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A sense of belonging to the neighbourhood in places beyond the metropolis – the role of social infrastructure

Peter Dirksmeier[1,2]✉

This paper analyses the importance of social infrastructure, understood as physical locations and institutions that influence the way people engage with one another, for explaining local belonging beyond the metropolis. Previous studies emphasise the importance of factors such as length of residence, trust, social cohesion, or community organisation for the sense of belonging to one's neighbourhood, but more or less ignore the aspect of social infrastructure. Furthermore, these studies predominantly focus on the major metropolises in the Global North and South, consistently overlooking smaller places. In this paper, a regional, individual-level dataset is used to analyse the systematic relationship between feelings of local belonging and the existing social infrastructure in cities, towns, and villages in Germany, covering various size categories below the metropolis. The statistical analyses show that local belonging primarily means belonging to the people in the neighbourhood. Trust in neighbours and conversations with neighbours are by far the strongest explanatory factors for a sense of belonging, while social infrastructure, although relevant at the individual level, is much less important. In contrast to the emphasis placed on social infrastructure in qualitative empirical studies, it plays only a minor role in residents' sense of belonging in German cities and villages.

[1] Leibniz University Hannover, Hanover, Germany. [2] Research Institute Social Cohesion, Hanover, Germany. ✉email: dirksmeier@kusogeo.uni-hannover.de

Introduction

Belonging is becoming an increasingly popular category for analysis in the social sciences and urban research. In particular, belonging is finding its way into empirical social geography through its practical implementation as an affective aspect of local ties and a sense of belonging (Mee and Wright, 2009; Antonsich, 2010; Devadason, 2010; Tomaney, 2015; Blokland et al. 2023). As a rule, the sense of belonging focuses on specific small-scale places in their diverse forms (Antonsich, 2010). The juxtaposition of different places enables the individual to constantly draw comparisons between them (Pred, 1984) and thus serves as an important means for people to form their identity, both individually and as a group, to find out where they stand in society (Cramer, 2016). These places are also of great importance as physical entities for creating a sense of community and belonging (Gieryin, 2000; Vaisey, 2007).

Social infrastructures are defined as physical locations and institutions that influence the way people engage with one another (Klinenberg, 2018). The opportunity structure of spaces for interaction and the associated sense of place, which is discussed in the literature as social infrastructure (Klinenberg, 2018), seems to be of great importance for conceptualising the intertwined connection between place and belonging. As structures of opportunity, social infrastructures such as libraries, schools, kindergartens, playgrounds, parks, places of worship, markets, or cafés enable people to come together and thus develop a sense of belonging to a place (Latham and Layton, 2019). The term is thus more comprehensive than similar concepts such as Ray Oldenburg's 'third places' (2023), which he has defined as consumer-oriented meeting places such as beer gardens, main streets, cafes, taverns, or pubs, or the similar concept of 'servicescapes' proposed by Aubert-Gamet and Cova (1998). These spaces are important for urban research, e.g., gentrification research, as they can sometimes promote the emergence of bridging social capital (Hyra, 2017). More closely related to the idea of social infrastructure is the concept of neighbourhood social conduits as general land uses that promote social interactions, as proposed by Wickes et al. (2019). The authors show for Brisbane, Australia, that social conduits correlate positively with neighbourhood belonging (Wickes et al. 2019). In contrast to these concepts, which emphasise specific aspects of the relationship between sociality and space, the concept of social infrastructure is characterised by the combination of at least four strands of literature. First of all, social infrastructure is based on the social sciences' examination of the concept of infrastructure in general. The term also includes the concepts of the public and of public space, as well as of encounters and the politics of provision (Latham and Layton, 2019).

Earlier empirical work on the topic of belonging in the city has, on the one hand, only marginally addressed the role of social infrastructures in creating and maintaining a sense of belonging (Blokland, 2019, Blokland and Nast, 2014; Blokland et al. 2023; Lobo, 2010; Preece, 2020). On the other hand, studies on the topic of social infrastructure have yielded little insight into the role of belonging in the use and meaning of social infrastructures (Klinenberg, 2018; Latham and Layton, 2019; 2022; Nethercote, 2017). Both research strands focus predominantly on metropolises[1] in the Global South, like Johannesburg (Simone, 2004) or Dhaka (Sultana, 2020) and Global North like Berlin (Blokland and Nast, 2014; Blokland et al. 2023) or London (Layton and Latham, 2022). They refer to class differences within cities (Devadason, 2010), but ignore smaller cities beyond the metropolis that consist of "ordinary neighbourhoods" (Beier, 2023), where the majority of the urban population worldwide lives (Preece, 2020). These differences in forms of socialisation in communities of different sizes have been the subject of the classic works of social science research. In *Gemeinschaft und Gesellschaft*, Ferdinand Tönnies (2019) recognises the community as the primary form of socialisation for smaller groups, based on personal exchange, and contrasts it with society as a sociality based on looser forms of connection in larger settlements (Honneth, 1994). As Berman emphasises, the small-town form is idealised in contrast to the metropolis (Berman, 1988) and the transition to industrial society is conceived as a loss of primary socialisation associated with this form of community (Honneth, 1994), which extends to an assumed incompatibility between community and industrial society (Willems, 1970). Durkheim (1992) summarises this constructed antagonism in the pair of terms mechanical and organic solidarity, while Simmel (1903) emphasises the gains in individualism and personal freedom possible in the metropolis. These classics of sociology accordingly recognise a higher degree of belonging in the small towns and villages than in the large cities of their time.

Smaller places beyond the big metropolises are of particular interest for research into the connection between belonging and social infrastructure, as only they make it possible to observe the particularities and specifics of the diverse interrelations in the lived realities of a large part of the urban population that does not live in the big metropolises (Maringanti, 2013). Bunnell and Maringanti (2010, 415) criticise the focus on a few global cities as a paradigm of urban research as "metrocentricity", which can be largely attributed to "a lack of self-reflexivity in research practice" (Bunnell and Maringanti, 2010, 417), which has emerged in recent years in urban studies with a focus on the metropolis in both the Global North and the Global South. The attractiveness of world city studies and their network-like "metageography" (Beaverstock et al. 2000) leads to a performative self-reinforcement of research and teaching efforts in this area and to a wealth of literature on the world city or global city. Beyond the undisputed significance of these urban centres, other forms of urbanisation are increasingly being overlooked from an epistemological perspective, while at the same time enabling epistemological advances in urban theory and empirical research that are still underutilised. For this reason, this article focuses on smaller cities and places in Germany as a case study.

My aim in this paper is to analyse the importance of social infrastructures compared to other determinants of neighbourhood belonging in cities beyond the metropolises. Specifically, I aim to determine the relative weight that social infrastructure has on the sense of belonging in localities beyond the metropolis in Germany, which is the basal small-scale category of identity assumptions. Social infrastructures act as catalysts for sociality and belonging as they provide opportunities for forming feelings of attachment to other people in the neighbourhood (Klinenberg, 2018). While this achievement of social infrastructure has been demonstrated in previous studies (Layton and Latham, 2022; Prytherch, 2022), little is known about the relationship between the contribution of social infrastructure to a sense of belonging in the city and other important mechanisms mentioned in the literature, especially trust. Still, previous empirical work on metropolises shows a clear influence of length of residence, habituation, identification, and social cohesion on belonging (Devadason, 2010; Blokland et al. 2023). My paper adds to the existing literature in the broader field of research on the social influences on feelings of belonging to the neighbourhood by focusing on the effects of social infrastructures in the context of localities with everyday infrastructure and opportunity structures. My paper thus expands existing knowledge on this relationship by examining determinants of belonging at both the individual level and in the form of infrastructure at the contextual level. The paper thus contributes to the emerging literature on the

relationship between social infrastructures and neighbourhood belonging in social geography by combining individual-level survey data with contextual data on neighbourhoods and analysing belonging in relation to the factual design of the neighbourhood context.

