

EXPERIENCING THE UNSEEN: A PHOTOVOICE-BASED PARTICIPATORY INQUIRY INTO ENVIRONMENTAL STRESSORS AND PSYCHOPHYSICAL VULNERABILITY IN URBAN COMMUNITIES

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Abstract

Objectives. This study employed a photovoice-based participatory inquiry to detect and analyze stressors present in the urban environment that directly or indirectly affect physical and psychological health. The objective was to investigate the experiences of local residents with these stressors and to generate community-grounded knowledge, capable of serving as a resource for future development strategies.

Material and methods. A group of 14 participants ($M = 25.60$, $SD = 9.59$) from Bucharest, Romania, took part in the data collection process, which involved focus groups, taking photographs, and writing accompanying comments as part of the photovoice methodology. A hybrid thematic and Grounded Theory analysis was conducted, yielding high inter-rater reliability (Cohen's Kappa = .86).

Results. The analyses revealed three central themes: The Decay of Common Space, Hostile Infrastructure, and The Landscape of Human and Societal Vulnerability. All themes are broken down into secondary ones that contain complex aspects of urban experiences, such as disgust, frustration, fear, existential anxiety, addiction, and inequity.

Conclusion. The study concludes that the identified stressors heighten psychophysical vulnerability through the mechanisms of negative emotional filtering and cognitive appraisal, ultimately leading to defensive behaviors. The findings highlight how neglect of urban space can foster feelings of insecurity and alienation, emphasizing the need for stakeholders to create more inclusive and safer environments for all residents.

Keywords: photovoice, urban stressors, psychophysical vulnerability, participatory action research, community health.

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Introduction

Every day, billions of people frequently walk to and from home, school, or work, or simply for recreation and exercise (Reis et al., 2008). Simultaneously, 55% of the global population now resides in cities (Grimaldi et al., 2022), which have undergone considerable development in recent decades. However, urban living, especially for individuals migrating from rural areas, has also created numerous opportunities for economic, professional, and educational advancement, as well as for personal growth and the formation of diverse social relationships (Nauman et al., 2016). The majority of those making this transition are adolescents and young adults (Bramston & Patrick, 2007; Looker, 2021).

Although cities offer a wealth of opportunities, daily life within them also places constant pressure on residents' physical and mental health. The existing literature broadly categorizes psychological stressors into two main types. The first concerns the negative perception and evaluation of the environment as a space harboring various dangers and aggressions. Examples include overwhelming noise, visual complexity, or climatic aspects that evoke a sense of insecurity. The second relates to social relationships, specifically how individuals perceive themselves to be viewed by others and how this shapes their behavior (Zotova, 2023). From a physical health perspective, studies have observed that accelerated urbanization correlates with decreased physical activity and is also associated with poor air quality, a scarcity of green spaces, and hearing impairment (Feng & Li, 2025).

Exploring these realities through the eyes of those who experience them daily, and utilizing Photovoice to facilitate this research process, can foster community engagement in rethinking strategies to improve the quality of life in urban spaces from multiple perspectives. This approach often leads to the identification of solutions to community problems that might otherwise be overlooked by stakeholders, decision-makers, or segments of the population who "isolate" themselves from stressful urban experiences (Erfani, 2021; Knudsen et al., 2023).

Similar studies address the theme of cities characterized by detrimental elements from a significantly deeper psychological perspective. Despite the threats residents face, they develop strategies such as leveraging social connection and spirituality to implement aesthetic improvements within their neighborhoods. In the same line of research, it was also observed that, to bolster their coping mechanisms, participants turned to social media and 'nature escapes' as protective behaviors (Linz et al., 2022).

To reimagine or reconfigure the communal spaces we share, a similar approach is required: one that first seeks to understand the unpleasant realities residents encounter, followed by an examination of the problems identified by participants across different contexts and spaces, and an analysis of their specific objections and their defining characteristics. By recognizing the unique tendencies of diverse groups and, more importantly, the complex nature of these phenomena – studied through an exploratory, deductive, and iterative process – it becomes possible to uncover new concepts, constructs, and the relationships between them, as well as the dimensions in which they manifest.

