed through two complementary scales: place attachment and sense of community. These scales are designed to delve into the extent of identification with the place and the perception of rootedness in the community residing there.

2.2 | Applications in community-based participatory research

From the standpoint of community processes, it is crucial to emphasize certain distinctive characteristics of the methodology, extending beyond the identified variables and framing it as a new tool for community-based participatory research (CBPR).

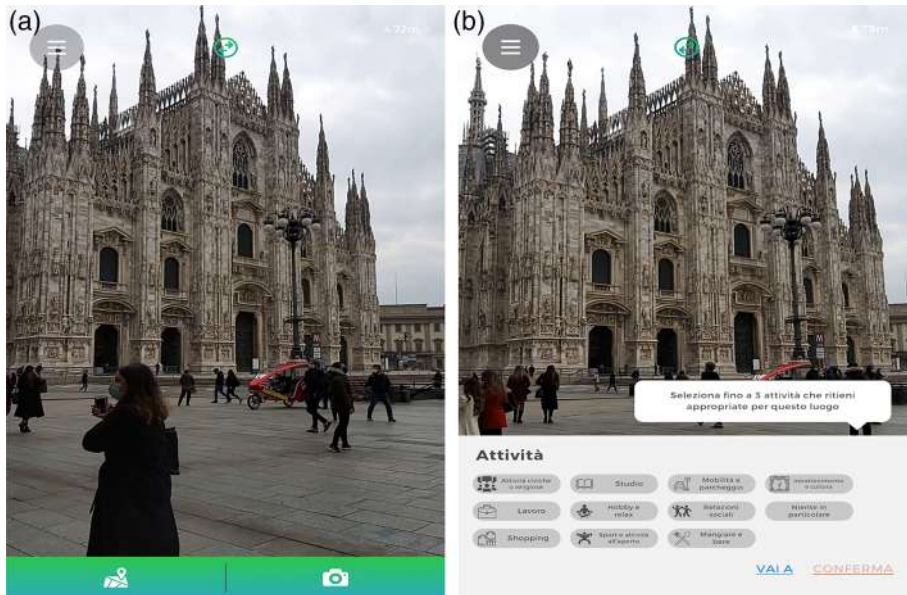
Primarily, it was crafted to function seamlessly in both the comprehensive analysis of the neighbourhood as a whole and in gathering data on individual smaller areas and specific points of view (POVs). This implies its versatility for application in various contexts, encompassing collective reflections on the urban residential space, broader planning initiatives, and participatory redesigns of specific public areas (such as a square, a school façade or a street).

Furthermore, this methodology proves valuable across different stages of urban regeneration processes (Table 1). During the initial phase (pre-occupancy evaluation), it serves as a tool to elucidate the needs and perceptions of citizens concerning the existing environment and potential directions for change, thereby highlighting both strengths and weaknesses. The data acquired can subsequently inform the initial planning, encompassing spatial transformations (design projects), as well as the formulation of policies to be implemented, including incentives, services, and engagement practices. Once one or more project hypotheses are available (ongoing evaluation), the methodology can be useful for decision-makers to consult citizens regarding these, promoting a form of data-driven evaluation not reliant on advertising-type communication, as it is based on realistic models. This approach brings out any further improvement possibilities in line with the desires of the transformative process and the inhabitants. Finally, within the scope of post-occupancy evaluation, it will still be possible to use this method to assess the impact of spatial change over time, querying the different population targets that use the place and enriching the final evaluation process with specific data.

The use in different phases is made possible by the inherently digital nature of the methodology. It has been developed primarily for direct (in situ) and collective interaction with the investigated locations using tablets or smartphones and is integrated into the CitySense app (Figure 1a, b). In such cases, it is possible to visualize, through augmented reality, the future urban space within the existing physical space, as well as to simply assess the current space. It can also be used for remote evaluation through personal computers, using simulations of environments (existing or under design), or spherical panoramas.

TABLE 1 Stages of urban regeneration processes and applications of the exp-EIA methodology.

| Stages (urban regeneration processes) | Improvements | |
|--|--|---|
| | Citizens | Other stakeholders (designers, public administration, developers) |
| Pre-occupancy evaluation (existing environment analysis) | Sharing needs and emotional states concerning the location (as a whole and point by point) | Develop briefs and formulate overarching design decisions while considering the needs of citizens/users |
| Ongoing evaluation (designed environment analysis) | Improved understanding of current project(s), more informed assessment, and discussions. | Validate projects based on citizen perception and incorporate any necessary adjustments for refinement. |
| Post-occupancy evaluation (new environment analysis) | Informed assessment | Conduct monitoring and evaluations informed by citizens/user experiences |

**FIGURE 1** (a), (b) Examples of CitySense application screenshots for smartphones and tablets (Milan, Piazza del Duomo).

Those technological aspects extend beyond spatial interaction to data availability. Data are, in fact, provided in real-time for collective evaluation and reflection, constituting a comprehensive and georeferenced mapping of the collected psychological data. Essentially, after the data collection phase, participants can immediately access the data through interactive maps, within which their experience of urban space is summarized, and clusters related to different participant groups (POVs) are created.