This paper uses data from a newly implemented panel survey that was conducted for the first time between January and May 2021 at the Research Institute for Social Cohesion (RISC) in Germany. The regional-based survey represents a new primary data source for Germany that is intended to contribute to the analysis of social cohesion and neighbourhood belonging at the local level, especially for basic research (Sackmann et al. 2024a) beyond the major German cities. The dataset contains a neighbourhood belonging scale, which serves as the dependent variable for the analysis of the relative importance of social infrastructures for neighbourhood belonging in the sample. The paper is arranged as follows: First, it outlines the cornerstones of belonging and neighbourhood belonging as well as the basic assumptions concerning social infrastructures and the research hypotheses. The subsequent section presents the dataset and provides information on the variables used. The fourth section presents information on the analysis strategy implemented. The fifth section states the relevant results. The paper ends with a discussion of the empirical outcomes and concludes with further assessments.

The nexus of belonging to the neighbourhood and the role of social infrastructure

On a conceptual level, social geography includes discourses of belonging in its theorising and empirical practice. Conceptual fine-tuning, such as practices of "elective belonging" (Butler, 2007; Savage, 2010; Pinkster, 2016; Jeffery, 2018) or "selective belonging" (Hanhoerster, 2015) is the subject of intense debate and research. However, as Tomaney (2015) notes in an overview article, the argument about nation-state belonging dominates, whereas "explorations of local attachment and belonging remain comparatively rare" (2015, 508). In particular, the empirical view of average cities seems obscured by this focus on nation-state or metropolitan belonging.

Belonging and neighbourhood belonging. In terms of space, belonging remains an open concept that functions informally rather than formally, is negotiated through practices and is associated with exclusion (Mee and Wright, 2009). The individual feels a sense of belonging as being at home in a place, but belonging is equally discussed as a claim, a justification for actions, a demarcation of boundaries for inclusion and exclusion processes, and resistance to the unwanted (Antonsich, 2010). A sense of belonging thus has an affective dimension as well (Mee and Wright, 2009). This sense of belonging is linked to work (Tomaney, 2013) in the sense of active citizenship (Ramdas et al. 2018) and thus theoretically only slightly linked to property ownership or length of residence (Tomaney, 2013). Belonging is found at different scale levels, has different histories and identities, connects with class aspects, and is thus a nested empirical category (Tomaney, 2015). For instance, the Chicago School's continuation of the 'marginal man' theory points in a specific sense to belonging (Goldberg, 1941), which, according to the theory, arises in the process of overcoming structural breaks in specific socio-spatial contexts. The positive experience of overcoming crises, for example, binds the individual to the realm of experiencing their own ability. Belonging arises through the feeling of simultaneity of sending and receiving, that is, that the individual feels understood in their environment (Pütz, 2019). This abstract "getting something back" then subsequently facilitates a sense of belonging to the social and spatial environment of the neighbourhood. Networks, support, social ties, and relationships are thus just as much aspects of belonging as loneliness (Wan et al. 2021). Belonging is thus to be understood as a form of loyalty to place and people in Judith Shklar's (1993) sense. This is also the reason why Kurtenbach (2024, 260) can speak of a "biographical matter of course" [own translation] when it comes to belonging in rural areas in Germany. Belonging to the neighbourhood of residence as a subjective reference to the place is not questioned, but rather taken for granted (Kurtenbach, 2024). Integration is achieved through shared experiences in the same ethnic group, independent of status, which are formed locally over a longer period of time. In contrast, Purifoy (2023) emphasises for the small town in the USA that different modes of place can co-exist here, which ultimately require different modes of belonging based on different social experiences of the Black population (Purifoy, 2023). With Purifoy (2023), one could ultimately ask about differentiations of belonging and assume, for example, a 'Black belonging' in the small-town US South, which is based on different forms of solidarity with the local community than, for example, belonging in the small-town US North.

If the place of belonging is radically transformed without regard to local identities, a "sense of not belonging" can develop, as Lang and Rothenberg (2017, 1756) impressively show with the example of High Line Park in New York City, which produces exclusions especially among subordinated local populations. In the course of the climate adaptation of large cities worldwide, which will become necessary in the aftermath of climate change, it is not only the gentrification of particularly well-adapted cities that poses a problem, which could lead to the displacement of poorer classes from ecologically advantageous neighbourhoods (Anguelovski et al. 2022), but also the associated loss of a sense of belonging to the neighbourhood and, subsequently, the willingness to trust and help each other. Belonging as an emotional geography can be severely affected or even destroyed by gentrification processes in the wake of a changing social and physical urban environment (Pánel et al. 2020). In the sense of Sauder (2020), a lasting sense of belonging is thus not only linked to action or structure, but also to luck that the residential environment is for instance not being radically gentrified, which is a particular problem for people with moderate or low incomes (Grier and Grier, 1980).

Feminist social theory deals intensively with belonging and manages to hem in the concept from different sides, which would otherwise become erratic, conceptually blurred, and ultimately irrelevant. Yuval-Davis (2011) defines belonging as a dynamic process and injects the term with its connection to place as a sense of being at home in a place in space. "Belonging is about emotional attachment, about feeling 'at home' and […] about feeling 'safe'" (Yuval-Davis, 2011, 20). Belonging implies being caught up in desires and other ways of being as well as allowing them and thus producing otherness, which on its reverse side means belonging (Probyn, 1996). "Belonging is an achievement at several levels of abstraction" (Bell, 1999, 3). As bell hooks (2009) points out, belonging is a two-way process. The characteristics of the place must fit the character of the person in order for a sense of belonging to emerge. This is how hooks justifies her move from New York City to a progressive university town in the conservative state of Kentucky (hooks, 2009). The sense of belonging can also arise on a smaller scale, as Probyn illustrates with the juxtapositions of balconies in Montreal, which create different configurations for the moments of their use, which are precisely the possibilities of feeling belonging (Probyn, 1996). The person who feels a sense of belonging needs a habitually appropriate place and this place must have the emotional and material resources to allow this (hooks, 2009). Yuval-Davis (2010)

Table 1 Neighbourhood belonging scale.

Belonging Items	Valid	Item-rest corr.	alpha
People in this neighbourhood are willing to help each other	9904	0.635	0.809
I feel at home in my neighbourhood	9904	0.775	0.747
I feel like a stranger in my neighbourhood (reverse)	9904	0.614	0.817
I am deeply rooted in my neighbourhood	9904	0.683	0.797

Data source: Sackmann et al. (2024b); Likert scale from 0 (do not agree at all) to 4 (fully agree).

thus sums up belonging as the resulting effect of the combination of community, familiarity, security, and a sense of the possibilities offered by the place itself. Blokland and Nast (2014) have published a scale that uses three items to operationalise this sense of belonging to a neighbourhood. Their work offers a successful implementation of this scale for Berlin. It is therefore used in a slightly modified form to operationalise belonging in this study (see Table 1).

