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# On the Role of Space, Place, and Social Networks in Social Participation

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Editorial

## On the Role of Space, Place, and Social Networks in Social Participation

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### Abstract

Recent literature recognises the importance of situating social networks in spatial contexts to better understand how space, place, and social networks interact and are co-constituted. Despite this call, the mainstream literature in social network analysis pays relatively little attention to spatial dimensions of social networks and remains largely disconnected from the vast body of research on spatial networks in geography and cognate fields. This thematic issue is one step towards advancing this research agenda by examining how such an approach relates to issues of social inclusion and social participation. It includes a selection of studies that focus on the relation between space and social networks across a wide variety of research fields and contexts. Contributions use original, often mixed-method approaches and multiple perspectives for capturing the role of space and people's experience of place in network formation through physical, cultural, and geographical dimensions. We conclude this editorial by briefly suggesting areas for future research.

### Keywords

distance; place; social network analysis; social networks; space; spatial context

### Issue

This editorial is part of the issue “On the Role of Space, Place, and Social Networks in Social Participation” edited by Gil Viry (University of Edinburgh), Christoph van Dülmen (Thünen Institute of Rural Studies), Marion Maisonobe (CNRS), and Andreas Klärner (Thünen Institute of Rural Studies).

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### 1. Introduction

The idea for this thematic issue emerged when we were organising sessions on the spatial dimensions of social networks at the International Network for Social Network Analysis (INSNA) Paris Sunbelt Conference in July 2020. The success of this event and the stimulating conversations with colleagues motivated us to develop this issue. It is ironic and telling that these conversations and the subsequent collaboration around the role of space on social connections occurred remotely due to the Covid-19 pandemic, demonstrating that, while physical co-presence facilitates emotionally-based relationships, scientific collaboration and intellectual stimulation can also happen online.

After outlining the theoretical stakes of this issue (Section 2), we briefly introduce the eight contributions

and their approaches (Section 3) and conclude by giving potential directions for future research (Section 4).

### 2. Social Networks in Spatial Contexts

Recent literature recognises the importance of situating social networks in spatial contexts to better understand the interplay between space, place, and patterns of connections between actors (e.g., Small & Adler, 2019; Ye & Liu, 2018). As Neal (2020, p. 369) recently writes in *The Oxford Handbook of Social Networks*: “Just as people are embedded in networks of different types of relationships, they are also embedded in physical space: They live somewhere, they work somewhere, and they form relationships somewhere.” This “somewhere” affects the preferences and opportunities for social actors to develop and maintain specific networks, whether it is

through spatial configurations (e.g., a room layout or meeting places within a neighbourhood), connectivity (e.g., the global network of cities), demographic composition (e.g., urban segregation), or the cultural norms in particular places (e.g., a monastery).

This call is part of a wider project in the network literature claiming that social network analysis (SNA) studies need to pay more attention to the importance of contexts, including a better integration of qualitative and quantitative approaches and methods (Crossley, 2010; Froehlich et al., 2019). This call is also in line with the spatial or mobility turn in the social science and humanities arguing that research should move away from considering fixity and propinquity as the norm and pay more attention to issues of space, place and mobility (Urry, 2012). Thinking space in network formation has a long history going back to classic network studies in social psychology, social anthropology, and sociology, such as Festinger et al. (1950), Mitchell (1969), Feld (1981), and Fischer (1982), who were all concerned with how space shapes social networks.

Despite this call, the mainstream literature in SNA pays relatively little attention to spatial dimensions of social networks and remains largely disconnected from the vast body of research on spatial networks in geography and cognate fields, such as architecture, transport and urban studies. This is particularly true in quantitative SNA, where the role of space in tie formation, when studied at all, has often been analysed through the unique lens of physical distance (or proximity)—usually as something “from the outside” to overcome, rather than as an inherent characteristic of relationships (e.g., long-distance relationships), networks (e.g., transnational families), and spatial environments (e.g., metropolitan areas). While this research has demonstrated that physical co-presence (and therefore the ability to be mobile) continues to strongly structure personal networks in the age of internet-based telecommunications (Mok et al., 2010; Preciado et al., 2012; Spiro et al., 2016), it is commonly influenced by a traditional notion of space as fixed and containing networks; its “impact” on networks being often limited to a Euclidean distance between network members. There are of course important exceptions with studies that focus on mobile populations, such as international migrants, or specific places of interest (e.g., poor neighbourhoods, schools) and place-based relationships (e.g., neighbours). Qualitative and mixed-method SNA studies have usually been more concerned with space when they analyse how the social, cultural, historical context of a place influences the relationships and processes taking place within networks (Bellotti, 2014; Froehlich et al., 2019). However, we argue that important questions and approaches for analysing how social networks and spatial contexts intersect need further development.

This lack of attention to space in the network literature is particularly surprising when we consider that human geographers have long replaced the once-

dominant notion of “container space” with an understanding of space as a relational phenomenon between people, objects, and places. From this perspective, social networks are no longer conceptualised as “contained in space” but in co-constitution with physical space. Network formation is a spatially-embedded and dynamic phenomenon in which space has structural effects on the way people develop and maintain specific network patterns through various mechanisms. At the same time, social actors are constituting spaces by interlacing different places through their social relationships and practices (see, e.g., Massey, 2005).

Social networks bear the traces of the successive places, groups and contexts through which individuals navigate and in which they have woven ties that remain active today. Gaining a comprehensive understanding of social networks (their size, structure, composition, etc.) and network processes (homophily, centrality, clustering, etc.) requires researchers to examine the relationships people, groups, and contexts have with places and what (and who) flows between these places. This not only means analysing how characteristics of spatial environments influence social relationships but also how, in turn, social relationships influence space, including how individuals and groups (bodily, sensory, and emotionally) experience places and spatial mobility depending on the relationships they are building there, what meanings they attach to places and spatial mobility, and how these experiences shape their social relationships and networks.

### 3. Multiplicity of Approaches

This thematic issue provides a selection of articles that focus on the relation between space and social networks across a wide variety of research fields. The issue starts with three contributions where the authors develop original approaches to examine personal networks in spatial contexts, either by looking at the geographical locations of the connections developed (Bidart et al., 2022; Liang et al., 2022) or the everyday places visited by the participants (van Dülmen & Klärner, 2022). The following five articles focus on specific spatial contexts and how the characteristics of places and people, and the connections between the two (through, e.g., sense of place, spatial appropriation, place attachment), shape the formation of social ties and networks (Baggetta et al., 2022; Beckmann et al., 2022; Le & Kolleck, 2022; Resler et al., 2022; Schubert & Brand, 2022). Spatial contexts examined are diverse, ranging from micro-spaces (city allotment gardens in Resler et al., 2022; meeting spaces of civil society organisations in Baggetta et al., 2022), meso-level spaces (residential centres for asylum-seeking adolescents in Schubert & Brand, 2022; cultural and arts education centres in Le & Kolleck, 2022; urban places and neighbourhoods in Beckmann et al., 2022; cultural meeting places in van Dülmen & Klärner, 2022), to macro-spaces (employment areas of

two countries in Bidart et al., 2022; inter-city distances in Liang et al., 2022).

Examining spatially-embedded social networks and socio-spatial processes involves conceptual and methodological challenges. What dimensions of spatial contexts and spatial scales are relevant? How to visualise social networks in space? How to analyse similarities, differences, and interconnections between the space in which people perform their daily activities and the space in which their social relationships develop? The collection of studies presented in this issue shows that capturing the role of space as a complex and multi-dimensional system requires multiple perspectives, both qualitative and quantitative methods. Many contributions use original combinations of methods, suggesting that there is no golden approach but various ways of approaching these issues, depending on the research questions addressed, the type of social relationships and spatial contexts examined, and the scale at which space is considered. Methods commonly used in SNA are often mixed with less conventional methods in creative ways: GPS tracking and two-mode analysis of people and places (van Dülmen & Klärner, 2022), qualitative content analysis and exponential random graph models (Schubert & Brand, 2022), systematic social observations (Baggetta et al., 2022), qualitative interviews with egocentric network hierarchical mapping (Le & Kolleck, 2022), or name-generator surveys and data-reduction techniques (Bidart et al., 2022; Liang et al., 2022; Resler et al., 2022, additionally including qualitative interviews in the studies by Bidart and colleagues and Resler and colleagues, specifically).

#### 4. Issues of Social Inclusion and Areas for Future Research

Situating networks in spatial contexts aims to understand network phenomena better, including those related to issues of social inclusion and social participation. We see three areas where such an approach may be especially fruitful. One is the interaction between risk factors of social exclusion at the spatial and network levels. Well-known spatial factors of social exclusion, such as area deprivation, lack of spatial mobility, or local stigmatisation, may not have similar effects on everyone, depending on the relationships people have in and beyond this space. For instance, the lack of accessibility among some individuals may be partly compensated for by the greater spatial mobility of their network members. A second area is the relationship between area-based and individual-based social capital and the extent to which resources at one level spread to the other level. The increased availability of network “big” data at the scale of entire populations offers promising opportunities in this regard. A third area is the relationship between places and social networks in their cultural dimension. Meanings people attribute to social relationships, stories, identities, and roles are intrinsically linked

to their experiences of place and the cultural norms in these places. In turn, the constitution of space and places, as well as their perception, are inextricably linked to how the social relationships that individuals or groups have with each other are spatially embedded. To gain a better understanding of these links, and thus of social networks more generally, further SNA studies that innovatively integrate space are needed.

#### Conflict of Interests

The authors declare no conflict of interests.

#### References

- Baggetta, M., Fulton, B. R., & Caplan, Z. (2022). Space and interaction in civil society organizations: An exploratory study in a US city. *Social Inclusion*, 10(3), 307–318.
- Beckmann, M., Knüttel, K., Petermann, S., & Stefes, T. (2022). The role of spatial context in shaping adolescents’ peer relationships. *Social Inclusion*, 10(3), 262–272.
- Bellotti, E. (2014). *Qualitative networks: Mixed methods in sociological research*. Routledge.
- Bidart, C., Maisonobe, M., & Viry, G. (2022). Analysing personal networks in geographical space beyond the question of distance. *Social Inclusion*, 10(3), 233–247.
- Crossley, N. (2010). The social world of the network. Combining qualitative and quantitative elements in social network analysis. *Sociologica*, 1. <https://doi.org/10.2383/32049>
- Feld, S. L. (1981). The focused organization of social ties. *American Journal of Sociology*, 86(5), 1015–1035. <https://doi.org/10.1086/227352>
- Festinger, L., Schachter, S., & Back, K. (1950). *Social pressures in informal groups; a study of human factors in housing*. Harper.
- Fischer, C. S. (1982). *To dwell among friends: Personal networks in town and city*. University of Chicago Press.
- Froehlich, D. E., Rehm, M., & Rienties, B. C. (Eds.). (2019). *Mixed methods social network analysis: Theories and methodologies in learning and education* (1st ed.). Routledge. <https://doi.org/10.4324/9780429056826>
- Le, T. H. T., & Kolleck, N. (2022). The power of places in building cultural and arts education networks and cooperation in rural areas. *Social Inclusion*, 10(3), 284–294.
- Liang, X., Lee, S., Chen, H., de la Peña, B., & Andris, C. (2022). Characteristics of jetties and little boxes: An extensibility study using the Neighborhood Connectivity Survey. *Social Inclusion*, 10(3), 221–232.
- Massey, D. (2005). *For space*. SAGE.
- Mitchell, J. C. (1969). *Social networks in urban situations: Analyses of personal relationships in Central African towns*. Manchester University Press.

- Mok, D., Wellman, B., & Carrasco, J. (2010). Does distance matter in the age of the Internet? *Urban Studies*, 47(13), 2747–2783. <https://doi.org/10.1177/2F0042098010377363>
- Neal, Z. P. (2020). The spatial dimensions of social networks. In R. Light & J. Moody (Eds.), *The Oxford handbook of social networks* (pp. 368–383). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780190251765.001.0001>
- Preciado, P., Snijders, T. A. B., Burk, W. J., Stattin, H., & Kerr, M. (2012). Does proximity matter? Distance dependence of adolescent friendships. *Social Networks*, 34(1), 18–31. <https://doi.org/10.1016/j.socnet.2011.01.002>
- Resler, M. L., Ramos Lobato, I., & Candy, S. (2022). “We don’t meet [any]where else, just here”: Spatiality of social capital in urban allotments. *Social Inclusion*, 10(3), 273–283.
- Schubert, D., & Brand, A. (2022). “Whom should I talk to?”: Role prescription and hierarchy building in supervised living groups. *Social Inclusion*, 10(3), 295–306.
- Small, M. L., & Adler, L. (2019). The role of space in the formation of social ties. *Annual Review of Sociology*, 45, 111–132. <https://doi.org/10.1146/annurev-soc-073018-022707>
- Spiro, E. S., Almquist, Z. W., & Butts, C. T. (2016). The persistence of division: Geography, institutions, and online friendship ties. *Socius*, 2. <https://doi.org/10.1177/2378023116634340>
- Urry, J. (2012). Social networks, mobile lives and social inequalities. *Journal of Transport Geography*, 21, 24–30. <https://doi.org/10.1016/j.jtrangeo.2011.10.003>
- van Dülmen, C., & Klärner, A. (2022). Places that bond and bind: On the interplay of space, places, and social networks. *Social Inclusion*, 10(3), 248–261.
- Ye, X., & Liu, X. (2018). Integrating social networks and spatial analyses of the built environment. *Environment and Planning B: Urban Analytics and City Science*, 45(3), 395–399. <https://doi.org/10.1177/2399808318772381>

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Article

## Characteristics of Jetters and Little Boxes: An Extensibility Study Using the Neighborhood Connectivity Survey

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### Abstract

Individuals connect to sets of places through travel, migration, telecommunications, and social interactions. This set of multiplex network connections comprises an individual's "extensibility," a human geography term that qualifies one's geographic reach as locally-focused or globally extensible. Here we ask: Are there clear signals of global vs. local extensibility? If so, what demographic and social life factors correlate with each type of pattern? To answer these questions, we use data from the Neighborhood Connectivity Survey conducted in Akron, Ohio, State College, Pennsylvania, and Philadelphia, Pennsylvania (global sample N = 950; in model n = 903). Based on the location of a variety of connections (travel, phone call patterns, locations of family, migration, etc.), we found that individuals fell into one of four different typologies: (a) hyper-local, (b) metropolitan, (c) mixed-many, and (d) regional-few. We tested whether individuals in each typology had different levels of local social support and different sociodemographic characteristics. We found that respondents who are white, married, and have higher educational attainment are significantly associated with more connections to a wider variety of places (more global connections), while respondents who are Black/African American, single, and with a high school level educational attainment (or lower) have more local social and spatial ties. Accordingly, the "urban poor" may be limited in their ability to interact with a variety of places (yielding a wide set of geographic experiences and influences), suggesting that wide extensibility may be a mark of privileged circumstances and heightened agency.

### Keywords

community sociology; extensibility; geography; social support; social ties; spatial social networks

### Issue

This article is part of the issue "On the Role of Space, Place, and Social Networks in Social Participation" edited by Gil Viry (University of Edinburgh), Christoph van Dülmen (Thünen Institute of Rural Studies), Marion Maisonobe (CNRS), and Andreas Klärner (Thünen Institute of Rural Studies).

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### 1. Introduction

Humans are connected to a set of places through a variety of mechanisms. These places can be childhood home cities, other places they have lived for an extensive period, locations where they have extended family, regions from where they receive information, or locales where they are members of institutions. Some individ-

uals are connected to many places, while others are connected to few; some have distant connections, and some have nearby connections. Colloquially, we might call someone a "jetter" if they connect to a variety of places (Chen & Wellman, 2009) or perhaps living in "little boxes" if their ties and their energies are invested in local places (Wellman, 1999a). These behaviors can be encompassed under the scholarly term "extensibility," defined



as the reciprocal of time-space convergence (Adams, 1995; Janelle, 1973), the geographic spread or reach of an agent (Adams, 2009), or the geographic reach of a place or event (Kwan, 2000). It is important to study individuals' extensibility because it can tell us more about the places (i.e., communities) that may have influenced an individual and the forces that continue to shape their cultural, political, and world views. A challenge, however, is how to measure and codify extensibility so it can be used as a descriptor variable for individuals (and, in turn, for the places where these individuals reside).

Extensibility, in its simplest form, can be captured by the number of places or people one has ties to, and the geographic separation (the distance) between the ego (an individual) and alters (their contacts; see Janelle, 1973). Social science researchers have used travel diaries or surveys to capture the locations of social ties, communications, and travel patterns (Fischer, 1982; Hampton & Wellman, 2003; Stutz, 1973). These spatial and social ties are distributed differently and can interact with socio-demographic attributes. For example, when distance increases, the likelihood of forming weak or strong ties also reduces (Hipp & Perrin, 2009); kin ties can be distant in urban communities (Illenberger et al., 2011; Kowald et al., 2013), yet local in rural communities (Fischer, 1982); and social friendships tend to be more spatially compact than core ties (Boessen et al., 2018).

Research has shown that localized, tight-knit, or small networks are often associated with individual characteristics such as low income, gender (male), single status, low educational attainment, and with the African American community (Small, 2007; van Eijk, 2010). Furthermore, those with greater educational attainment and higher income tend to have connections from varied ethnic backgrounds (Marsden, 1987), perhaps suggesting a relationship with multiple geographies. While significant correlation exists, socioeconomic indicators can be weak predictors of personal network size, composition, or contact frequency (Kowald et al., 2013; van den Berg et al., 2009). Extensibility patterns also correlate with levels of social support, travel behavior, and disaster resilience (Klinenberg, 2015). Extensive social networks can provide social capital in the form of emotional or material aid (Lin et al., 2001; Wellman, 1999b) and motivate travel (Picornell et al., 2015; van den Berg et al., 2013). Conversely, individuals with less residential mobility tend to have locally concentrated contacts (Viry, 2012). Socially isolated individuals are also less likely to abandon their homes in disastrous events due to a lack of support and exposure to others' decisions (Sadri et al., 2017). These correlations may underline the role of greater social factors (e.g., racial discrimination) in including or excluding individuals in developing local or far-reaching ties (Sibley, 1995).

The emergence of big data has provided researchers with large volumes of individual behavior, that, for privacy reasons, is aggregated as place-to-place connectivity, effectively expanding the concept of extensibility to

define groups of interconnected places (as described in Neal, 2012). Studies using these types of datasets have found that places with wealthier, more educated, and more resourceful populations tend to have more far-reaching ties. For instance, Facebook friendship data tells us that for a resident of Kentucky, the probability of having a Facebook friend outside 500 km is much lower than for a resident of Los Angeles (Bailey et al., 2018). Furthermore, people in counties with higher average income and education have wider, more extensive networks (Bailey et al., 2018). Relatedly, a study of British telephone calls found that wealthy locales have connections to many places, whereas poorer locales have fewer connections (Eagle et al., 2010).

There are many ways we can connect to a place: through movement, information transfer, social ties, belongingness to organizations, etc. Yet, in many survey-based studies, social network researchers often solely focus on social relationships or travel, not both. Implications are typically drawn for single variables (such as "places where kin live") rather than a collective set of places (e.g., where one has a vacation home, where they grew up, and where they make calls to), despite ample evidence that travel and relationships are intertwined (Chen & Wellman, 2009). Big data sets do not provide the full story of individual extensibility and its interactions with other social and behavioral factors because one individual is rarely found and linked between datasets. If we had such datasets, we could capture a larger swath of an individual's place-based connections and thus, use this extensibility profile as an independent or dependent variable with more confidence than if we had only one mode (locations of friends or cities visited). Thus, in this study, we aimed to leverage the advantages of both survey data and computational methods to characterize individuals' extensibility. We created a new dataset of ego-centric and multi-modal spatial social networks through a survey deployed in multiple US cities and characterized individuals through a data-driven machine learning model.

Our research questions are twofold. First, do individuals have common extensibility patterns (that is, does a typology emerge) that match theories of local ("little boxes"), glocal, and global reach (Wellman, 2001)? Secondly, do individuals in each type have similar demographic and behavioral attributes? To answer these questions, we clustered 903 individuals (a subsample of the 950 respondents that were suited for the model) with more than 20,000 connections into four groups (i.e., clusters, profiles, categories, classes, types). These groups are distinctive in the distances of the locations they connect with and the types of connections. Clustering was done using the K-means clustering algorithm. Then we used post-hoc tests of ANOVA and Chi-square to reveal whether these groups can be distinguished by a priori sociodemographic and behavioral factors.

We find four major types that reflect the "jetters" and "little boxes" tropes, after Chen and Wellman (2009) and Wellman (1999a), and two groups who have

characteristics of each. Our results suggest correlations between connectivity patterns and race, education, relationship status, local social support, and the security of having alternative places to stay. However, individuals within the same group do *not* have similar political orientation, age, gender, household size, or employment status. Our findings that certain demographic variables lead to more connections and more interaction with a wide variety of places can help create rules of thumb for questions such as: Which groups are more likely to travel between cities? Who may lack ties outside of communities? Who may have been exposed to different types of cultures and environments throughout their lives? Also, since individuals' connectivity data are difficult to source consistently, this study makes a conceptual advancement in data collection.

## 2. Data and Methods

### 2.1. Neighborhood Connectivity Survey

Our study uses data collected from the Neighborhood Connectivity Survey, a large mail-based survey conducted in 2017 and 2018. A mail was sent to participants selected from cities near three major locales: Akron, in the Ohio Metropolitan Area (pop. 700,000 as per the 2018 US census); State College, in the Pennsylvania Metropolitan Area, home to the large Pennsylvania State University (pop. 158,000 as per the 2018 US census); and Philadelphia County, Pennsylvania, i.e., "urban Philadelphia" (pop. 1.6 million as per the 2018 US census). These cities were chosen because they were of interest to our partners at the John S. and James L. Knight Foundation.

In 2017 and 2018, we mailed a total of 20,000 addresses and received 1,023 surveys, 950 of which were sufficiently completed. The survey includes four modules: connectivity, social life, behaviors, and demographic metrics, which, combined, took roughly 30 minutes to finish. Participants could answer the survey on paper or online and were rewarded with a gift card to nationwide retailers for their participation (see the Supplementary File for a copy of the survey).