This leads us to a final and crucial aspect, namely the possibility of integration with other CBPR methods, both in the data collection phase and in the discussion/re-elaboration phase. Regarding data collection, it primarily takes place within community activities that inherently serve as a method of exploration and reflection on the nearby space, such as experiential walks. In these walks, navigating urban space becomes a process of learning by doing, fostering collective reflection on space. This collective reflection generates discussions among stakeholders and cultivates innovative design solutions through the community's "rediscovery" of communal space and the sharing of



FIGURE 2 (a), (b) Collective mapping activities through CitySense during a community event on urban regeneration (Milan, December 2019).

related knowledge and practices. Additionally, data collection with exp-EIA can be seamlessly integrated into community activities and events, offering an enjoyable form of engagement and participation within the framework of citizen science (Figure 2a, b). In the realm of collaborative discussion and re-elaboration, it can serve as an initial step to provide data for informing traditional individual listening processes (interviews) or group processes (design workshops, focus groups). Moreover, it acts as a tool for creative stimulation in further activities for participatory analysis of the nearby territory, such as photovoice (Wang & Burris, 1997) or community mapping.

3 | APPLYING THE EXP-EIA METHOD: A BLENDED CASE STUDY

3.1 | The case study: Context and goals

The research was conducted as part of the 'History, Research, and People' project (funded by NextgenerationEU plan), with the primary goals of recovering the original design of the area, establishing a dedicated research space focused on urban green areas, and encouraging its utilization by both local citizens and park visitors. This initiative specifically centres on a substantial segment of Monza Park, overseen by the University of Milan, situated in the megalopolitan region of Milan, Italy. Noteworthy for its distinctive features, the park resembles a vast forest and holds the distinction of being the third-largest walled park in Europe. Designed in 19th century as a hunting reserve, it is now entirely enveloped by urban development, included in the northwest section of the Milan metropolitan region, approximately 15 km from Milan's city centre and 2 km from Monza's centre. Monza, boasting a population of 120,000, stands as the third-largest city in the Lombardy region and plays a pivotal role in a densely populated urban area linking Milan to the Lake Como region. Due to its vast dimensions, the park functions as a versatile focal point addressing various needs of the local community and different population targets. It facilitates a range of activities, including sports, leisure, and hosts culturally and historically significant structures or events. On fine weather weekends count to 50,000 visitors. Additionally, the park integrates economic and commercial activities, contributing to its dynamic role within the community. As a result, the park plays a significant role in shaping the perceived territorial identity, hosting key civic symbols such as the Lambro River, the Villa Reale (royal villa), and the local racetrack. In this multi-stakeholder context, the research aimed to foster a participatory co-design process by integrating the exp-EIA approach with other traditional CBPR methods, specifically employing dedicated workshops based on participatory mapping. Referring to the scheme in Table 1, the co-design activity involved an integration of the initial two

phases (*pre-occupancy* and *ongoing* evaluation). On one hand, residents' perspectives on the functionality and emotional/identity-related significance of various parts of the considered park section were explored through a traditional paper-and-pencil mapping activity. On the other hand, a comparative assessment between the current state and the project in specific locations, conducted during a collective experiential walk, allowed the collection of data regarding the experience of the present and future space through the exp-EIA method. The ultimate goal was to inform designers about the psychosocial and identity-related aspects relevant to citizens. Simultaneously, it aimed to provide residents with the opportunity for an informed assessment based on the preliminary project preview.

3.2 | Methodology

3.2.1 | Procedure and sample

The procedure has foreseen the organization of two sessions (morning and afternoon). The first session involved a group of members from various citizen associations dedicated to protecting the park or organizing cultural events within it. The second session included a group of university students in Agricultural sciences, who are expected to carry out their future laboratory activities in an old 'cascina' (farmhouse) located in the park, once the co-design and regeneration activities will be concluded. The two groups consisted of 19 members from associations and 19 agricultural science students, respectively. The former primarily comprised elderly individuals (average age 62), predominantly male (67% of the total), with a notable proportion declaring a high level of education (67% holding a bachelor's degree or higher). The second group showed an average age of approximately 24 years and a more balanced gender distribution (59% female). As students, 64.7% of them reported having attained a high school diploma as their highest level of education. None of the participants identified themselves as non-binary.

For both groups, an initial participatory mapping activity was planned with different purposes. The group of association members, as custodians of expert knowledge, engaged in a collaborative mapping and collective discussion (Figure 3a, b) about the main (formal and informal) pathways in the considered park area, along with the identification of territorial landmarks based on their artistic and naturalistic value. On the other hand, the student group



FIGURE 3 (a), (b) Collaborative mapping activities on naturalistic and cultural values of the area (local association members).