The neighbourhood takes on a special role with reference to belonging. Humans dwell as an immediate experience of being-in-the-world (Ingold, 2006) and they dwell with others. People dwell in the neighbourhood and the sense of belonging to the neighbourhood is primarily related to the people living there (Blokland et al. 2023). Belonging therefore, arises in contact with local neighbours, in interactions about everyday topics and problems that are current in the neighbourhood (Suk et al. 2020). This aspect of belonging as social cohesion and trust in the neighbourhood is operationalised with a question from the "social cohesion and trust" scale developed by Sampson et al. (1997, 920), which is aimed at reciprocal help among neighbours (Table 1). According to Allen et al. (2021), this conception of belonging can be understood as an extension of the somatic into the social, as humans seek to establish belonging to fellow humans and to safe places due to an internal motivation. As a result, Allen et al. (2021) see four human competencies as essential for establishing belonging: competencies for creating attachment, opportunities for belonging, intrinsic motivations for belonging, and human perceptions of belonging. But neighbourhood belonging is not attainable for everyone in the neighbourhood and shows social and cultural variances (Devadason, 2010). It requires a "comfort zone" that enables a sense of belonging and local relatedness (Blokland and Nast, 2014). Thus, the context of belonging becomes important (Blokland, 2019). The place of neighbourhood is itself essential for experiences of belonging (Preece, 2020) as a space that allows for fleeting encounters and thus promotes (interethnic) understanding (Lobo, 2010).

The relation between social infrastructure and neighbourhood belonging. Social infrastructures are closely linked to issues of belonging, as they primarily allow people to come together (Latham and Layton, 2022) and subsequently develop a sense of belonging to the neighbourhood. Social infrastructures can be defined as "places that allow people to gather" (Latham and Layton, 2022, 659). Social infrastructure is a socially produced infrastructure that itself produces the social again (Amin, 2014) and "form[s] the foundation of communities" (Zahnow, 2024, 1). This is in contrast to the poststructuralist view of social infrastructure, which does not distinguish between people and artefacts in terms of infrastructure (Simone, 2004; McFarlane, 2021). According to this view, social infrastructures are merely practices of connecting people and things that maintain a certain stability through repetitive actions. This kind of 'humanisation' of social infrastructure is then seen as a cornerstone of urban life. In this sense, care, for instance, is a social infrastructure (McFarlane, 2021). The term remains extremely vague in its poststructuralist interpretation. By contrast, places can be considered social infrastructures if they provide opportunities for social contact and thus help generate connectedness (Layton and Latham, 2022). For example, evidence of the stress-reducing effect of well-maintained green spaces can be found worldwide, especially for marginalised people (Klinenberg, 2018). Such experiences with infrastructure shape human identity (Amin, 2014) and foster a sense of belonging.

The concept of social infrastructure refers to networks formed by facilities, places, institutions, or social groups that provide opportunities for interaction and exchange as a network (Latham and Layton, 2019). Infrastructures in general are fitted into other structures, they have a spatial and temporal scope, and their use must be learned (Star, 1999). Social infrastructures in particular can thus also have an exclusionary effect if their use is not learned in certain social groups, e.g., library use, which then reduces educational opportunities. Similar social infrastructures can vary greatly in terms of their impact on society. Barlösius (2019) illustrates this with the food supply in rural areas. The grocery shop jointly run by the village community and the grocery shop branch of a big chain are both social infrastructures, but they each evoke fundamentally different forms of sociality. Only the first form can be expected to have a genuine influence on the sense of belonging to the neighbourhood or village, the second rather not. Social infrastructure is operationalised in this study by the frequency of use of hedonistic-cultural infrastructure in the form of local restaurants and cafés, pubs, and cultural events near the place of residence (Klinenberg, 2018; Latham and Layton, 2019), which are measured on a six-point scale from 'never' to 'daily'. In addition, the degree of satisfaction with other social infrastructures in the vicinity, ranging from cultural offerings, play and development opportunities for children to services for older people, is measured.

The link between neighbourhood belonging and social infrastructure has predetermined breaking points when access to infrastructure is essential but not guaranteed. Nethercote (2017) shows this with the example of Melbourne, where a life-stage-specific social infrastructure, the primary school, is not available in certain neighbourhoods and thus evokes an infrastructure-directed displacement pressure, which in turn segregates the locational advantages in the inner city in a socially unequal way, especially for migrants. The same applies to dual structures of social infrastructure in administration and in reality, e.g., schools in Africa, where social infrastructure serves on paper as a technique for regulation and audit or serves patron-client networks, but does not necessarily serve people as materialised infrastructure (Larkin, 2013). This often takes place at the expense of the marginalised, who are referred to social infrastructures that exist administratively but not de facto (Larkin, 2013) and are thus inhibited in their life chances and opportunities for forming belonging. Social infrastructures thus always have a power dimension inscribed in them (Sultana, 2020). They are able to generate belonging by fostering and maintaining trust, encounters, and sociality (Latham and Layton, 2019). Yet, they can also prevent belonging in cases of dysfunctionality.

As Blokland et al. (2023) point out, empirical work on neighbourhood belonging mainly analyses aspects such as heterogeneity, density, size, according to Louis Wirth's (1938) classical urbanity theory, as well as social cohesion, collective efficacy, residential duration, and community organisation. So far, social infrastructures actually play less of a role in the empirical

analysis of neighbourhood belonging. In this context, Zahnow (2024) emphasises that social infrastructures can increase and consolidate the sense of belonging to the neighbourhood by promoting social interactions, although this connection is only understood in a rudimentary way. In her own empirical research, she finds indications of an internal differentiation of social infrastructures with regard to the promotion of belonging in the sense that infrastructures that require participation and active engagement in a group, such as sports clubs or praying in a temple, create a closer connection and sense of belonging than economically motivated places of consumption such as shops or cafés (Zahnow, 2023). Therefore, Zhuang and Lok (2023) call for more empirical research, particularly in smaller towns and cities, to clarify the extent to which these places help to promote and develop a sense of belonging in communities. However, it can be assumed that the sense of belonging to the neighbourhood is positively influenced by social infrastructures and, thus, can be translated into five empirically testable hypotheses.

(1) Trust in neighbours is a strong predictor of belonging (hypothesis one).
(2) The frequency of use of social infrastructure in the neighbourhood is positively related to the sense of belonging to the neighbourhood (hypothesis two).
(3) Satisfaction with the social infrastructure in the neighbourhood is positively related to the sense of belonging to the neighbourhood (hypothesis three).
(4) There is a positive correlation between social infrastructure services in the neighbourhood and the sense of belonging to the neighbourhood (hypothesis four).
(5) Finally, the correlation between social infrastructure and belonging is more pronounced in rural areas (hypothesis five).

Data and variables

The statistical analysis is based on a panel survey conducted for the first time between January and May 2021, which was implemented on a random sample in twelve localities in Germany (Sackmann et al. 2024b). Figure 1 shows the geographical location of the study sites in Germany.

The municipalities included in the sample can be characterised as smaller localities beyond metropolises. In order to reflect the variance in effects caused by the size of the localities, four of these localities are small rural towns and villages with less than 9,000 inhabitants. The three smallest study sites are rural villages (Markt Winzer, Eisdorf, Jübar), Willebadessen is a small rural town near the university town of Paderborn. Four towns have a medium size between 30,000 and 75,000 inhabitants and are located both in more peripheral areas (Einbeck/Passau) and in an extended metropolitan region (Gladbeck/Merseburg). Passau is an exception in this group because it is a university city with around 11,000 students. Four larger towns with more than 100,000 inhabitants are included in the sample (Sackmann et al. 2024a). Hanover is the largest of these, with 535,000 inhabitants. It is the capital of Lower Saxony and a university city with around 49,000 students, and therefore offers many jobs in public administration and academia. Bielefeld is the second largest city in the sample, with 334,000 inhabitants and around 38,000 students. Magdeburg is the capital of Saxony-Anhalt and a university city with around 18,000 students. The smallest major city in the sample is Ingolstadt, with around 138,000 inhabitants. It is not a classical university town but is strongly influenced by the automotive industry. The regional diversity of local political traditions in the Federal Republic of Germany is captured by the distribution of localities in the federal states of Bavaria (southern Germany), Lower Saxony (northern Germany), North Rhine-Westphalia (western Germany), and Saxony-Anhalt (eastern Germany). The sample size is $n = 11{,}034$ with a response rate of 24.0%. In all localities, a random sample was drawn from the registers of the resident population of the municipalities in 2020 to ensure representativeness in the respective municipalities (Sackmann et al. 2024b). All those selected received a letter inviting them to participate in the online survey ($n = 7589$) with a follow-up paper questionnaire ($n = 3445$) in order to also reach people without online access (see Table 2).

