How the neighbourhood-built environment shapes loneliness: A photo-elicitation study

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A B S T R A C T

Loneliness, though often perceived as an individual experience, is also influenced by the broader context in which individuals live, including the neighbourhood. This study used a participant-generated photo-elicitation approach to understand how structured (e.g., physical infrastructure) and lived (e.g., perceptions, safety, and affordability) characteristics of the neighbourhood-built environment affect loneliness. Eighteen participants (aged 20–80) from Belgium took photographs and engaged in photo-elicitation interviews to understand their narratives of loneliness and the role of the neighbourhood-built environment in these experiences. Interview data were inductively analysed using the Qualitative Analysis Guide of Leuven (QUAGOL) and supplemented by photographs. The results describe how the neighbourhood-built environment provides an escape from loneliness at home, facilitates social interactions and participation, supports meaningful involvement, and offers a space for solitude and for processing grief and loss. Availability, accessibility, and affordability of neighbourhood social infrastructure are important, while neighbourhood aesthetics contribute to feelings of safety and welcomeness. Changes in demographics and social infrastructure can bring improvements, but also challenges in relation to loneliness. The discussion underscores that loneliness is not only influenced by individual and interpersonal factors, but also by the neighbourhood-built environment. Our research offers a foundation for targeted, place-sensitive interventions that seek to prevent or moderate loneliness (e.g., preserving informal meeting places) and highlights the need for policymakers and urban planners to prioritise social infrastructure, including accessible third and passing places.

1. Introduction

During the last decades, loneliness has received considerable research and policy attention, recognizing it as a significant public health and societal challenge (Goldman et al., 2024). Loneliness, often defined as the discrepancy between one's desired and achieved social relationships (Perlman and Peplau, 1982), is frequently examined through individual and interpersonal factors such as marital status, living arrangements, psychological factors, or social network characteristics (Barjaková et al., 2023; Dahlberg et al., 2022). Many of these, however, are influenced by broader contextual factors, including the

environment in which one lives, and the broader socio-economic and socio-cultural context (de Jong Gierveld and Tesch-Römer, 2012). A growing body of research suggests that the place where we live plays a role in the experience of loneliness as well (Schepers et al., 2025; Buecker et al., 2021; Victor and Pikhartova, 2020). A more holistic, ecological perspective on loneliness is needed (Meehan et al., 2023), as loneliness is not only influenced by individual characteristics, household and living situations, but also social networks and sense of community, as well as built and external environmental conditions (Gijsbers et al., 2024). Loneliness is unequally distributed across places, because of the uneven capacity of places in the neighbourhood to support people's

neighbourhoods-based social contacts. For example, urban processes like the privatisation of public spaces can physically and symbolically alienate less affluent groups of people, rendering these places devoid of community-building practices and opportunities for social interaction (Yarker et al., 2023). Moreover, neighbourhood characteristics, such as perceived helpfulness of neighbours (Marquez et al., 2023) or distance to public parks and leisure activities (Buecker et al., 2021), have been demonstrated to both foster and alleviate loneliness. In this paper, we aim to better understand which and how characteristics of the neighbourhood-built environment relate to or contribute to adults' experiences of loneliness.

1.1. Neighbourhood-built environment: structured and lived characteristics

The neighbourhood-built environment can be understood as comprising two interrelated dimensions: the structured and the lived environment. The structured environment refers to the physical, built, constructed, material composition, such as housing, parklands, and public spaces, transport infrastructure, health services, and other amenities. The lived environment refers to the non-structural elements that mediate experiences of the neighbourhood-built environment, such as perceptions of the neighbourhood, safety, and affordability (Bower et al., 2023). Both the structured and the lived neighbourhood-built environment have the capacity to influence loneliness. This reflects the understanding that loneliness is a subjective experience precipitated by a discrepancy between someone's current and their ideal social environment (Cacioppo and Hawkley, 2009; Perlman and Peplau, 1981), both in terms of quantity and quality. This discrepancy can lead to an unpleasant negative experience related to loss and disappointment (Cacioppo and Hawkley, 2009; Van Tilburg, 2021). For instance, the availability of public places (Darabos et al., 2024), green spaces (Astell-Burt et al., 2022), the perceived distance to public amenities, such as public parks and sport/leisure facilities (Marquez et al., 2023), and neighbourhood mobility and safety are related to loneliness, as these places in the neighbourhood-built environment provide opportunities for social interaction, mental restoration, and neighbourhood satisfaction (Lam, 2022; Lyu and Forsyth, 2022).

1.2. Social infrastructure: third and passing places

To comprehend the relation between the structured and lived neighbourhood-built environment and loneliness, scholars have researched the mechanisms by which the neighbourhood prevents or alleviates loneliness. Among these mechanisms is the concept of social infrastructure (Klinenberg, 2018; Yarker, 2022). Social infrastructure can be defined as physical spaces of connection that support social, economic, cultural, and political life, including public services and institutions (e.g., libraries, schools, public transport), organised activities (e.g. volunteer organisations, member associations), outside venues and public spaces (e.g., parks, squares), as well as commercial venues (e.g. shops, shopping centres, cafés) (Klinenberg, 2018; Yarker, 2022; Latham and Layton, 2019). Such spaces are often referred to as third places, which are easily accessible places, outside of the home and place of work; that have the capacity to facilitate informal social interactions (Yarker, 2022; Oldenburg and Brissett, 1982). These spaces are distinguished from transitory spaces (i.e. passing places), such as streets, sidewalks, and public transport, which facilitate brief social interactions (Yarker, 2022; Gardner, 2011). A diverse mix of social infrastructure has been shown to encourage physical activity, foster a sense of community, and provide opportunities for social interactions (Jing et al., 2024), which in turn are associated with lower odds of being lonely (Rhubart and Li, 2025). This highlights the need to prioritise social infrastructure in policy for building societies that protect and support vulnerable populations and fund opportunities for social interaction to reduce social isolation and loneliness (Swader and Moraru, 2023).