Using data from the 2018 US census from the American Community Survey, we compared the demographics (relationship status, educational attainment, age, race/ethnicity) of our sample to those in the same set of tracts where any respondents lived. We found that our respondents have lower educational attainment rates, higher average age, and fewer people in the 18–24 range than the population in the study area. Our sample also has fewer Black and Latino members of the population than the study area.

### 2.2. Variables: Connections, Demography, and Behavior

We define connectivity as individuals' connections to geographic locations. To protect privacy, locations are

reported at the city level (and some international links are reported as countries). We asked thirteen relational questions and grouped them into five categories: migration (i.e., where people have lived for an extensive period of time), social ties (e.g., close friends/families, communication, financial/legal supports, etc.), affiliated institutions (e.g., school, affiliated organizations), news (i.e., subscriptions to non-local news), and travel (i.e., where people have visited). These responses could be presented as a network centered at a respondent's home location and connected to geographic locations to which the individual has connections: 950 responses out of 1,023 total responses reported more than two connections and 10 out of 950 responses were missing sociodemographic information. However, we report findings for only 903 subjects because 47 subjects were not able to be effectively classified using our method (see Section 2.3).

Demographic variables include age, race, employment status, gender, relationship status, political orientation, and education level. Of the 903 respondents, 592 identified as female and 278 as male (33 reported "other" or did not disclose their gender). About 80% ( $n = 719$ ) of respondents were White/Caucasian, 12.6% ( $n = 112$ ) were Black/African American, and 6.8% ( $n = 61$ ) were Hispanic/Latino, Asian, bi-racial, or other. Most respondents were employed ( $n = 523$ ) and most described their political orientation as neutral, left, or very left. About one-third attained a bachelor's degree or higher, 48.2% were married ( $n = 436$ ), and 50.3% did not have children in the home ( $n = 454$ ).

Behavioral factors include a derived local social support index, intercity travel frequency, and the percentages of people who could evacuate to locations of close friends and families during emergencies. We generated a local social support index based on questions about people's social life, such as how often they have lunch with coworkers and how many friends they feel comfortable inviting to dinner (as in Stewart et al., 1988). The index scales from 0 to 1, representing low to high levels of local social support. We derived an estimate of people's intercity travel frequency based on how often they used intercity modes of transport (e.g., flights, intercity buses, etc.). Respondents also listed locations they would go to if they had to evacuate the area for two weeks, two months, and indefinitely. We then compared those locations to locations of their close friends and families to calculate the percentages of people evacuating to locations where they had close ties.

### 2.3. Choosing a Clustering Algorithm

We next classified individuals into different groups based on their spatial connections to find common types of extensibility profiles. In prior work, the direction, magnitude, and distance of flow patterns successfully revealed typologies of places with different compositions of social groups and spatial interactions (Andris & Hardisty, 2011; Chen et al., 2021; Liu et al., 2018; Prestby et al., 2020).

The goal is to sort each survey respondent into one of  $n$  number of groups that help us find common types of extensibility patterns (e.g., near, far, mixture, etc.).

We chose unsupervised learning to overcome the limitations of a priori assumptions of connectivity patterns. Machine learning techniques have been widely used to study network-based data for different purposes, such as finding a prevalent subgraph pattern (Cook & Holder, 2006), classifying or identifying different members (nodes) from a communication/social network (Alsayat & El-Sayed, 2016; Nurek & Michalski, 2020), or measuring dynamics in networks (Agarwal & Bharadwaj, 2015).

There are several advantages of using unsupervised learning in this network study. First, the algorithms allow us to input many data attributes into the classifier, and second, they suggest an optimal number of clusters (i.e., typologies/profiles) to fit our data. The unsupervised learning algorithm iterates assigning clusters to samples until the sum of the feature attribute distances between the samples in each cluster is minimized.

We tested and compared the results from three prominent algorithms: nearest-neighbor algorithms (e.g., K-means), decision tree algorithms (e.g., hierarchical clustering), and model-based clustering, in the R statistical computing environment. We ultimately chose K-means clustering for our data analysis since the algorithm resulted in an adequate number of clusters and had better within-cluster consistency (i.e., those within a single group had similar characteristics) compared to the results of other algorithms, as calculated by Silhouette scores for each cluster. The Silhouette score is a standard method to evaluate the internal consistency of K-means clusters. We calculated the 95% confidence intervals  $[-0.0176, -0.0172]$  of Silhouette scores by assigning individuals to random clusters 1,000 times. Though the clusters were moderately homogeneous (Silhouette scores ranging from 0.25 to 0.32), they still provided groupings that were significantly better than random assignment. We excluded individuals with negative Silhouette scores in the K-means clustering analysis, as a negative score indicates that they were misclassified or are best classified between clusters. Thus, in this study, we used 903 responses for connectivity classification and statistical analyses.

#### 2.4. Applying the K-Means Algorithm

We input eight variables into the K-means algorithm to characterize each individual's network. Five are the distance distributions of all places (nodes) that the individual connects with, and the other three are the total number of links that the individual reports via relationship questions, the number of unique place connections, and the number of connection types (i.e., migration, social ties, affiliated institutions, news, and travel). They represent the network structure's spatial scales, magnitudes, and diversity, respectively.

To convert the distance distribution into a vector, we divided the distribution into five distance bins: <5 km, 5–50 km, 50–1,300 km, >1,300 km, and non-US. The distance is measured as Euclidean distance, which closely approximates the travel distance (Boscoe et al., 2012). The thresholds were selected based on the observed distribution, i.e., visually distinctive troughs (5, 50 km) or natural breaks (1,300 km), and can be interpreted as connections in the neighborhood, city, and regional scale (as in Boessen et al., 2014; see Figure 1). To avoid any single feature dominating the classification process, we used the percentage of links that fall in each distance bin instead of the absolute numbers, and we used min–max scaling to transform the three other features into ranges of 0 to 1.

#### 2.5. Statistical Tests With Chi-Square and ANOVA

To examine whether the resulting clusters have statistically distinctive demographic and behavioral characteristics, we used Chi-Square post-hoc tests for all categorical (demographic) variables and ANOVA post-hoc tests (Tukey HSD) for continuous (behavioral) variables. We calculated the standardized residuals in Chi-Square post-hoc tests for each cluster. The residuals represent the extent to which the observed counts of a demographic category in a cluster deviate from the expected counts (i.e., total counts divided by the number of clusters) normalized by the residual cell variance  $V$  (Agresti, 2018):

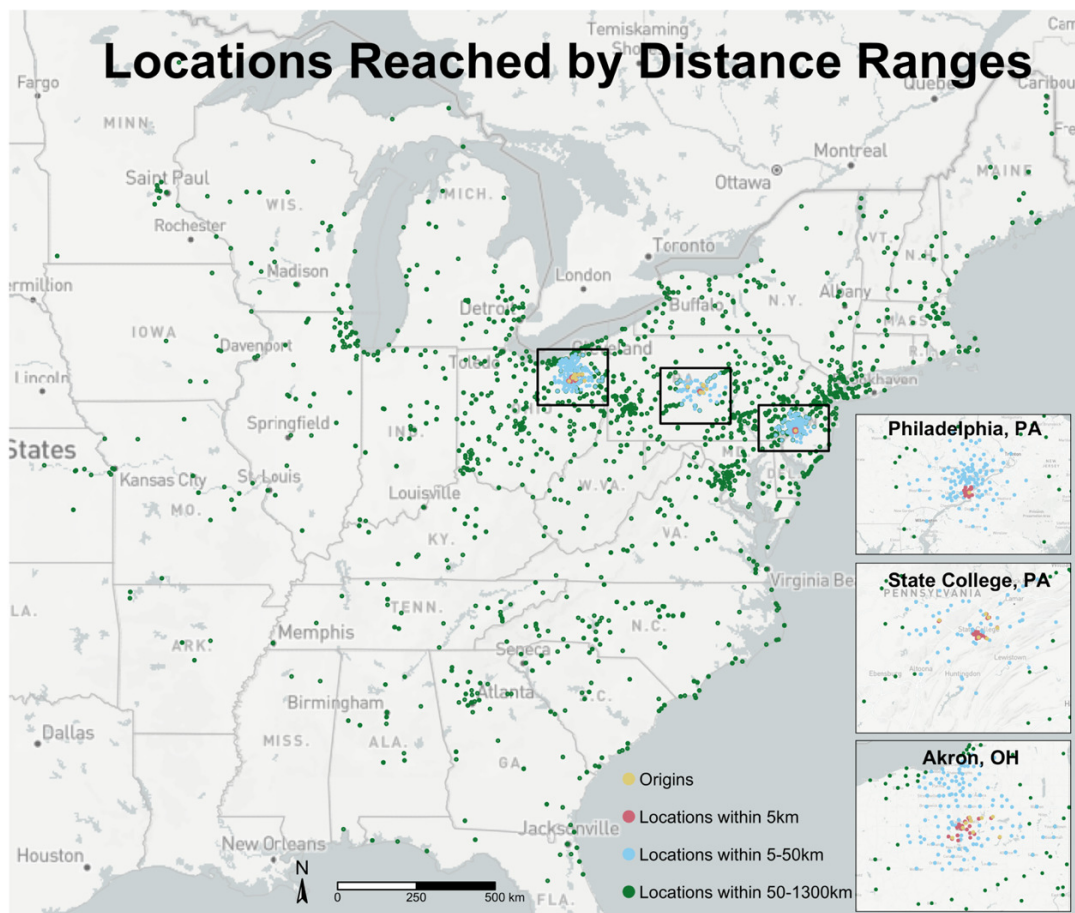
$$\text{Std Residuals} = \frac{\text{Observed} - \text{Expected}}{\sqrt{V}}$$

We also used Bonferroni correction for the p-values to account for the multiple comparisons. We used ANOVA post-hoc tests to compare each cluster to each other cluster for each of the variables. We use the Tukey HSD statistic to define the statistical significance of the mean differences, as it accommodates groups with unequal sample size, which is the case in our survey.

### 3. Results

#### 3.1. Classification of Extensibility

The K-means clustering returned four clusters, each with a distinct feature distribution. We call the first cluster “hyperlocal” ( $n = 195$ ) because most connections are concentrated within 5 km of the respondent's home location (Figure 2). These connections tend to represent social and institutional ties and contain scant non-local news subscriptions or travel outside of the local areas, indicating a close-knit local social circle, or “little boxes” (Figure 3). The 195 people in this category are marked with an overlap between the distribution of their spatial ties and local social ties. Consistent with this interpretation, the number of unique places they are connected to



**Figure 1.** Destinations in different distances range from the respondents' origin cities.

is also the lowest compared with people from other clusters (Figure 2). Among all cities, Philadelphia has the highest percentage of people identified as hyperlocal (41%), which reflects Boessen et al. (2018)'s observation that people living in denser neighborhoods are more likely to have a restricted geographic reach, as well as prior findings that deprived populations have smaller social networks (see Small, 2007).

The second cluster is called "metropolitan" ( $n = 213$ ), named after the concentration of links within a metropolitan area (i.e., within 50 km; see Figure 2). The distance distribution of people's migration history closely follows their social and institutional ties (Figure 3) in both the neighborhood (0–5 km) and the city (5–50 km) range. People in this cluster have many total connections and connection types, as with those in the hyperlocal cluster. Cities with the most respondents under this category are Cuyahoga Falls (51%) and Barberton (48%), two periphery cities in Akron.

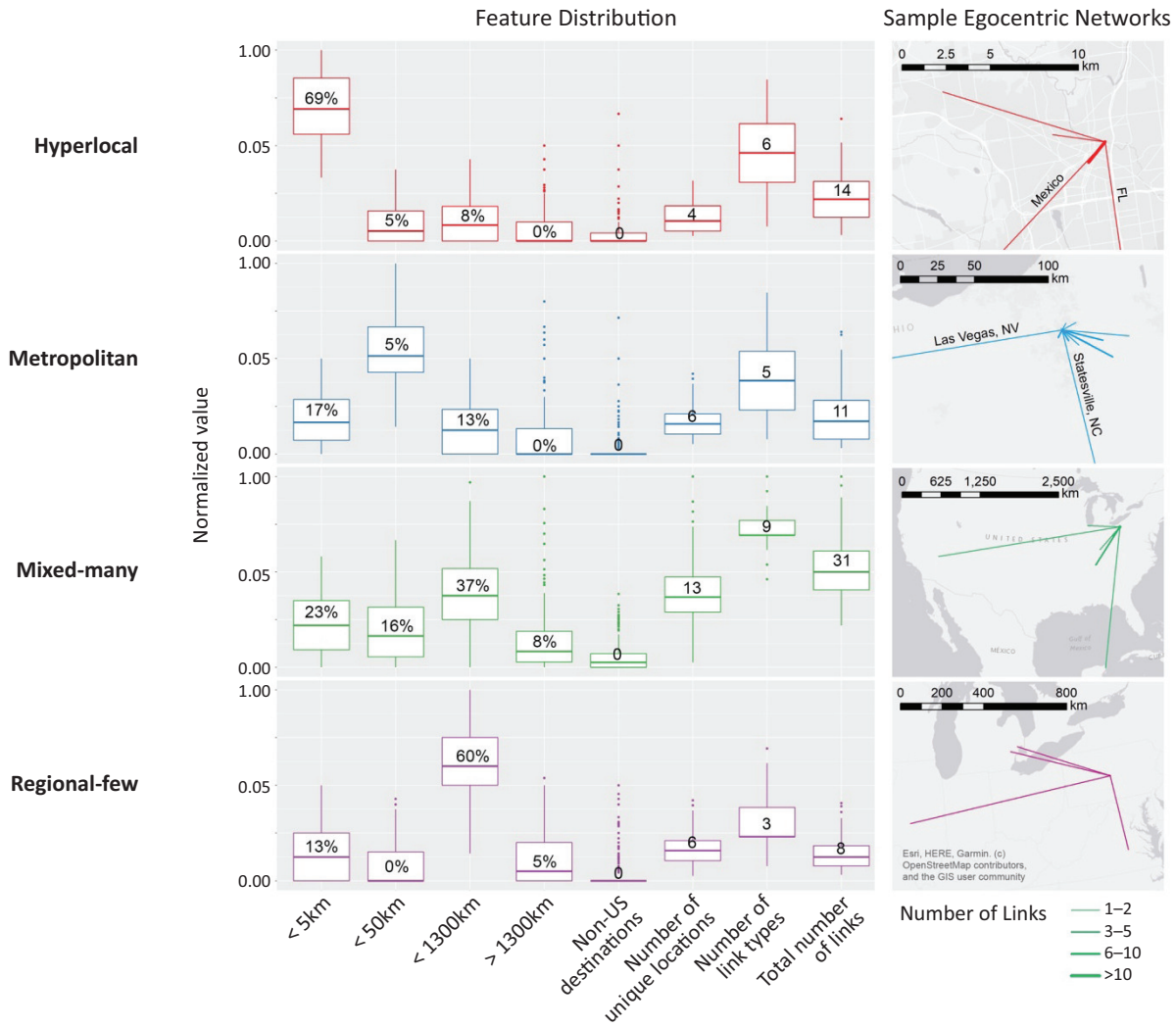
The third cluster, called "mixed-many" ( $n = 273$ ), has the highest average number of total connections and mixed-distance ties (Figure 2). Individuals in this cluster have local connections through institutions, while at the same time, maintain extensive social networks and spatial footprints (migration and travel; see Figure 3). The respondents in this category have the most connections to international destinations and the most

diverse ties in terms of connection types and the number of unique places. Many individuals in this category (47%) are from the university town, State College (Pennsylvania), and we expect that being affiliated with a university and academic system may encourage international ties and movement patterns.

Finally, "regional-few" ( $n = 222$ ) has the fewest number of total links, most of which extend across regions (Figure 2). Respondents tend to lack local ties and have the least diverse connection types. While their institutional connections are mostly local, their spatial, social, information (news), travel histories, and networks are generally found within the (regional) range between 50–1300 km (Figure 3). The overlap may suggest that a respondent recently moved to their current city but still maintained social contacts from former places. Accordingly, State College has the highest percentage of regional-few individuals (43%), which may indicate that university affiliates have been to a distant city but are not deeply rooted in their local area.

### 3.2. Statistical Correlation With Sociodemographic and Behavioral Characteristics

To associate extensibility patterns with sociodemographic characteristics, we report the standardized residuals from Chi-square post-hoc tests (Table 1).



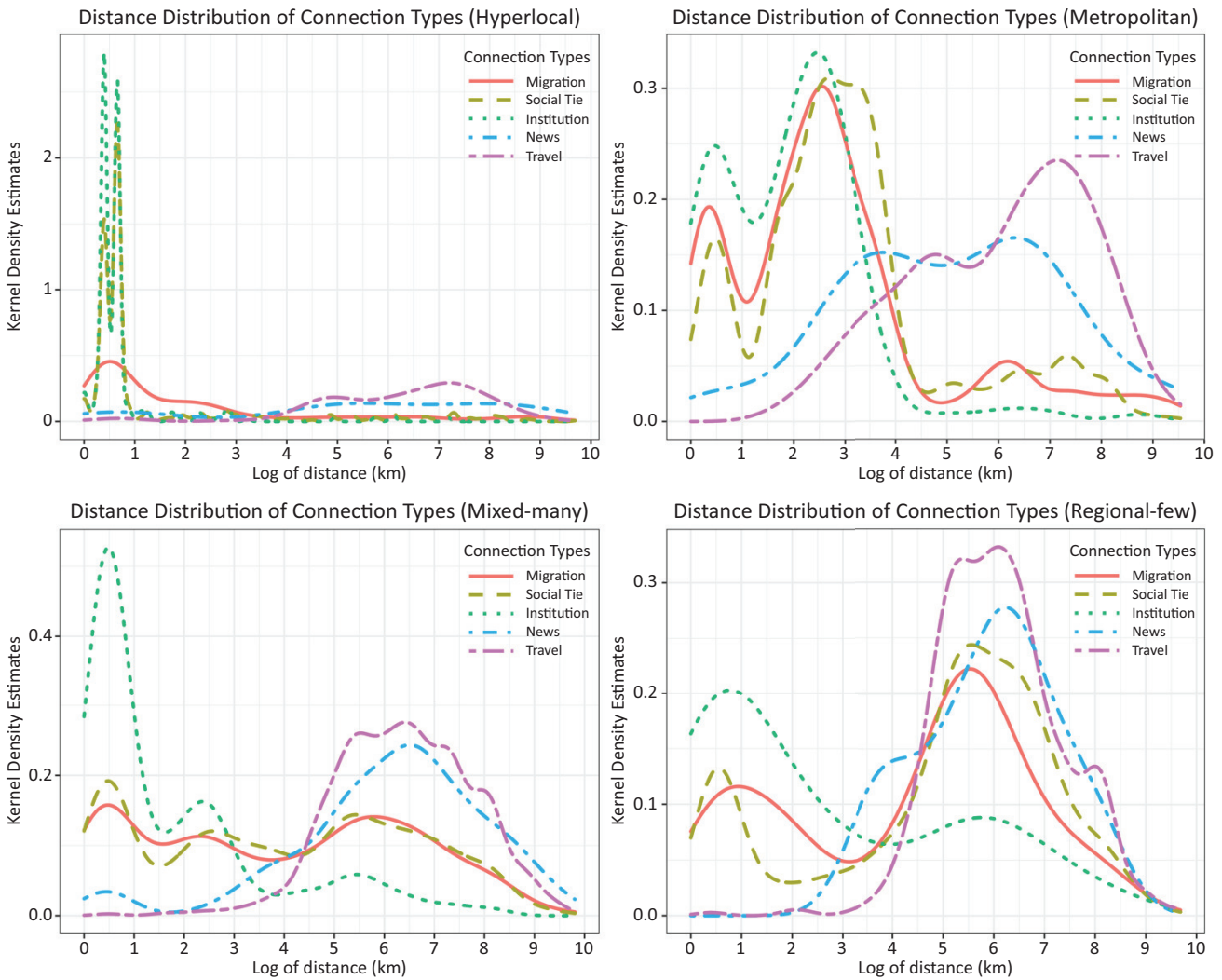
**Figure 2.** Boxplots and sampled ego-centric networks from each of the four resulting clusters. Notes: The boxplot shows the descriptive statistics of each feature in each cluster; for non-distance features, the boxplots report the distribution of absolute counts; for distance-related features, the boxplots report the distribution of the percentage of links in the distance ranges rather than absolute counts. The labeled statistics on the boxplots are the unscaled median values for each feature; the y values are then scaled between 0 and 1 for relative comparison. The sampled networks on the right provide examples of scale, wherein the edges are weighted by the number of links connected to each location.

We found that respondents with a high school education level or lower are statistically more likely to have locally concentrated ties, as featured by the hyperlocal and metropolitan patterns. Conversely, respondents with a Bachelor’s degree or higher are more likely to have a mixed-many network pattern. We also observed that pursuing an associate’s degree is correlated with a spatial social network that expands beyond one’s local context. We postulated that education beyond high school may have a significant impact on people that meet others from distant places or visit places outside of their hometown areas.

The metropolitan and mixed-many clusters were comprised of many white individuals, while Black or African American individuals were often found in the hyperlocal category (with a residual of 6.41). Black or African American respondents were more likely than

white respondents (32% vs. 11%) to be in the hyperlocal category. Forty-six percent (n = 51) of Black or African American respondents were classified as hyperlocal, which exceeds the expected 25% if the population was evenly split across four patterns. In addition, race and education levels were correlated: 76% (n = 39) of Black or African American respondents in the hyperlocal category also had educational attainment at the high school level or lower. This group may also have close-knit relationships at the neighborhood level.

Respondents who identified as single seemed to concentrate in the hyperlocal cluster, but this effect may be explained by education levels. Most single people in the hyperlocal cluster have an education level of high school or lower. In contrast, people who are married tend to have a mixed-many type of connectivity pattern. Three percent of married mixed-many individuals are Black or



**Figure 3.** Distance distribution of various connection types for each of the four clusters. Notes: The Y-axis shows the kernel density estimates of the count of a type of connection at various distances; higher y values indicate a greater likelihood/frequency of occurrence.

African American, which is significantly lower than the overall percentage (12%) in the total respondent population. Black or African American respondents who are single and have lower levels of educational attainment are often found in the hyperlocal pattern.