Dependent variables. The dependent variable 'neighbourhood belonging' is operationalised as a mean value scale consisting of four items of a five-point Likert scale. The items were developed in close alignment with the belonging scale by Blokland and Nast (2014), supplemented by an item on neighbourly reciprocity from Sampson et al. (1997) and Browning and Calder (2017). The questions were slightly modified for the German context and are presented in Table 1. The response categories used in the scale were coded so that higher numbers mean higher agreement. All missing values were deleted in a first step, i.e., only cases that were complete for all items were included in the sample. The reliability of the scale (Cronbach) is $\alpha = 0.837$ and can be described as good.

Independent variables. The importance of social infrastructures is first operationalised via the frequency of use of hedonistic-cultural infrastructures close to home (Klinenberg, 2018; Latham and Layton, 2019). The three questions on the frequency of use of local restaurants and cafés, pubs, and cultural events are measured on a six-point scale from never to daily. The three items are then summarised to form a mean scale (frequency) (Cronbach's $\alpha = 0.759$). Social infrastructures in relation to care for older people, play and development opportunities for children, and cultural offerings are measured by satisfaction with the respective offerings in the place of residence. The question is: 'How satisfied are you with the following services in your place of residence? Care for older people in need of care, play and leisure opportunities for children and young people, cultural offerings'. The possible answers form a five-point Likert scale from very satisfied to very dissatisfied. van der Eijk's (2001) measure of agreement for the three social infrastructures is between 0.72 and 0.76 on a scale of 0 to 1, indicating a relative agreement of the answers (van der Eijk, 2001). Satisfaction with these three social infrastructures is not polarised.

The question "How many neighbours would you entrust with the keys to your home?" serves as a strong trust measure and thus reliably determines trust in neighbours (Letki, 2008; Tan and Teng, 2020). In addition, respondents are asked whether they regularly talk to neighbours on the street on a scale from 0 (never) to 3 (often). An additional indicator for the perception of belonging is the number of best friends at the place of residence. The more close friends there are, the stronger the perceived belonging is likely to be (Witten et al. 2007; Minza et al. 2024). Methodologically, mental health in a neighbourhood is linked to social infrastructure (Latham and Layton, 2022) and self-reported mental health thus serves as a control variable for the perception of belonging. Urban/rural is a dummy variable with the value of one if the respondent lives in a rural area, to test whether belonging is more pronounced in rural areas (Kurtenbach, 2024).

Sex (female/other), age, education (operationalised as the highest school-leaving qualification), and migration background serve as general socio-demographic control variables. Since the study by Blokland et al. (2023) emphasises the importance of length of residence for belonging to a neighbourhood, the dummy

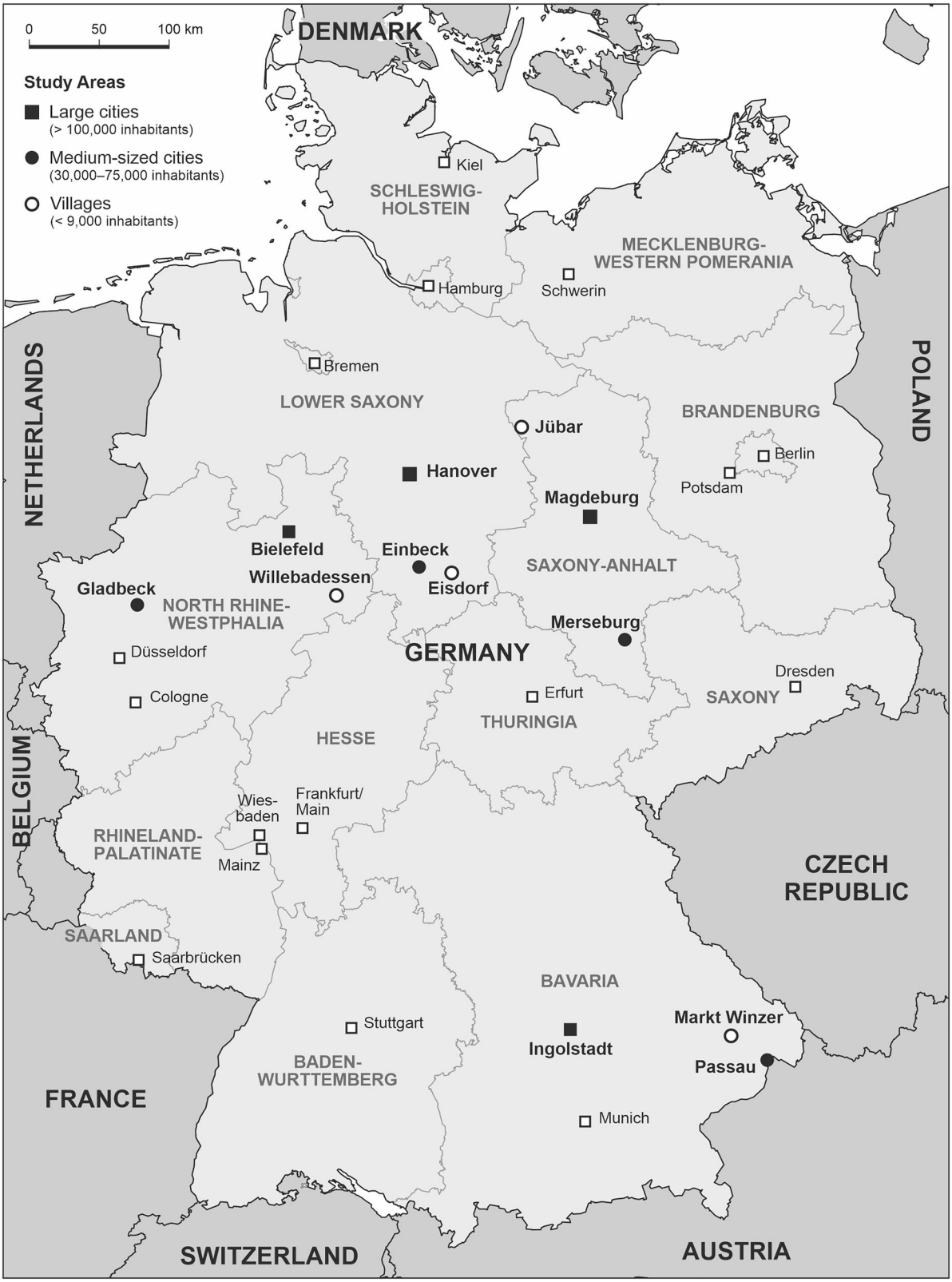


Fig. 1 Location of the survey sites in Germany. Graphic: Stephan Pohl.

variable 'home ownership' (yes/no) and the metric variable 'length of residence' (in years) are included as additional proxies for anchoring respondents in their living environment. Table 3 shows the descriptive statistics of the variables included in the analysis (Table 3).

Methodology

The five hypotheses developed in the theoretical section are tested in three separate methodological steps with the aid of OLS regressions, Blinder-Oaxaca decompositions, and multi-level regression models. First, four OLS regression models with

Table 2 Sample sizes and response rate of the 2021 survey.