The objective of this study is to understand what neighbourhood-built environment structured and lived characteristics contribute to or relate to adults' experiences of loneliness through a photo-elicitation study, and how this happens. This objective informs the following research questions: (1) what neighbourhood-built environment characteristics shape or relate to loneliness, and (2) how do these characteristics shape or relate to loneliness?

2. Methods

2.1. Study design

This study reports on qualitative research undertaken as part of a larger research project: 'A Lonely Planet? Addressing LONELIness from a PLAce-based perspective: research on the influence of Neighbourhood and Environment', an inter-university research project that applies a mixed methods approach to explore the role of the neighbourhood in loneliness.

Our study employs a constructivist approach, using a qualitative methodology, namely participant-driven photo-elicitation interviews, to explore the lived experiences of lonely adults, capturing their subjective reality, and unique perspectives. Talking about one's own photos can elicit emotions, memories, and ideas about their neighbourhood-built environment and loneliness, which might otherwise be difficult to describe cognitively (Glaw et al., 2017; Liebenberg, 2018).

To ensure explicit and comprehensive reporting, description of the data and methods section adheres to the COREQ (Consolidated Criteria for Reporting Qualitative Research) checklist (Tong et al., 2007) (see Appendix 1). Ethical approval was received from the Ethics Committee for human sciences of the Vrije Universiteit Brussel (VUB) (ECHW_422.02-WP1).

2.2. Participants

Participants (n = 18) were purposively recruited from diverse neighbourhoods in different provinces in Flanders (i.e., the northern region of Belgium) and Brussels, ensuring demographic diversity in age, migration background, living arrangements, residential density, and gender (See Table 1). Recruitment involved collaboration with local community organisations, spontaneous responses to participation requests made by the professionals within these organisations, via social media, and identification through the researchers' networks. The inclusion criteria were as follows: (1) adult individuals (being 18 years or older), (2) living in Flanders and Brussels, (3) experiencing loneliness (i.e., a loneliness score of a minimum of 2 on the 6-item De Jong Gierveld scale (Gierveld and Tilburg, 2006), indicating moderate to severe loneliness as assessed during the interview), with (4) sufficient proficiency in the language to conduct the interview (i.e., Dutch). The 6-item De Jong Gierveld Loneliness Scale is a reliable and valid measurement instrument for overall, emotional, and social loneliness (Gierveld and Tilburg, 2006). Table 1 presents a summary of participant characteristics. It is important to acknowledge that some participants reside in multiple neighbourhoods (e.g., student city and parental home).

2.3. Data collection

Data were collected by three PhD researchers of the project team: the first author (FH, female, adult educational scientist), the second (DG, female, sociologist) and the third (WS, male, political scientist) and four trained MSc students. Data were collected in three steps. First, an in-person appointment was scheduled at a participant-chosen location, where the researcher explained the study, answered questions regarding their reasons for researching loneliness, and obtained signed consent. Thereafter, participants had two weeks to take *six photographs*: three that depict the characteristics of their neighbourhood and three taken at moments when they felt lonely. The delineation of their neighbourhood,

Table 1
Participant characteristics of the interviews selected for analysis (n = 18).

Pseudonym Participant	Gender	Age	DJG 6-item Loneliness Scale score[a]	Living arrangements	Migration background	Residential density[b]
Alfons	M	74	3	Living alone	No	semi-rural
Dean	M	72	3	Living alone	Yes (EU)	urban
Dora	F	71	2	Cohabitation	No	semi-rural
George	M	80	2	Living alone	No	semi-urban
Georgette	F	75	6	Living alone	No	urban
Jeanine	F	74	5	Living alone	No	urban
Joris	M	51	5	Living alone	No	semi-rural
Lieve	F	33	6	Cohabitation	No	urban
Linde	F	60	5	Cohabitation	No	urban
Lola	F	22	6	Living alone	No	urban
Marian	F	42	5	Cohabitation	Yes (non-EU)	semi-urban
Merel	F	69	5	Living alone	No	semi-rural
Mila	F	23	4	Cohabitation	No	urban/semi-urban[c]
Nathan	M	22	4	Cohabitation	No	urban
Oliver	M	20	6	Cohabitation	No	urban/urban[c]
Petra	F	53	6	Cohabitation	Yes (non-EU)	semi-rural
Robert	M	71	5	Living alone	No	urban
Rosa	F	65	6	Living alone	No	urban

[a] DJG scores 0–1 = not lonely; 2–6 = lonely.
[b] Municipalities' residential densities were obtained from the Study Service of the Flemish Government: Municipalities were categorized as rural (residential density ≤150 inhabitants/km2), semi-rural (150–300 inhabitants/km2), semi-urban (300–600 inhabitants/km2) and urban (>600 inhabitants/km2).
[c] Some participants lived in two places (e.g. student city and parental home).

and what constituted loneliness, was left to their own subjective interpretation. The researcher inquired whether participants had access to a smartphone; if not, a camera was provided (n = 2), and whether participants felt comfortable taking photos, and if not, the researcher took them based on verbal instructions (n = 2).

The second step involved the face-to-face *photo-elicitation interview*. An interview topic list, comprising four parts, elaborated on why participants chose to take specific photographs and what they intended to tell through these images. The interview commenced with general questions about the participants' neighbourhood (e.g., questions about where they live, how they feel about their neighbourhood, etc.). Second, questions were posed on participants' photographs. For neighbourhood-related photos, questions focused on positive and negative aspects of the neighbourhood-built environment, their importance, and the associated feelings, such as loneliness. For loneliness-related photographs, questions addressed the meaning, circumstances, duration, and causes of loneliness. Third, participants were asked explicitly about their neighbourhood-built environment in relation to loneliness (e.g., "Is there anything in your neighbourhood that makes you feel lonely?", "What is missing that could help reduce your loneliness?"). Finally, questions to obtain the participants' socio-demographic characteristics, such as age, gender, and living arrangement, were asked, and the 6-item De Jong Gierveld scale (Gierveld and Tilburg, 2006)was administered to assess the loneliness level.