In terms of behavioral characteristics, the ANOVA post-hoc tests report statistically-significant mean differences between two clusters (Figure 4). Respondents with more long-distance connections (in the mixed-many and regional-few categories) travel more often between cities. This correlation is reasonable because connections provide motivations for (and evidence of) past travel, perhaps visiting family or attending alumni events.

People with hyperlocal and metropolitan styles of extensibility also reported less local social support than people in the mixed-many group, despite the former having a high concentration of local ties. Since the local social support index only measures the quality of social life locally, the result indicates that people in the

mixed-many group are more likely to receive social support from their local networks than people in hyperlocal and metropolitan clusters, even if they share a similar number of total connections.

Lastly, we tested whether people with different extensibility patterns have more or few options regarding alternative places to stay (which is especially useful in emergencies). Eighty-four percent of mixed-many respondents identified plausible evacuation locations, while only 45%, 43%, and 27% of people in hyperlocal, metropolitan, and regional-few groups, respectively, described destination cities for evacuations. The hyperlocal group had the fewest percentage of people (36%) that said they would evacuate to locations where they also had friends and families (inferred), perhaps because their ties are nearby (and likely to be impacted by the same evacuation events due to co-location). Still, many respondents in the mixed-many cluster appeared to be at an advantage, as they could supply more scenarios with support during evacuation events.

**Table 1.** Standardized residuals from Chi-square post-hoc tests.

Sociodemographic Variables	Hyperlocal	Metropolitan	Mixed-many	Regional-few	Count
Age: 18–24	1.02	-1.25	-0.65	0.95	39
Age: 25–34	1.05	-0.70	-0.77	0.50	162
Age: 35–54	-0.65	0.80	-0.93	0.83	267
Age: 54–65	0.45	0.85	-0.85	-0.36	184
Age: 65+	-1.12	-0.41	2.68	-1.39	246
Employment: Unemployed	1.96	0.78	-2.34	-0.12	46
Employment: Retired or Disabled	1.15	1.55	-0.52	-2.06	268
Employment: Student	0.31	-2.00	0.72	0.91	39
Employment: Employed	-2.10	-0.97	1.25	1.60	523
Gender: Female	0.08	-0.15	2.55	-2.63	592
Gender: Male	-0.08	0.15	-2.54	2.63	278
Education: High school or less	<b>6.41***</b>	<b>4.04**</b>	<b>-6.41***</b>	<b>-3.12*</b>	376
Education: Associate	<b>-3.76**</b>	0.21	2.22	0.95	247
Education: Bachelor	-1.76	<b>-3.40*</b>	<b>3.74**</b>	0.98	165
Education: Master or above	-2.74	-2.65	2.45	2.54	79
Political Orient: Very right	-0.88	-0.57	-0.14	1.50	50
Political Orient: Moderate right	-1.00	0.53	-0.01	0.39	140
Political Orient: Neutral	1.33	1.57	-1.70	-0.88	222
Political Orient: Moderate left	-0.66	-0.78	1.93	-0.75	215
Political Orient: Very left	0.77	-1.12	-0.15	0.57	133
Race: White or Caucasian	<b>-7.06***</b>	<b>3.37**</b>	<b>4.22***</b>	-1.13	719
Race: Black of African American	<b>6.70***</b>	<b>-3.21*</b>	<b>-3.79**</b>	0.85	112
Race: Other	2.27	-1.07	-1.63	0.65	61
Relationship: Single	<b>4.37***</b>	-0.01	<b>-4.72***</b>	0.89	177
Relationship: In a relationship	0.13	1.81	-0.65	-1.21	115
Relationship: Married	<b>-3.73**</b>	-1.81	<b>3.53**</b>	1.56	436
Relationship: Divorced or separated	-0.70	0.63	0.32	-0.30	107
Relationship: Widowed	1.22	0.40	0.90	-2.51	62
Children below 18: Yes	1.49	0.18	1.67	0.24	204
Children below 18: No	-1.49	-0.18	-1.67	-0.24	454

Notes: \* $p < 0.05$ ; \*\* $p < 0.01$ . \*\*\* $p < 0.001$ ;  $p$ -values are adjusted by Bonferroni correction; the standardized residuals should be compared within the sociodemographic subtypes (e.g., gender, race, education) for a particular cluster; a statistically-significant standardized residual means that a sociodemographic attribute is highly concentrated in a cluster beyond the expected mean (see Section 2.5); the count is the number of people in a sociodemographic subtype.

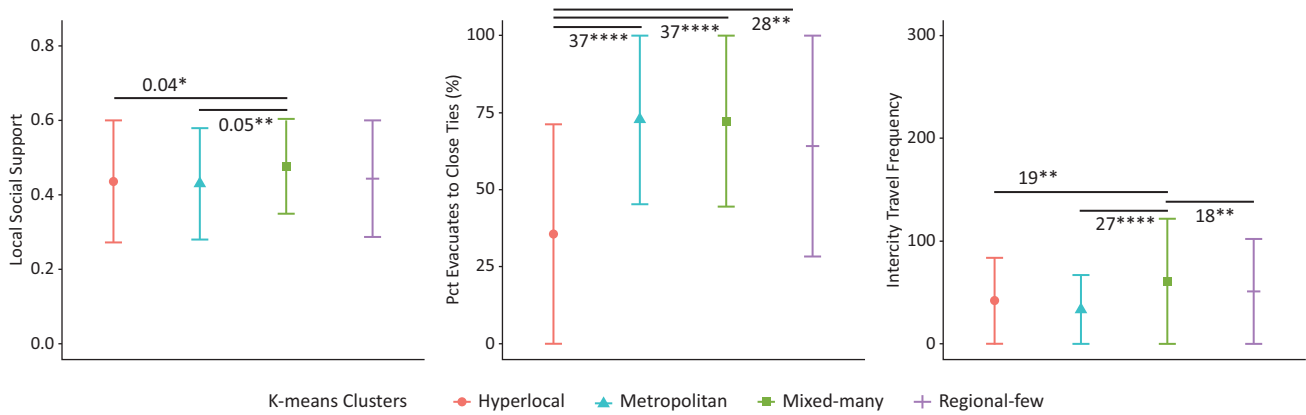
Age, employment, gender, children status, and political orientation variables are relatively well-distributed across the clusters and thus do not exhibit a significant correlation with one or more patterns.

#### 4. Discussion and Conclusions

This study created a typology of individual connectivity patterns (including hyperlocal, metropolitan, mixed-many, and regional-few) through an extensive mail-based survey called the Neighborhood Connectivity Survey. The survey provided a unique dataset that included a wide range of spatial social connections of

individuals and socio-demographic information. We conducted unsupervised clustering of the individual spatial social networks using the K-means algorithm to characterize the individual connectivity with multiple features. Lastly, we examined the tendencies in sociodemographic characteristics, social life, and spatial activities of individuals with each connectivity pattern through ANOVA and Chi-square tests.

We found that the four typologies have distinct extensibility profiles and are only moderately homogenous, indicating that individuals can deviate from the typologies or have mixed profiles of extensibilities. We also found that race, education, and relationship status



**Figure 4.** Mean and standard deviations of local social support, percentage of people that could leave to the locations of close friends and families, and intercity travel frequency for each extensibility type. Notes: The y axis scales with the minimum and maximum value in a behavioral factor; a black line between any two clusters signals a statistically-significant relationship and is annotated with the absolute value of the mean difference between those two clusters at either end of the black line; the statistical significance of the mean difference is tested with ANOVA multiple comparisons (Tukey HSD); the p-value is adjusted by Bonferroni correction (\*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001; \*\*\*\*p < 0.0001).

correlate with individuals’ spatial social network patterns, while age, gender, family size, employment status, and political orientation did not show a significant correlation with the clusters. A notable finding is that residents with low education attainment and residents from Black or African American populations had the smallest networks (by area). This finding triangulates with past research showing that Black individuals tend to have smaller and weaker social networks and maintain fewer social ties outside of families than white individuals (Small, 2007). It also reflects prior findings that education beyond secondary schools is statistically associated with network heterogeneity and levels of resources leverageable from the social networks (van Eijk, 2010). Yet, our findings further reveal that these local ties are likely to be social and institution connections (thus with limited lived experience, news, and travel outside of the home city) and that individuals in this group are least likely to evacuate to locations of closest friends and families during disastrous events. It is also important to note that despite a high concentration of local ties, they may not have the highest level of local social support. Accordingly, more attention and resources should be allocated to this community in terms of community facilities and emergency preparedness.

Our results also speak to the privilege of mixed-range and diverse network patterns. mixed-many and regional-few individuals tended to be White, married, or college-educated, and exhibited frequent travel tendencies between cities, local social support, and resilience during disaster events. Similarly, Viry (2012) found that people’s social support (i.e., the number of supporting ties) is not affected by the geographic distribution of their networks and the frequency of moving, though those who move frequently lean toward a sparsely knit and transitive social network.

These results serve as evidence that systemic deprivation and exclusion in terms of race and especially access to education tends to result in a geographically-limited range of social contacts and experiences. While our results associate traveling and having experiences in many places with higher socioeconomic status, we acknowledge that migration can also be forced, as in the case of population displacement during crises. However, a more novel perspective is that these patterns tend to be consistent regardless of the respondent’s home location, and urban or rural distinctions. Therefore, we suggest that inferring peoples’ experiences given the traditional context of the geographic situation (i.e., hometown location) should also consider the influence of inclusive or exclusive social factors (as in Sibley, 1995).

Finally, this study has a number of limitations. First, the sample population was limited to residents in a few cities in neighboring states in the US. Accordingly, the distance distribution was reasonably consistent across the sample population. Due to the limited sample size, we also did not examine the implications of these cities’ characteristics on extensibility patterns, which has been explored in other studies (Boessen et al., 2014, 2018; Mazumdar et al., 2018). Given the differences in our sample characteristics and the population characteristics of our study area, as mentioned, our results may be skewed to represent older people who have less educational attainment and are white. Next, variances persisted between individuals *within* each cluster. Using the mean values of the features for clustering removed important parts of the data distribution (such as anomalies or bimodal trends). Lastly, we lacked a detailed explanatory mechanism for the clusters. Unsupervised clustering captures intrinsic tendencies but does not explain why variables within one group may correlate. Future work should examine direct correlation with fewer variables



from our survey data to provide a more in-depth understanding of how different connections are associated with demographic or lifestyle factors. We suggest that this type of extensibility-driven work be replicated across a wider range of geographic areas to capture communities that differ in terms of density, isolation, etc., and to capture respondents from a wider variety of socio-demographic groups.

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### Conflict of Interests

The authors declare no conflict of interests.

### Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

### References

- Adams, P. C. (1995). A reconsideration of personal boundaries in space-time. *Annals of the Association of American Geographers*, 85(2), 267–285.
- Adams, P. C. (2009). *Geographies of media and communication*. John Wiley & Sons.
- Agarwal, V., & Bharadwaj, K. K. (2015). Predicting the dynamics of social circles in ego networks using pattern analysis and GA K-means clustering. *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery*, 5(3), 113–141.
- Agresti, A. (2018). *An introduction to categorical data analysis*. John Wiley & Sons.
- Alsayat, A., & El-Sayed, H. (2016). *Social media analysis using optimized K-means clustering* [Paper presentation]. 2016 IEEE/ACIS 14th International Conference on software engineering research, management and applications, Towson, USA.
- Andris, C., & Hardisty, F. (2011). Visualizing migration dynamics using weighted radial variation [Paper presentation]. GeoViz Hamburg '11: Linking Geovisualization With Spatial Analysis and Modeling Conference, Hamburg, Germany.
- Bailey, M., Cao, R., Kuchler, T., Stroebel, J., & Wong, A. (2018). Social connectedness: Measurement, determinants, and effects. *Journal of Economic Perspectives*, 32(3), 259–280.
- Boessen, A., Hipp, J. R., Butts, C. T., Nagle, N. N., & Smith, E. J. (2018). The built environment, spatial scale, and social networks: Do land uses matter for personal network structure? *Environment and Planning B: Urban Analytics and City Science*, 45(3), 400–416.
- Boessen, A., Hipp, J. R., Smith, E. J., Butts, C. T., Nagle, N. N., & Almquist, Z. (2014). Networks, space, and residents' perception of cohesion. *American Journal of Community Psychology*, 53(3/4), 447–461.
- Boscoe, F. P., Henry, K. A., & Zdeb, M. S. (2012). A nationwide comparison of driving distance versus straight-line distance to hospitals. *The Professional Geographer*, 64(2), 188–196.
- Chen, Q., Chuang, I. T., & Poorthuis, A. (2021). Entangled footprints: Understanding urban neighbourhoods by measuring distance, diversity, and direction of flows in Singapore. *Computers, Environment and Urban Systems*, 90. <https://doi.org/10.1016/j.compenvurbsys.2021.101708>
- Chen, W., & Wellman, B. (2009). Net and jet: The internet use, travel and social networks of Chinese Canadian entrepreneurs. *Information, Communication & Society*, 12(4), 525–547.
- Cook, D. J., & Holder, L. B. (Eds.). (2006). *Mining graph data*. John Wiley & Sons.
- Eagle, N., Macy, M., & Claxton, R. (2010). Network diversity and economic development. *Science*, 328(5981), 1029–1031.
- Fischer, C. S. (1982). *To dwell among friends: Personal networks in town and city*. University of Chicago Press.
- Hampton, K., & Wellman, B. (2003). Neighboring in Netville: How the Internet supports community and social capital in a wired suburb. *City & Community*, 2(4), 277–311.
- Hipp, J. R., & Perrin, A. J. (2009). The simultaneous effect of social distance and physical distance on the formation of neighborhood ties. *City & Community*, 8(1), 5–25.
- Illenberger, J., Kowald, M., Axhausen, K. W., & Nagel, K. (2011). Insights into a spatially embedded social network from a large-scale snowball sample. *The European Physical Journal B*, 84(4), 549–561.
- Janelle, D. G. (1973). Measuring human extensibility in a shrinking world. *Journal of Geography*, 72(5), 8–15.
- Klinenberg, E. (2015). *Heat wave: A social autopsy of disaster in Chicago*. University of Chicago Press.
- Kowald, M., van den Berg, P., Frei, A., Carrasco, J. A., Arentze, T., Axhausen, K., Mok, D., Timmermans, H., & Wellman, B. (2013). Distance patterns of personal networks in four countries: A comparative study. *Journal of Transport Geography*, 31, 236–248.
- Kwan, M. P. (2000). Human extensibility and individual hybrid-accessibility in space-time: A multi-scale representation using GIS. In D. G. Janelle & D. C. Hodge (Eds.), *Information, place, and cyberspace* (pp. 241–256). Springer.
- Lin, N., Cook, K. S., & Burt, R. S. (Eds.). (2001). *Social capital: Theory and research*. Transaction Publishers.
- Liu, X., Hollister, R., & Andris, C. (2018). Wealthy hubs and poor chains: Constellations in the US urban migration system. In L. Perez, E.-K. Kim, & R. Sengupta (Eds.), *Agent-based models and complexity science in the age of geospatial big data* (pp. 73–86). Springer.

- Marsden, P. V. (1987). Core discussion networks of Americans. *American Sociological Review*, 52(1), 122–131.
- Mazumdar, S., Learnihan, V., Cochrane, T., & Davey, R. (2018). The built environment and social capital: A systematic review. *Environment and Behavior*, 50(2), 119–158.
- Neal, Z. P. (2012). *The connected city: How networks are shaping the modern metropolis*. Routledge.
- Nurek, M., & Michalski, R. (2020). Combining machine learning and social network analysis to reveal the organizational structures. *Applied Sciences*, 10(5). <https://doi.org/10.48550/arXiv.1906.09576>
- Picornell, M., Ruiz, T., Lenormand, M., Ramasco, J. J., Dubernet, T., & Frías-Martínez, E. (2015). Exploring the potential of phone call data to characterize the relationship between social network and travel behavior. *Transportation*, 42(4), 647–668.
- Prestby, T., App, J., Kang, Y., & Gao, S. (2020). Understanding neighborhood isolation through spatial interaction network analysis using location big data. *Environment and Planning A: Economy and Space*, 52(6), 1027–1031.
- Sadri, A. M., Ukkusuri, S. V., & Gladwin, H. (2017). The role of social networks and information sources on hurricane evacuation decision making. *Natural Hazards Review*, 18(3). <https://ascelibrary.org/doi/10.1061/%28ASCE%29NH.1527-6996.0000244>
- Sibley, D. (1995). *Geographies of exclusion: Society and difference in the west*. Routledge.
- Small, M. L. (2007). Racial differences in networks: Do neighborhood conditions matter? *Social Science Quarterly*, 88(2), 320–343.
- Stewart, A. L., Hays, R. D., & Ware, J. E. (1988). The MOS short-form general health survey: Reliability and validity in a patient population. *Medical Care*, 26, 724–735.
- Stutz, F. P. (1973). Distance and network effects on urban social travel fields. *Economic Geography*, 49(2), 134–144.
- van den Berg, P., Arentze, T., & Timmermans, H. (2009). Size and composition of ego-centered social networks and their effect on geographic distance and contact frequency. *Transportation Research Record*, 2135(1), 1–9.
- van den Berg, P., Arentze, T., & Timmermans, H. (2013). A path analysis of social networks, telecommunication and social activity–travel patterns. *Transportation Research Part C: Emerging Technologies*, 26, 256–268.
- van Eijk, G. (2010). *Unequal networks: Spatial segregation, relationships and inequality in the city*. IOS Press.
- Viry, G. (2012). Residential mobility and the spatial dispersion of personal networks: Effects on social support. *Social Networks*, 34(1), 59–72.
- Wellman, B. (1999a). From little boxes to loosely bounded networks: The privatization and domestication of communities. In J. L. Abu-Lughod (Ed.), *Sociology for the twenty-first century. Continuities and cutting edge*. University of Chicago Press.
- Wellman, B. (1999b). *Networks in the global village: Life in contemporary communities*. Routledge.
- Wellman, B. (2001). Little boxes, globalization, and networked individualism. In M. Tanabe, P. Besselaar, & T. Ishida (Eds.), *Digital cities II: Computational and sociological approaches* (pp. 10–25). Springer.

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Article

## Analysing Personal Networks in Geographical Space Beyond the Question of Distance

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### Abstract

Recent literature recognises the importance of situating social networks in spatial context. Yet, the spatial analysis of personal networks has often been limited to examining residential distances between actors. While distance is a central characteristic of social relationships, it is a poor indicator for understanding the intricacies of the geographical space, places and personal networks. This study develops an original approach for mapping and analysing personal networks based on their geographical scope and the distribution of the residential locations of network members in relevant geographical areas. We perform a factor and cluster analysis to identify the major geographical patterns of personal networks using two samples of egocentric networks from France and Switzerland. We validate the approach first by interpreting the patterns both quantitatively and qualitatively, and second by examining how these patterns relate to important social characteristics of respondents and their personal networks. We conclude by discussing the significance of this approach for integrating geographical information into the analysis of personal networks and for rethinking networks and the geographical space as co-constituted.

### Keywords

distance; geographical space; mixed methods; personal networks; place; social network analysis

### Issue

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### 1. Introduction

Social relationships and networks develop in and across the geographical space. The network literature has shown that migrants, families, scientists, friends, etc., can develop their personal relationships and networks over large distances while places and spatial proximity continue to strongly structure personal networks, even in the age of the Internet (Mok et al., 2010; Small & Adler, 2019; Spiro et al., 2016). Yet, social network research has not fully taken up issues of space and place. The role of space in extending and sustaining personal networks

has often been examined through the lens of physical distance—usually as something “from the outside” to overcome—rather than as an inherent characteristic of relationships (e.g., cross-border or long-distance relationships), networks (e.g., transnational families, mobile friendship groups), and spatial environments (e.g., metropolitan areas). In turn, urban and mobility studies have often focused on specific places of interest (e.g., poor neighbourhoods) or populations (e.g., international migrants, kinetic elite), and have largely ignored the intermediate level of personal networks when examining the impact of spatial or mobility-related aspects on

individual behaviours and outcomes. A recent network literature has analysed migrants' transnational networks (Herz, 2015; Lubbers et al., 2021; Vacca et al., 2018), the links between spatial mobility behaviours, and network spatial dispersion (Puura et al., 2022; Viry, 2012), or the influence of urban contexts and physical space on personal networks (Huszi et al., 2021; Tulin et al., 2019; Vanhoutte & Hooghe, 2012). However, approaches for analysing personal networks within geographical space beyond the notion of distance and Euclidean space need further development.

Our starting hypothesis is that personal networks that spread across multiple places are different from networks clustered in one or two places at equivalent distances (Barrat et al., 2013). Networks in multiple places often bear the traces of people and groups' mobility experiences (relocations, study and work periods, holidays), and resilience to physical separation. Individuals have therefore a particular history of their social relationships and networks that is intimately intertwined with the link these relationships have to places and spatial mobility (for a relational approach to space see, e.g., Massey, 2005). While individuals do not necessarily develop a bodily and sensory experience of the places where their network members live (e.g., by visiting them), being connected to various places through network members reflects adaptation skills and is likely to increase awareness of and access to these places and their social, cultural, economic, etc., specificities. This spatial diversity may therefore contribute to expanding people's horizons and social world, which may also be turned into opportunities and resources over the life course. In Granovetter's (1973) terms, these resources can be derived from both weak and strong ties. By their location in different places, people can act as bridges to novel resources and information, but can also be long-standing, emotionally close relationships (e.g., relatives, old school friends) that are less dependent on physical proximity and frequent in-person contact to be sustained (Rutten et al., 2010).

A better understanding of the geography of personal networks is an important issue for social inclusion in a globalising world. Maintaining social relationships in different places is valuable, but often requires substantial resources of time, effort, access, emotion, and planning that are unevenly distributed across regions and social groups, and therefore an important source of social inequality (Urry, 2012). It is also critical for research on social inclusion to examine how network and geographical contexts relate to each other and other risk factors of social exclusion (e.g., lack of mobility, discrimination, area- and individual-level deprivation).