Investigation site	Population (31/01/2023)	Gross sample	Online response	Paper response	Total response	Response rate (%)
Ingolstadt (B)	138,016	6600	1176	474	1650	25.0
Passau (B)	53,093	3300	486	242	728	22.1
Markt Winzer (B)	3841*	3000	392	170	562	18.7
Hanover (LS)	535,932	6600	1160	440	1600	24.2
Einbeck (LS)	30,420	3300	691	263	954	28.9
Eisdorf (LS)	1243#	1107	210	105	315	28.5
Bielefeld (NRW)	334,002	6600	1024	428	1452	22.0
Gladbeck (NRW)	75,343	3300	481	236	717	21.7
Willebadessen (NRW)	8133	1000	175	85	260	26.0
Magdeburg (SA)	236,188	6600	1234	584	1818	27.5
Merseburg (SA)	33,641	3300	391	297	688	20.8
Jübar (SA)	1569	1347	169	121	290	21.5
Total	1,451,421	46,054	7589	3445	11,034	24.0

Data sources: Sackmann et al. (2024a; 2024b), German Federal Statistical Office, Municipality Markt Winzer, Wikipedia; * in 2022; # 31/12/2021, (*B* Bavaria, *LS* Lower Saxony, *NRW* North-Rhine Westphalia, *SA* Saxony-Anhalt).

Table 3 Descriptive statistics.

	N	Mean	SD	Min	Max
Neighbourhood belonging (dv)	9904	2.93	0.83	0	4
Social infrastructure (frequency)	9666	0.93	0.81	0	5
Social infrastructure (care)	6606	2.44	0.93	0	4
Social infrastructure (leisure)	7461	2.23	1.00	0	4
Social infrastructure (cultural offers)	9814	2.36	1.02	0	4
Keys neighbours (trust)	10,562	1.44	0.80	0	3
Conversations with neighbours	10,852	2.24	0.78	0	3
Best friends (among neighbours)	10,696	1.34	1.19	0	3
Mental health	10,844	2.79	1.02	0	4
Sex (female)	11,034	0.52		0	1
Age	11,031	54.10	18.11	17	99
Education	10,255	2.72	1.16	0	4
Home ownership	8825	0.59		0	1
Length of residence	10,858	19.73	17.16	0	121
Migration background	10,260	0.28		0	1
Urban/rural	11,034	0.13		0	1

Data source: Sackmann et al. (2024b).

robust standard errors to avoid heteroscedastic problems[2] test the influence of trust in neighbours and the frequency of use of social infrastructure in the neighbourhood (hypotheses 1 and 2) and the influence of satisfaction with the social infrastructure (hypothesis 3) on belonging to the neighbourhood. The models also control for the influence of trust and contacts in the neighbourhood. The following equation shows the overall model to explain belonging to the neighbourhood:

$$Y_i = \beta_0 + \beta_1 x_1 + \cdots + \beta_{15} x_{15} + \varepsilon \quad (1)$$

where β_0 is a constant, ε indicates an unmeasurable error variable and $\beta_n x_n$ represents the unknown model parameters (Fahrmeir et al. 1996). The first model examines the influence of the covariates on the use of and satisfaction with social infrastructures. In the second model, the trust and contact covariates on belonging are also included. Model three additionally tests mental health based on self-reports and the socio-demographic control variables. This model also includes home ownership, length of residence, and whether the locality is urban or rural. The correlation matrix (Spearman's) in Table 4 for the ordinal independent variables in the models shows no unwarranted correlations that could potentially interfere with the results of the regression models. Additionally, the variance inflation factor (VIF) is calculated and tests for possible multicollinearity among the items in the model. The values lie between 1.02 and 1.64 and do not indicate any multicollinearity problems, which would be indicated by a value of VIF < 10 (Gujarati, 2004, 362).

In the second methodological step, mean differences in the belonging scale are decomposed to determine whether these are due to composition effects or to differences in the effects of the covariates (Cotton, 1988). The two variables, satisfaction with cultural social infrastructure and satisfaction with the care infrastructure for older people, are divided into two groups based on the 75th percentile. The two groups thus represent people who are very satisfied with the local social infrastructure and people who are not or are indifferent (hypothesis 3). These two variables represent, on the one hand, satisfaction with cultural offerings, a rather hedonistic social infrastructure associated with amenities in the residential environment. On the other hand, satisfaction with care for older people represents a social infrastructure that addresses a basic need for many. This makes the two variables well suited to breaking down differences in terms of belonging to the neighbourhood in terms of composition effects. To test hypothesis five, the mean difference in belonging for the four

Table 4 Correlations (Spearman) of the explanatory covariates of the regression.

	SI frequency	SI culture	SI leisure	SI care older people	Keys	Conver-sation	Friends	Mental health
SI frequency	1.000							
SI culture	0.188*	1.000						
SI leisure	0.114*	0.538*	1.000					
SI care older people	0.054*	0.244*	0.332*	1.000				
Keys	0.106*	0.130*	0.139*	0.105*	1.000			
Conversation	0.105*	0.090*	0.069*	0.070*	0.378*	1.000		
Friends	0.172*	0.097*	0.064*	0.048	0.145*	0.139*	1.000	
Mental health	0.093*	0.187*	0.160	0.143*	0.146*	0.165*	0.098*	1.000

Data source: Sackmann et al. (2024b); *$p < 0.001$; $n = 4103$, *SI* social infrastructure.

Table 5 Sense of belonging: Percentage difference from the average according to place.

Municipality	Percentage diff.
Ingolstadt (B)	−3.84
Passau (B)	−2.46
Markt Winzer (B)	5.63
Hanover (LS)	−1.86
Einbeck (LS)	6.61
Eisdorf (LS)	11.89
Bielefeld (NRW)	0.41
Gladbeck (NRW)	−2.38
Willebadessen (NRW)	5.98
Magdeburg (SA)	−2.35
Merseburg (SA)	−0.05
Jübar (SA)	4.74

Data source: Sackmann et al. (2024b).

villages in rural areas and the eight cities is also calculated and analysed using the Blinder-Oaxaca decomposition. The Blinder-Oaxaca decomposition explains the influences of the covariates that can be attributed to pure compositional effects of the different groups (Jann, 2008; Blau and Kahn, 2017). Not all social infrastructures are equally relevant to everyone. Satisfaction could be related to position in the life cycle, for example. The decomposition also highlights the proportion of the differences in the unexplained part, which presumably needs to be explained in terms of attitudes and behaviour.

The third methodological step consists of estimating random intercept, random slope multi-level models (Barr et al. 2013) for the two cities of Magdeburg and Hanover. In this third step, the influence of the objective social infrastructure available in the neighbourhood is estimated (hypothesis 4). The model structure follows Eq. (2). The left bracket describes the fixed part, the right bracket the random part (Luke, 2020):

$$Y_{ij} = [y_{00} + y_{10}X_{ij} + y_{01}W_j + y_{01}W_jX_{ij}] + [u_{0j} + u_{1j}X_{ij} + r_{ij}] \quad (2)$$

where the subscript i refers to the individual in the neighbourhood j, y_{00} denotes the mean of neighbourhood belonging at the individual level. y_{01} is the slope for the predictor at the neighbourhood level and W_j (fixed part) and u_{0j} (random part) are the error terms or the unmodelled variability for the neighbourhoods (Luke, 2020). The data are only available for the two major cities of Magdeburg and Hanover in a multi-level structure with a total of 82 units at level 2 that correspond to the respective city districts. The presence of green spaces and parks in the district as a dummy, the number of available childcare places for one- to six-year-olds, the presence of an care support centre or community drop-in for older people as a dummy, and the total weekly opening hours of the libraries in the district are used as indicators for social infrastructure at district level (Klinenberg, 2018). In addition, the control variables at context level are net migration in 2020, the proportion of people with a migration background in the district in 2020, the proportion of detached and semi-detached houses in all buildings in the district in 2019, the population density in the district in 2020, and the proportion of unemployed people in the working-age population in the district in 2020.