FIGURE 4 The farmhouse (current state) as seen by participants via the digital app during the experiential walk.

focused on future educational activities within the farmhouse. Through group interaction, they created a collective map of the activities that should preferably take place there, considering the naturalistic and landscape characteristics of the area. At the end of the workshop activities conducted in an indoor space, both groups participated in an experiential walk, a guided group walk in the park focused on using the exp-EIA method in situ through a digital application. Specifically, three significant points were identified, which will be focal points of the regeneration process. These locations respectively represent the farmhouse (Figure 4) where future educational activities will take place, the only historical building in this part of the park, a crossroad (named ‘roundabout’, Figure 5) that serves as a crucial junction for the design of pedestrian and cycling paths in the area, and an irrigation ditch (Figure 6), which is the course of an ancient waterway deemed significant to restore symbolic prominence. Each participant was asked on-site, immersing themselves in the local landscape (including its sounds and scents), to assess both the current state and the proposed rearrangement as outlined in the first draft of the regeneration project. At the conclusion of the walk, both groups reconvened at the indoor facility for a brief debriefing session.

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Ethics Committee of Politecnico di Milano (protocol code 7/2019 on 18 March 2019, and 15/2020 on 15 July 2020). Informed consent was obtained from all participants.

3.2.2 | Measures

As described above, the second part of the activity involved the use of the exp-EIA method during a walk in the park. Through a digital application, a concise and interactive questionnaire for each of the three identified focal points was administered in situ. The following variables were measured:



FIGURE 5 The 'roundabout' (current state) as seen by participants via the digital app during the experiential walk.



FIGURE 6 The irrigation ditch (current state) as seen by participants via the digital app during the experiential walk.

1. *Restorative potential*: was measured via a four-item scale of perceived restorativeness (i.e., 'This place is fascinating and intrigues me'), adapted from Hartig et al. (1997) and rated by the participants on a 5-point Likert Scale (not at all-completely). The scale showed an acceptable reliability (Cronbach's Alpha = 0.75; Ponterotto & Ruckdeschel, 2007).
2. *Aesthetic pleasure*: was measured using a single-item scale (i.e., 'From this point of view, this place gives me the feeling of...') representing the continuum Unpleasantness/Pleasantness continuum, adapted from Russell and collaborators (Russell & Lanius, 1984; Russell & Pratt, 1980) with a graduated slider ranging from (-) 5 to (+)5, passing through a midpoint value of 0. The slider was accompanied by two emoticons representing the two extremes, as suggested by Betella and Verschure (2016)
3. *Activation*: was measured using a single-item scale representing the continuum Deactivation/Activation continuum, adapted from Russell and collaborators (Russell & Lanius, 1984; Russell & Pratt, 1980) with a graduated slider ranging from (-) 5 to (+)5, passing through a midpoint value of 0. The slider was accompanied by two emoticons representing the two extremes, as suggested by Betella and Verschure (2016)
4. *Suitable activities*: were collected through a list of 9 options (i.e., 'Shopping', 'Social relations', and 'Sport & Outdoor', allowing up to three responses per participant. These responses help to understand how perceived suitable activities change in the current setting (status quo) and in the future setting (designed).

Other measures on the relationship between the participants and the park as a whole, assessing place attachment and sense of community, were also included in the survey but are not part of the analysis in the current paper. The data, already automatically processed by the app incorporating the exp-EIA method, were further processed using the statistical software IBM *SPSS Statistics* (version 25) to generate the presented findings.

3.3 | Results

The results highlight the potential of integrating the exp-EIA methodology into collaborative design processes centred on mapping and group elaboration activities. The process has resulted in the creation of a collective map, which will serve as a foundation for future working sessions with citizens and to develop a fine-tuning of the planned design.

An innovative feature of these integrated maps is their dual perspective: a survey view, typical of traditional co-design processes, and a route perspective, reflecting subjective experience, facilitated by exp-EIA. Moreover, the possibility to digitally represent both perspectives enables a deeper collective reflection on the interactions between symbolically relevant areas and their psychological correlates, including emotions, restorative potential, suitable activities, and perceptions of community value, even in real-time.

As a result, the 'landmark atlas' highlights, from a survey perspective (Figure 7), the areas with the greatest symbolic impact based on the cultural and landscape values emphasized by the participants. In detail, areas to be enhanced are highlighted for the presence of fauna and a particular soundscape (depicted in purple), plants with strong aesthetic value (such as mulberry) and fruits to be cultivated (in fuchsia), rare trees with significant references to tactility (shown in green), and specific green areas characterized by a particular smellscape (depicted in orange). Additionally, specific landmark points that could be further enhanced are indicated (text in blue). At the same time, the use of exp-EIA encourages a 'route' perspective, allowing citizens and stakeholders to reflect on data at the scale of individual experience. In this perspective, the data shows that not all the significant areas have the same experiential connotation. Specifically, point A (the farmhouse area) appears to have a more positive characterization in terms of regenerative potential, activation, and perception of positive emotion compared to the other two points (Figure 8). When read in interaction with the qualitative data collected during the mapping workshop (Figure 9), it emerges that such positivity is to be attributed to the convergence between naturalistic values and the presence of a culturally significant architectural artefact (the farmhouse). This location also stands out as a potential attractor for