The third step was the *member check interview* (Birt et al., 2016; Dierckx de Casterlé et al., 2012). After an initial analysis of the interviews separately, an individual one-page narrative summary report was created based on the participant's interview transcript. This report was read aloud to ensure clarity and understanding. Participants were asked if the content accurately reflected their story and if they had any additional comments or corrections. This step ensured that the perspective of the participant was accurately represented, and it enabled the researcher to re-engage with participants and ask further clarifying questions about findings (Birt et al., 2016).

All 18 participants took part in both a photo-elicitation and a member check interview, conducted at the participants' homes whenever preferred. Participants were interviewed individually, except for one case where they requested their partner's presence during the interview. In that case, the partner's contributions were not included in the analysis, and no quotes from the partner were used in the study. Photo-elicitation interviews were conducted between July 2023 and December 2023, and member check interviews were conducted from

February 2024 to April 2024. Photo-elicitation interviews lasted between 63 and 122 min, with an average of 105 min. Member check interviews lasted between 17 and 61 min, with an average of 29 min. All interviews were digitally recorded and transcribed verbatim.

2.4. Data analysis

An inductive data analysis was employed following the qualitative method of constant comparative analysis, through the ten steps of the Qualitative Analysis Guide of Leuven (QUAGOL), a theory- and practice-based guide developed to support and facilitate the process of analysing qualitative interview data (Dierckx de Casterlé et al., 2012; Dierckx de Casterlé et al., 2021). QUAGOL aims to support and facilitate the inductive analysis process and is structured into two phases: (1) the preparation for coding and (2) the actual coding process. In the preparation for coding (1), interviews were re-read and synthesised into narrative reports highlighting participants' key storylines about their neighbourhood, loneliness experiences, and how the two relate (e.g., accounts of "neighbourhood with lots of green", "loss of a partner", and "places that help with loneliness"). These reports were used to develop a preliminary conceptual scheme to address the objective of this study. In the actual coding process (2) this scheme was translated into a preliminary coding list and applied to the data using qualitative software NVivo 12™, which was refined through several iterations. The coding was inductive and open, with categories and codes developed from the data. Descriptive storylines (e.g., places that help with loneliness) were refined into codes such as "finding (mental) rest", and contributed to the key finding "spaces of solitude to process loss and grief". Photographs were not coded on their own but used to illustrate participants' narratives (e.g., a photo of a bench described as a "place to process loneliness"). At the time of the member check, no coding had yet taken place. Instead, participants validated their narrative summaries read aloud by the researcher. However, the member check interviews were transcribed and coded using the same coding scheme and were included in the analysis. As the focus of this study was on capturing individual narratives of neighbourhood and loneliness, we did not conduct comparisons across participant subgroups (e.g., age, gender, migration background). Instead, the analysis led to describing the results in two sections, along which we structured the key findings and the related concepts, supported by illustrative quotes and photos, using pseudonyms (Dierckx de Casterlé et al., 2012; Dierckx de Casterlé et al., 2021). Table 2 presents the eight core findings derived from the refinement of descriptive

Table 2
Coding framework and core findings.

Research Question	Core Finding	Example Codes
RQ1: What neighbourhood-built environment characteristics shape or relate to loneliness?	Neighbourhood social infrastructure: static and temporary places	"Green spaces", "cafés", "community centres", "neighbourhood parties"
	Changes and transitions in the neighbourhood-built environment	"Changes familiar infrastructure", "changes in interactions", "austerities"
RQ2: How do neighbourhood-built environment characteristics shape or relate to loneliness?	Neighbourhood as a place to escape from feeling lonely at home	"Trapped by walls at home", "ruminating thoughts", "slow passing of time"
	Neighbourhood-built environment facilitates fleeting social interactions	"Seeing people", "recognizing people, "greeting people", "getting to know people"
	Neighbourhood-built environment creates opportunities for participation in social activities	"Involvement", "usefulness", "participating conditions"
	Neighbourhood-built environment provides space for solitude and processing grief and loss	"Finding mental rest" "grieving", "solitude", "solace"
	Not merely the availability, but the accessibility and affordability of social infrastructure is key	"Opening hours", "financial implications", "nearby places"
	Neighbourhood aesthetics' contribute to a safe and welcoming feeling	"Grey in the neighbourhood", "green in the neighbourhood" "maintenance", "feeling unsafe"

storylines into codes related to the two research questions.

Overall, the QUAGOL approach comprised a joint analytical procedure in which the first author took the lead, while the co-authors either analysed parts of the data, or provided feedback on the different phases in the coding process and reflected on the (intermediate) results. To ensure the credibility of our findings, a team of three researchers (FH, LDD, SVR) regularly employed researcher triangulation by discussing the narrative summary reports and developing the conceptual scheme, maintaining awareness of potential influences on and assumptions about the outcomes. These findings were, in a second phase, discussed and reflected upon with the other co-authors (DG, WS, BD, SD).

3. Results

The analysis of the interviews, derived from the refinement of descriptive storylines into codes and core findings, is presented in two sections, relating to the two research questions: (1) what neighbourhood-built environment characteristics shape or relate to loneliness: and (2) how do neighbourhood-built environment characteristics shape or relate to loneliness? (See Table 2). The findings are structured around eight core findings, supported by illustrative quotes and photographs. Photo captions indicate the original photo prompts ("What is characteristic in your neighbourhood?" and "When you feel lonely"), along with participants' pseudonyms and age.

RQ1: What neighbourhood-built environment characteristics shape or relate to loneliness?

3.1. Neighbourhood social infrastructure: static and temporary places

Participants discussed both static and temporary third places. Static places comprised outdoor locations (e.g., green spaces, places of solace, nature reserves, public parks), commercial venues (e.g., cafés, malls), public services and institutions (e.g., schools, neighbourhood community centres, public transport, streets), where organised activities may take place at fixed times. Temporary places encompassed neighbourhood parties, markets, carnivals, village festivals, and fairs. Some participants attended independently, while others relied on acquaintances to accompany them.