By combining the disciplines of sociology and human geography, this study aims to develop a novel approach that accounts for the complexity inherent in the geographical patterns of personal networks and that can be replicated in diverse settings. As such, this framework can be used to set a new research agenda in spatial sociol-

ogy and social geography. Our research question is: How to approach the geography of personal networks beyond the residential distance between network members? We argue for an approach that considers the distribution of the residential locations of network members in functional spatial units, mainly employment areas. We also argue that this approach can be applied to a wide variety of personal network data using basic geographical information. In this study, we apply our approach to two different datasets from France and Switzerland. We identify the main geographical patterns of personal networks and interpret them using both qualitative and quantitative network analysis. We further validate the approach by examining how these patterns relate to important social characteristics of the individuals and networks. In using two different datasets, our intention is not to compare the geography of networks across both settings; rather we aim to demonstrate that our approach can be applied to diverse types of networks and different spatial contexts.

Instead of measuring the spatial dispersion of personal networks based on residential distances (e.g., great circle distance, confidence ellipse; see, e.g., Frei & Axhausen, 2007), we examine the personal networks of respondents (named *ego*) based on their geographical scope and the distribution of the residential locations of network members (named *alters*). To capture the diversity of distribution patterns, we develop a classification of personal networks in geographical space, using the employment areas of a country as the main geographical unit. The employment areas are defined as areas where most of the workforce both lives and works. Their delimitation is statistically based on commuting flows and not on administrative divisions (e.g., French departments, Swiss cantons). For example, the employment area of Zurich—the largest city and a major economic hub of Switzerland—extends far beyond the canton of Zurich by including large parts of several other cantons, in which the majority of the employed population works in the Zurich area. This functional unit is sociologically relevant because most activities of daily living (e.g., visiting, commuting, consuming) occur within their boundaries. We use network indices to examine both the extent to which alters live in the same area as *ego*, and the extent to which their residential locations are clustered into the same area or, conversely, scattered across different areas. We approach the geographical scope of personal networks, by considering the national regions, countries, and continents in which the areas are distributed. By geographical space, we refer to the complex and social system formed by places, networks, and flows between these places (for a definition see Gadai, 2012, p. 30). This conceptualisation goes beyond a definition of space as only a physical and neutral phenomenon (Euclidean space).

In the following sections, we review the relevant literature on the geography of personal networks and the links between their social and spatial dimensions.

We then present our approach, including how the classifications of personal networks are performed. Using the most typical networks of each class as examples, we enter the individuals' socio-spatial histories to better understand the classes identified. We conclude the analytical part by showing how these classes relate to some key social characteristics of the egos and personal networks. The final discussion centres on the relevance and replicability of this approach for further exploring the intricacies of space, places, and personal networks.

## 2. Space and Personal Networks

Social network analysis (SNA) has an ambivalent relationship with space. In its early days, SNA focused on restricted and relatively closed spaces, such as reform and residential schools for the social psychologist Moreno (1934), or an island for the anthropologist Barnes (1954). Early examples also include the work of Festinger and colleagues showing that small differences in the spatial environment (e.g., configuration of the housing unit) influenced friendship formation (Festinger et al., 1950). The Chicago School rooted sociology in urban contexts, from which it later sought to "abstract" networks (Hannerz, 1980, p. 219). The Manchester School of Anthropology was also interested in how place experiences relate to personal networks, in particular when migration generates "contradictions" between the multiple social structures individuals belong to. A classic example is the study by Mayer (1962) on rural migrants in Southern African towns.

In sociology, the important development of SNA in the 1990s focused attention on formal or structural explanations, which contributed to detach networks from their social, cultural, and geographical contexts, and therefore also from the subjective meanings actors attach to places or culture (Eve, 2002). The notion of networks was used as an alternative to the notions of territory or community. However, some studies such as those by Wellman (1979) or Fischer (1982) were more concerned with examining how personal networks vary in different geographical settings (e.g., neighbourhoods, urban/rural areas).

This development contributed to maintaining a gap between mainstream SNA that is largely placeless and the spatial analysis of networks in geography and cognate fields, such as economic geography, transport and communication research. A number of transport studies have incorporated personal networks into the analysis of travel behaviours and destination choice (for a review see Kim et al., 2018). Strongly related to research in physics, recent literature on the spatial dimension of complex networks has also emerged in geography, but this research remains fragmented (Andris, 2016; Ducruet & Beauguette, 2014). Personal relationships are also considered in the literature on neighbourhood effects (Hägerstrand, 1970; Tulin et al., 2019; Vallée et al., 2015). These studies share common objectives with network

scholars in sociology in analysing and mapping everyday activity spaces.

The importance of space in personal network research has also largely been studied through the lens of cross-border migration and its effect on network composition, often in terms of the countries of origin and destination, but also in relation to the ethnic diversity of the residential place (Huszti et al., 2021; Vanhoutte & Hooghe, 2012). The research questions often revolve around whether distance matters in the formation, duration, and quality of migrants' relationships and how migration affects personal networks.

Despite repeated argument that mobile and internet-based technologies will reduce the "friction" of distance, evidence still shows that spatial proximity and place sharing facilitate social interactions and that social networks remain strongly shaped by linguistic, institutional and national borders (Mok et al., 2010; Spiro et al., 2016; Wang et al., 2015). But the literature on transnational networks also shows that people can maintain strong relationships and sustain a sense of being emotionally close with others living far away, especially parents, adult children, and close friends (Herz, 2015; Lubbers et al., 2021; Vacca et al., 2018). Some evidence suggests that transitive relationships (e.g., a friend of a friend) survive greater distances (Viry, 2012). The rare longitudinal personal network studies show a high turnover in relationships over time and after migration, but the overall composition, size, and structure of networks are remarkably stable (Lubbers et al., 2021; Mollenhorst et al., 2014). Physical distance also does not affect everyone equally, with evidence that high-status individuals show more spatial dispersion in their networks. Finally, personal networks with many network members living in a different place than ego tend to be structured around clusters of long-distance relationships concentrated in a few places rather than being composed of many far-flung network members living in different places (Frei & Axhausen, 2007).

While this literature has demonstrated the significance of spatial proximity and spatial mobility for personal networks, it is often influenced by a traditional notion of space as fixed and containing networks, whose "impact" on networks is limited to a Euclidean distance between network members. In geographical and sociological debates, a process has started by which SNA must better incorporate spatial context and rethink the places where people turn to others beyond propinquity (Blokland et al., 2021). The geographical space affects the opportunities for social actors to develop and maintain specific network patterns through other mechanisms than distance (Farber & Li, 2013; Small & Adler, 2019; Tóth et al., 2021). In turn, individuals are producing networked spaces by interlacing places through their personal relationships. Personal networks bear the traces of the successive places, groups, and contexts through which individuals navigate and in which they have woven ties that remain active today. Whether the

groups remain as network clusters or only isolated individuals remain, the network structure (size, density, clustering, etc.) reveals the history of the contexts, places and activities that ego shares with others (Bidart et al., 2020). Some family and friends move, other people are met far from home (e.g., holiday or work travel), and new residential places appear in the network. Egos may not have visited some of these places but are connected to them through their personal relationships and realise that these places are within their reach. The geography of personal networks can therefore be examined in relation to the members' places of residence, the relationship ego has with these places (e.g., current or former places of residence, places of visit), and the flows between these places.

### 3. Data and Methods

We used two different egocentric network datasets to illustrate our approach to the geography of personal networks. The first one is the Caen Panel, a qualitative follow-up study based on social activity-focused name generators capturing large networks (mean size of 37 alters) of 87 young people who were aged 17–23 and lived in the city of Caen (Normandy, France) at the time of the first interview. Participants were interviewed five times between 1995 and 2015 (all waves are pooled here). In a wide range of life contexts (school, family, friends, neighbourhood, work, leisure, and voluntary activities), young people were asked to name “people whom they know a little better, with whom they talk a little bit more” (see <https://panelcaen.hypotheses.org/methodologie#english>). The second dataset comes from the nationally representative 2013 MOSAiCH survey including the family networks of 670 adults (18+) living in Switzerland. Personal networks were based on a unique name generator asking respondents to self-define their meaningful family members (mean size of 6.25 alters; see <https://forscenter.ch/projects/mosaich>).

A critical issue for studying the geography of personal networks is to determine the relevant geographical areas. Using a micro-geographical scale, such as GPS coordinates, streets, or blocks, has proved to be a useful method in neighbourhood research, architecture, and urban planning for investigating how spaces are routinely used for diverse activities (see, e.g., Andersson & Musterd, 2010). It is however deemed too fine-scaled for determining the residential patterns of alters because people with whom ego has developed long-term and cross-context personal relationships often live beyond the borders of ego's neighbourhood. Using large national regions (typically NUTS 2 areas in the Eurostat classification, such as national provinces) would, conversely, be too coarse for capturing differences in the residential contexts of alters within these areas.

We considered the employment areas of a country as an appropriate geographical unit in which most residents live and work. Contrary to agglomerations,

these functional areas are not necessarily associated with large urban centres and their surface significantly varies depending on the density of population. This statistically-defined unit also has the advantage of facilitating comparisons, while administrative divisions (e.g., municipalities, counties) are extremely heterogeneous in their delineation and their definition varies across regions and countries. Finally, employment areas (and associated statistics) are available in many developed countries. Our approach thus offers a straightforward way of characterising the geographical patterns of personal networks across one or several usual places. In Switzerland, we used the 16 large employment areas based on commuting flows of the employed population in 2014 (<https://www.bfs.admin.ch/hub/api/dam/assets/8948839/master>). In France, we used the 2010 delineations of 322 labour market areas (*zones d'emploi*) based here again on commuting flows of the employed population using the 2006 census (<https://www.insee.fr/fr/information/2571258>). Because only the country information was available for alters living abroad in the MOSAiCH sample, we used the country of residence as the area for these alters in both datasets.

To characterise the geography of personal networks, we used seven network indices:

1. Number of alters cited (network size): While large networks are more likely to be dispersed across many areas than small networks, it is important for our purpose to distinguish small networks with high dispersion and large locally-based networks.
2. Number of areas: The number of different employment areas where alters live is a key element to measure the geographical dispersion of personal networks.
3. Index of qualitative variation (IQV) of areas: The IQV index measures the extent to which alters are evenly distributed in areas, regardless of the number of alters and number of areas (Agresti & Agresti, 1978; Crossley et al., 2015). Suppose we have  $r$  different areas and  $P_i$  is the proportion of alters living in area  $i$ , then the IQV index is defined as:

$$IQV = \frac{1 - P_1^2 - P_2^2 - P_3^2 - \dots - P_r^2}{1 - \frac{1}{r}}$$

The index ranges between 0 and 1, with 0 meaning that all alters live in a single area and 1 meaning that the residences are evenly distributed in the different areas. We applied a log transformation  $\log(1 + x) / \log(2)$  that keeps the index between 0 and 1 but weighs up small (non-null) scores. This indicator is useful to analyse whether egos have multiple geographical poles of importance in their networks or, conversely, most of their alters clustered in the same residential area.

4. Ego-alter geographical similarity using EI index: This ego-alter similarity index measures the extent

to which alters live in the same area as ego (Krackhardt & Stern, 1988). If E stands for the number of alters living in different areas than ego’s and I stands for the number of alters living in the same area as ego, then the EI index is:

$$EI = \frac{E - I}{E + I}$$

The index ranges between -1 and 1, with -1 (perfect similarity) meaning that all the alters live in the same area as ego and 1 (perfect heterogeneity) meaning that all the alters live in different areas than ego’s.

The three infographics in Figure 1 illustrate extreme cases of IQV and EI indices.

The last three indices measure the geographical scope of the network:

5. The proportion of alters living in a different region than ego within the same country (national scope). We used the 18 administrative regions for France and the three linguistic regions for Switzerland. The use of this meso-geographical level is to determine whether alters live in the same country as ego but in a region with a different language for multilingual Switzerland and different administra-

tive and transport structures (e.g., the regional train system TER) for France. Similar national divisions could be used for other countries (e.g., states in the USA or NUTS 2 areas in the Eurostat classification).

6. The proportion of alters living in a different country in Europe (European scope). We used the United Nations geoscheme to define the European continent. However, the MOSAiCH sample includes some alters living in ex-Soviet countries of Europe (e.g., Russia, Moldova, Ukraine) and because transportation costs are relatively high between Switzerland and these countries, we decided to classify them in the “World” category.
7. The proportion of alters living outside Europe (world scope).

The proportion of alters living in the same region within the same country as ego can be deduced from these three proportions and is therefore not included here.

#### 4. Classifications of Personal Networks Based on Their Geography

Table 1 reports some descriptive statistics of the seven indices for both datasets. A majority of alters live in the same employment area as ego, with a negative mean

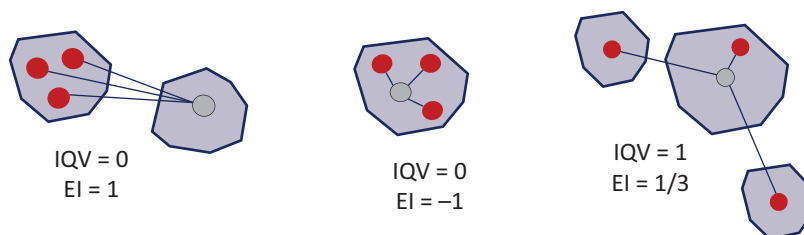


Figure 1. Examples of extreme cases for IQV and EI indices.

Table 1. Descriptive statistics of the indices.

	Mean	SD	Median	Min	Max
<b>MOSAiCH (N = 670)</b>					
Size	6.25	2.95	6	1	11
#Areas	1.89	1.03	2	1	7
IQV	0.45	0.42	0.58	0	1
EI	-0.45	0.63	-0.67	-1	1
% Different region	0.04	0.13	0	0	1
% Different country—Europe	0.09	0.20	0	0	1
% Different country—World	0.03	0.11	0	0	1
<b>CAEN PANEL (N = 281)</b>					
Size	38.08	18.03	36	6	131
#Areas	6.84	4.08	6	1	23
IQV	0.56	0.25	0.58	0	0.94
EI	-0.23	0.55	-0.36	-1	1
% Different region	0.23	0.22	0.15	0	1
% Different country—Europe	0.01	0.03	0	0	0.19
% Different country—World	0.004	0.01	0	0	0.09



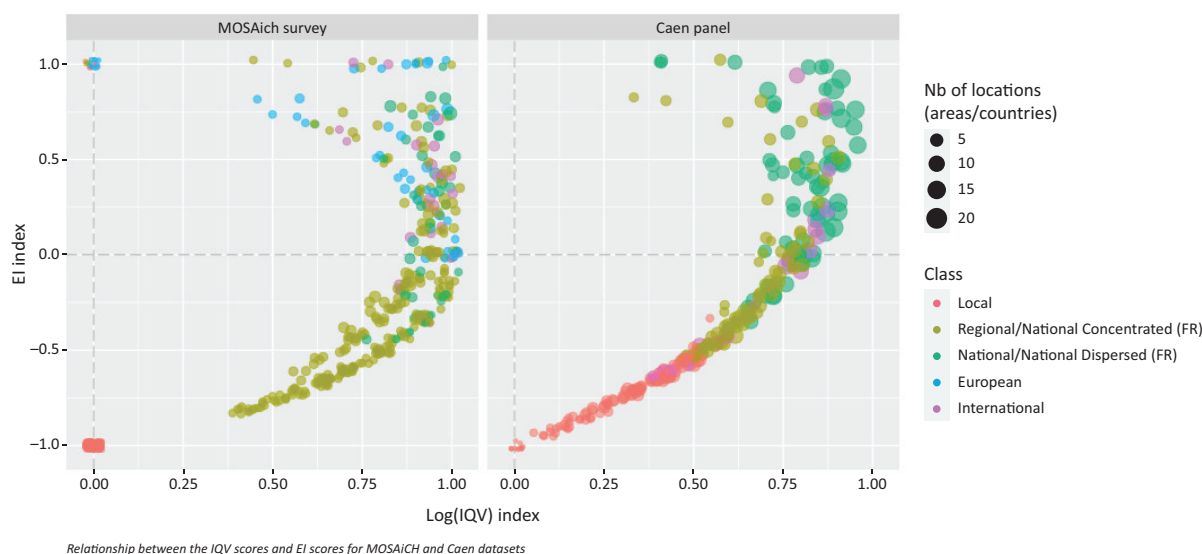
EI index. When considering the geographical scope of the personal networks, 84% of alters in the MOSAiCH sample live in the same linguistic region of Switzerland as ego. Among the remaining 16 %, a majority live abroad. In the Caen Panel, personal networks are more national in scope, with 23% of alters living in a different region in France (note that egos who moved abroad were excluded from the sample in this study). This last difference between the two datasets highlights the important influence of sharing the same language on sociability.

Figure 2 shows how the IQV and EI scores relate to each other for each dataset. Each point represents a network and its size is set according to the number of areas (colours represent the classes described below). In both datasets, the networks dispersed across many areas are logically associated with high IQV and EI scores. We find a positive relationship between IQV and EI indices for negative EI values (lower half of the plot). This means that when many alters live in the same area as ego, an additional alter living outside ego’s area tends to increase the dispersion. When many alters live outside ego’s area (positive EI scores, upper half of the plot), an additional alter living outside ego’s area does not significantly change the IQV score for large networks (the IQV score is already close to 1) and tends to be associated with lower IQV scores for small networks. The latter corresponds to situations where the few alters named are clustered in a few areas (sometimes only one for MOSAiCH) that are not the area where ego lives.

Using the library FactoMineR in R (Lê et al., 2008; R Core Team, 2022), we ran a principal component analysis (PCA) using the seven indices presented above. We then performed a hierarchical ascendant cluster analysis using the factor scores to group networks

into classes representing typical geographical patterns. We chose a 5-class solution for MOSAiCH and a 4-class solution for the Caen Panel based on inertia gains (the solutions also suggested by FactoMineR).

Tables 2 and 3 summarise the classes for each dataset based on the mean scores of the seven indices used. In MOSAiCH, the first “Small-Local” class represents almost half of the sample. These individuals have a small family network, in which all alters live in the same area as ego. In Class 2, the second-largest class, individuals have larger family networks. A majority of alters live in the same area as ego, although a substantial share does not (EI = -0.27). On average, they live in 2.48 areas, across which they are relatively equally dispersed (IQV = 0.77). Most alters live in the same linguistic region of Switzerland as ego, so we named this class the “Regional” class. Class 3 is a smaller class with networks that are “National” in scope with about half of the alters living in a different linguistic region of Switzerland. Alters are evenly distributed in areas (three on average) with a mean IQV score of 0.90. The “European” Class 4 corresponds to personal networks with an average proportion of 70% of alters living in another European country. Many alters do not live in the same area as ego (EI = 0.60)—a typical network pattern of recent immigrants who have maintained many relationships with relatives in the country of origin. Finally, the fifth class, named “International,” is composed of networks with about half of the alters who live beyond Europe. These networks are the largest, most dispersed personal networks, with an average number of 3.07 areas. The average distribution of alters in areas is almost as high as in Class 3 of national networks (IQV = 0.89). Although smaller than in the previous group, a relatively large proportion of these alters do not live in the same area as ego.



**Figure 2.** EI scores by IQV scores for the MOSAiCH survey and the Caen Panel. Note: Because many points overlapped each other for the small networks of the MOSAiCH sample, we added a small amount of random noise to each point to better identify where the mass of the data is.

**Table 2.** Description of groups by the indices (MOSAiCH, N = 670).

	1 Small-Local	2 Regional	3 National	4 European	5 International
N	287	259	46	48	30
% Sample	43	39	7	7	4
Size (mean)	4.80	7.54	6.72	6.48	7.87
#Areas (mean)	1	2.48	3.02	2.21	3.07
IQV (mean)	0	0.77	0.90	0.69	0.89
EI (mean)	-0.98	-0.27	0.19	0.60	0.30
% Another region (mean)	0	0.02	0.46	0.01	0.01
% Europe (mean)	0	0.08	0.03	0.70	0.10
% World (mean)	0	0.01	0.01	0.01	0.46

In the Caen Panel, we chose a classification in four classes. The individuals of the first “Local” class have a middle-sized personal network where most alters live in the same area as ego (EI = -0.74). In the second “National-Concentrated” class, alters live in 6.27 areas, on average, mostly in the same region as ego, although 24% live in a different region of France. The distribution of alters’ residential locations in these areas is average compared with the other classes and the mean network size is the lowest of the sample. The third “National-Dispersed” class is characterised by networks that have about half of the alters living in a different region of France, on average. The network size is the highest of all classes. Alters’ residences are evenly dispersed in many areas (11.60 areas, IQV = 0.79), with an important proportion of alters who live in a different area than ego (EI = 0.37). The fourth “International” class corresponds to networks with an average proportion of alters not living in France of 9%. The number of areas and distribution of alters in these areas is slightly more important than in Class 2 but lower than in Class 3. There is also an equal proportion of alters living and not living in the same area as ego (EI = -0.07).