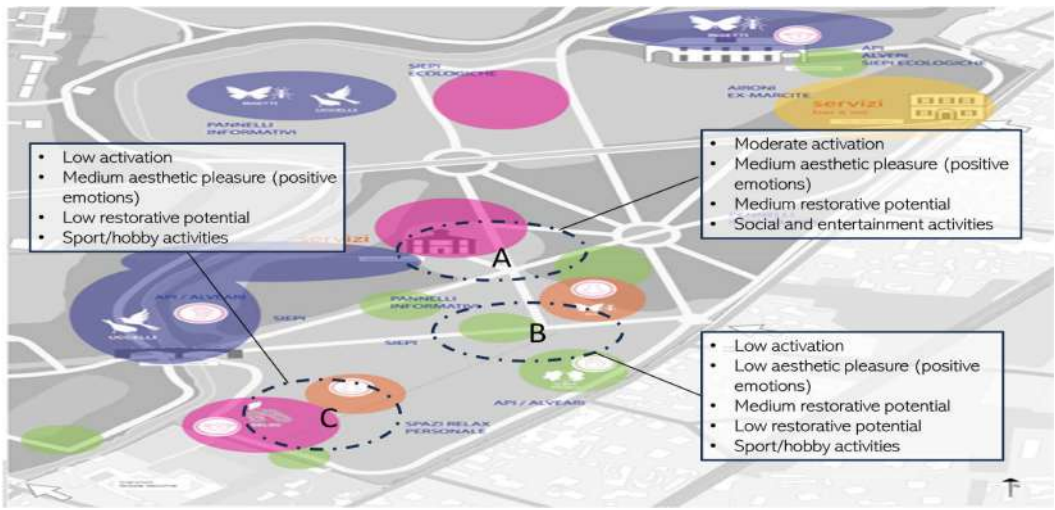


FIGURE 9 The collective map ('landmark atlas') after having been enriched with data from exp-EIA ('survey +route' perspective). The coloured areas have the same meanings described in Figure 7. The boxes provide a narrative summary of the results obtained with exp-EIA on the measures of restorative potential, aesthetic pleasure, activation, and suitable activities.

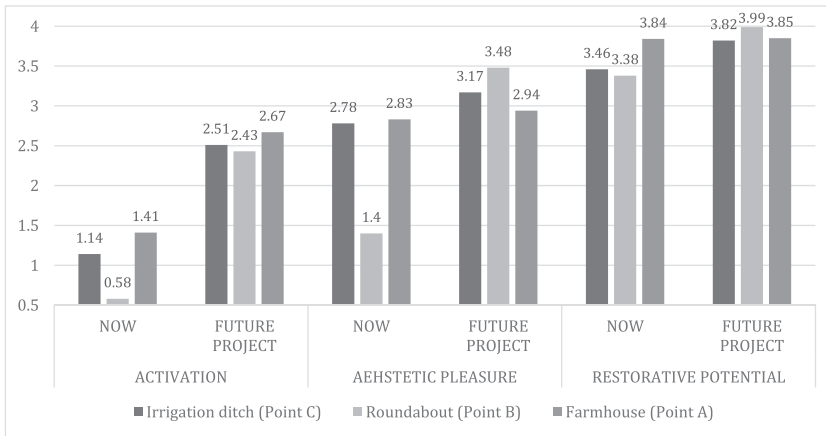


FIGURE 10 Comparison (current state vs. future project) of the three significant points based on psychological experience (visualized in situ via exp-EIA, average values).

4 | CONCLUSIONS

The results show just one of the potential interactions between the exp-EIA method and commonly employed community-based approaches or techniques in urban regeneration. Additionally, they shed light on both the strengths and limitations, or areas for improvement, of this innovative methodology. Notably, one of its strengths lies in enriching the data accessible to citizens and other stakeholders, with a particular focus on the psychological aspects of the place experience. Furthermore, this data can be available in real-time, facilitating an initial organization of collectively expressed and experienced contents, and providing a platform for participant discussion and relationship-building that helps mitigate dynamics associated with exclusive group membership. While this tool

certainly cannot eliminate power asymmetries, its role in fostering collective reflection through enhanced information sharing and a data-driven framework could be underscored. In this regard, exp-EIA can be intended as a tool for promoting spatial justice (Soja, 2010) in its procedural component, as it enables a broader engagement and allows citizens to express a more informed opinion within the realm of collaborative planning. This can also strengthen their role as professionals who can integrate these insights into urban planning and regeneration, ensuring the diverse needs and perspectives of the community are represented and giving effective voice to the often-overlooked viewpoint of psychological sciences on urban space. Moreover, the exp-EIA method has the potential to empower psychologists to facilitate more effective communication and collaboration within multidisciplinary teams, such as those typically involved in territorial-scale transformation processes. By offering a data-driven framework for collective reflection, psychologists can mitigate misunderstandings and conflicts among team members from diverse disciplines. This fosters a more cohesive and productive approach to urban regeneration, benefiting not only stakeholders but also experts and policymakers.