The importance of outdoor social infrastructure, in particular green spaces, was consistently recognised by all participants in this study. Cited green spaces included public parks and nature reserves, street greenery, private green, and organised green initiatives, such as neighbourhood gardening projects. Seeing greenery and spending time at these green spaces was described as helpful when feeling lonely. However, some participants mentioned that living in a neighbourhood characterised by an abundance of green spaces and nature can be too quiet and isolated, as there is little social interaction. Overall, green spaces were seen not only as settings for physical activity like walking or processing thoughts, but also as contributing to neighbourhood liveliness (See Photo 1).

Moreover, these places were seen as settings where spontaneous, fleeting social interactions might occur or where people could take part in shared activities, such as community gardening, which can all help when feeling lonely. In this regard, green spaces were often cited as third places, whereas greenery along streets could serve both as part of a passing place (e.g., on a walking route) or as a third place when benches or seating invited people to linger.

3.2. Changes and transitions in the neighbourhood-built environment

Participants discussed the history of their neighbourhood, highlighting demographic and physical changes, as well as shifts in the social infrastructure. While some changes brought improvements, others led to challenges in relation to their loneliness.

Changes in social infrastructure affected social interactions and the

Fig. 1. "Green creates liveliness, but here (…), it's bare here, it's just terribly bare. There's nothing (…). I find that sad (…). Per person, we have far too little space, we have proportionally far too little greenery, far too little air. If your basic feelings [feeling good] are already down, Then you become lonely more quickly than most people. The basic feeling here in the neighbourhood is not okay. People here live with a heavy feeling." Photo prompt: "What is characteristic in your neighbourhood?" by Jeanine (74-year-old) - Social infrastructure.

ambiance of the neighbourhood (i.e., the lived environment), influencing participants' loneliness. A participant specifically highlighted the austerity measures on social infrastructure affecting the possibilities for social interactions in the neighbourhood: *"That* [the austerities by the local government] *made a huge impact (…), the sports hall was quietly deteriorating (…), there was little investment here (…)"* (Joris, 51). Another participant expressed a sense of nostalgia when the neighbourhood changed: *"That community centre made people come together, but now everyone kind of ignores each other. (…) It's a pity that it's gone"* (Lieve, 33). Lastly, participants reflected on potential future changes and what this would mean for themselves and the neighbourhood. A participant with a migrant background explained: *"It would be a pity if* [the mosque in the neighbourhood] *ever had to disappear. That would be a loss. (…) The Moroccan community here would fall to pieces, I am convinced of that"* (Dean, 72), highlighting how changes in social infrastructure can have social consequences.

Neighbourhood demographic changes, such as changes in generational and cultural compositions, created not only a sense of disconnection from the once-familiar social neighbourhood but also prompted changes the physical neighbourhood: *"I certainly find it very hard here* [to speak and connect with neighbours]. *(…)* [In the neighbourhood] *there are a few Flemish, originally Flemish shops, you almost don't find them. I find that so unfortunate (…). We used to have that (…) We don't have one here anymore, that's gone"* (Jeanine, 74). Neighbourhood changes, whether physical, social, or both, can influence social interactions and how residents experience their neighbourhood in ways that may affect loneliness.

RQ2: How do neighbourhood-built environment characteristics shape or relate to loneliness?

3.3. Neighbourhood as a place to escape from feeling lonely at home

Spending the whole day inside the house made participants feel trapped by walls, drained, and evoked spiralling thoughts (i.e., ruminative negative thinking), which could contribute to their loneliness. Participants spoke of how time goes by slowly inside the house when they have nothing to do, or no one to see (See Photo 2).

To break this monotony, participants spoke of how the structured neighbourhood-built environment provided the possibility to be away from home and to fill up time, engage with friends, get some fresh air, clear their heads and find some relaxation and distraction from their loneliness.

3.4. Neighbourhood-built environment facilitates fleeting social interactions

When asked what participants had or missed in the neighbourhood in relation to loneliness, they pointed to places that provided opportunities to interact fleetingly with others.

Even when not explicitly designed for social interaction, participants discussed how social infrastructure, such as third places (e.g.; parks, playgrounds) and passing places (e.g.; sidewalks, train stations), provided a range of often spontaneous opportunities to see, recognize, get to know and meet others. For instance, a participant described how being at the neighbourhood pier helped with loneliness: *"Especially in the summer, I go there to meet up with friends and that does help against loneliness, and just nature helps against loneliness (…). There, people often say hello"* (Nathan, 22). This example illustrates how certain places allow for fleeting social interactions, although they are not specifically built for them, which can help during periods of loneliness.

Moreover, knowing where, when, and with whom these social interactions might happen motivated participants to go to these specific places, as one respondent explained: *"When I go for a walk, I get to know some people. So, now in the park, there are people I know, and I say hello to them"* (Petra, 51). Being in certain places at specific times can lead to

Fig. 2. "That's a clock. It feels lonely, when you have nowhere to go during the day. I think to myself, I'm having a calm day, and then you sit there, and you see that clock that doesn't move forward (…) Yes, then it gets lonely because that clock doesn't move forward." Photo prompt: "When you feel lonely" by Robert (71-year-old) - Slow moving time at home.

recognition and passing social interactions, such as greeting familiar faces. These passing interactions create a routine, and affirm one's presence in a place, offering social interactions that help with loneliness (See Photo 3).

Conversely, the lack of knowledge of when and where spontaneous encounters can happen affected the motivation to visit or avoid certain places and the experience in these places. This uncertainty could contribute to loneliness.