This comprehensive understanding, achieved without pre-established assumptions that could bias the formation of new theoretical frameworks, is crucial for developing new paradigms and exploring heretofore unexplored ones (Milliken, 2010).

Study objective

The objectives of this research were as follows:

O1: To identify and analyze the risk factors present in the urban environment that are perceived by participants as having a negative impact on their well-being or their psychological and physical health.

O2: To explore in depth the experiences of socially active participants when encountering risk factors or stressors, along with their ways of understanding these phenomena and the effects they experience.

O3: To empower participants to formulate and address these community-level problems, and especially to create knowledge that can influence future public policies and urban and community development strategies.

To achieve these objectives, a participatory action research framework was selected, which embraces a collaborative, iterative philosophy with an open-ended outcome and unpredictable efforts (Cornish et al., 2023), precisely to facilitate the achievement of the third proposed objective. Furthermore, the research is based on a paradigm of critical and constructivist theory, which calls for the inclusion of communities in composing and shaping the understanding of phenomena through interactions with and interpretations of the environment (Baum et al., 2006). This interpretive approach is necessary for fulfilling the second objective, as it emphasizes the participants' subjective, lived experiences over the pursuit of a single, objective truth.

Methodology

Research design

To carry out the proposed objectives, the Photovoice methodology was primarily used, this being a participatory action research method developed in the 1990s by Caroline Wang and her collaborators (Wang & Burris, 1997). After participating in an initial focus group, participants took photographs in public spaces over a two-week period that could serve as answers to the two research questions of the present study: "What phenomenon or element do you encounter on your way, on the street, that you feel affects your psychological life? "; and "What phenomena or elements do you encounter and consider to be detrimental to your physical health? ".

Participant recruitment

In the first phase, a group of 14 individuals was selected through convenience sampling. The group consisted of students who responded to an open invitation sent to their communication groups, via e-mail, and in person. They expressed their willingness to participate and provided informed consent to participate in this research after receiving information regarding the study's purpose and objectives, how they would be involved in conducting the study, the possibility of withdrawing at any time, and the non-provision of any kind of benefit for their participation. Considering the chosen methodology and the high degree of participant involvement in data collection, the sample size is considered satisfactory for this type of study (Nykiforuk et al., 2011). Among the participants, nine were female, four were male, and one student identified with another gender. The participants' ages ranged from 20 to 49 years ($M = 25.60$, $SD = 9.59$), they lived or spent most of their time in Romania's capital, Bucharest, and

they usually walked for at least 20 minutes a day in the city. Regarding their activity, 5 had the status of both student and employee, while the other nine were students only. Furthermore, seven were in a romantic relationship, and only one person had children. The data from the focus group was collected in person, through a single audio-recorded meeting. The visual data (images) were collected individually by each participant over a two-week period across Bucharest, and the post-photography data were collected online using a virtual notebook that required uploading the photographs and writing associated comments, following the Photovoice methodology (Sutton-Brown, 2014). The organization of the focus groups and communication with participants were conducted by a single person. The focus group was organized in two 60-minute sessions with half of the participants in each, where they identified and debated the topics generated by the two central research questions. Subsequently, they were provided with information on how to collect the visual data, respecting privacy rights and all that ensues from them. The images were organized in individual digital notebooks accompanied by comments on the photographs chosen by the participants and considered to be the most relevant.

Analysis

Given that the primary purpose was not to test pre-existing hypotheses but to create and develop a theoretical model and to understand participants' experiences in their daily urban walking activities, a qualitative and iterative analysis, drawing upon the principles of structured thematic analysis and Grounded Theory, was chosen and implemented. This approach posits that the researcher's role is to identify a naturalistic system from the collected data and to construct a theoretical statement about the world, life, or their constituent aspects (Delmas & Giles, 2023). Because the approach was a hybrid, QualCoder software version 3.7 (Colin, 2025) was chosen, which specializes in analyzing qualitative data in the form of text and images. The strategy adopted was balanced, aiming to allow for the inductive exploration of data and the formation of themes from participants' narratives, while simultaneously ensuring a rigorous and systematic verification process.