Another promising aspect is the significant bridging of the digital and physical realms, enabling a beneficial interaction between the two. For instance, in the discussed case study, collective activities unfold in physical space, fostering spontaneous interaction among participants. However, the place experience is also captured via a digital app, with the gathered data then made accessible for subsequent face-to-face interactions. Moreover, the digital dimension facilitates connections to additional layers of reality that would otherwise remain unseen, including those pertaining to future regeneration projects in virtual and augmented reality. Also, it aligns more closely with people's daily habits, deeply immersed in an increasingly phygital reality, enabling researchers and practitioners to extend their reach to broader audiences and connect with community members who may prefer digital interactions. This aspect is particularly pertinent in meeting the requirements of younger generations and digital natives, as urban spaces are currently being designed to accommodate their future adult lives. Considering the limitations, the risks associated with the differential participation of social groups with varying levels of familiarity with technology can be certainly included, although studies already conducted on the elderly population (Fumagalli et al., 2020) have offered encouraging results. For this reason, exp-EIA should not be considered as a standalone methodology, but rather as one of the tools to be used within a comprehensive engagement process that may involve other techniques. Furthermore, its use is suggested to be mediated and rigorous, to avoid the collected data being utilized primarily for promotional purposes by certain stakeholders. To this end, further research should more extensively test the potential interaction with other CBPR approaches. Particularly relevant are the hybridizations with methodologies based on photo image collection or mapping, including those founded on the use of GIS, which are increasingly present in applied social sciences (Aitken, 2002; Dunn, 2007). Exp-EIA could also be further integrated within the recent approaches that conceptualize social networks as new crucial platforms for building and strengthening the sense of belonging to communities and places (Gatti et al., 2021; Gatti & Procentese, 2021). The versatility of the tool makes it suitable for facilitating community dialogue on the narrative and symbolic dimensions of places, supporting novel forms of comparison between different imaginaries related to urban space, whether grounded in the subjective experience of physical space or in its utilization and communication through digital devices. According to this framework, further developing exp-EIA to promote a sense of community and place belonging (Madsen et al., 2023) both indirectly (through data collection, social dialogue, and informed decision-making) and directly (by fostering new social relationships in urban spaces), could become one of the platform's most significant future advancements.

Lastly, this method can contribute to significant policy innovations. Through its integration into standard planning processes, it can indeed provide policymakers with a contemporary decision-making tool for selecting projects and evaluating outcomes associated with their investments in urban space. Moreover, it can support them in achieving meaningful forms of citizen engagement, in alignment with the latest trends in urban regeneration strategies (Leyden et al., 2017). This implementation could foster a virtuous cycle of engagement, monitoring, and evidence-based public evaluation.

ACKNOWLEDGEMENTS

The authors would like to thank all participants involved in the case study. The participatory urban regeneration process has been developed within the 'Storia, ricerca e persone'. Proposta di riqualificazione dell'area dell'Università di Milano all'interno del Parco di Monza 'project, funded by the European Union–NextGenerationEU', under the National Recovery and Resilience Plan (NRRP) Mission 1 Component 2 Investment line 2.3: Programmes to enhance the identity of places: historical parks and gardens. The exp-EIA method is being developed within the MUSA—Multi-layered Urban Sustainability Action—project, funded by the European Union—NextGenerationEU, under the National Recovery and Resilience Plan (NRRP) Mission 4 Component 2 Investment Line 1.5: Strengthening of research structures and creation of R&D 'innovation ecosystems', set up of 'territorial leaders in R&D'. The first development of the exp-EIA method has received funding from the European Union EIT Digital research and innovation programme Horizon 2020 'AR4CUP. Augmented Reality for Collaborative Urban Planning' (2019 and 2020). Open access publishing facilitated by Università degli Studi di Milano, as part of the Wiley - CRUI-CARE agreement.

CONFLICT OF INTEREST STATEMENT

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ETHICS STATEMENT

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Ethics Committee of POLITECNICO DI MILANO (protocol code 7/2019 on 18 March 2019, and 15/2020 on 15 July 2020). Informed consent was obtained from all subjects involved in the study.