3.5. Neighbourhood-built environment creates opportunities for participation in social activities

Going to third places in the neighbourhood where there are opportunities to participate in social activities can help with loneliness. One participant showed her diary with all the activities at the neighbourhood community centre she wanted to attend in the following weeks. In it, she stated: *"If I didn't have all that* [i.e., the neighbourhood community centre], *then this* [referring to her loneliness] *would overwhelm me"* (Rosa, 65).

Some third places actively support social participation through volunteering. This supports the feeling of involvement and usefulness to others and their neighbourhood, as mentioned by Joris, a 51-year-old man who is currently unemployed for health reasons and volunteers at the residential care centre in the neighbourhood: *"I like living here* [in the neighbourhood]. *I have my voluntary work here, which is very important to me. (…) Because I get a bit crazy here* [in the house] *alone. (…) My involvement* [in the neighbourhood] *(…) gives life meaning again"* (Joris, 51). Such involvement in the neighbourhood is not always driven by

Fig. 3. "(…) at half past three the school is over and then you see the children coming outside, and that gives a different feeling, you see something, you don't feel you are alone, you see movement (…). I sit on a bench because I see the children playing here, it's a playground (…). Sometimes I make contact with these children. They say hello to me. Then I don't feel so alone. And other people also come and sit there, and they also talk to other people. (…) If there's nothing to see then I'm gone quickly." Photo prompt: "What is characteristic in your neighbourhood?" by Robert (71-year-old) - Opportunities for social interactions.

altruism, but also by the desire to cope with one's loneliness (See Photo 4).

However, several participants also talked about the downside of attending social activities. For instance, going alone to these activities discouraged participation, even if they eventually could help with loneliness (See Photo 5).

In addition, at times participants were even more aware of their loneliness after attending social activities, as they were reminded them of their loneliness, as these moments brought their focus to the absence of deeper connections or reminded them that they did not have someone to share experiences with. As one participant expressed: "*I go to a barbecue for* [people who experience] *loneliness. You go there, and when you get home, it* [loneliness] *hits you twice as hard. Then you think, how beautiful could it* [be not to be lonely]*, and how it is* [to be lonely again] *now*" (Linde, 60). Some participants explained that when experiencing profound loneliness, doing social activities is not always a solution: "*Profound loneliness doesn't go away with going to activities. It breaks the routine and you're out of your head, and you do hear what people have been doing (…), but it's all very superficial, isn't it?*" (Jeanine, 74). This highlights that while participating in activities can provide temporary relief from loneliness, it does not necessarily address deep-seated loneliness.

3.6. The neighbourhood-built environment provides space for solitude and processing grief and loss

Certain places provided a setting for processing thoughts, sadness, grief, loss, and loneliness. These emotions were experienced particularly during life transitions such as bereavement, relationship breakdown, or
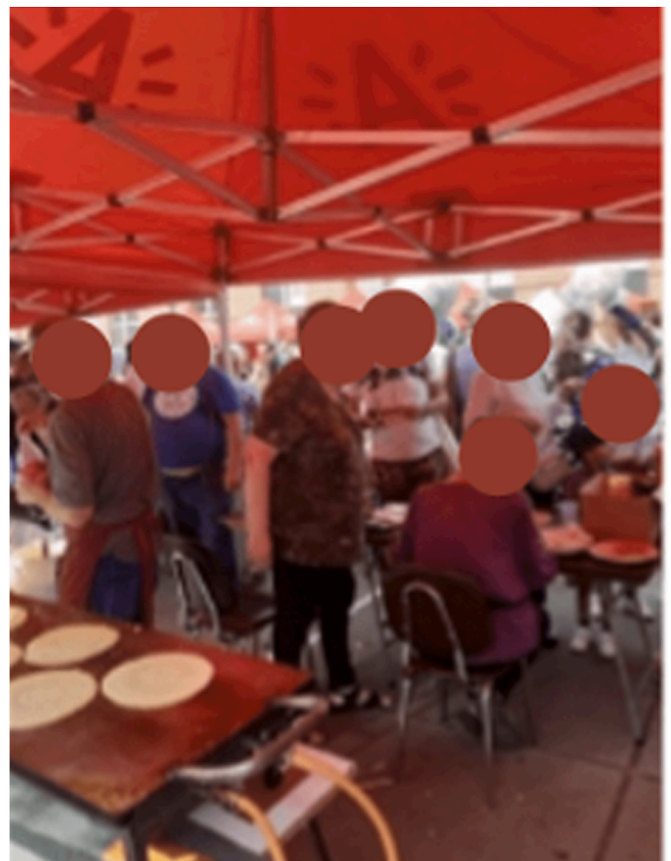

Fig. 4. "(…) When I moved here [to the neighbourhood], I felt very bad because everything was so anonymous. Nobody spoke, I felt terrible, and because of that I started [volunteering at X organisation], I knew of [X organisation] before I came to live here. We try to do things with the neighbours [for others in the neighbourhood]. They [the neighbours] ask me: 'you always do everything for someone else,' but that's not true! I don't do everything for someone else; I also do it because I don't want to feel lonely." Photo prompt: "When you feel lonely" by Jeanine (74-year-old) - Feeling involved.

Fig. 5. (…) It's the feeling when you go in. You must go somewhere with a good feeling. (…) I really don't get that there (…). I try to bring [a friend and neighbour] along. If she comes along, then this one [points to herself] also says she will come!" Photo prompt: "What is characteristic in the neighbourhood?" by Dora (71-year-old) - Opportunities for social activities.

social exclusion. Some participants suggested that the presence or absence of places for solitude and for processing grief and loss influenced how they dealt with these emotions. Participants talked about visiting green spaces such as parks and forests, as well as places of spiritual worship, which provided them with solace and helped with loneliness (See Photo 6).

However, not all participants visited places of solitude to process grief and loss. A participant whose spouse passed away described the multi-faceted nature of the bench in the park as a place of processing grief and loss, or experiencing loneliness, while also being a space of hope for spontaneous social interactions (See Photo 7).