The entire process was coordinated by the main author of the study together with a team of four external collaborators who served as coders. The coders were selected based on their level of training (graduate studies in social sciences) and their understanding of the subject and the qualitative methodology. Prior to commencing the actual process, a training session was organized for the collaborators. This session included a discussion of the overall objective and coding methods rooted in the Grounded Theory philosophy. Additionally, a pilot exercise on a text sample was conducted during the session to ensure understanding of the process and to establish the coding protocol. After transcribing the data into the software, each coder was allocated a period to familiarize themselves with the data through repeated reading and viewing of the materials.

The analysis scheme was not created a priori but emerged inductively from the available data. For the text data, the chosen unit of analysis was the "meaning unit", the smallest piece of information that can represent a distinct idea (Bengtsson, 2016), such as the phrase "I feel in danger when forced onto the road" which constitutes a single meaning unit expressing perceived physical threat. For the visual data, the photo-comment dyad was used as the unit of analysis, reflecting the impossibility of separating these two elements during the analysis process. The coding stages involved the authors and two coders for the independent coding of a quarter of the data. Specifically, in this phase, they generated initial descriptive codes for the units, such as: "fear of male groups," "frustration with illegally parked cars," and "disgust at uncollected waste," with the aim of deconstructing the data and exposing emergent concepts. In the subsequent stage, the three individuals compared the individually generated codes, discussed any discrepancies that arose, and collaboratively developed a coding guide containing clear and unambiguous

definitions, which then served as the basis for subsequent coding processes. The remaining two coders, using the established guide, independently coded the entire database, yielding an inter-rater reliability (IRR) Cohen's Kappa score of .86. This score suggests a high level of agreement between them (McHugh, 2012) and is indicative of strong reliability for further analyses. This phase highlighted the need to create more abstract and broader categories, leading to the formation of axial categories, such as the aggregation of codes for street litter, graffiti, and vandalism into "Decay of Public Space." In the final step, the main author, co-authors, and coders synthesized the axial categories into core integrative themes. This involved identifying the central phenomenon that connected all categories and laid the foundation for the final theoretical framework presented in the "Findings" section.

To ensure the quality and representativeness of the findings, a number of strategies were implemented such as: collecting data through multiple methods to obtain a rich and diverse dataset that allowed for the exploration of potential answers to the research questions, as well as a rigorous description and the opportunity to evaluate the resonance of the findings with the participants' voices. Moreover, the authors maintained a reflexive journal (Smith, 1999) throughout the study, in which analytical decisions, personal biases, and insights were noted. Another aspect supporting rigor was the use of external coders who were not involved in data collection, a fact that reduces the tendency for premature interpretation of the collected data (O'Connor & Joffe, 2020). The entire process was not aimed at homogenizing the results; rather, the emergence of contradictions was considered a natural occurrence that enhanced the potential to offer a broader perspective on the phenomena studied in this paper. Other strategies employed to enhance rigor included: triangulation of audio, written, and visual data; members of the research team checking the findings with participants; adherence to participatory action research criteria; and the use of specialized software to ensure a clear and well-defined analysis path."

To ensure transparency and integrity, the protocol for this study was preregistered and published on the Open Science Framework (OSF) platform prior to the study's commencement. The preregistration includes the research questions, the chosen design, and the data analysis strategy, and can be found at the following link: <https://doi.org/10.17605/OSF.IO/58SQT>. Ethical approval for this study was obtained from the Ethics Committee of the Research and Development Department of Roma Education Fund Romania, a government-recognized public benefit organization based in Bucharest, Romania (no. 4201/ March 11, 2025).

Results

The following section presents the results derived from the analysis of the focus group, the photographs taken, and their accompanying comments. The participatory process facilitated a deeper understanding of the participants' experience of physical and psychological vulnerability as encountered in the urban environment, and the clustering of the findings into central themes, each empirically supported.

Theme 1: The Decay of Common Space

This theme emerged as the most dominant and striking of all. In the collected data, it is attributed to a state of considerable psychological distress provoked by the neglected and degraded urban environment. Participants did not necessarily frame this environmental degradation as an aesthetic problem. Rather, they perceived it as a personal affront and a profound sense of disrespect toward the community, as well as a clear expression of indifference from the local administration. These factors, in turn, induced a state of insecurity, disgust, and frustration.