ORCID

Nicola Rainisio  <https://orcid.org/0000-0001-9846-9250>

REFERENCES

- Aitken, D. J. (2015). *Trust and participation in urban regeneration*. Sheffield, UK: Sheffield Hallam University. <https://doi.org/10.3351/ppp.0006.0003.0003>
- Aitken, S. C. (2002). Public participation, technological discourses and the scale of GIS. In W. J. Craig, T. M. Harris, & D. Weiner (Eds.), *Community participation and geographic information systems* (pp. 357–366). London: Taylor and Francis. <https://doi.org/10.1201/9780203469484>
- Allen, T. (2000). Housing renewal—doesn't it make you sick? *Housing Studies*, 15(3), 443–461. <https://www.tandfonline.com/doi/abs/10.1080/02673030050009276>
- Alroy, K. A., Cavalier, H., Crossa, A., Wang, S. M., Liu, S. Y., Norman, C., ... Lim, S. W. (2023). Can changing neighborhoods influence mental health? An ecological analysis of gentrification and neighborhood-level serious psychological distress—New York City, 2002–2015. *PLoS One*, 18(4), e0283191. <https://doi.org/10.1371/journal.pone.0283191>
- Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, 35(4), 216–224. <https://doi.org/10.1080/01944366908977225>
- Baba, C., Kearns, A., McIntosh, E., Tannahill, C., & Lewsey, J. (2017). Is empowerment a route to improving mental health and wellbeing in an urban regeneration (UR) context? *Urban Studies*, 54(7), 1619–1637. <https://doi.org/10.1177/0042098016632435>
- Betella, A., & Verschure, P. F. (2016). The affective slider: A digital self-assessment scale for the measurement of human emotions. *PLoS One*, 11(2), e0148037. <https://doi.org/10.1371/journal.pone.0148037>
- Boffi, M., & Rainisio, N. (2017). To Be there, or not to Be. Designing subjective urban experiences. In B. E. A. Piga & R. Salerno (Eds.), *Urban design and representation* (pp. 37–53). Cham, Switzerland: Springer International Publishing. https://doi.org/10.1007/978-3-319-51804-6_4

- Collins, K., & Ison, R. (2009). Jumping off Arnstein's ladder: Social learning as a new policy paradigm for climate change adaptation. *Environmental Policy and Governance*, 19(6), 358–373. doi:10.1002/eet.523
- Commission of the European Communities. (1998). Sustainable urban development in the European Union: A framework for action. Communication from the Commission COM. (1998) 605 final, 28.10.98 <https://aei.pitt.edu/6794/1/6794.pdf>. Accessed 27/03/2024
- Condie, J., & Richards, M. (2022). A call for a digital community psychology. In C. Kagan, J. Akhurst, J. Alfaro, R. Lawthom, M. Richards, & A. Zambrano (Eds.), *The Routledge international handbook of community psychology: Facing global crises with Hope* (pp. 163–179). London: Routledge. <https://doi.org/10.4324/9780429325663-14>
- Curtis, S., Cave, B., & Coutts, A. (2002). Is urban regeneration good for health? Perceptions and theories of the health impacts of urban change. *Environment and Planning C: Government and Policy*, 20(4), 517–534. <https://doi.org/10.1068/c02r>
- Desouza, K. C., & Bhagwatwar, A. (2012). Citizen apps to solve complex urban problems. *Journal of Urban Technology*, 19(3), 107–136. <https://doi.org/10.1080/10630732.2012.673056>
- Dunn, C. E. (2007). Participatory GIS—A people's GIS? *Progress in Human Geography*, 31(5), 616–637. <https://doi.org/10.1177/0309132507081493>
- European Parliament and Council. (2011). *Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (codification)*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011L0092>
- Evans-Cowley, J., & Hollander, J. (2010). The new generation of public participation: Internet-based participation tools. *Planning Practice & Research*, 25(3), 397–408. <https://doi.org/10.1080/02697459.2010.503432>