### 5. Paragons as Illustrative Cases of the Classes

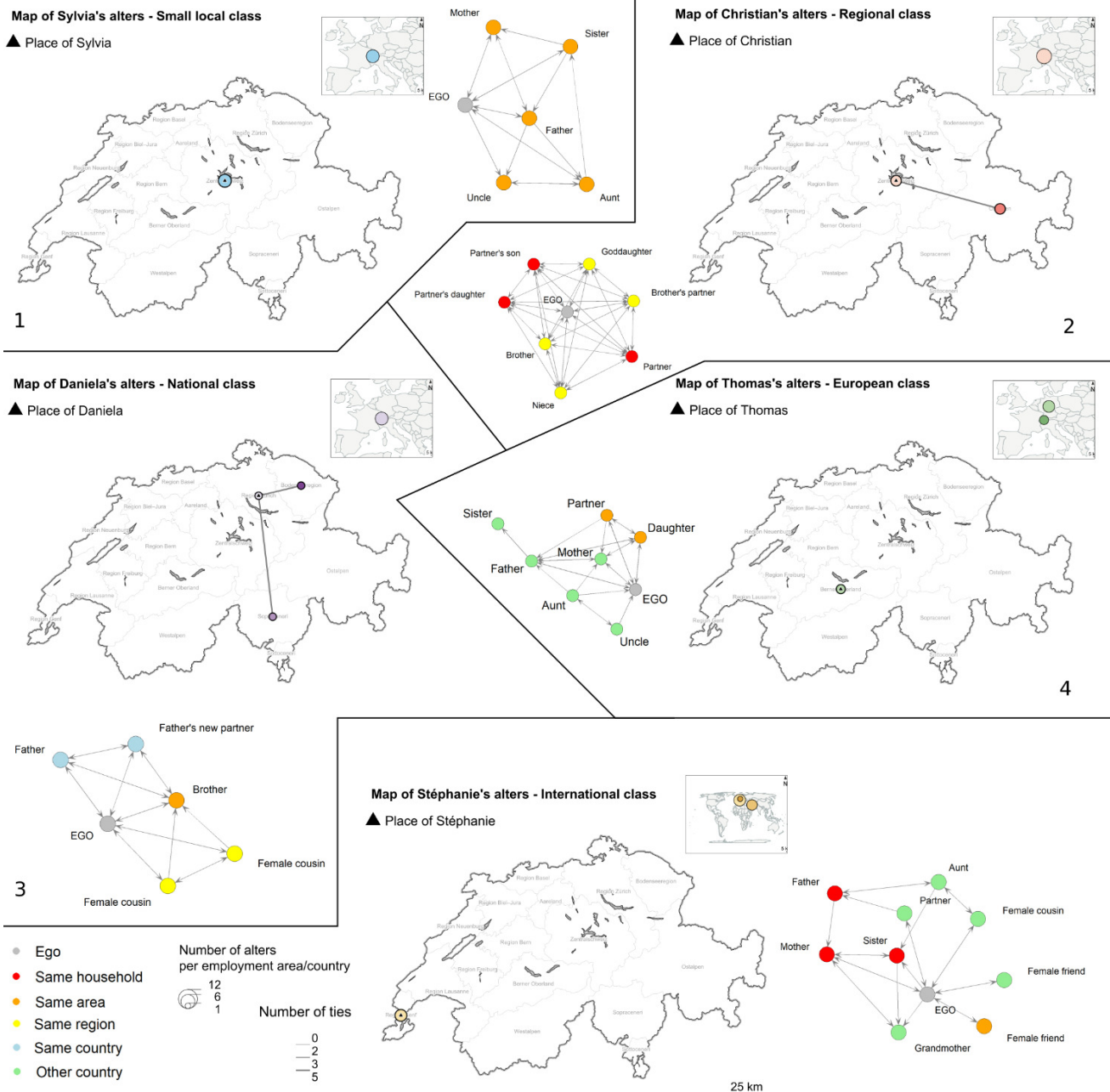
To give some flesh to the geographical patterns identified in the previous section and better understand their specificities, we now illustrate these classes by investigating the paragon of each class. Paragons are the indi-

viduals closest to the gravity centre (or centroid) of their class (the most “typical” case). In other words, they are the best representatives of their class in terms of their scores on the seven indices examined. The network diagrams and geographical mappings of these paragons are presented in Figures 3 and 4 for each dataset. Edges on network diagrams represent emotional support relationships for MOSAiCH (directed ties) and knowledge ties for the Caen Panel (undirected ties). Geographical locations of alters’ residence (in relation to ego’s) are represented by colours.

The paragon of the first “Small-Local” class in MOSAiCH is Sylvia, 34, a single woman who lives alone in Luzern (central Switzerland) where she is employed as a production planner in the electronics industry. In her family network, Sylvia named her two parents, her uncle and aunt, who all live in the suburbs of Luzern where she also grew up, and her younger sister who lives in a village in the canton, about 20 km away. The paragon of the second “Regional” class is Christian, 53, who lives with his partner and her two children from a previous marriage in a small town in the canton of Aargau (northern Switzerland). Christian also named his brother, his brother’s wife, their child and Christian’s goddaughter, who all live in a village in the Swiss Eastern Alps, about one and a half hours away by car. Christian grew up in a village close to the lake of Constance (north-eastern Switzerland) and works in Zurich city, 45 min drive from home, as an investigating officer. The paragon of the third “National” class is Daniela, 44, who lives alone

**Table 3.** Description of groups by the indices (Caen Panel, N = 281).

	1 Local	2 National Concentrated	3 National Dispersed	4 International
N	106	85	68	22
% Sample	38	30	24	8
Size (mean)	34	30	54	38
#Areas (mean)	3.77	6.27	11.60	9.09
IQV (mean)	0.29	0.65	0.79	0.68
EI (mean)	-0.74	-0.11	0.37	-0.07
% Another region (mean)	0.07	0.24	0.48	0.20
% Europe (mean)	0.003	0.006	0.018	0.041
% World (mean)	0.0004	0.0007	0.003	0.05



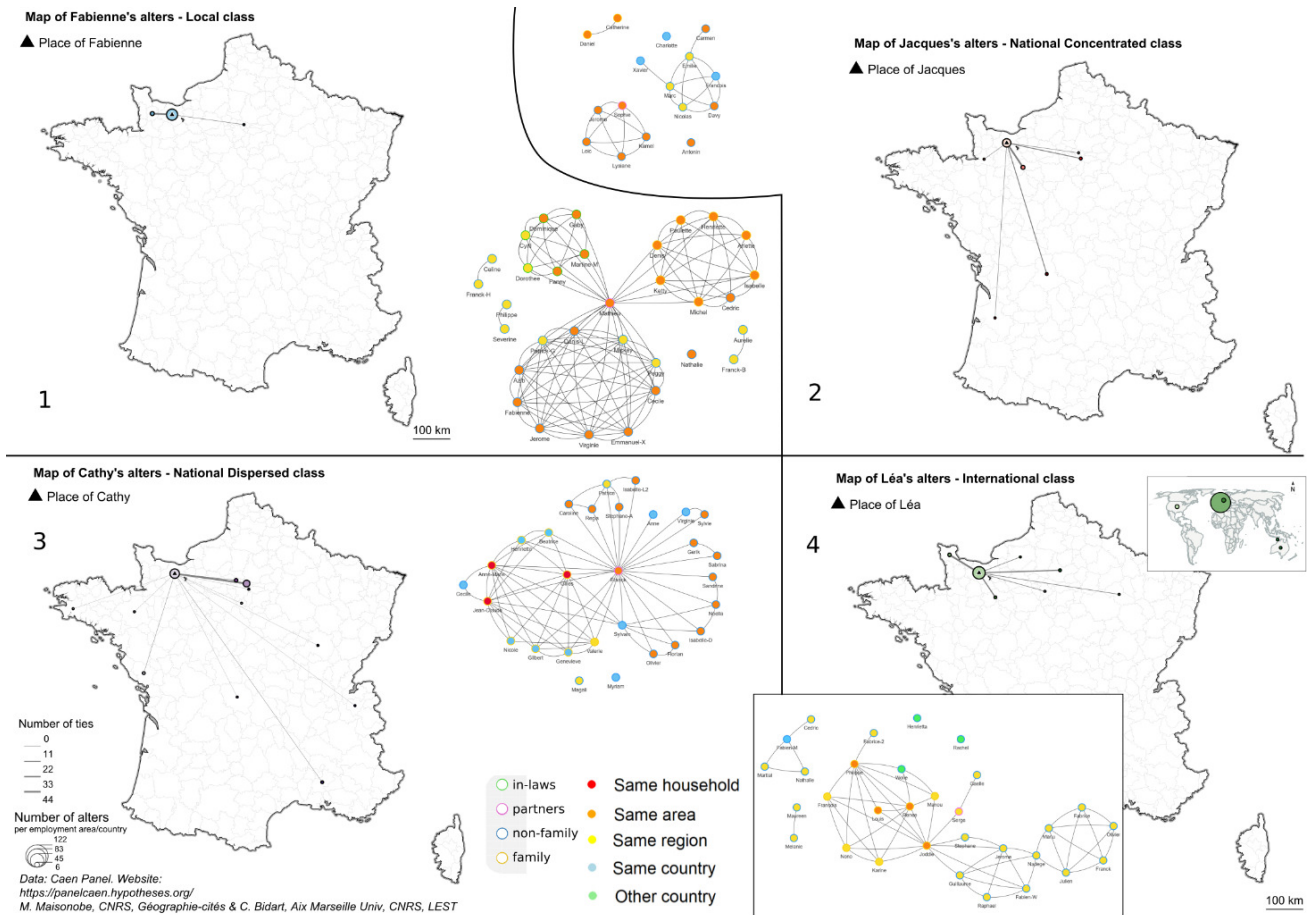
Data: Mosaich 2013. Website: <https://forscenter.ch/projects/mosaich/>  
 M. Maisonneuve, CNRS, Géographie-cités & G. Viry, Edinburgh Univ

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**Figure 3.** Network diagrams and geographical mappings of the paragons of the MOSAiCH classes.

in the region of Zurich, in a village, 20 minutes drive from the city. She works in the outskirts of the city as a safety inspector. In her family network, she named her older brother who lives in a nearby locality in the suburbs of Zurich where Daniela grew up. She also named two female cousins who live in the lake of Constance region, as well as her father and his partner who live in the Italian-speaking region of southern Switzerland, close to Locarno, about a three-hour drive from Daniela's home. The paragon of the fourth "European" class is Thomas, 37, who was born in Germany and lives in the Bernese Alps. He is an IT consultant for a company based in Zurich. Thomas lives alone but has a partner and a

daughter who live in the same area. Thomas also named his two parents, an uncle, aunt and sister who all live in Germany. Finally, the paragon of the fifth "International" class is Stephanie, 22, who lives with her parents and her younger sister in the suburbs of Geneva, close to where she grew up. Stephanie has a university degree and has never been employed. Her father was born in Iran and her mother in Germany. In addition to her household members, Stephanie named her partner, an aunt, a female cousin, and a female friend (considered a family member) who all live in Iran, another female friend who lives near her home and her mother's mother who lives in Germany.



**Figure 4.** Network diagrams and geographical mappings of the paragons of the Caen Panel classes.

As the Caen Panel has a strong qualitative dimension, we can describe in more depth the situation of the paragons to gain insight into how life events, family backgrounds and institutions shape the geography of personal networks. In Figure 4, roles (family, non-family, partner, in-laws) are represented by coloured rings.

Fabienne as the paragon of the “Local” class was born in Caen, where her whole family lives. She worked for three years as a supermarket sales assistant in Saint Lô, a small town about an hour’s drive away from Caen. She still has friends there, two couples (Séverine and Philippe, Aurélie and Franck), and some members of her biker gang, which makes up most of her friends. She also has a weak tie with Frédéric, who now lives in Paris (he appears on the map but not on the network diagram, which only depicts strong ties). The networks of this class show a typical network structure segmented into very dense components and cliques. In some cases, like Fabienne’s, only the ego and partner connect the components, forming a star-shaped structure. Both density and clustering are high. These networks are typical of working-class non-mobile trajectories. Some rare long-distance relationships are usually related to the move of alters, except when ego experienced short periods of study or work, like Fabienne.

Jacques as the paragon of the “National Concentrated” class is a shopkeeper who lives in the sub-

urbs of Caen and has never lived elsewhere. But his network includes several alters in other cities of France. His core group of childhood friends (Marc, Nicolas, François) moved after school, but they remained close friends despite the spatial dispersion. Individuals in this class have the smallest networks in the sample. They show network structures particularly fragmented into small parts. Life stories show commitments in groups (music bands, school gangs) that have eventually dispersed geographically due to family or job-related reasons, but people have remained tied together. In general, there is no partner to bridge these groups but ego.

Cathy as the paragon of the “National Dispersed” class is training to be a secretary in Caen. She lived previously in the suburbs of Paris where her family stayed. Her mobility experiences explain the dispersion of her network. Some of her high school friends also moved away to other cities for their studies, but they still meet in couples or small groups in Normandy or the Paris region. For example, Sylvain lives close to Paris, but his parents have a holiday house in Cathy’s village where he regularly meets the local group of friends. In this class, both the ego and alters were mobile. Non-local family and in-laws contribute to the geographical dispersion. The proximity of the coastline also increases holiday travel and the seasonal reactivation of relationships.

The network structure is mostly segmented, sometimes in a star-shaped structure around ego and the partner. The high spatial dispersion is explained by the combination of factors that contribute to forming small, dispersed groups.

Léa as the paragon of the “International” class completed her high school and lives with her parents. She never moved further than 30 km but included in her network people living in foreign countries who were met in student exchanges organised by secondary and high schools. This is how young people from working-class backgrounds like Léa (her father is a security guard and her mother is a nurse) had the opportunity to travel and develop international relationships. In an interview, she said: “I went to England with Nadège. I went to Germany last year, I stayed in touch with my pen pal, Wolle, who came to visit me this summer and invited me to Hanover. I went to the United States with the school. I stayed in contact with the family at Henrietta’s house. And before that, the school hosted an American girl who came to France, Rachel.” In this class, some egos never travelled abroad but stayed in touch with people who did, such as French alumni of prestigious schools who eventually moved to different countries. Here, institutions like schools and Erasmus programmes play an important role in the international scope of the network. The networks of this class are composed of both local and long-distance relationships. Their structure is in star or pearl-collar shape with a high diameter: different alters connect different components.

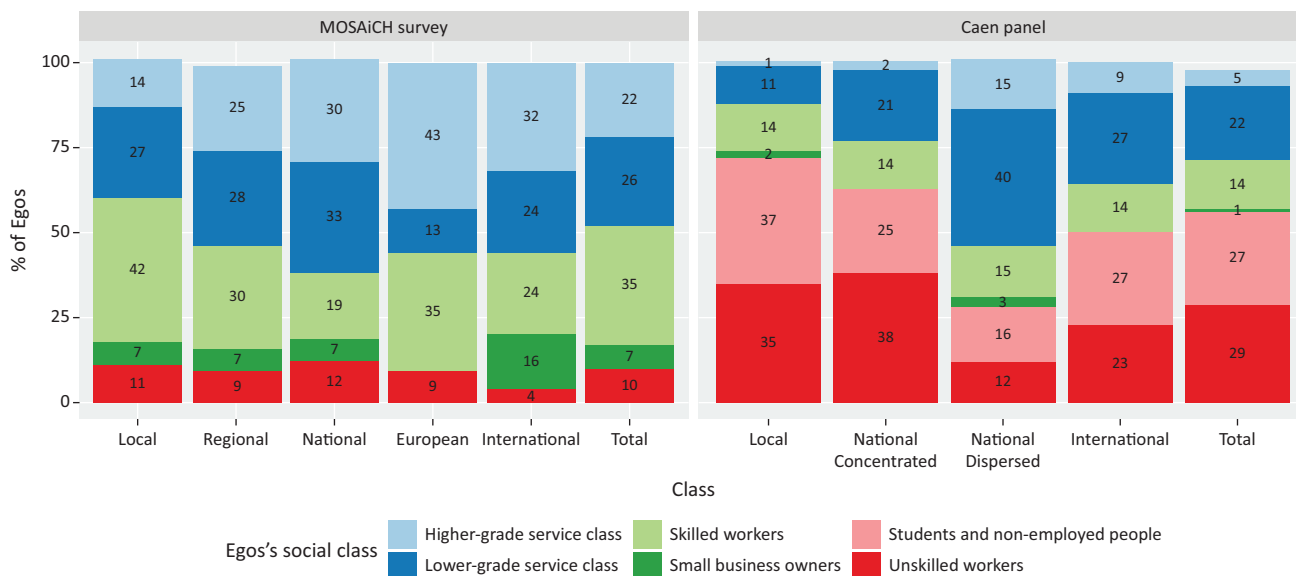
**6. Assessing the Validity of the Classifications: Relationship to Socio-Demographic and Structural Variables**

We used different strategies to assess the validity of the classifications obtained. First, in an exploratory way, we

evaluated different indices and different methods of factor analysis (PCA or factor analysis of mixed data) and assessed the quality of the classifications based on clarity, internal consistency, and parsimony. Second, we validated the classifications based on the stories and visual inspection of the geographical mapping of the paragons. Finally, using bivariate analyses, we measured the association between the classes and some social characteristics of the individuals as well as structural properties of the personal networks. Because of size limitations, we only present here the results of the analysis for four characteristics: ego’s social class, living arrangement, residential mobility, and network density at both the inter-individual and inter-area levels.

*6.1. Social Class*

We used the social class scheme of Oesch (2006) where occupations are classified into five classes based on employment and work conditions. For the Caen Panel, we added the category of “Students and non-employed people” since they represent an important proportion of the studied population. Figure 5 shows a strong association between the geography of personal networks and ego’s social class for both samples. Those in the service class tend to have a personal network that is dispersed at the National or European (for Switzerland) levels, and to some extent, at the international level. Conversely, skilled and unskilled workers, students and non-employed people are over-represented among those having local networks in both datasets and national-concentrated networks in the Caen Panel. Despite some differences between both datasets largely explained by the differences in the composition of the two populations, the analysis reveals a greater propensity to have a spatially dispersed personal network among people in service occupations.



**Figure 5.** Classes by ego’s social class.

### 6.2. Living Arrangement

We also observe clear differences by ego’s living arrangement (Figure 6). In both samples, those having a local personal network often live with parents or with a partner and children. People having a regional, national, or European network are more likely to live alone than those having a local network. Individuals living with a partner without children are overrepresented among those having a national and dispersed network. Finally, we observe that people with an international network differ in their living arrangements across the two samples: They often live with a partner and children in MOSAiCH while they often live with parents in the Caen Panel.

### 6.3. Residential Mobility

In the MOSAiCH sample, ego’s residential mobility was measured based on the place where ego lived at the age of 14. For both samples, we grouped respondents into four categories: (a) those who live in the same employment area as the one at 14; (b) those who live in the same linguistic region of Switzerland for MOSAiCH/in the same administrative region of France for the Caen Panel as the one at 14; (c) those who live in a different linguistic region of Switzerland/administrative region of France from the one at 14; and (d) those who lived abroad at the age of 14. For the Caen Panel, this last category concerns one respondent only.

We see a strong correspondence between residential mobility and the geography of personal networks (Figure 7). In MOSAiCH, those who grew up in a foreign country are more likely to have a European or world-wide personal network. The effect of mobility is also strong among those who grew up in Switzerland. Those who moved from a different linguistic region of Switzerland

are more likely to have a national network. By contrast, egos who developed a small-local network or a regional network are more likely to live close to or in the same area where they grew up.

In the Caen Panel, those with a national and dispersed network are more likely to live in a different area than the one where they lived at 14. By contrast, those who live in the same area as where they grew up are overrepresented among the local and international class (this latter being probably due to the student population and exchange programmes). As shown in the previous analysis on living arrangements, individuals in the international class of the Caen Panel significantly differ in their sociodemographics from their counterpart in MOSAiCH. The latter group in Switzerland are mostly employed people, some of whom have immigrated for work.

### 6.4. Network Density

Network density is defined as the number of existing relationships between network members divided by the maximum number of possible relationships. Scores range between 0 and 1, with 1 meaning that all members are interconnected and 0 meaning that no one is connected to anyone else in the network. We calculated the inter-individual network density based on the directed emotional support relationships in MOSAiCH and knowledge relationships in the Caen Panel. For the latter, egos were excluded from the calculation, since by definition they know everyone in their personal networks. We also computed the “inter-area” density according to the proportion of existing relationships between alters located in different areas (considering only strong ties in the Caen Panel).

For both samples, we observe that the classes are strongly associated with network density, both at the inter-individual and inter-area levels (Figure 8). The more

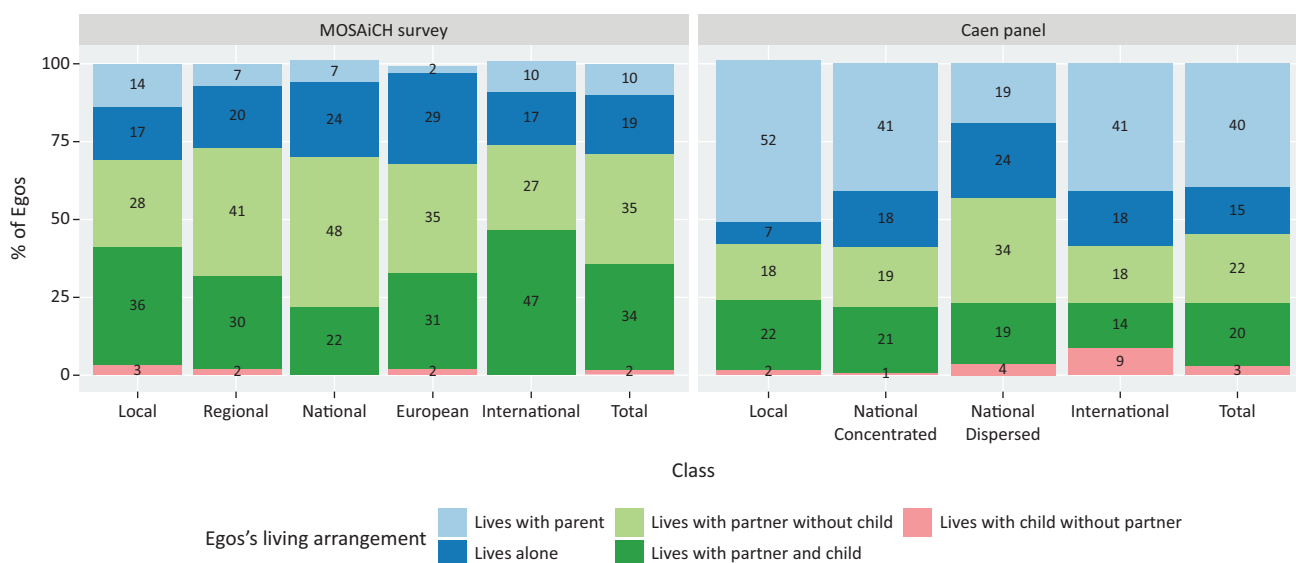


Figure 6. Classes by ego’s living arrangement.