Outcomes

Towns and municipalities are heterogeneous and different in themselves. The twelve study locations selected for the panel reflect great heterogeneity in terms of living conditions and realities. The first step in the study is therefore a one-way analysis of variance (ANOVA) to test whether the municipalities differ significantly in terms of belonging to the neighbourhood. The result shows a significant difference between the municipalities ($F = 17.50$; $p < 0.001$), which is also clearly reflected in the percentage difference from the average in the sample. Tables 5 shows the values for the twelve study municipalities.

The average values show that larger cities tend to have lower levels of belonging, with the weakest value occurring in Ingolstadt. The values in the eastern German municipalities are lower relative to their size than in the western German municipalities. The western German villages of Eisdorf, Markt Winzer, and Willebadessen clearly show a high level of belonging as assumed by Kurtenbach (2024).

The results of the OLS regression analyses show the strong effect of the trust covariates on belonging in all four models (see Fig. 2). The models have R^2 values between 0.061 (Model 1) and 0.483 (Model 3) and can explain around half of the variance in belonging. The effect of trust is clearly evident. In model three, increasing the key variable by one, i.e., passing on another flat key, increases belonging by 0.33 units. The effect of talking to neighbours is even more pronounced. An increase of one unit causes belonging to rise by 0.45 units. The conversations and key variables are both measured on the same scale. Of the four covariates on social infrastructure, the two variables, satisfaction with care for older people and satisfaction with cultural institutions are significant. Looking at the beta coefficients, it becomes clear that care for older people has the strongest influence of the social infrastructure variables. However, the influence is small compared to the trust variables. An increase in satisfaction with the care infrastructure for older people only leads to an increase in belonging of 0.06 units in model 3. Of the control variables, living in a rural area shows a notable effect, which is only slightly smaller than the effect of satisfaction with the care infrastructure (beta 0.038 to 0.066). It is interesting to note that the effect of satisfaction with cultural facilities is stronger than the effect of

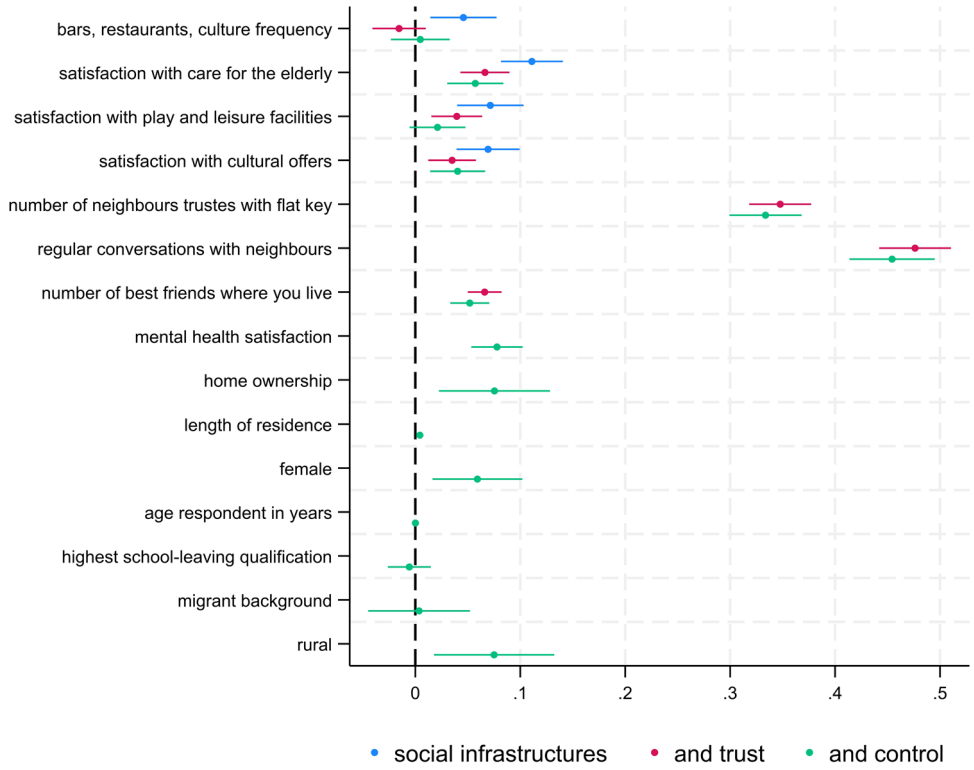


Fig. 2 OLS-Regression with robust SEs, confidence intervals shown as lines. Data source: Sackmann et al. (2024b).

home ownership (beta 0.052 to 0.044), albeit with a very small effect size (see Table S1 in the supplement).

With regard to the mean differences in belonging between the 75th percentile of people who are satisfied with the cultural social infrastructure in the neighbourhood and the others ($t = -12.58$, $p < 0.001$), it is noticeable that this is 7.72% higher. Regarding satisfaction with the care infrastructure, the value is 7.76% higher ($t = -10.81$, $p < 0.001$). The difference between urban and rural areas is most pronounced, with 8.14% higher levels of belonging in the villages ($t = -9.50$, $p < 0.001$). The decomposition analyses only show how much of these differences are due to pure composition effects. The difference in the mean between the eastern and western German municipalities is only slight at 1.36% and is weakly significant ($t = 2.01$; $p < 0.05$). Therefore, no decomposition is calculated for this minor difference (see Table 6).

The difference in the mean value for satisfaction with cultural social infrastructures is 56% due to composition effects. Trust in neighbours alone explains almost 27% of this, and conversations with neighbours 17%. Neighbourly relations, or 'neighbouring' according to Keller (1968), almost completely explain the difference in belonging between the people most satisfied with the cultural social infrastructure and the others. The same picture, only slightly weaker, emerges from the mean difference in belonging to the neighbourhood between the people most satisfied with the care infrastructure for older people and the others. Although the social infrastructure for care of older people is completely different to cultural institutions, trust, measured by the number of keys to the apartment entrusted to neighbours, also has the greatest explanatory power here at 29%, followed by conversations with neighbours at 16%. People who are very satisfied with these two divergent forms of social infrastructure feel more related, and this difference can be largely explained by the relationships of trust and interaction in the neighbourhood.

The mean difference in belonging between urban and rural areas is explained somewhat differently. Composition effects are responsible for 58% of the difference (reference = rural). Here, interactions are more important (33%) than trust (18%). Education explains a further 12% of this difference. It is striking that the frequency of using social infrastructure in the neighbourhood is significant and has a negative input. The decomposition clearly shows that belonging is primarily linked to the people in the neighbourhood and that this effect is also evident for the difference between urban and rural areas.

Finally, multi-level models are used to examine whether the objective presence of social infrastructures has an impact on belonging. The models are only estimated for the cities of Hanover and Magdeburg, as the data is only available in a multi-level structure for these two locations. First, an empty model is estimated. Then, a model is estimated with only social infrastructures as context variables and the same individual variables as in the OLS regressions. The covariate with the strongest explanatory power in the OLS regressions, conversations with neighbours, is included in the models as a random slope, i.e., it can vary between neighbourhoods. The same model is then estimated but with structural variables at the context level. In the final fourth model, the context variables that were significant in the previous models are included together. The models are estimated using the restricted maximum likelihood method. In this case, the variance components are already included in the likelihood function. The regression coefficients are then estimated in a subsequent step, which leads to better estimation results (Hox et al. 2018) (see Table 7).