- Ferilli, G., Sacco, P. L., & Blessi, G. T. (2016). Beyond the rhetoric of participation: New challenges and prospects for inclusive urban regeneration. *City, Culture and Society*, 7(2), 95–100. <https://doi.org/10.1016/j.ccs.2015.09.001>
- Ferilli, G., Sacco, P. L., Tavano Blessi, G., & Forbici, S. (2017). Power to the people: When culture works as a social catalyst in urban regeneration processes (and when it does not). *European Planning Studies*, 25(2), 241–258. <https://doi.org/10.1080/09654313.2016.1259397>
- Figueroa Sarriera, H. J., & González Hilario, B. (2017). Emerging technologies: Challenges and opportunities for community psychology. In M. A. Bond, I. Serrano-García, C. B. Keys, & M. Shinn (Eds.), *APA handbook of community psychology: Theoretical foundations, Core concepts, and emerging challenges* (pp. 469–483). Washington D.C: American Psychological Association. <https://doi.org/10.1037/14953-024>
- Floridi, L. (2015). *The online manifesto: Being human in a hyperconnected era*. Springer Open. <https://library.oapen.org/bitstream/handle/20.500.12657/28025/1001971.pdf>
- Fumagalli, N., Fermani, E., Senes, G., Boffi, M., Pola, L., & Inghilleri, P. (2020). Sustainable co-design with older people: The case of a public restorative garden in Milan (Italy). *Sustainability*, 12(8), 3166. <https://doi.org/10.3390/su12083166>
- Gaete Cruz, M., Ersoy, A., Czischke, D., & Van Bueren, E. (2023). Towards a framework for urban landscape co-design: Linking the participation ladder and the design cycle. *CoDesign*, 19(3), 233–252. <https://www.tandfonline.com/doi/full/10.1080/15710882.2022.2123928>
- Gatti, F., & Procentese, F. (2021). Experiencing urban spaces and social meanings through social media: Unravelling the relationships between Instagram city-related use, sense of place, and sense of community. *Journal of Environmental Psychology*, 78, 101691. <https://doi.org/10.1016/j.jenvp.2021.101691>
- Gatti, F., & Procentese, F. (2022). Ubiquitous local community experiences: Unravelling the social added value of neighborhood-related social media. *Psicologia di comunità: Gruppi, Ricerca Azione e Modelli Formativi*, 2, 56–79. <https://doi.org/10.3280/psc2022-002004>
- Gatti, F., Procentese, F., & Mitchell, R. (2021). Prospettive di Connessioni Urbane*: a case study about using Instagram to keep in touch with urban places in Naples (Italy) during COVID-19 pandemic. In *Proceedings of the 24th international academic mindtrek conference* (pp. 41–48). <https://dl.acm.org/doi/proceedings/10.1145/3464327>
- George, J. J., & Leidner, D. E. (2019). From clicktivism to hacktivism: Understanding digital activism. *Information and organization*, 29(3), 100249. https://www.sciencedirect.com/science/article/pii/S1471772717303470?casa_token=m1MhKjcqYO4AAAAA:cnzMbqf4YvSMri4kE7CUEqric4sbRTPZGlal_bNpPtDw_f8FQbUyCpfgekaaxaFdrVRS_yvrsQ
- Glasson, J., & Wood, G. (2009). Urban regeneration and impact assessment for social sustainability. *Impact Assessment and Project Appraisal*, 27(4), 283–290. <https://doi.org/10.3152/146155109x480358>
- Greijdanus, H., de Matos Fernandes, C. A., Turner-Zwinkels, F., Honari, A., Roos, C. A., Rosenbusch, H., & Postmes, T. (2020). The psychology of online activism and social movements: Relations between online and offline collective action. *Current Opinion in Psychology*, 35, 49–54. <https://doi.org/10.1016/j.copsyc.2020.03.003>
- Hartig, T., Korpela, K., Evans, G. W., & Gärling, T. (1997). A measure of restorative quality in environments. *Scandinavian Housing and Planning Research*, 14(4), 175–194. <https://doi.org/10.1080/02815739708730435>
- Heath, S. C., Rabinovich, A., & Barreto, M. (2017). Putting identity into the community: Exploring the social dynamics of urban regeneration. *European Journal of Social Psychology*, 47(7), 855–866. <https://doi.org/10.1002/ejsp.2296>