1.1 Vandalism as Symbolic Aggression

There are instances where certain common public spaces place people in situations of physical proximity with strangers or in scenarios of complete isolation from the external environment. An example of such a space is represented by the elevators of residential buildings, which participants considered significant sources of both physical and psychological distress. One participant, referring to an accompanying photograph (Figure 1) of a broken and dirty elevator, noted: "A first situation that causes me negative emotions and states is the vandalization/dirtying of the elevators... The unpleasant smell, the dirty surfaces, and the obscene messages present in the elevators are images that affect the daily lives of all the people who use them, especially the children." The comment highlights that the problem encountered transcends the mere perception of existing squalor and rather takes on a form of aggression that contaminates this transitional environment, affecting the most vulnerable in society. Broken mirrors in another elevator further reinforce the idea of an unsafe, dangerous, and fractured environment.

Figure 1

A Collage of Three Elevator Photos: The Dirty Floor, the Graffiti, and the Broken Mirror



1.2 Litter as a Sign of Indifference

The theme of a "lack of civic-mindedness" was a frequent one in the focus group analysis and was actively captured in the photographs, which often depicted litter in public spaces. Participants photographed litter in parks, on sidewalks and streets, as well as in public transport. Specifically, a participant who photographed a bottle discarded in a green space stated that this fact caused them an emotional response, formulated as follows: "Packaging (bottles and bags) thrown in green spaces and parks for children. These things cause me discomfort and detonate a lack of respect for other citizens." This sentiment is also found in another participant's account, who captured litter in public near their home, describing the phenomenon as "a state of neglect, of indifference, of a lack of respect from the inhabitants of my immediate vicinity." The analysis revealed, in addition to the psychological component, a physical health hazard mentioned by a participant who photographed discarded can lids on the ground: "from personal experience I know it is sharp and you can easily cut yourself on it, which could lead to infections." This statement highlights how an act of negligence may be directly translated into a perceived physical danger.

Figure 2

A Collage of Trash in a Bus, a Park, and on the Sidewalk



Theme 2: Hostile Infrastructure: The Urban Environment as a Source of Danger and Anxiety

This theme provides an experiential framework for how the static physical environment (built structures), through poorly developed urban plans, stark disparities (in infrastructure quality, street cleanliness levels, and building degradation), and the improper use of open spaces is experienced as hostile and perilous by the participants. They expressed a feeling of a permanent state of alert and a marked tendency to develop defense strategies to use when they choose to walk in places that should be considered safe.

2.1 The Sidewalk as a Contested and Perilous Territory

The most frequently encountered problem in the participants' photographs was the obstruction of sidewalks. In their photographs, they often captured cars parked entirely on the sidewalk, making access impossible, or the placement of poles on already undersized walkways (Figure 3). These findings are similar to those of a recent study that identifies the same elements of inaccessibility (San-Juan-Escudero et al., 2025). The participants' narratives suggest their constant need to take risks and expose themselves to situations that could affect their physical integrity: "I feel in danger every time I am forced to go around them on the road, where vehicles circulate. Moreover, it is impossible for mothers with baby strollers to use the sidewalk." This phrase is directly linked to a statement made by another participant during the focus group: "I have to go onto the road, putting myself in danger," highlighting how a portion of urban space dedicated to safe pedestrian travel becomes a source of physical danger and social exclusion by obstructing access for vulnerable individuals, such as wheelchair users, those with walkers or crutches, visually impaired individuals, mothers with strollers, and so on.

Figure 3

Cars Parked on the Sidewalk



2.2 Urban Decay as an Imminent Threat

During their walks, especially in the city's historic areas, participants frequently captured old, heritage buildings in advanced states of decay, with crumbling facades or warning signs: "Attention! Falling plaster!". The photographs concretize the abstract fear of earthquakes, while the collapse of buildings emerged from the narratives as a persistent threat to participants' physical safety. One photograph dramatically captured the situation of these buildings and the danger they posed to passersby, accompanied by the participant's statement: "If the mesh wasn't there...", expressing the precarious state of people's safety and their dependence on a fragile barrier (mesh) that protects them from the major decay of the city they inhabit. Another participant, who captured a dilapidated building in photos, made the following ironic remark: "The future of buildings, the state of the city's maintenance", framing the phenomenon as a systemic failure of the local public administration.