In addition, specific places can hold emotional and symbolic significance, as this participant expressed: *"(…)The taller the little tree gets, the longer my wife is away from me"* (George, 80). One participant addressed places of solace, expressing appreciation for the symbolic flower plantings and inspirational texts. These were created outside public places across various neighbourhoods in Flanders in response to the shared need for mourning after the COVID-19 pandemic, to provide connection, comfort, and a place to reflect on loss (See Photo 8).

Fig. 7. "On that bench, very close to that road, I can come back to myself, to what I feel inside, and express my sadness. I get lonely, and quiet, and calm. And on that bench, I can find a little bit of peace and express my sadness. I feel that, that those moments are very important, to process loneliness, sadness, and loss. And in those difficult moments, I can find an outlet on that bench. (…) If I could meet someone there for a chat, a conversation, or to share a story, one who is close to my heart, it would make a big difference. Now, I see that sense of endlessness in the distance, with little contact with others. So yeah, if that were possible … But, as I said, the positive side is that you get to be in nature, relax a little. It's a kind of a counterbalance, you know." Photo prompt: "when you feel lonely" by George (80-year-old) - Processing thoughts and hope for social interactions.

3.7. Not merely the availability, but the accessibility and affordability of social infrastructure is key

Participants emphasised the importance of availability and accessibility of affordable social infrastructure. A participant explained: *"For people who are really lonely, it's only open in the afternoon and not on weekends.* [What I need in the neighbourhood to manage loneliness is] *a place where, when I feel alone, I can go, and there is someone there who offers a listening ear"* (Linde, 60). This highlights the need for time-flexible, available, and accessible social infrastructure, particularly for those who visit these places when they experience loneliness.

Moreover, when the neighbourhood-built environment does not align with one's personal physical and/or financial abilities, participants felt imprisoned and socially isolated in their home: *"(…) the realisation of being socially isolated due to financial limitations is harsh (…). You are isolated here, cut off, because you cannot cope financially (…). [It has] to do with loneliness, not being able to be social (…). I can't afford that* [going to the pub], *because I just spend all my money on food"* (Joris, 51). Even when participants left their homes, the limited access to affordable public transportation remained a concern. Participants stressed the importance of nearby, affordable public transport, as it directly influenced their mobility and ability for social interactions.

3.8. Neighbourhood aesthetics contribute to a safe and welcoming feeling

The neighbourhood's aesthetic features affect how participants perceive and value their neighbourhood as welcoming and safe. A neighbourhood-built environment that is visually appealing, well-maintained, and offers natural elements tended to be perceived by participants as more inviting and secure, suggesting an intertwined relationship between aesthetics and safety perception. Conversely, spaces dominated by harsh, grey architecture, that lacked greenery and were not wellmaintained, evoked a sense of unease for participants. This influenced how they perceived their neighbourhood and the amount of time they spent in certain neighbourhood places, and whether they felt connected to or isolated from their neighbourhood, contributing, in some cases, to loneliness (See Photo 9).
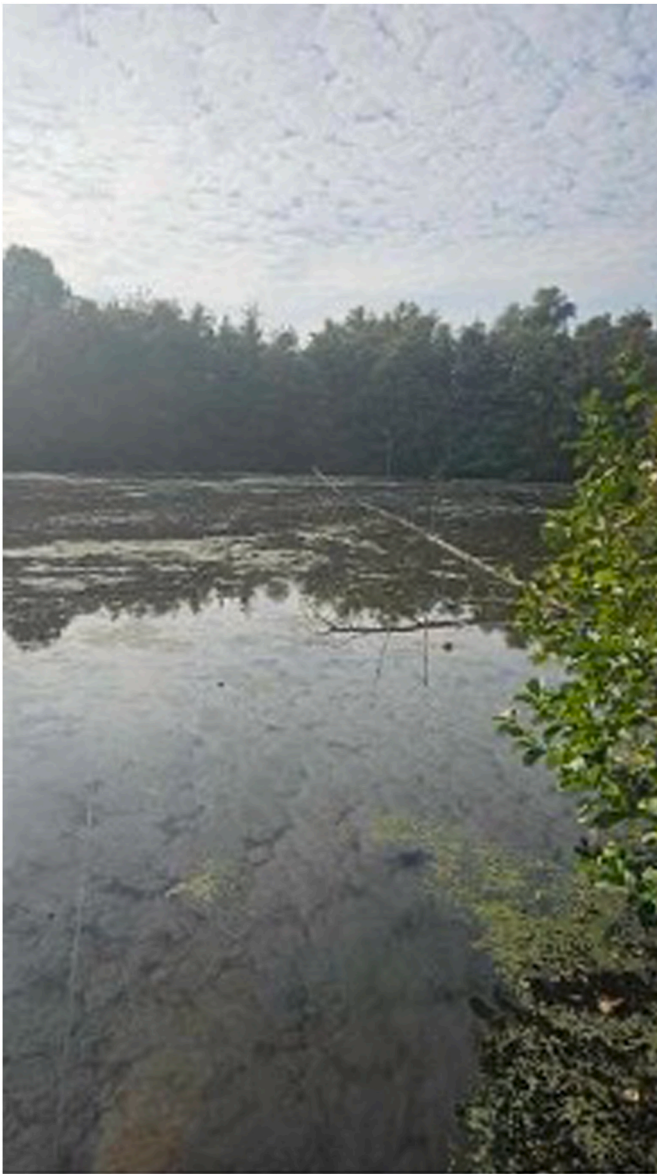

Fig. 6. "That [forest] is where I go when I really want to be completely alone. No one ever goes there. I sometimes go there when I want to be alone or when I'm feeling lonely (…). I think I have more of a need than other people to just be alone sometimes, to just go to a different place and find some peace (…). That's where I go when I really want to be completely left alone. Because I know no one ever goes there, at least, I've never seen anyone there (…). It's just about enjoying the view and the peace and quiet that you have there (…), just a bit of distraction and some time to put things into perspective. Time to pause and reflect, to think, 'actually, it's not all that bad,' or 'it will work out with time'." Photo prompt: "when you feel lonely" by Nathan (22-year-old) - Processing thoughts in solitude.