- Huxley, P., Evans, S., Leese, M., Gately, C., Rogers, A., Thomas, R., & Robson, B. (2004). Urban regeneration and mental health. *Social Psychiatry and Psychiatric Epidemiology*, 39, 280–285. <https://doi.org/10.1007/s00127-004-0739-3>
- Jongeneel-Grimen, B., Droomers, M., Kramer, D., Bruggink, J. W., van Oers, H., Kunst, A. E., & Stronks, K. (2016). Impact of a Dutch urban regeneration programme on mental health trends: A quasi-experimental study. *Journal of Epidemiology and Community Health*, 70(10), 967–973. <https://doi.org/10.1136/jech-2015-207016>
- Kaplan, S. (1987). Aesthetics, affect, and cognition: Environmental preference from an evolutionary perspective. *Environment and Behavior*, 19(1), 3–32. <https://doi.org/10.1177/0013916587191001>
- Kearns, A., Ghosh, S., Mason, P., & Egan, M. (2020). Urban regeneration and mental health: Investigating the effects of an area-based intervention using a modified intention to treat analysis with alternative outcome measures. *Health & Place*, 61, 102262. <https://doi.org/10.1016/j.healthplace.2019.102262>
- Krabbendam, L., & Van Os, J. (2005). Schizophrenia and urbanicity: A major environmental influence—Conditional on genetic risk. *Schizophrenia Bulletin*, 31(4), 795–799. <https://doi.org/10.1093/schbul/sbi060>
- Kuo, F. E., Sullivan, W. C., Coley, R. L., & Brunson, L. (1998). Fertile ground for community: Inner-city neighborhood common spaces. *American Journal of Community Psychology*, 26(6), 823–851. <https://doi.org/10.1023/a:1022294028903>
- Lees, L., & Hubbard, P. (2020). The emotional and psychological impacts of London's 'new' urban renewal. *Journal of Urban Regeneration & Renewal*, 13(3), 241–250.
- Leyden, K. M., Slevin, A., Grey, T., Hynes, M., Frisbaek, F., & Silke, R. (2017). Public and stakeholder engagement and the built environment: A review. *Current Environmental Health Reports*, 4, 267–277. <https://doi.org/10.1007/s40572-017-0159-7>
- López-Contreras, N., Puig-Barrachina, V., Vives, A., Olave-Müller, P., & Gotsens, M. (2021). Effects of an urban regeneration program on related social determinants of health in Chile: A pre-post intervention study. *Health & Place*, 68, 102511. <https://doi.org/10.1016/j.healthplace.2021.102511>
- Madsen, A. K., Burgos-Thorsen, S., De Gaetano, C., Ehn, D., Groen, M., Niederer, S., ... Simonsen, T. (2023). The urban belonging photo app: A toolkit for studying place attachments with digital and participatory methods. *Methodological Innovations*, 16(3), 292–314. <https://doi.org/10.1177/20597991231185351>
- Mehdipanah, R., Rodríguez-Sanz, M., Malmusi, D., Muntaner, C., Diez, E., Bartoll, X., & Borrell, C. (2014). The effects of an urban renewal project on health and health inequalities: A quasi-experimental study in Barcelona. *Journal of Epidemiology and Community Health*, 68, 811–817. <https://doi.org/10.1136/jech-2013-203434>
- Peen, J., Schoevers, R. A., Beekman, A. T., & Dekker, J. (2010). The current status of urban-rural differences in psychiatric disorders. *Acta Psychiatrica Scandinavica*, 121(2), 84–93. <https://doi.org/10.1111/j.1600-0447.2009.01438.x>
- Piga, B. E. A., Rainisio, N., Stancato, G., & Boffi, M. (2023). Mapping the in-motion emotional urban experiences: An evidence-based method. *Sustainability*, 15(10), 7963. <https://doi.org/10.3390/su15107963>
- Ploegmakers, H., & Beckers, P. (2015). Evaluating urban regeneration: An assessment of the effectiveness of physical regeneration initiatives on run-down industrial sites in The Netherlands. *Urban Studies*, 52(12), 2151–2169. <https://doi.org/10.1177/0042098014542134>
- Ponterotto, J. G., & Ruckdeschel, D. E. (2007). An overview of coefficient alpha and a reliability matrix for estimating adequacy of internal consistency coefficients with psychological research measures. *Perceptual and Motor Skills*, 105(3), 997–1014. <https://doi.org/10.2466/pms.105.3.997-1014>
- Russell, J. A., & Lanius, U. F. (1984). Adaptation level and the affective appraisal of environments. *Journal of Environmental Psychology*, 4, 119–135. [https://doi.org/10.1016/s0272-4944\(84\)80029-8](https://doi.org/10.1016/s0272-4944(84)80029-8)
- Russell, J. A., & Pratt, G. A. (1980). Description of the affective quality attributed to environments. *Journal of Personality and Social Psychology*, 38, 311–322. <https://doi.org/10.1037//0022-3514.38.2.311>
- Sæbø, Ø., Rose, J., & Skiftenes Flak, L. (2008). The shape of eParticipation: Characterizing an emerging research area. *Government Information Quarterly*, 25(3), 400–428. <https://doi.org/10.1016/j.giq.2007.04.007>
- Schwartz, R., & Hochman, N. (2014). The social media life of public spaces: Reading places through the lens of geotagged data. In R. Wilken & G. Goggin (Eds.), *Locative media* (pp. 52–65). London: Routledge. <https://doi.org/10.4324/9781315887036-11>
- Soja, E. (2010). *Seeking spatial justice*. Minneapolis, USA: University of Minnesota Press. <https://doi.org/10.25071/1913-9632.35842>
- Sui, Y., Ettema, D., & Helbich, M. (2022). Longitudinal associations between the neighborhood social, natural, and built environment and mental health: A systematic review with meta-analyses. *Health & Place*, 77, 102893. <https://doi.org/10.1016/j.healthplace.2022.102893>
- Thurber, A. (2018). Keeping more than homes: A more than material framework for understanding and intervening in gentrifying neighborhoods. In J. Clark & N. Wise (Eds.), *Urban renewal, community and participation—Theory, policy and practice* (pp. 25–43). New York: Springer. https://doi.org/10.1007/978-3-319-72311-2_2
- Tran, L. D., Rice, T. H., Ong, P. M., Banerjee, S., Liou, J., & Ponce, N. A. (2020). Impact of gentrification on adult mental health. *Health Services Research*, 55(3), 432–444. <https://doi.org/10.1111/1475-6773.13264>

- Wang, C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior*, 24(3), 369–387. <https://doi.org/10.1177/109019819702400309>
- Wang, H., Zhao, Y., Gao, X., & Gao, B. (2021). Collaborative decision-making for urban regeneration: A literature review and bibliometric analysis. *Land Use Policy*, 107, 105479. <https://doi.org/10.1016/j.landusepol.2021.105479>
- Wood, L., Hooper, P., Foster, S., & Bull, F. (2017). Public green spaces and positive mental health—investigating the relationship between access, quantity and types of parks and mental wellbeing. *Health & Place*, 48, 63–71. <https://doi.org/10.1016/j.healthplace.2017.09.002>

How to cite this article: Rainisio, N., Boffi, M., Piga, B., Stancato, G., & Fumagalli, N. (2024).

Community-based participatory research for urban regeneration: Bridging the dichotomies through the exp-EIA method. *Journal of Community & Applied Social Psychology*, 34(5), e2877. <https://doi.org/10.1002/casp.2877>