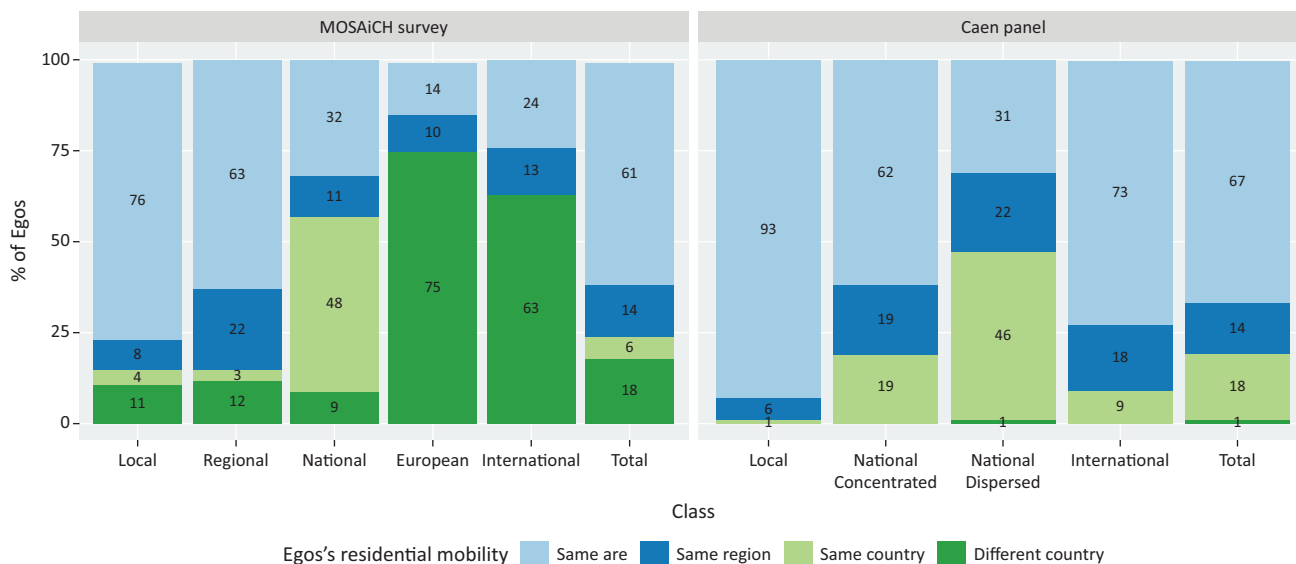


Figure 7. Classes by ego's residential mobility.

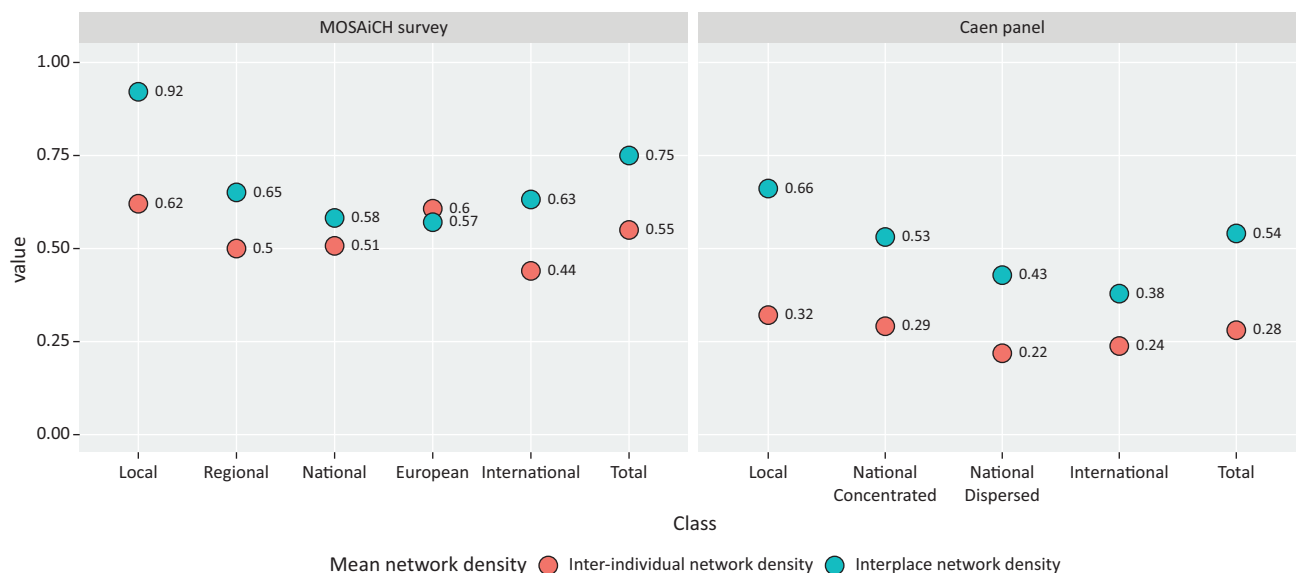


Figure 8. Mean density of ego's inter-individual and inter-area networks.

spatially dispersed networks are, the lower the density. Local networks are particularly dense, but these networks tend to be smaller in size, especially for the MOSAiCH dataset, as density is generally inversely proportional to network size. The only exception concerns the European networks in MOSAiCH, which are characterised by a high inter-individual density. In this class, networks are relatively small and egos named a relatively high proportion of relatives who live in the country of origin and are tightly connected.

### 7. Conclusions

The approach proposed in this study has proved to be effective for analysing the geography of personal networks. We grouped network members' residential loca-

tions by employment areas and analysed the aggregate structure (networks of places). Our results based on two samples of egocentric networks suggest that the approach is applicable to a wide range of geographical settings and types of personal network data. Our approach further demonstrates the added value of using relevant geographical areas rather than residential distance information. The geographical patterns identified are more meaningful and better capture the complexity of geographical patterns than distance-based descriptors. The main geographical unit of analysis used, the employment area, is a functional statistical unit whose delimitation is provided by national statistical offices and is based on local commuting flows. The network indices considered (IQV, IE, number of areas, etc.) are appropriate to examine the dispersion of personal

networks across employment areas and the propensity of egos to have alters living in the same area as them. In addition, the geographical scope of personal networks is based on structuring geographical divisions: linguistic, administrative, and national borders, rather than a continuous and linear variable, such as a mean distance. Another important advantage of the proposed approach is that characteristics of these areas (e.g., economic activity, deprivation, demography evolution) can easily be integrated into the analysis as environmental factors for better understanding personal networks in their geographical context. The proposed approach also has the advantage of capturing the geography, not as an attribute of network members, but as a higher structural level, with the potential to analyse the links between the composition, structure and geography of personal networks. Researchers could use alternative indices, units and divisions depending on the research questions addressed. For example, the geographical scope of networks could be measured using categorical indicators either based on the “farthest alter” or the category in which the highest number of alters falls. Using cross-national employment areas would also be useful to overcome methodological nationalism.

In addition to statistical analysis, the analysis of the paragons—the statistically most typical networks of each class—proved to be an efficient way of illustrating and characterising the geographical patterns identified. When the data are available, qualitative analysis of personal stories of the paragons gives further insight into how life events, social backgrounds, and institutions shape the geography of personal networks. In this study, the key factors that appear to be relevant are the location of the family and in-laws, ego’s mobility experiences, divorce and remarriage, having met friends in another place who stayed there, or having friends who moved and remain connected, temporary jobs and studies in other places, leisure activities that tie together people living in different places, secondary residences in tourist places, and institutional exchange programmes. All may contribute to the spatial dispersion and geographical scope of personal networks. The classifications were further validated by the strong statistical associations with egos’ socio-demographics and network characteristics.

We see three promising extensions of this approach. One is incorporating area characteristics (e.g., transport networks, population density, socio-economic deprivation) into the analysis to examine the influence of environmental factors on the geography of personal networks. Statistical models could also include both the geography of personal networks and area characteristics to estimate their respective effects on individual-level outcomes (e.g., social exclusion). A second extension is studying the geographical distribution of the different classes to highlight local and regional specificities in the geography of personal networks. This is particularly relevant when using nationally representative samples like

MOSAiCH. When using panel data like the Caen Panel, a third promising extension of this approach is to analyse intra-individual changes in class across survey waves to dynamically analyse the geography of personal networks over the life course. In all these research directions, the use of our approach by other network researchers seems to us particularly desirable to examine personal networks in geographical context.

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### Conflict of Interests

The authors declare no conflict of interests.

### References

- Agresti, A., & Agresti, B. F. (1978). Statistical analysis of qualitative variation. *Sociological Methodology*, 9, 204–237. <https://doi.org/10.2307/270810>
- Andersson, R., & Musterd, S. (2010). What scale matters? Exploring the relationships between individuals’ social position, neighbourhood context and the scale of neighbourhood. *Geografiska Annaler: Series B, Human Geography*, 92(1), 23–43. <https://doi.org/10.1111/j.1468-0467.2010.00331.x>
- Andris, C. (2016). Integrating social network data into GISystems. *International Journal of Geographical Information Science*, 30(10), 2009–2031. <https://doi.org/10.1080/13658816.2016.1153103>
- Barnes, J. A. (1954). Class and committees in a Norwegian island parish. *Human Relations*, 7(1), 39–58.
- Barrat, A., Bidart, C., & Grossetti, Q. (2013). Des liens et des lieux [Ties and places]. In L. Beauguitte (Ed.), *Les réseaux dans le temps et dans l’espace: Actes de la deuxième journée d’études du groupe fmr (Flux, Matrices, Réseaux)*. <https://halshs.archives-ouvertes.fr/halshs-00869371>
- Bidart, C., Degenne, A., & Grossetti, M. (2020). *Living in networks: The dynamics of social relations*. Cambridge University Press. <https://doi.org/10.1017/9781108882392>
- Blokland, T., Krüger, D., Vief, R., & Schultze, H. (2021). Where we turn to: Rethinking networks, urban space, and research methods. In A. Million, C. Haid, I. Castillo Ulloa, & N. Baur (Eds.), *Spatial transformations* (pp. 258–268). Routledge. <https://doi.org/10.4324/9781003036159>
- Crossley, N., Bellotti, E., Edwards, G., Everett, M. G., Koskinen, J., & Tranmer, M. (2015). *Social Network Analysis for Ego-Nets*. Sage. <https://doi.org/10.4135/9781473911871>
- Ducruet, C., & Beauguitte, L. (2014). Spatial science and network science: Review and outcomes of a



- complex relationship. *Networks and Spatial Economics*, 14(3), 297–316. <https://doi.org/10.1007/s11067-013-9222-6>
- Eve, M. (2002). Deux traditions d'analyse des réseaux sociaux [Two traditions of social network analysis]. *Réseaux*, 5, 183–212. <https://www.cairn.info/revue-reseaux1-2002-5-page-183.htm>
- Farber, S., & Li, X. (2013). Urban sprawl and social interaction potential: An empirical analysis of large metropolitan regions in the United States. *Journal of Transport Geography*, 31, 267–277. <https://doi.org/10.1016/j.jtrangeo.2013.03.002>
- Festinger, L., Schachter, S., & Back, K. (1950). *Social pressures in informal groups; a study of human factors in housing*. Harper & Brothers.
- Fischer, C. S. (1982). *To dwell among friends: Personal networks in town and city*. University of Chicago Press.
- Frei, A., & Axhausen, K. W. (2007). *Size and structure of social network geographies* (Report No. 444). Arbeitsberichte Verkehrs- und Raumplanung, IVT, ETH Zurich. <https://doi.org/10.3929/ethz-a-005562753>
- Gadal, S. (2012). Geographic space ontology. In T. Podobnikar & M. Čey (Eds.), *Universal ontology of geographic space: Semantic enrichment for spatial data* (pp. 28–52). Information Science Reference. <https://doi.org/10.4018/978-1-46660-327-1>
- Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, 78(6), 1360–1380. <https://doi.org/10.1086/225469>
- Hägerstrand, T. (1970). What about people in regional science. *Papers of the Regional Science Association*, 24, 7–21.
- Hannerz, U. (1980). *Exploring the city. Inquiries toward an urban anthropology*. Columbia University Press. <https://doi.org/10.7312/hann91086>
- Herz, A. (2015). Relational constitution of social support in migrants' transnational personal communities. *Social Networks*, 40, 64–74.
- Husztí, É., Albert, F., Csizmadya, A., Nagy, I., & Dávid, B. (2021). When spatial dimension matters: Comparing personal network characteristics in different segregated areas. *Social Inclusion*, 9(4), 375–387. <https://doi.org/10.17645/si.v9i4.4520>
- Kim, J., Rasouli, S., & Timmermans, H. J. (2018). Social networks, social influence and activity-travel behaviour: A review of models and empirical evidence. *Transport Reviews*, 38(4), 499–523. <https://doi.org/10.1080/01441647.2017.1351500>
- Krackhardt, D., & Stern, R. N. (1988). Informal networks and organizational crises: An experimental simulation. *Social Psychology Quarterly*, 123–140. <https://doi.org/10.2307/2786835>
- Lê, S., Josse, J., & Husson, F. (2008). FactoMineR: An R package for multivariate analysis. *Journal of Statistical Software*, 25, 1–18. <https://doi.org/10.18637/jss.v025.i01>
- Lubbers, M. J., Molina, J. L., & McCarty, C. (2021). How do migrants' processes of social embedding unfold over time? *Global Networks*, 21(3), 529–550. <https://doi.org/10.1111/glob.12297>
- Massey, D. (2005). *For space*. SAGE.
- Mayer, P. (1962). Migrancy and the study of Africans in towns. *American Anthropologist*, 64(3), 576–592.
- Mok, D., Wellman, B., & Carrasco, J. (2010). Does distance matter in the age of the Internet? *Urban Studies*, 47(13), 2747–2783. <https://doi.org/10.1177/2F0042098010377363>
- Mollenhorst, G., Volker, B., & Flap, H. (2014). Changes in personal relationships: How social contexts affect the emergence and discontinuation of relationships. *Social Networks*, 37, 65–80. <https://doi.org/10.1016/j.socnet.2013.12.003>
- Moreno, J. L. (1934). *Who shall survive? A new approach to the problem of human interrelations*. Nervous and Mental Disease Publishing Co.
- Oesch, D. (2006). Coming to grips with a changing class structure: An analysis of employment stratification in Britain, Germany, Sweden and Switzerland. *International Sociology*, 21(2), 263–288. <https://doi.org/10.1177/2F0268580906061379>
- Puura, A., Silm, S., & Masso, A. (2022). Identifying relationships between personal social networks and spatial mobility: A study using smartphone tracing and related surveys. *Social Networks*, 68, 306–317. <https://doi.org/10.1016/j.socnet.2021.08.008>
- R Core Team. (2022). *R: A language and environment for statistical computing (online)*. R Foundation for Statistical Computing. <https://www.R-project.org>
- Rutten, R., Westlund, H., & Boekema, F. (2010). The spatial dimension of social capital. *European Planning Studies*, 18(6), 863–871. <https://doi.org/10.1080/09654311003701381>
- Small, M. L., & Adler, L. (2019). The role of space in the formation of social ties. *Annual Review of Sociology*, 45, 111–132. <https://doi.org/10.1146/annurev-soc-073018-022707>
- Spiro, E. S., Almquist, Z. W., & Butts, C. T. (2016). The persistence of division: Geography, institutions, and online friendship ties. *Socius*, 2. <https://doi.org/10.1177/2378023116634340>
- Tóth, G., Wachs, J., Di Clemente, R., Jakobi, Á., Ságvári, B., Kertész, J., & Lengyel, B. (2021). Inequality is rising where social network segregation interacts with urban topology. *Nature Communications*, 12(1), 1–9. <https://doi.org/10.1038/s41467-021-21465-0>
- Tulin, M., Volker, B., & Lancee, B. (2019). The same place but different: How neighborhood context differentially affects homogeneity in networks of different social groups. *Journal of Urban Affairs*, 43(1), 57–76. <https://doi.org/10.1080/07352166.2019.1578176>
- Urry, J. (2012). Social networks, mobile lives and social inequalities. *Journal of Transport Geography*, 21, 24–30. <https://doi.org/10.1016/j.jtrangeo.2011.10.003>
- Vacca, R., Solano, G., Lubbers, M. J., Molina, J. L., &

- McCarty, C. (2018). A personal network approach to the study of immigrant structural assimilation and transnationalism. *Social Networks*, 53, 72–89. <https://doi.org/10.1016/j.socnet.2016.08.007>
- Vallée, J., Le Roux, G., Chaix, B., Kestens, Y., & Chauvin, P. (2015). The “constant size neighbourhood trap” in accessibility and health studies. *Urban Studies*, 52(2), 338–357. <https://doi.org/10.1177/0042098014528393>
- Vanhoutte, B., & Hooghe, M. (2012). Do diverse geographical contexts lead to diverse friendship networks? A multilevel analysis of Belgian survey data. *International Journal of Intercultural Relations*, 36(3), 343–352. <https://doi.org/10.1016/j.ijintrel.2011.09.003>
- Viry, G. (2012). Residential mobility and the spatial dispersion of personal networks: Effects on social support. *Social Networks*, 34(1), 59–72. <https://doi.org/10.1016/j.socnet.2011.07.003>
- Wang, Y., Kang, C., Bettencourt, L. M. A., Liu, Y., & Andris, C. (2015). Linked activity spaces: Embedding social networks in urban space. In M. Helbich, J. Jokar Arsanjani, & M. Leitner (Eds.), *Computational approaches for urban environments* (pp. 313–336). Springer. <https://doi.org/10.1007/978-3-319-11469-9>
- Wellman, B. (1979). The community question: The intimate networks of East Yorkers. *American Journal of Sociology*, 84(5), 1201–1231. <https://doi.org/10.1086/226906>

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Article

## Places That Bond and Bind: On the Interplay of Space, Places, and Social Networks

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### Abstract

Social networks of socially disadvantaged individuals can help them in coping with everyday life and avoiding social exclusion. At the same time, social ties also have the power to bind an individual to their disadvantageous situation, perpetuating the risks of social exclusion. One mechanism through which ties can be established are “foci”: extra-network structures around which common interactions occur (e.g., family, workplace, clubs) that usually have spatial anchor points (places) where joint interactions happen. To better understand this interplay of places and networks, we use a methodological novelty that connects a person’s everyday places with their ego-centred network (two-mode network). We analyse in depth two cases (elderly women living alone) from a mixed-methods study conducted in rural peripheries in eastern Germany, and we combine data from GPS tracking, qualitative interviews, and egocentric networks. A central finding of our analysis is that tie formation in places is more successful if ego has certain resources (e.g., cultural, financial, or time resources) that allow them to utilise places as foci—hence, ego and places must “match” in their characteristics. Beyond that, the existing foci (and their spatial anchoring as places in everyday life) in which ego is integrated must be considered as structures. Even if a person has enough resources and easy access to places with characteristics that promote contact, this does not automatically mean that they will form ties in such places, as the person’s network plays a major role in whether they frequent these places and establish new ties there.

### Keywords

focus theory; GPS tracking; personal networks; poverty; rural areas; social inequality; social network analysis; spatial sociology; two-mode networks

### Issue

This article is part of the issue “On the Role of Space, Place, and Social Networks in Social Participation” edited by Gil Viry (University of Edinburgh), Christoph van Dülmen (Thünen Institute of Rural Studies), Marion Maisonobe (CNRS), and Andreas Klärner (Thünen Institute of Rural Studies).

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### 1. Introduction

Research on social inequality has shown that the social networks of socially disadvantaged individuals help them cope with everyday life by providing support and resources (Klärner & Knabe, 2019; Lubbers, Small, & García, 2020; Matthews & Besemer, 2015). By providing resources defined as social capital (Bourdieu, 1986), social networks may mitigate social inequalities and enable social inclusion, as access to “possibilities pro-

duced by human development” (Therborn, 2013, p. 21). However, social networks do not guarantee the realisation of these possibilities, understood here as life chances. Indeed, social networks can also limit opportunities, because support-receiving individuals may be bound by reciprocity obligations (Offer, 2012). We argue that people are especially likely to have limited opportunities when their constraining network ties are linked to places visited repeatedly in everyday life. Hence, to better understand the ambivalent effects of social networks

on the mitigation or reproduction of social inequality, we aim to address their spatial contextualisation, and the conditions under which they are formed and maintained.

Before the resources of social networks can be used by a focal individual (ego) to improve their life chances, these networks must first be constituted through ties to other individuals (alters). In this context, social network theory stresses the importance of focus (plural: foci), which is “a social, psychological, legal, or physical entity around which joint activities are organized (e.g., workplaces, voluntary organizations, hangouts, families, etc.)” (Feld, 1981, p. 1016). Although foci are not just physical places, they usually have spatial anchor points where joint interactions take place. Consequently, the spatial environment and preconditions for establishing network ties merit our attention. Drawing on this perspective, we seek to identify mechanisms of network formation and empirically extend established concepts of network research. Methodologically, we do so by linking a person’s everyday places with their network members, which results in two-mode networks. To our knowledge, this approach has not been implemented before.

As well as providing a methodological novelty, this article aims to broaden the spatial perspective by shifting the context to rural peripheries. Previous studies that explicitly dealt with the functioning of foci and their effects on social networks investigated foci in urban contexts, such as childcare centres (Small, 2009) or anti-poverty organisations (Lubbers, García, et al., 2020; Mazelis, 2020). By contrast, rural peripheries are far away from the nearest administrative urban centre and can be described as spatially disadvantaged because, in these areas, labour market opportunities, places for meeting daily needs, and institutional help are more difficult for residents to reach than they are in more prosperous or urban areas (Kühn, 2015). Given that social networks often provide fewer resources even in deprived urban neighbourhoods (Huszi et al., 2021), and places that have been identified in previous research as potential foci for tie formation (Newman, 2020) are more difficult to reach in rural peripheries, the formation and maintenance of social contacts may be systematically weakened in such areas (Klärner & Knabe, 2019). Thus, in our study, we examine in depth how places visited in everyday life serve as foci for tie formation, which factors help or hinder this process, and the implications this interplay has for individual life chances.

## 2. Places and Networks

We draw on social network theories and on empirical studies on the role of physical space in the formation of social networks to show how places function as foci that can enable tie formation. The places people visit in their everyday lives can influence their social networks, as it is “the presence or absence of fixed places that make social interaction possible or likely” (Small & Adler, 2019, p. 116). These places of social interaction can become

foci, which are “extra-network social structure[s] that systematically produce patterns in a social network” (Feld, 1981, p. 1016). Accordingly, we investigate whether the places people visit regularly include places that enable social interactions and promote tie formation and/or maintenance—and thus serve to build social capital that may mitigate social inequalities.