Figure 4

A Crumbling Building With a Protective Mesh



Theme 3: The Landscape of Human and Societal Vulnerability

This final theme emerged from the data analysis, as the one carrying the highest emotional charge, supported by documentation of encounters with visible signs of poverty, vice, addiction, and even death. These images represent the contact points where the urban environment subjected residents to unmediated forms of human suffering, triggering complex reactions of fear, empathy, disgust, and an emotional response to the disregard for common moral standards.

3.1 Confronting Mortality and Contamination

The sight of animal carcasses on the street was associated with a very high level of distress. A participant who photographed a dead rat and a dead pigeon on the street they were walking on, offered a profound reflection on the felt psychophysical impact: "Dead animals make me think of diseases, which in turn feed my anxiety of contamination and death. Every time I see a dead animal I feel that if I get close to it I will get sick and die, which induces fear, disgust, and panic in me." Thus, public space loses its quality as a neutral environment and becomes a place of confrontation with the morbid aspects of life, triggering a profound existential anxiety with reflections on the imminence of death and personal fragility, a phenomenon that can be translated as Mortality Salience, the central element of Terror Management Theory (Goldenberg et al., 2001).

Figure 5

Dead Rat and Bird on the Pavement



3.2 The Visual Pollution of Vice

This subtheme presents a concern raised by participants during the focus groups, specifically the exaggerated, even overwhelming, number of advertisements for gambling and betting. A photograph captures a massive apartment block in the city center displaying numerous casino ads on its facade (Figure 6), and the participant adds the following comment: "I can't even look at the stars in peace. Disgust!". This statement supports the idea that the visual field is saturated with industries that can pose a high degree of risk to the social, familial, professional, spiritual, and economic situations of citizens, creating an oppressive atmosphere that permeates even the most mundane experiences, such as looking at the sky. All of this can be summarized as representative of a perceived ecosystem of vice and addiction incorporated into the city's visual identity.

Figure 6

Apartment Building With Multiple Casino Advertisements



3.3 The Traces of Desperation

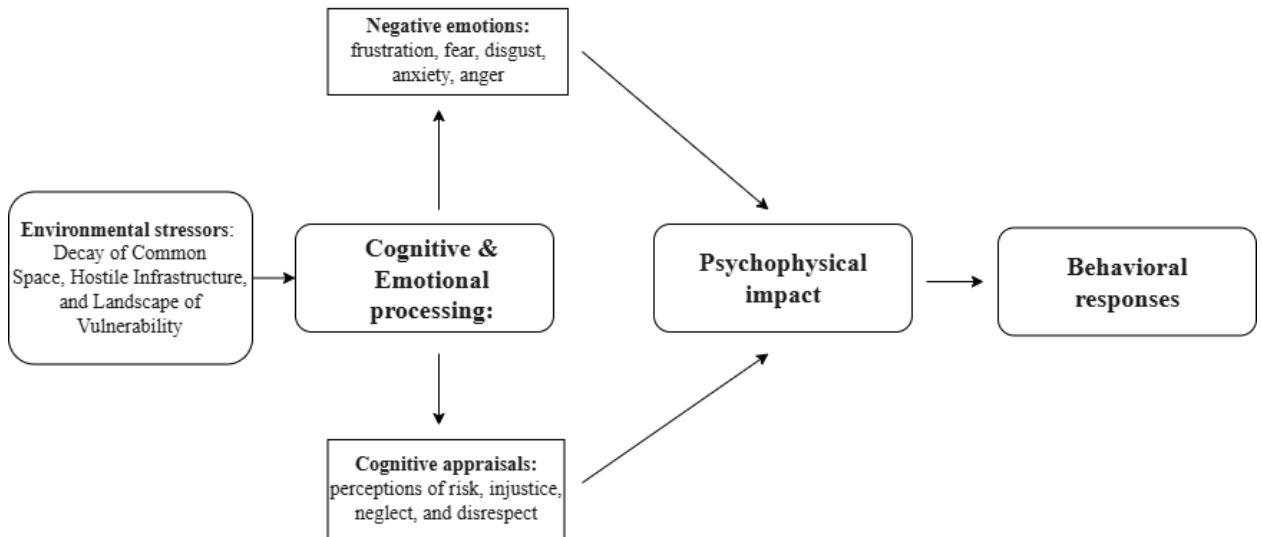
A photograph capturing an empty bottle next to some old tires, all located near a train station, was associated by one participant with the presence of homeless people and vagrancy. The comment attributed to the photo presented a state of fear and an understanding of one's own position in that context: "Their presence in abundance makes me feel in danger sometimes, when I am alone...". In this framework, the image becomes a symbol of marginalization, and the empty bottle becomes a marker of a maladaptive coping mechanism. The entire captured scene generates a feeling of perceived danger, often illustrating a conflicting yet complex emotional response to the contact with visible public poverty and addictive behavior.