Model 1 shows that the grand mean of the neighbourhood level intercepts is 2.906 and this value is statistically highly significant. The intercept in the random effect part, with the value 0.049, shows that there is variation in belonging between the neighbourhoods. This variation is significantly different from zero. A likelihood ratio

Table 6 Blinder-Oaxaca decompositions of mean differences in belonging.

	Satis. cultural offers (75th percentile)		Satis. care for older people (75th percentile)		Urban/rural	
	Percent of difference explained	Coefficient	Percent of difference explained	Coefficient	Percent of difference explained	Coefficient
Sex	0.69	−0.002	−0.11	0.000	−0.43	0.001
Age	−0.27	0.001	−0.05	0.000	1.00	0.002
Education	−3.14	0.007**	0.54	−0.001	12.27	−0.030*
Home ownership	0.32	−0.001	2.10	−0.005*	−6.00	0.014
Length of residence	−2.40	0.005*	1.45	−0.003	17.53	0.020
Migration background	0.03	−0.000	−0.14	0.000	−2.59	−0.027
Urban/rural	−3.65	0.008*	1.29	−0.003	-	-
Keys neighbours (trust)	26.80	−0.059***	29.02	−0.069***	18.88	−0.045***
Conversations with neighbours	17.35	−0.038***	16.08	−0.038***	33.93	−0.082***
Best friends (among neighbours)	7.04	−0.015***	1.33	−0.003	−3.34	0.008
Social infrastructure (frequency)	4.83	−0.011*	0.02	−0.000	−10.63	0.026**
Mental health	8.74	−0.019***	10.34	0.025***	−0.61	0.001
Explained	56.35	−0.124***	61.88	−0.147***	58.02	−0.140***
Unexplained	43.65	−0.096***	38.12	−0.091***	41.98	−0.101**
Difference	100	−0.219***	100	−0.238***	100	−0.240***
Observations		5667		3718		6120

Data source: Sackmann et al. (2024b).

test is also highly significant ($X^2 = 54.23$, $p < 0.001$) and shows that a multi-level model is preferable here to an OLS regression. The intraclass correlation coefficient is 0.071, which is acceptable for a multi-level regression. Model 2 shows that an additional neighbour who is entrusted with a flat key increases belonging by 0.334. The covariate representing conversations with neighbours also shows a similar increase. If this changes by one unit, for example, from rarely to occasionally, then belonging increases by 0.398 units. The values of the regression coefficients are thus roughly comparable with those of the OLS regression in Fig. 2. The random effect parameter indicates that the slope varies significantly between the neighbourhoods. Of the socio-demographic control variables, only home ownership and length of residence are significant. Home ownership is associated with an increase in belonging of 0.131 units compared to people who do not own a home. One extra year of residence increases belonging by 0.006 scale points. Of the social infrastructures in the neighbourhood, only a centre for services for older people is significant, but its effect on belonging is negative. In Model 3, the effects of the level 1 indicators hardly change in comparison to Model 2. However, at the neighbourhood level, the proportion of people with a migration background has a clearly negative effect on belonging. In addition, the proportion of unemployed in the neighbourhood also has a significantly negative effect on belonging. However, the explanatory power of the level 2 variables is moderate overall. Model 3 has an R^2 of 0.47 at the individual level and an R^2 of 0.44 at the context level. The final fourth model only includes context variables that were significant in the previous models. The result shows that again the covariates at the individual level hardly change, that the conversations variable varies significantly between the contexts, and that the social infrastructure variable that was still significant in model 2 now loses its significance. The AIC value shows a slightly better fit of the fourth model compared to models 2 and 3. The explained variance has decreased slightly compared to model 3 at both levels. Ultimately, the multi-level models show that in comparison with the individual-level variables, and even in comparison with socio-demographic characteristics of the neighbourhoods, the objective social infrastructure in the neighbourhoods only has a very small influence on neighbourhood belonging.

Discussion

The empirical results show a differentiated picture with regard to the five hypotheses on belonging and social infrastructure derived from the research literature. The strong influence of the housing key variable in all statistical methods on belonging confirms hypothesis 1. In contrast, hypothesis 2 must be rejected, as the frequency of using social infrastructure is not significant in the OLS regressions except for the first model. Hypothesis 3 is confirmed, even if the positive effect of satisfaction with local social infrastructure on belonging is rather weak. In contrast, hypothesis 4 must be rejected as the multi-level models cannot show that the objective structure of social infrastructures has any influence. Finally, regressions and decompositions show stronger belonging in rural villages and confirm hypothesis 5.

The empirical data were collected in cities and places beyond the metropolises and thus fill the research gap in belonging research identified by Preece (2020). Existing research on belonging focuses heavily on metropolises. One metropolitan-specific topic that is often empirically investigated in belonging research is the sense of 'elective belonging' as a correspondence relationship between the legitimate inhabitation of a place and the associated symbolic capital (Butler, 2007; Pinkster, 2016), which is sometimes advantageous in socially competitive situations (Bourdieu, 1999). The idea of the 'spatial self' as a "presentation of the self, based on geographical traces of physical activity" (Schwartz and Halegoua, 2015, 1643) draws on this symbolic capital, which ultimately rests in the perception and recognition of the value of inhabiting a place (Bourdieu, 1998). Belonging is then symbolic capital expressed in the 'spatial self'. Such metropolitanised research on belonging asks, for example, about the 'right' degree of cosmopolitanism, which must not undermine belonging but at the same time allow for cosmopolitanism and contingency (Ho, 2006). Such questions are of secondary importance for smaller cities. Instead, the statistical analyses show the great importance attached to neighbours for the sense of belonging. The neighbour in Heidegger's sense (2000) is more than a personified ambivalence of closeness and distance or familiarity and strangeness (Keller, 1968). Trust and contact with

Table 7 Multi-level models (random slope) for belonging for Hanover and Magdeburg.

	Model 1 b (SE)	Model 2 b (SE)	Model 3 b (SE)	Model 4 b (SE)
Intercept	2.906*** (0.034)	1.072*** (0.101)	1.276*** (0.103)	1.295*** (0.102)
Keys neighbours (trust)		0.334*** (0.021)	0.329*** (0.021)	0.330*** (0.021)
Conversations with neighbours		0.398*** (0.026)	0.382*** (0.025)	0.385*** (0.025)
Best friends (among neighbours)		0.050*** (0.012)	0.051*** (0.012)	0.052*** (0.012)
Mental health		0.116*** (0.014)	0.115*** (0.014)	0.114*** (0.014)
Sex		0.039 (0.027)	0.039 (0.028)	0.039 (0.027)
Age		0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Education		−0.021 (0.014)	−0.025 (0.014)	−0.024 (0.014)
Home ownership		0.131*** (0.032)	0.103*** (0.033)	0.102*** (0.031)
Length of residence		0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)
Migration background		−0.041 (0.033)	−0.044 (0.032)	−0.043 (0.032)
Weekly opening hours of the library		0.000 (0.000)		
Childcare places for 1- to 6-year-olds		0.000 (0.000)		
Number of daycare centres and kindergartens		−0.003 (0.003)		
Centre for services for older people		−0.091* (0.047)		−0.017 (0.036)
Park (dummy)		−0.047 (0.040)		
Migration balance in 2020			−0.000 (0.000)	
Proportion of people with a migrant background 2020			−0.312** (0.118)	−0.337** (0.114)
Proportion of detached and semi-detached houses 2019			0.071 (0.072)	
Population density 2020			0.000 (0.001)	
Proportion of unemployed			−1.946** (0.659)	−1.883** (0.636)
Variance components: Random effect	Variance component	Variance component	Variance component	Variance component
Intercept	0.049* (0.014)	0.080* (0.039)	0.030* (0.028)	0.037* (0.029)
Conversations with neighbours		0.010* (0.006)	0.007* (0.005)	0.008* (0.005)
Wald (X^2)		1290.34	1471.48	1449.15
R^2 (level 1)		0.392	0.465	0.454
R^2 (level 2)		0.034	0.441	0.383
AIC	4732.87	3501.01	3455.62	3426.04
N (Level 1)	1942	1872	1872	1872
N (Level 2)	82	82	82	82

Data source: Sackmann et al. (2024b).

people in the neighbourhood have the clearest influence on the sense of belonging. People in the neighbourhood have a mutual relay function: if there is mutual trust and regular contact, then people feel that they belong to their neighbourhood in the city.