Before turning to the various criteria that previous research has found to be conducive to successful tie formation in places, it is important to note that spaces evolve and places are not static. Political ideologies, spatial planning, economic and market processes, social movements, etc., can transform spaces and the characteristics and functions of places (Horgan & Dimitrijević, 2021; Lefebvre, 1996; Sevilla-Buitrago, 2015). In our study, we focus on rural peripheries in eastern Germany. The spaces of rural areas are generally subject to diverse transformation processes, of which the diminishing importance of agricultural production for the economies of the Northern Hemisphere is only the most obvious (Shucksmith et al., 2012). In the former socialist states of Central and Eastern Europe, including eastern Germany, the changes have been even more drastic (Bański, 2019). Here, the most important trends have been political peripheralisation and reductions in financial and infrastructure resources flowing to these areas. Many places, such as grocery stores in small villages, cultural clubs run by the socialist party, and, above all, factories were closed and were not replaced by market or welfare state actors. Our research takes as its starting point the assumption that, in former socialist states, this profound transformation of rural spaces and the closure of many places that facilitated social encounters affected the existence of potential foci where residents of these rural peripheries could establish new contacts.

Previous research shows that places must have certain characteristics to function successfully as foci. Routinely visited organisations, like childcare centres, seem to be more successful in enabling not only meeting but also mating (i.e., tie formation) when their institutional norms promote frequent, long-lasting social interactions oriented towards others, and are focused on common tasks (Small, 2009; Small & Gose, 2020). In addition, the likelihood that the ties formed will be long-lasting increases if they stem from family or neighbourhood contexts, i.e., from foci with strong emotional and/or spatial closeness (Mollenhorst et al., 2014). That the temporal rhythmicity of places affects their ability to facilitate social contact was pointed out even more explicitly by Lager et al. (2015). In their study of a Dutch neighbourhood, they showed that while the weekly regularity of local activities (e.g., food market, card club) was important, the asynchronous time geography of elderly pensioners and young working people in the neighbourhood minimised opportunities for encounters.

While the characteristics of places play a role in the chances of having encounters and forming ties, the characteristics of ego and their economic and cultural

resources influence whether they build new ties at a potential focus (Crossley, 2013, p. 141). Knabe et al. (2018) showed that individuals need to have psychological capabilities and interpersonal skills to use places to form and maintain social ties. In their study on how people in Barcelona used informal networks to cope with poverty, Lubbers, García, et al. (2020) found that the causes of poverty (such as low economic resources and mental illness) also prevented many individuals from attending social foci and limited their access to leisure activities, which in turn reduced their contacts. Furthermore, the authors found that individuals with economic problems were more likely to form ties in an organisation for evicted people started by others who had been evicted than in charity organisations. They attributed this finding to the network mechanism of homophily, which means that individuals are more likely to form ties with people who have similar characteristics, such as the same gender, ethnicity, or education (McPherson et al., 2001). Thus, conceptually, we regard the two mechanisms of homophily and foci as closely related, as foci often attract people with similar attributes (Lubbers, García, et al., 2020, p. 68), and membership in foci may in turn generate similar attitudes.

People's foci are in a reciprocal relationship, i.e., as individuals are involved in constraining foci (Feld, 1981, p. 1019), they spend considerable time and resources on activities associated with those foci. Family and work are usually highly constraining foci, as they are not easy for outsiders to join; and the members involved in each focus typically form ties with the other members (Feld, 1981, p. 1030). In addition, there may be constraints on the participation of ego in other foci: "It may be difficult, costly, and time-consuming to disassociate from the focus and/or become associated with others" (Feld, 1982, p. 797). Mollenhorst et al. (2014) observed that when new network ties emerge over time, they are more likely to be chosen from long-standing contexts, such as ego's family or neighbourhood. Similarly, Ortiz and Bellotti (2021) showed that social networks can take on a cumulatively reinforced supportive or exploitative character over the life course of ego. The worse the socio-economic situation of the individuals, the more likely it is that their networks constrain their life choices, and the denser their networks are likely to be. This suggests that the structure of such networks is dominated by a few long-standing foci. We argue that this double constraint of foci highlights the extent to which people's foci can systematically limit their life chances by preventing them from joining alternative foci, and potentially forming *weak ties* (Granovetter, 1977) there. Against this background, we define a focus as a structure that, as Giddens (1984, p. 25) put it, "is always both constraining and enabling," and that has spatial anchor points in the form of places. Accordingly, whether people visit certain places may be based on these network structures; and these places in turn have spatial characteristics that tend to enable or impede the formation of new contacts.

To empirically address these three points—the characteristics of places, ego's characteristics and resources, and the foci ego is involved in—it is necessary to apply a methodological design that captures the existing foci of a person (ego), the characteristics of these foci and the members of ego's network associated with them, and the potential foci (as places) that ego visits, but from which no ties result.

### 3. Data and Methods

We analyse data from the international research project Social Disadvantage in Rural Peripheries in Eastern Germany and the Czech Republic (Keim-Klärner et al., 2021) that investigates living conditions in rural peripheries in Central Europe, and focuses on three social groups: (a) elderly living alone, (b) labour market disadvantaged, and (c) single parents. These groups were selected because they are at risk of experiencing multiple disadvantages. For the present study, we perform an in-depth analysis of two individual cases from group (a) who lived in the eastern German rural peripheral regions of Mansfeld-Südharz and Vorpommern-Greifswald, which were selected due to their poor services and transport accessibility (ESPON, 2017). All respondents were recruited in person and signed informed consent forms prior to their participation.

#### 3.1. Problem-Centred Interviews and Collection of Egocentric Network Data

First, we conducted a problem-centred interview (Witzel & Reiter, 2012) in which we asked about the respondent's everyday life, job, health, finances, education, and social ties (Interview I). At the end of Interview I, we collected egocentric network data using the software VennMaker (Gamper et al., 2012). Using a name generator approach (Perry et al., 2018, pp. 68–108), we asked for the names of people (alters) (a) with whom ego does things in their leisure time, (b) who support ego emotionally and (c) practically in everyday life, (d) who could give ego informational support when searching for a new job, (e) who could give ego mobility support, (f) who actually gave ego mobility support recently, and (g) with whom ego has conflictual relationships. Our name generators capture different dimensions of social support, sociability, and conflictual ties. Alters could be named in one, multiple, or up to all seven of the name generators. We then asked for information about each of the alters. The name interpreters (Perry et al., 2018, pp. 109–128) were sex, age, type of relationship to ego, employment status, household composition, frequency of contact with ego, and residential distance to ego (in minutes). Lastly, the ties between alters were determined by asking whether two alters "know" each other, i.e., whether they would recognise and talk to each other even without ego's presence. Accordingly, the alter-alter-ties, unlike the ego-alter-ties, could not be multiplex.

Respondents were actively involved in drawing the network map (Figure 1) by placing their alters on concentric circles depending on how emotionally close they felt to them. During this final step, the participants were encouraged to reflect on their network: Has anything changed in their network in the past? Would they like to change something in their network? Is there support they would like to receive but are not? Do they (sometimes) feel lonely?

### 3.2. Collection of GPS Data and Mobility Interview

Following Interview I, the interviewees' spatial mobility and the places they visited in their daily lives were determined with the help of a two-week GPS tracking process. Participants were instructed to carry a GPS logger (Qstarz BT-Q1000XT) with them every time they left their home for 14 consecutive days. This period is considered long enough to capture most of the places they visit in their everyday lives (Stanley et al., 2018).

The GPS data were processed into maps using a geo-information system that depicted the places ego visited. These maps served as narrative stimuli for a semi-structured interview (Interview II) in which all visited places were discussed chronologically. Thus, the quantitative GPS data were enriched with ego's subjective perceptions about why they visit this place, for how long, and with what regularity; what they do while there; and whom they met or usually meet there.

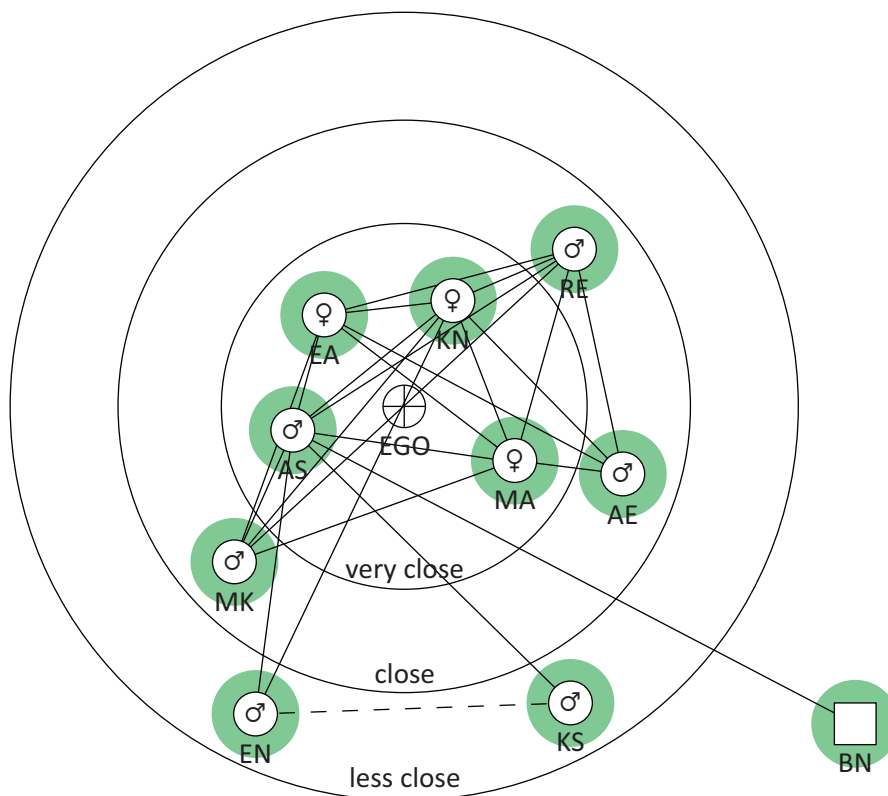
### 3.3. Affiliation of Everyday Places and Alters

In a final step of Interview II, the everyday places that had so far been discussed were linked to the alters of the ego-centred network. For this purpose, the interviewer went through the list of alters one by one and asked in which of the previously discussed places ego usually meets the alter in question. The resulting affiliations formed two-mode or bipartite networks.

### 3.4. Analytical Approach

Both interviews were tape-recorded and fully transcribed. Qualitative data analysis was performed using the software MAXQDA 2020 by applying an a priori coding scheme based on the interview guidelines and open coding to capture themes emerging from the material. These codes were used to write systematic case portraits for comparative analysis (Witzel & Reiter, 2012).

The affiliation matrices of the everyday places with the alters were manually created, and the places were categorised according to why they were visited, i.e., the meaning ego attributed to them during Interview II when reporting on the respective visits. The processing, analysis, and visualisation of the network data were performed using R (v3.6.0; R Core Team, 2019), and the igraph (v1.2.4.1; Csardi & Nepusz, 2006) package.



**Figure 1.** Anonymised network map of Mrs Lindemann (see Section 4.2). Own illustration with VennMaker.

4. Results

The two cases presented have several common features: Both are elderly women who are living alone and are retired, both have relatively large networks, and both visit a wide range of places in their everyday lives. However, in terms of their life chances, there are clear differences between them that make their cases valuable to compare, and that provide insights into the interplay of social networks, everyday places, and life chances.

4.1. Case A—Mrs Lena Schmidt: Effective Foci by Matching Ego and Places

Lena Schmidt is a 70-year-old widow who lives alone. She and her deceased husband previously had their own business with several employees, hence, she is financially relatively well-off. She is in good health for her age. She has a biological son and a stepson who was already an adult when she married her second husband. Both sons live in the region, about a 40 minutes’ car drive away. She lives in her own house in a village of about 300 inhabitants, which is comparatively remote even within the peripheral research region. Mrs Schmidt has her own car, which enables her to meet her everyday needs.

The death of her husband eight years ago and her retirement were clear breaks from her previous life. After

these events, she was mostly alone, except for contact with her two sons and her sister. She then began to actively establish new relationships in her village. Now her network (Figure 2) consists of eight closely connected alters who are either neighbours, friends, or relatives.

Mrs Schmidt’s two-mode network (Figure 3) consists of the eight alters and 37 places she visited during the 14-day tracking period. Fourteen of the places are connected to alters, while 23 of the places—predominantly shops and medical facilities—have no affiliations. Of the places she visits, two regularly host cultural events: an art yard and an old church tower (Figure 3). As Mrs Schmidt reported, these places are important for the formation and maintenance of her social ties within the village. She visits these places to bring variety into her everyday life, but above all to meet her friends and neighbours:

I had never attended [the village events] before, when I was going to work. But you must seek out people now, when you’re at home. I hardly knew anyone here in the village. Because we [ego and her husband] really only went to work early and came home in the evening, and then we had things to do here, and then the next day we had to go back to work. So, when I was staying home, I had to somehow get in touch with some people. And then I started going with them regularly to the art yard and got involved a bit.

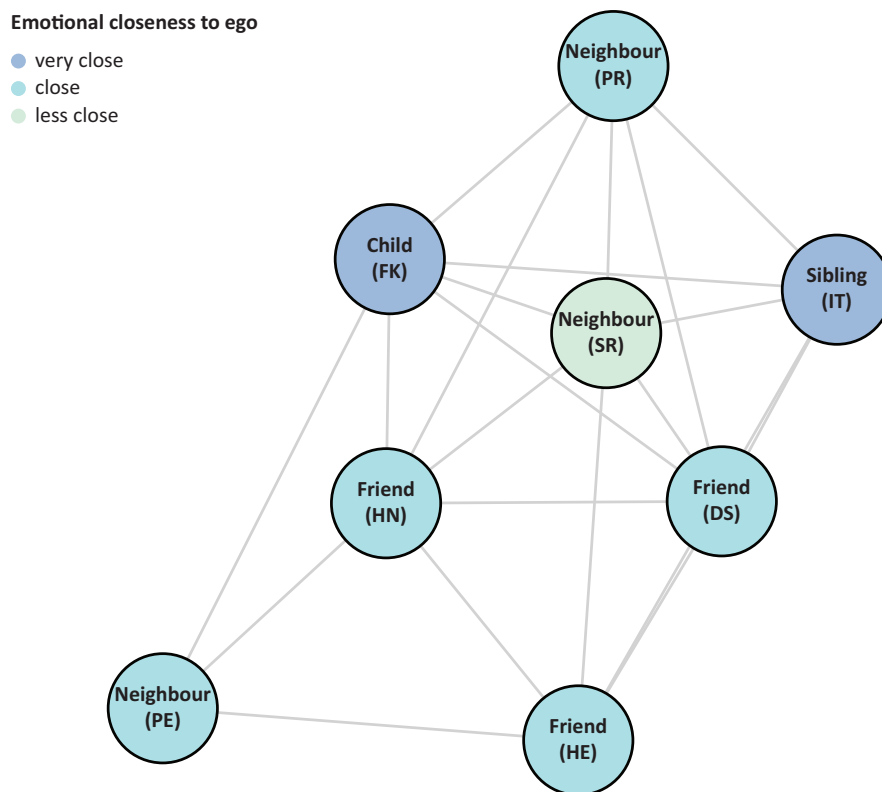


Figure 2. Ego-centred network of Mrs Schmidt. Notes: Alters’ labels are derived from the relationship type reported by ego and a two-letter anonymisation key; emotional closeness to ego is indicated by node colour; ties between alters indicate that they “know each other” according to ego’s account; layout based on the Fruchterman-Reingold algorithm. Own illustration.

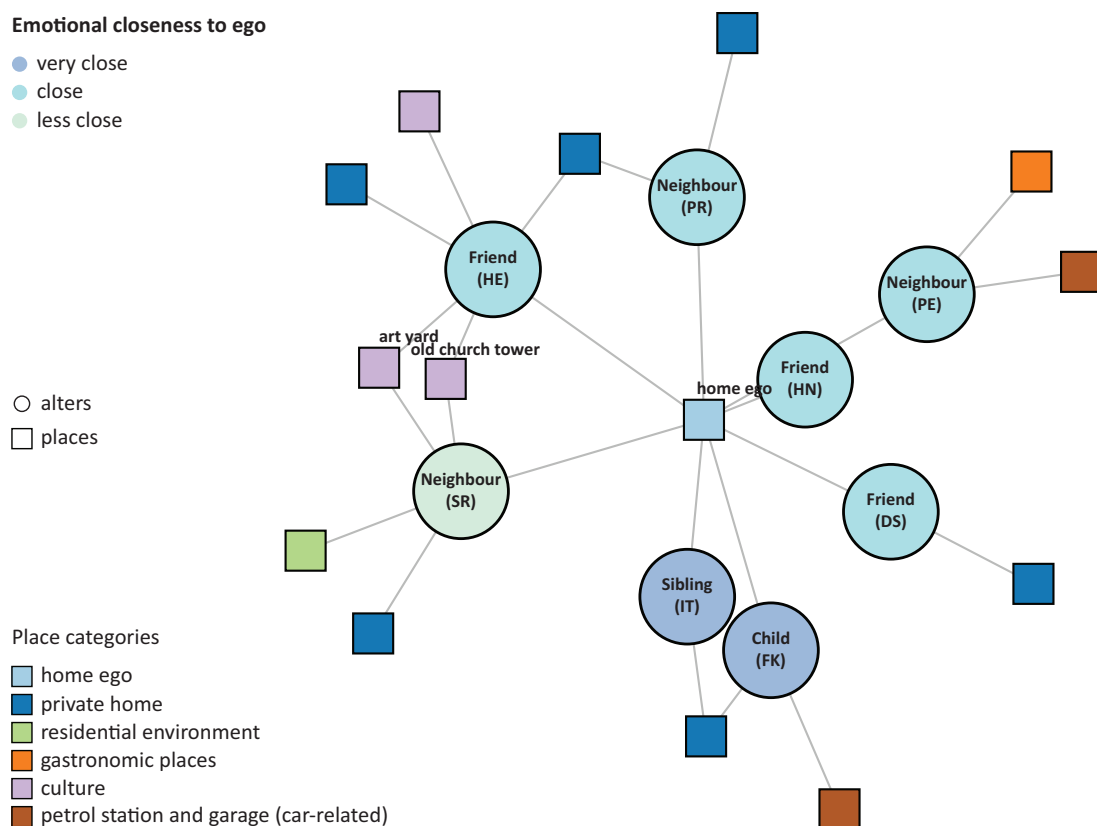
For Mrs Schmidt, these two public cultural places function as foci. At these places, “20, 30 women” meet, they talk about organising coming events, and “then it is always the turn of one or two to make coffee or to bake a cake.” These women know each other, even when they do not necessarily all talk to each other: “There are also people there with whom you don’t necessarily want to chat...but somehow communities are formed, when you get along well.” The nature of these foci allows Mrs Schmidt to seek contact with people who share her views (*homophily* mechanism), and to avoid people she finds unsympathetic. As ties to these groups of women are not represented in the ego-centred network, they can be considered *weak ties*. But Mrs Schmidt visits these places regularly with Friend HE and Neighbour SR (Figure 3), and these regular visits have strengthened their relationships. HE has become an important and close friend. She is affiliated with several of the everyday places Mrs Schmidt visits, which reinforces their relationship.

In addition, Mrs Schmidt’s two-mode network shows that the other important places for meeting network members are private homes. She visits almost all network members in their private homes. However, the most central place in the network is Mrs Schmidt’s own home (Figure 3). Her house is important for her everyday life, but also for strengthening and maintaining her

social ties. Since the death of her husband, her home has taken on special qualities as a meeting place, as it allows, for instance, her best friend HE or her sister IT to engage in private exchanges with no men present:

Actually, we [HE and ego] prefer to meet at my place, she prefers to come to me. Because she still has a husband, and...well, when women talk, the husband doesn’t necessarily always have to sit with them [laughs].

Mrs Schmidt’s home can be seen as a form of *bonding spatial capital*, since it provides her with resources to maintain her social ties as she pleases. All network members are connected to her home, but not at the same time. With this spatial capital, she can flexibly organise her relationships with heterogeneous ties (very close sister, close friends, less close neighbour). Her home helps her consciously diversify her network, without being concerned about repulsion between her alters (i.e., the avoidance of dissimilar people as the opposite of homophily; see Skvoretz, 2013). Thus, her bonding spatial capital *home* enables her to have different relationships to meet different needs (leisure activities, practical support, etc.):



**Figure 3.** Two-mode network of Mrs Schmidt. Notes: Twenty-three isolated places are not shown; places are depicted as squares and annotated when they are mentioned in the analysis; alters are depicted by circles and their emotional closeness to ego is indicated by node colour; ties between alters and places indicate that ego and alter meet at these places or they visit them together according to ego’s account; layout based on the Fruchterman-Reingold algorithm. Own illustration.



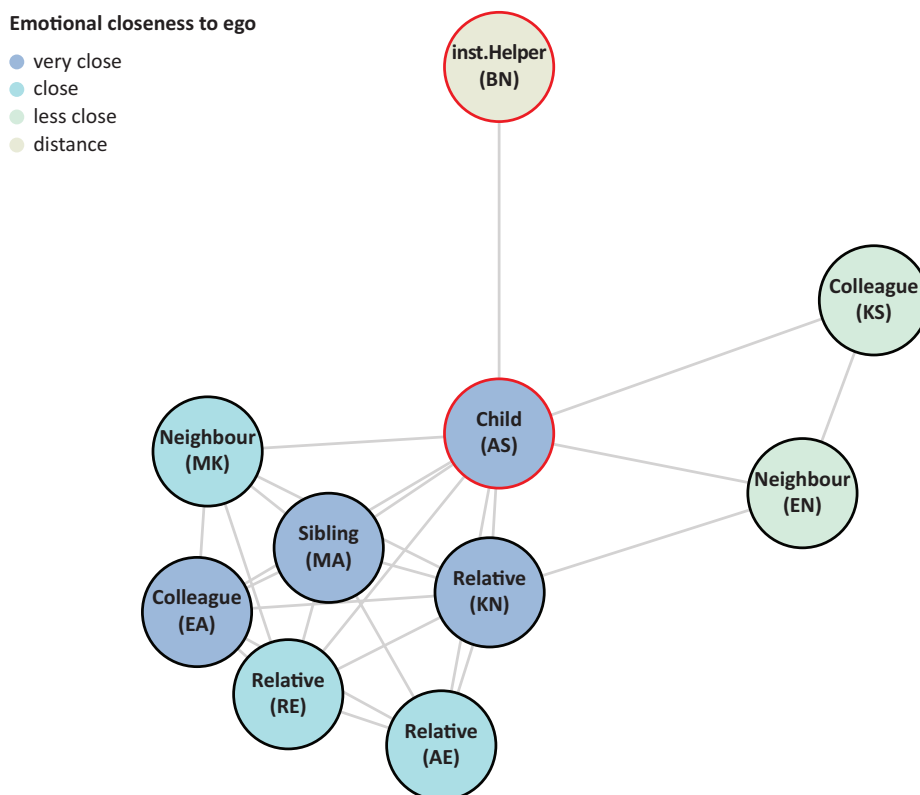
Just fixating on one person is not good....You can have a best friend with whom you talk about all kinds of things, but you still have to have other acquaintances....Not everything has to be so tight...how do you say...[you need] the man for all cases [laughs], the person for all cases [laughs].