Synthesizing the Findings and Creating the Urban Stress-Vulnerability Model

The integrated analysis of all data suggests the existence of a model that explains the mechanisms through which urban stressors affect the psychophysical well-being of individuals (Figure 7). The model proposes a successive pathway of several stages and phenomena as follows: The physical and social environment contains a sum of stressors categorized into three major themes (The Decay of Common Space, Hostile Infrastructure, and The Landscape of Human and Societal Vulnerability). Individuals who are active in the city's life perceived these stressors and processed them through a negative emotional filter (frustration, fear, disgust, anxiety, anger) and made negative cognitive appraisals of the content (perceptions of risk, injustice, neglect, and disrespect). This processing leads to a state of increased psychophysical vulnerability, characterized by a decrease in well-being and an increased sense of alienation from the environment, as well as a heightened feeling of helplessness. As a consequence of all this, residents may adopt a defensive or avoidant behavior, represented by avoiding certain places, choosing longer routes to not encounter stressors, or psychologically disengaging from what they observe, the latter potentially contributing to the creation of a cycle of these elements and their perpetuation

Figure 7

Urban Stress and Vulnerability Model



Discussion

Walking in urban agglomerations often involves exposure to numerous factors and events that continuously interact with our psychological life, affecting both mental and physical health, and generating various behavioral responses. In an attempt to understand this phenomenon and its mechanisms in depth by using the photovoice methodological framework, we have moved beyond the simple nomination of the problems faced by the city and have come to know, through the participants' eyes, the experience of being face-to-face with the negative elements of the constant transformation of public space, the hostility generated by the inequitable infrastructure, and the landscape of vulnerabilities that burden those who cannot ensure the maintenance of their well-being. In relation to the existing literature, the discovery of Theme 1 supports the Broken Windows Theory (Hope, 2017), which posits that visible signs or traces of contraventions or offenses that leave physical marks on the environment the emergence of further acts of the same nature. Furthermore, beyond facilitating and supporting these behaviors, the lack of action from those empowered to manage these situations can create a strong sense of distress, felt by those who come into contact with these traces.

The theme "Hostile Infrastructure," found and expressed in other similar research (San-Juan-Escudero et al., 2025), brings a new component to the understanding of the notion of urban accessibility and walking, repositioning the concept of "lack of accessibility" as a form of systemic hostility that consistently generates a series of physical risks and fears regarding the planning of walks, potential accidents, or disagreements with the actors involved, most often found to be drivers and pedestrians (Bozovic, 2025). Another finding is the synergy between gambling advertisements, neglect of the city's sustainability needs, and inadequate and shortsighted infrastructure, which together create the element named in this paper as "The Landscape of Human and Societal Vulnerability" (Turesson et al., 2024). The model created with the help of these components offers a framework for understanding in detail how the city can affect our well-being, providing the possibility of creating specialized interventions for people who face a wide range of problems and claim the environment as a trigger or maintainer of the

altered state in which they find themselves. However, we must also consider the possibility of alternative explanations.