Fig. 9. "Loneliness, that's difficult, yes. What I'm thinking about are these cold, grey walls (…), so lifeless, a lifeless environment doesn't create a good atmosphere either (…). There's this big brick wall, there on one side, and the tower block, the grey tower block on the other side, and I just feel a bit confined. And then just the endless road where only cars drive. (…) It just doesn't really look very attractive either. (…) If it just looks nicer, that would be better, or it [the neighbourhood] would make a better impression (…)." Photo prompt: "What is characteristic in your neighbourhood?" by Oliver (20-year-old) - Neighbourhood aesthetics and safety.

Fig. 8. "It's a new place [here in the neighbourhood]. It's a comforting place. You can't see it clearly, but there are all sorts of things [poems, messages] hanging from the trees. There are poems hanging here, and chairs in the back, it's a really beautiful place (…). When I go to the city, I pass by there and sit down. I can read a book there, and then I always hope someone will come and sit next to me (…). Just to read, to meditate, although that might sound like a strange word. Just to find some peace within myself. And if someone comes to sit with me, I would like that." Photo prompt: "What is characteristic in your neighbourhood?" by Linde (60-year-old) - Places of solace.

4. Discussion

This study highlights the role of the neighbourhood-built environment in shaping loneliness, by discussing the interrelation of individual, social, and infrastructural characteristics in understanding how structured and lived neighbourhood characteristics can facilitate or hinder social connection. Rather than perceiving loneliness as a purely personal issue, our findings reinforce an ecological perspective that integrates structured (physical infrastructure) and lived (perceptions, safety, affordability) neighbourhood characteristics into understanding loneliness. By using a photo-elicitation method, this research contributes to a better understanding of how the neighbourhood-built environment affects loneliness.

A first contribution is the nuanced understanding that the neighbourhood can act as both a refuge and a barrier. For many participants, the neighbourhood was an escape from loneliness at home. They expressed how time passed so slowly inside the house, that they felt trapped by walls, with nothing to do, and no one to see. Participants used the neighbourhood-built environment to break this cycle and sought informal, fleeting interactions. Moreover, the neighbourhood-built environment became meaningful through participants' interpretations (e.g., benches in the park became places to process loss and grief in solitude for some, while others saw them as a space of hope for spontaneous social interactions)This reflects how people hold their own mental constructs of the neighbourhood-built environment that influence their meanings and use (Jing et al., 2019). However, not all neighbourhoods offered the same opportunities, as some spaces felt unwelcoming, aesthetically unappealing, or unsafe, reinforcing loneliness rather than alleviating it. A Chinese study confirms that well-being in green spaces depends not only on access but also on qualities such as attractiveness, odour, and available facilities (Wang et al., 2023). This aligns with research emphasising that place-based interventions should not merely promote public spaces but also ensure that they are walkable and bikeable (Darabos et al., 2024; Halawani, 2024), as well as safe (Bower et al., 2023; Domènech-Abella et al., 2021) and include green spaces (Astell-Burt et al., 2022), since such places can support interactions and provide mental restoration (Feng et al., 2022), and therefore can affect loneliness.

Moreover, this study highlights the role of non-structured elements, underlining that loneliness appears to be more sensitive to individual assessments of the neighbourhood, irrespective of "objective" measures such as street cleanliness, noise levels (Lam and Baxter, 2025) or the availability of green spaces (Astell-Burt et al., 2022). For example, while some individuals find green spaces supportive in dealing with loneliness, others may find them too quiet and may become more aware of their loneliness.

A second contribution is that social infrastructure was found to be a double-edged sword. On the one hand, neighbourhood-built environments with well-maintained third places provided opportunities for social engagement, spontaneous interactions, and meaningful participation. These third places functioned not only as destination spaces, but

also as passing places, both of which appeared valuable in participants' narratives. Indeed, research shows that opportunities for continued volunteering and the skills acquired through such activities can be effective in reducing loneliness (Yeung et al., 2025). Conversely, not all social infrastructure supported social connection equally, and participation in social activities did not always alleviate loneliness. For some, participating in formalised social activities heightened awareness of their loneliness rather than reducing it. This questions public health messaging about joining a group to tackle loneliness (Welch et al., 2024). More casual, spontaneous encounters in informal spaces can be more helpful than group-based social interventions (Ljubojevic, 2025).

Moreover, affordability and accessibility were important. Participants who faced financial constraints or mobility challenges found themselves excluded from potential social opportunities. This suggests that neighbourhood social infrastructure interventions alone are insufficient if broader structural barriers persist, and that they should be embedded in broader policies that address financial precarity and mobility constraints (Feng et al., 2022; Barreto et al., 2024).

A third contribution pertains to neighbourhood demographic and social infrastructure changes, which influenced belonging. Belonging is not a simple matter of feeling 'at home' or not, but a multifaceted, affective experience formed through embodied practices, social encounters, and the materiality of place (Pinkster and Loomans, 2025). While some participants welcomed revitalisation efforts, others expressed a sense of loss when familiar spaces and social hubs disappeared. The loss of neighbourhood community centres, local cafés, and meeting places disrupted existing social networks, leading to increased loneliness. This reinforces the need for a life-course approach to place (Lekkas et al., 2017a), which suggests that neighbourhoods evolve over time and that these transformations impact social well-being. The decline of socially cohesive places due to urban regeneration or privatisation can create a sense of placelessness (Yarker, 2022), where residents no longer feel they belong. While previous studies have explored how neighbourhood social infrastructure can foster community resilience (Swader and Moraru, 2023), our findings emphasise the importance of sustaining social spaces amid neighbourhood transitions. This requires long-term environmental planning strategies that preserve accessible, inclusive, and intergenerational meeting places.