The statistical analyses put the influence of social infrastructures on neighbourhood belonging in Germany into perspective. The analysis conceptualises social infrastructures analogously to Latham and Layton (2022) or Klinenberg (2018) and is thus able to estimate their influence on neighbourhood belonging in comparison to other covariates. Unlike, for example, empirical studies on comparable spatial units of smaller cities in the Global South, such as the study by Ayoola and Amole (2018), which show that the physical appearance of a neighbourhood in Akure, Nigeria, is very important for the residents' sense of belonging, social infrastructures have no significant effect in the multi-level models. This finding for Germany stands in contrast to other predominantly qualitative empirical results. Based on qualitative empirical research in the Global North, Brown (2022), for example, emphasises the importance of public places in this context using the example of Paradise, California, USA. Lewis et al. (2022) emphasise for Manchester, UK, that renovated and renewed public spaces act as a hinge for the possibility of creating social connections in the neighbourhood, which subsequently leads to a sense of belonging. Witten et al. (2007), on the other hand, emphasise the role of specific social infrastructures for belonging using the example of schools in New Zealand, which form anchors of belonging. The data for Germany used here only shows the importance of similar specific social infrastructures in relation to individual satisfaction with them, but not in relation to their objective existence in a neighbourhood. When it comes to belonging to ordinary German neighbourhoods, social infrastructures have significantly less explanatory power than trust or regular conversations.

On the one hand, the results on belonging to the 'ordinary neighbourhood' (Beier, 2023) in Germany can claim to reproduce earlier empirical findings for these spaces (Preece, 2020). The cultural divergence of belonging noted by Devadason (2010) for London is reflected in respondents' tendency to feel more like they belong. In the context of social infrastructures such as markets, this aspect needs to be explained. As Lobo (2010) shows qualitatively for markets in suburban Melbourne, aspects of minimal sympathy (Stichweh, 2010), such as humour and laughter, play an important role in destabilising ethnic boundaries in encounters in the context of social infrastructures. Belonging can thus arise here in the context of social infrastructures, but eludes the rough attention grid of quantitative models, especially multi-level models. Social infrastructures such as weekly markets generally have informal rules that govern their use and are derived from the interests of the individuals using them (Barlösius 2019). This suggests that it is not so much the objective social infrastructure itself, but the informal rules for its use that seem to be essentially responsible for promoting belonging. This is in line with the social relationship of enabling social infrastructures strongly advocated by Larkin (2013). Latham and Layton (2019) already clearly point to this effect of social infrastructures on sociality. If they promote trust and encounters (Lobo, 2010), then they promote belonging, as the results show. If they promote fear and discomfort, they inhibit any affective relationship with the place (England and Simon, 2010).

A sense of belonging is rooted in the appreciation of the local, the neighbourhood as the part of the city one does not go to, precisely because one is already there (Perec, 2008, 57), and this in turn is the prerequisite for the appreciation of the other. For Tomaney (2013), solidarity rooted in the local is therefore the most important moral starting point for the ecological order of society. The great importance of trust and conversations in the statistical analyses reflects this basic social figuration. Belonging is then able to reconcile the human need for security with the freedom to shape one's own individuality (Huizinga and van Hoven, 2018). As Blokland (2019) emphasises, the context of belonging is important. The community of residents does not necessarily go hand in hand with a sense of belonging, for example, when people are allocated to social housing in stigmatised neighbourhoods. Community can then be based on shared experiences of one's own subordination, but this does not mean that belonging also develops. The duration of residence can therefore have an effect on belonging in both directions and can also mean non-identification with the neighbourhood (Blokland et al. 2023) as a "sense of non-belonging" (Lang and Rothenberg, 2017, 1756) due to long periods of decline, as Blokland et al. (2023) show for the metropolis of Berlin. The empirical results for smaller cities outside the metropolises in Germany confirm that contact with and trust in fellow citizens are decisive for the sense of belonging, but also material security, such as home ownership. Whether the low explanatory power of social infrastructure would also apply if the informal rules of its use were included in the models remains an open question. The theoretical assumption that belonging to the neighbourhood primarily means belonging to the people in the neighbourhood is clearly confirmed. The mechanisms of trust building can then be subsumed as social infrastructures. However, in terms of their importance for the establishment of belonging, they are only one mechanism among many in the city.

Conclusion

Do smaller cities and villages and their specific social infrastructures create a different sense of belonging than metropolises? Ultimately, even in the smaller, more ordinary city, belonging is produced in an intersectional context based on various aspects (Tomaney, 2015), a crucial one being trust in neighbours and another being social infrastructure. The question of the impact of the lack of such infrastructures on belonging is a decisive point from this perspective. If displacement in Melbourne due to a lack of school places, particularly affecting migrants, inhibits belonging in parts of the city (Nethercote, 2017), then this clearly demonstrates the exclusionary potential of infrastructure invoked by Star (1999). Latham and Layton's (2019) call for social geography to turn specifically to the policies of social infrastructure provision is then ultimately aimed at a politics of belonging that is quite different from a view as a discursive resource (Antonsich, 2010). The article highlights an important result for the international discourse, with the statistical findings presented from the German context. Metrocentricity (Bunnell and Maringanti, 2010), which has been inherent in the theoretical and empirical conception of social infrastructures since their development by Klinenberg (2015; 2018) and in their application in belonging research, should be flanked and supplemented by analyses of smaller towns and communities. The spatial scale makes a difference to the effect of social infrastructures on belonging. The scales of this difference should be researched more internationally.

Belonging is so much more than an abstract or theoretical social science construct. Belonging, situated at the intersection of competencies, opportunities, intrinsic motivations, and perceptions (Allen et al. 2021) is linked to a sense of commitment and stands up for place (hooks, 2009) and is thus at the heart of solidarity and social cohesion in society. Place attachment touches on people's identity and the place they assign to themselves in society (Cramer, 2016). The empirical work presented for smaller, more ordinary cities in this paper illustrates the enormous importance people place on their sense of connectedness to each other. Against this backdrop, policies of social infrastructure provision (Latham and Layton, 2019) are policies for holding society together in solidarity in the context of multiple crises.

Data availability

Data is available after registration at the RISC Research Data Centre: https://fgz-risc-data.de/en/.

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Notes

1 There is no clear quantitative threshold that determines a metropolis. With Mieg (2012), a minimum size of one million inhabitants can be assumed. In addition, metropolises often have specific functions such as ports or air hubs and are the starting point of social, economic, cultural, or political change (Mieg, 2012).

2 A Breusch-Pagan/Cook-Weisberg test indicates the presence of heteroscedasticity problems in the control model ($X^2 = 77.92$; $p < 0.001$). Therefore, robust standard errors are estimated for all OLS models.

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PD designed the study, analysed the data, wrote the first version and also wrote the final version.

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Informed consent

This article does not contain any studies with human participants performed by any of the authors. The survey data was collected as part of Leibniz University's ethics vote.

Additional information

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Correspondence and requests for materials should be addressed to Peter Dirksmeier.

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