A high level of frustration or a heightened reactivity to detecting social injustice among the participants, and observing what was mentioned in the data, may have their socio-demographic status as a moderator (for example, the status of student or employee). This entire effect potentially heightening the sensitivity to how they perceive what is present in the common urban environment (Etchezahar et al., 2022). More precisely, an alternative explanation for the mentioned "lack of respect" can be formed around the unfulfillment or dissatisfaction of the participants' expectations by those with whom they interact. What may be considered a lack of respect in some cases could, in others, be the result of a person's unintentional negligence or the presence of circumstances to which the other parties involved do not have access. A major strength of this paper is precisely the implementation of a participatory action research design and the use of Photovoice to create deeply contextualized data and to empower participants with the role of co-researchers in this study. Another beneficial aspect was the method of triangulating narrative, visual, and textual data, as well as the use of an inductive approach (Grounded Theory), with the theory formulated in the stipulated model emerging directly from the data, without the use of pre-existing frameworks (Timonen et al., 2018). The limitations are represented by the small number of participants and the fact that the sample is one of convenience, the results thus not being generalizable to the entire city population. Another limitation is that this type of research presupposes the involuntary involvement of subjectivity, although data triangulation methods and the maintenance of a reflexive journal were used. Another aspect that represents a limitation is the lack of data capturing phenomena across seasonal variations, which have a considerable effect on the urban environment as well as on mobility and the duration of natural light (Murphy Schlichting & Sharma, 2025).

For future research, it is recommended to consider conducting a similar study but with a population that benefits from other demographic valences such as age, family status, the neighborhood where the participant resides, as well as immigrant status, and taking into account the possibility of existing cultural sensitivities and characteristics. A longitudinal study would facilitate the analysis of perceptual changes over time and would help in detecting the way people process elements of distress in urban communities, while also considering the implementation of a quantitative study to evaluate the prevalence of the stressors' impact on a representative sample. Such results can support efforts in raising awareness of the importance of the urban environment and of physical and psychological health, as well as the involvement of citizens in holding decision-makers accountable for the needs and, especially, for possible investments in infrastructure that can improve the psychophysical quality of life of the inhabitants.

Conclusions

The conducted study highlighted the complex ways in which the urban environment can influence well-being, emotional responses, and social perception. The participants played a complex and well-defined role in building the theoretical model, as they were the ones who provided their personal, day-to-day experiences regarding the involvement of stressors in the perception of hostility, inequality, and neglect present in the environment. Following the support of already established models, such as the Broken Windows Theory (Hope, 2017), the possibilities for expanding conceptual boundaries proved to be promising, introducing new terms such as Hostile Infrastructure and The Landscape of Human and Societal Vulnerability. The choice of an active-participatory methodology revealed aspects that, in many cases, have not been captured by quantitative research in environmental psychology. One such phenomenon is the effect that socio-demographic dimensions have on emotional reactivity to everyday risks;

however, a much more nuanced approach to this intersectional dynamic is needed in future research. From the conclusions drawn, the need emerges to develop interventions not only for improving infrastructure reliability and urban management but also for strengthening cohesion among residents, encouraging their involvement in societal decision-making. Despite the present limitations, this work may serve as a launching platform for other studies using mixed or longitudinal methodologies. Future efforts in this direction may contribute to urban planning, the development of public health strategies, as well as community policies that support a positive collective climate.

Competing Interest

No conflicts of interest arose in the development of this study, and there was no external funding or sponsorship involved. The researchers maintained neutrality regarding the political or personal preferences of the participants.

Ethics Committee Approval

Ethical approval for this study was obtained from the Ethics Committee of the Research and Development Department of Roma Education Fund Romania, a government-recognized public benefit organization based in Bucharest, Romania (no. 4201/ March 11, 2025).

Consent to participate

Each participant provided informed consent both verbally prior to enrollment in the study and in writing upon submission of their initial data. Participants were notified of their right to withdraw from the research at any stage, and the confidentiality of their personal information was guaranteed. All data containing identifying information pertaining to individuals, their possessions, or highly specific locations were anonymized.

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AI Assistance Declaration

In the preparation of this manuscript, the authors utilized a Large Language Model, namely Claude 3.5 Sonnet from Anthropic, to translate the text from Romanian into English, as well as for grammatical proofreading and ensuring the use of academic language. Following this AI-assisted process, the entire document was thoroughly reviewed and approved by all three authors to preserve the original ideas and adhere to the principles of research ethics. The AI tool was not used for data generation, analysis, interpretation, or for generating original content.

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