4.1. Implications for policy and practice

Expanding the understanding of loneliness beyond an individual problem allows for a broader approach to loneliness interventions. Our findings highlight that both structured and lived characteristics of the neighbourhood-built environment can alleviate or reinforce loneliness, underscoring the need for interventions that address these neighbourhood dynamics.

At the same time, these neighbourhood dynamics are influenced by broader social inequalities, which means that interventions also need to be rooted in an understanding of loneliness as unequally distributed in the population, just as many other socioeconomic, political, technological, and cultural resources and opportunities (Barreto et al., 2024). Moreover, loneliness should be recognised as a structural condition stemming from broader social factors (e.g., austerity policies limiting access to social resources, or privatisation of public spaces) where fundamental needs and desires remain unmet (Wilkinson, 2022). Without addressing these conditions, there is a risk that interventions in the neighbourhood-built environment remain superficial, focusing on 'fixing' individuals rather than changing the systems that marginalise them (Feng et al., 2022; Barreto et al., 2024). Moreover, the role and attitudes of professionals and stakeholders in loneliness interventions function as moderating mechanisms, enabling the association between program activities and outcomes; and allowing interventions to move beyond the individual level (e.g. supporting and sustaining accessible third places, creating opportunities that facilitate organised and informal social interactions, embedding attention to neighbourhood

aesthetics and safety, and addressing barriers related to affordability and mobility) (Gryp et al., 2025). This reinforces the need to frame loneliness as a social justice issue (Barreto et al., 2024) and to articulate social infrastructure initiatives with policies targeting financial precarity, accessibility barriers, and uneven distributions of public space. Therefore, urban planners and policymakers should consider the neighbourhood-built environment as a key resource for addressing loneliness.

Beyond just complying with a checklist for diverse social infrastructure that facilitates interactions and participation, explicit attention should be paid to affordability and accessibility, as well as the perceptions of safety and welcomeness. Addressing loneliness also requires making space for loneliness through, for example, multisensory urban spaces (i.e., spaces that not only help prevent loneliness but also support and normalise loneliness), such as places of solace (Heu and Brennecke, 2023) and spaces for processing grief and loss.

4.2. Recommendations for future research

Based on the findings, recommendations can be formulated for further research. First, social infrastructure changes affect possibilities for interactions and create a sense of disconnection from the once-familiar neighbourhood, reinforcing loneliness. Further research could explore how the neighbourhood life course and changes in the neighbourhood-built environment over time influence residents' experiences of loneliness (Lekkas et al., 2017b; Pearce et al., 2018), and offer new perspectives on the relationship between place and loneliness, and on the life-course approach to place (Lekkas et al., 2017a).

Further, we recognise loneliness consists of different dimensions, such as social loneliness (a lack of social networks), emotional loneliness (a lack of close, meaningful relationships), or existential loneliness (a deeper sense of isolation and disconnection from the world) (Delafontaine et al., 2023). While previous studies suggest that the neighbourhood-built environment can affect emotional-state loneliness (Gijsbers et al., 2024), and our findings suggest that the neighbourhood-built environment is also used to tackle different types of loneliness. For instance, third places that create opportunities for participation in social activities appear to address social loneliness, whereas places of solitude appear to help with both emotional and existential loneliness. However, we did not engage in further interviewing or a deeper analysis of these different dimensions. Future studies could explore whether specific neighbourhood-built environment characteristics interact to influence different forms of loneliness.

Lastly, loneliness interventions often focus on increasing social interactions, however, our findings suggest that not everybody seeks social interactions when experiencing loneliness. There is a need to explore the role of places in the neighbourhood that allow for quiet presence, processing grief and loss, or simply being alone. Making space for loneliness may offer restorative capacities and provide subtle forms of well-being, where people do not feel excluded when feeling lonely but instead supported in dealing with their experiences of loneliness (Feng et al., 2022; Heu and Brennecke, 2023).

4.3. Strengths and limitations

A key strength of this study lies in its use of photo-elicitation interviews, which allowed participants to visually capture and reflect on their lived experiences of loneliness in the neighbourhood-built environment (Glaw et al., 2017; Liebenberg, 2018). By having a visual starting point for conversation, photo-elicitation supported our participants in articulating feelings and experiences that may otherwise be difficult to express verbally, rendering loneliness and its relation to the neighbourhood more speakable.

This study also has some limitations. First, the study is subject to self-selection bias due to voluntary participation (Natafgi et al., 2024). This may have influenced the sample, as socially engaged individuals who

experience loneliness, or who are comfortable taking photographs may have been more likely to participate. Nonetheless, the sampling strategy, in collaboration with a range of local organisations, allowed for a relatively diverse sample in terms of age, gender, and background. Second, while the 6-item loneliness scale used in the study provided a useful indication of subjective loneliness, it should be interpreted with caution, as it is not a diagnostic tool (Maes et al., 2022).

5. Conclusion

This study underscores the significance of the neighbourhood-built environment on adults' loneliness, pointing to the neighbourhood as both a refuge and a barrier that is not merely a passive entity, but rather an active agent that contributes to loneliness experiences. Structured characteristics of the neighbourhood-built environment, such as the presence of social infrastructure and green spaces, can mitigate loneliness by fostering opportunities for social interaction, engagement in social activities, supporting meaningful involvement, and by providing a place for solitude and solace to process grief and loss. At the same time, lived characteristics, such as perceptions of safety, influence how these spaces are utilised and experienced. By integrating both structured and lived dimensions into environmental design, we can create neighbourhoods that prevent or mitigate loneliness.

CRediT authorship contribution statement

Freya Häussermann: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft. **Dorien Gryp:** Investigation, Validation, Writing – review & editing. **Wouter Schepers:** Investigation, Validation, Writing – review & editing. **Bas Dikmans:** Validation, Writing – review & editing. **Sarah Dury:** Validation, Writing – review & editing. **Liesbeth De Donder:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Supervision, Writing – review & editing.

Declaration of interest statement

The authors declare that they have no competing interests.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.healthplace.2025.103587.

Data availability

Data will be made available on request.

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