For clarity of illustration, we did not include in Figure 3 everyday places without affiliations to alters; nonetheless, they are worth investigating. These places are mainly shopping venues and doctors’ offices where Mrs Schmidt does not report having any encounters with members of her network. Particularly interesting is the village cemetery (not depicted in Figure 3), which is a place she regularly visits to take care of her husband’s grave, but where she actively avoids meeting other people because she feels they drag her down in their grief and make her feel guilty for not mourning constantly. This observation is congruent with Mrs Schmidt’s efforts to consciously differentiate her network according to functions that are helpful to her in her everyday life, or that serve her well-being. As she does not want to grieve constantly, she deliberately avoids meeting people at the cemetery by visiting it in the mornings, as she knows that most people go there in the evenings. It thus appears that places can have a time structure or rhythm that influences their potential to function as a focus.

4.2. Case B—Mrs Hanna Lindemann: The Double Constraint of Foci

Mrs Hanna Lindemann is a 60-year-old divorced mother of two who receives a work-incapacity pension because she has chronic illnesses that also restrict her mobility. Since German reunification in 1990, and the subsequent collapse of the eastern German economy, she has held precarious jobs and been long-term unemployed. She lives in a midsized city in a rural periphery where she rents a two-room apartment. She cares intensively for her 35-year-old son AS, who has serious health issues, is unemployed, and lives part-time in her apartment. Her daughter has been living far away for some time and is not included in her network.

Mrs Lindemann’s ego-centred network (Figure 4) of 10 alters consists of a tightly-knit group of emotionally close to very close neighbours and relatives (bottom left), less close individuals (KS and EN), and authorities as institutional helpers (BN) for herself, but mostly for her son. She has ambivalent and partly conflictual ties (highlighted by red node frames) with both her son AS and authorities BN, which—according to the respective name generator—prevent her from leading her life as she would like to. Her son is playing an important role in Mrs Lindemann’s everyday practices and he also has a central position in her ego-centred network, as he is tied



**Figure 4.** Ego-centred network of Mrs Lindemann. Notes: Alters’ labels are derived from the relationship type reported by ego and a two-letter anonymisation key; emotional closeness to ego indicated by node colour; conflictual relationships with ego indicated by red node frames; ties between alters indicate that they “know each other” according to ego’s account; layout based on the Fruchterman-Reingold algorithm. Own illustration.

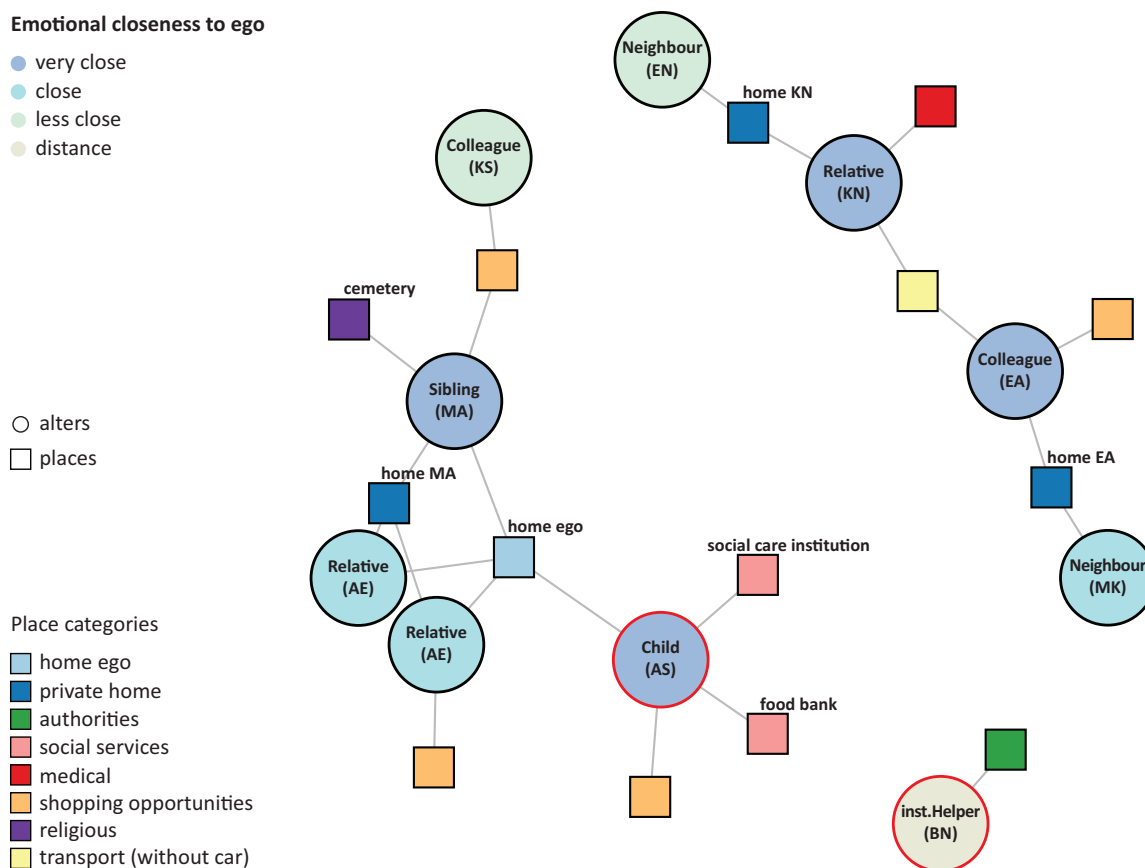
with all other alters. The bottom-left cluster of closely connected alters consists of former work colleagues (still stemming from her employment in the GDR in the 1980s) and relatives who live in her immediate neighbourhood. She regularly looks after two members of this cluster who are older than she is: her aunt KN (aged 76) and her former colleague EA (female, aged 80). Apart from the institutional helpers BN, she has known these people for decades, and these ties are thus characterised by a high degree of continuity.

Mrs Lindemann’s two-mode network (Figure 5) consists of 10 alters and 29 uniquely visited places. Fourteen of the places are connected to alters, while 15 of the places—predominantly stores—have no affiliations. We can find no clubs, associations, or cultural places. The affiliation of alters and everyday places illustrates Mrs Lindemann’s care practices. Her son AS stays with her Mondays to Wednesdays and both social service facilities are connected to him (food bank and social care institution; Figure 5). The weekly visits to the social care institution in which she accompanies her son are a major burden for her.

The four members on the upper-right side of the two-mode network (EN, KN, EA, MK; Figure 5) live within

walking distance of Mrs Lindemann’s home and include her aunt KN, as well as her former colleague EA, for whom she provides household and shopping support. They are connected via private places (home KN, home EA) or local public transport (i.e., when they are travelling together to do the shopping), but, interestingly, not via Mrs Lindemann’s home, which indicates that her visits are unilateral and that her care practices towards KN and EA require her to be the mobile one. Moreover, due to the spatial proximity of the emotionally very close alters to whom she has (or believes she has) care obligations, she feels constantly monitored and pressured to meet their expectations. The influence of this emotionally and spatially close part of her network becomes clear when she talks about her avoidance strategies in relation to these alters during the review of the network map produced in Interview I (Figure 1):

The way the situation is, it’s sometimes a little bit like that, like a cocoon, everybody tugs at you....You must be careful not to kick anyone....Sometimes I say, “I have such a terrible stomachache today, it’s like a migraine, I’m lying on the bed.” And there, because I don’t feel well, but then I had to switch



**Figure 5.** Two-mode network of Mrs Lindemann. Notes: Fifteen isolated places not shown; places are depicted as squares and annotated when they are mentioned in the analysis; alters are depicted by circles, their emotional closeness to ego is indicated by node colour, and conflictual relationships with ego are indicated by red node frames; ties between alters and places indicate that ego and alter meet at these places or they visit them together according to ego’s account; layout based on the Fruchterman-Reingold algorithm. Own illustration.

off....Sometimes you must fight back like that....It's not nice when you don't have people around, but I know it's also bad when you have too many and too close.

Nevertheless, this part of her network also offers her significant emotional support in dealing with her son. Family ties, especially her emotionally very close sister MA, are important sources of (emotional) support. Significantly, the only places that have positive connotations for Mrs Lindemann are those that are affiliated with her sister (home MA, cemetery; Figure 5).

In Mrs Lindemann's case, 15 out of her 29 everyday places are not linked to members of her network. These are mostly isolated shopping venues with a purely functional character; she often visits them to run errands for AS, KN, or EA. Nonetheless, Mrs Lindemann, like Mrs Schmidt, regularly visits at least one place that has the potential to serve as a focus. She visits the food bank (Figure 5) weekly, and the GPS data indicate that she is usually there two hours before the actual distribution of food takes place. Her son AS then arrives when the food is distributed and helps her transport the food to her home. When asked, she confirms that she always meets the same people there, and they talk and share food:

And Tuesdays are food bank days, where we always meet, we all meet quite early, and we usually get things done pretty early. The [food bank employees] arrive at half past 11 and we usually meet at around 10 and have a chat. Today, an acquaintance brought nuts from her garden. Then we exchange such food items and help each other.

However, unlike for Mrs Schmidt, for Mrs Lindemann, these regular, focused interactions do not lead to ties that are reflected in the network we have collected. We assume that there are at least two reasons for this. First, the existing *strong* and *bonding* ties that stem from her constraining foci family and former workplace have a restrictive *binding* effect on Mrs Lindemann, i.e., they make tie formation more difficult, or even prevent it altogether by tying up resources, such as time and energy. Second, the acquaintances she meets at the food bank are socially homogeneous, and in a situation that is structurally similar to hers. Although homophily prevails in this context, strengthening ties to these acquaintances is unlikely to help her in coping with everyday life and could even add to the burdens that she already carries in her closer network and that she sometimes tries to avoid.

#### 4.3. Comparison of the Two Cases

We compared two ideal-typical cases from our sample who have in common that they are older women who live alone in rural peripheries, but who differ significantly in terms of the (dis)continuities of their life trajectories, their current life situations, their (economic)

resources, their time, their health, and, correspondingly, their life chances. For Mrs Schmidt, developing social network ties has helped her lead a satisfactory life, even though she has experienced adversity. After the death of her husband, Mrs Schmidt had no local ties in the village, but she actively sought new acquaintances. She took advantage of opportunities offered by cultural institutions and events in the village that function as foci. In addition, the gatherings at these places were large enough for Mrs Schmidt—who has well-developed interpersonal skills—to interact with people whom she found sympathetic (*homophily*) and to avoid people she did not like. The discontinuity in her network was accordingly accompanied by discontinuity in the everyday places she visited.

For Mrs Schmidt, public places are important opportunity structures for forming and strengthening social ties, and it is important to note that such places are present even in peripheral rural areas. Nonetheless, it is only through her resources (social, cultural, financial, time, health) and her agency that she has gained access to these places, i.e., ego and the places “matched.” Building on the encounters she had at these places, she consciously expanded (and diversified) her network, which now offers her the variety and the practical support in everyday life she wants. Thus, the places she visited offered her opportunities to expand her social capital strategically. Mrs Schmidt has a variety of life chances available to her, and she actively seizes them. Hence, she is very satisfied with her life: “I like living here. It's nice when I get up early....I can do what I want.”

In contrast to Mrs Schmidt, Mrs Lindemann's life trajectory and her social ties are characterised by a high degree of continuity, and her individual resources are low. Her care obligations explain a large share of the everyday places she visits. The foci of Mrs Lindemann's family and former colleagues are *doubly constraining* and tie her to places in ways that make it both difficult for new members to join and difficult for her to participate in other foci. Accordingly, she has no ties beyond these long-term foci. However, previous gathering places of these foci have disappeared (e.g., her workplace), or it has become more difficult for her to reach them due to the reduction in public transport. Because she is bound to these constraining foci, and her home cannot function as *bonding spatial capital* where she could manage her ties spatiotemporally, Mrs Lindemann cannot structure her network either emotionally or spatially in the ways that Mrs Schmidt can. Mrs Lindemann describes her life situation as a “constant struggle.” Her opportunities for gaining access to different kinds of social contacts (to establish new social capital) by visiting places that differ from those she currently visits are severely constrained. Hence, her life chances, as well as her agency, are limited, and there seems to be no prospect of change.

Even though it was not the primary analytical focus, spatial mobility turned out to be a central factor in both the opportunities to visit places and the degree of

strain caused by these visits. Mrs Schmidt reported visiting places in her everyday life as she pleases (regardless of whether they are affiliated with her ego-centred network members), and with a high degree of agency. Mrs Lindemann, on the other hand, reported being driven to a large degree by (perceived) demands from emotionally close parts of her network when visiting places in her everyday life. In addition, her poor health makes her comparatively low mobility potential even lower. She has neither her own car nor a driving licence. Hence, when visiting places, she is mostly dependent on local public transport, which operates relatively well within the city where she lives by day, but is insufficient for trips outside the city, and is, she believes, unsafe at night.

## 5. Discussion and Conclusion

We found that the places that the two women visited reflected their respective life situations, their resources, and their existing network structures (as foci) and, conversely, that the places influenced these conditions. Hence, we illustrated the interplay between each woman's everyday places and her social network, while showing that this interdependency could have positive or negative effects on individual life chances.

The three central findings of our analysis are the following: That (a) tie formation in places is more successful if ego has certain resources (such as cultural, financial, or time resources) that allow them to utilise places as foci—hence, ego and places must “match.” Moreover, (b) the existing foci (and their spatial anchoring as places in everyday life) in which ego is integrated must be considered as structures that shape their actions. Even if a person has enough resources and easy access to places with characteristics that promote contact, this does not automatically mean that they will form ties in such places, as the person's network plays a major role in whether they frequent these places and establish new ties there. Finally, (c) the relational embeddedness of an individual in physical space, i.e., daily mobility, and its preconditions need to be considered to better understand why a person does or does not visit certain places, and how these actions in turn condition the structure of social networks, especially in rural peripheries.

Ad (a), our analysis revealed that an individual must have certain characteristics to be able to utilise places as foci: We identified cultural, financial, and time resources as prerequisites for access (cf. Crossley, 2013, p. 141). This adds an important dimension to findings from previous research that places tend to function better as foci when regular, long-lasting, joint activities occur there, and when institutional norms enable social contacts (Small & Gose, 2020). We conclude that ego and places must first “match” before “meeting” and “mating” can occur. The matching of people and places is relevant for rural peripheries (and other spatially disadvantaged areas), as such spaces usually have a much lower density of potential foci, like clubs or associations, and the

types of places that exist may not match the needs of individuals who would be most helped by building new (supportive) ties. Hence, a mere analysis of the spatial distribution patterns of foci that meet generic criteria is inadequate, as how well-matched the places and people of interest are must also be considered.

Ad (b), to understand how places can enable tie formation, the existing foci (and their spatial anchoring as places in everyday life) in which an individual is involved must be considered. Case B (Mrs Lindemann) showed how the focus of family, which is often characterised by multiplex exchange relationships, can be constraining in a double sense: External individuals do not enter, but highly involved individuals also hardly participate in other foci. This finding is in line with Mollenhorst et al. (2014), who found that ties formed in family or neighbourhood contexts tend to be particularly long-lasting and that new contacts are more likely to stem from them. However, by linking Mrs Lindemann's everyday spatial practices to her network, we were able to trace more precisely why the ties to her emotionally close network members are so enduring, and why her chances of making new contacts in other contexts are so low: She is compelled to seek out certain places because of the obligations stemming from her constraining foci, or because of her own challenging life situation; and she lacks the time, energy, and resources to deviate from this pattern and establish new contacts. For example, even though her regular visits to the food bank over a long period of time should have allowed for homophilic tie formation, which is crucial for establishing social capital (Lager et al., 2015), the people she met there were not represented as alters in her network. In contrast, in Mrs Schmidt's life (Case A), drastic life events (death of her husband, her retirement) eliminated the previous double constraints of the foci of family and employment and led to a reshaping of her network. For her, being alone was a prerequisite for strengthening her agency and for forming new relationships; an observation that can further refine the results of Mollenhorst et al. (2014).

Mrs Schmidt's case also shows that the ambivalence of social capital can be avoided if ego has adequate resources and opportunities to strategically reshape and diversify her own network, and if she has bonding spatial capital (her own home) where she can manage encounters with her various alters. This finding adds another facet to the results of Ortiz and Bellotti (2021), which indicate that a good socioeconomic situation is significantly more likely to be associated with opportunities than with constraints by the network, and vice versa. By contrast, Mrs Lindemann is not free to structure her network according to her needs, either spatially or emotionally. Thus, when an individual's resources are already low and the resources in the network are also sparse, having social capital can lead to multiple disadvantages for ego through a binding effect (Offer, 2012).

Ad (c), the comparison of the two cases demonstrated that spatial mobility plays a central role in

explaining the interplay between places and networks: first, as a necessity for visiting places as spatial anchor points of potential foci and, second, as an effect of existing foci, which—as in Mrs Lindemann’s case—can be the reason for a large share of everyday mobility. This observation of the pivotal role of everyday mobility relates to research on mobility and social exclusion (Cass et al., 2005). It also echoes the insight of Lubbers, García, et al. (2020) that the causes of poverty limit poor people’s opportunities to participate in potential foci, which in turn reduces their options for expanding or diversifying their networks. The strong embeddedness in existing foci exerts considerable space-time constraints on ego, and therefore limits the possibilities for new social interactions, as the more time and energy that is invested in the foci, the fewer individual resources ego has. Furthermore, the social networks and the mobility biographies of both cases are mutually dependent. For example, after the death of her husband and her retirement, Mrs Schmidt began to establish local contacts in her village, but was also able to maintain her former, geographically more distant work contacts because she had sufficient (mobility) resources. Her “spatially and relationally more discontinuous social network” may have fostered “a stronger willingness for new experiences of spatial mobility” (Viry et al., 2009, p. 140)—in her case, smaller-scale local mobility. While further analyses are necessary to understand the relationship between networks and everyday mobility in more detail, the research design presented here provides suitable data for doing so, as it could address the “fundamental problem of...over-reliance on variable analysis” (Schwanen et al., 2015, p. 133) in researching the interplay of mobility and social inequalities by emphasising the role of social networks.

### 5.1. Limitations

As our study is qualitative, we cannot claim the representativeness of our results. However, this was not our aim. Instead, we sought to identify mechanisms of network formation and empirically extend established concepts of network research in a spatial context that has previously received little attention. To this end, we presented two contrasting cases to illustrate findings from our broader sample. A concise presentation of the analysis of the full sample could not be done within the scope of this article; not least because the quantitative analysis of two-mode networks requires new analytical approaches.

The places the interviewees visit on an everyday basis were determined using 14-day GPS tracking data. However, places that they visit regularly, but at longer intervals, may not have been included in the data. This uncertainty cannot be resolved; but when asked after Interview II, most respondents stated that the places discussed are representative of the places they visit in their everyday lives.

The information on social networks was collected via seven name generators. We asked for a specific set of alters, and therefore captured only a part of ego’s networks. Furthermore, the alter–alter ties are constituted by mutual “knowing”; thus, we cannot make any differentiated claims about the specific nature of those ties. Nonetheless, we think that the resulting networks are adequate for answering our research questions.

### 5.2. Outlook

Because our article was narrowly focused on the relationships between personal networks, space, and places, we did not discuss in depth how space (and places) are politically constructed or transformed. For example, we did not relate our findings to the discussion on *place-making*, i.e., the “ongoing collaborative process in which diverse groups of stakeholders within a community work together to define, develop, and deliver on a common vision for spatial transformation” (Horgan, 2020, p. 145). For eastern Germany, these placemaking processes are of the utmost importance because the transition from a socialist system to a market society led to the emergence of new stakeholders and a shift in the balance of power between the state, the market, and civil society, which in turn transformed space (Sevilla-Buitrago, 2015).

Moreover, we could not relate our findings to the psychogeography of everyday life (Ellard, 2015). Nonetheless, we found numerous starting points for psychogeographic analyses in our data. Examples include the few positive descriptions of places by Mrs Lindemann, which are consistently associated with her sister; or when she mentions that she no longer uses the bus station in the evening because she feels unsafe being there in the dark, which in turn significantly reduces her mobility.

We agree with Small and Gose (2020) that the interactions between agency and context should be considered even more systematically in future research. The “iterational” dimension of agency (Emirbayer & Mische, 1998, p. 971) could prove useful for analysing the reinforcing interplay of private places in everyday life and constraining foci (as in Mrs Lindemann’s case), and could therefore explain the reproduction of low life chances. At the same time, the concept of “relational work” (Zelizer, 2012, p. 149) could shed light on how individuals (as in Mrs Schmidt’s case) actively shape their networks according to their needs based on spatial opportunities. The advantage of applying an agency perspective is that it allows for a more realistic consideration of the multiplexity of relationships, and thus does not depend on a binary categorisation of relationships as either supportive or burdensome. Moreover, addressing agency more systematically would complement the structural argument made in this article (the role of space in social networks) at the action level (the role of agency in the use of space). Such an approach could improve our understanding of the ways in which space contributes to the formation of social ties, and can thus

mitigate (but also reproduce) social inequalities. Further research into the interplay of space and agency would help to address one of the basic questions of sociology, namely, that of the interplay of structure and action.

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### Conflict of Interests

The authors declare no conflict of interests.

### References

- Bański, J. (Ed.). (2019). *Three decades of transformation in the east-central European countryside*. Springer. <https://doi.org/10.1007/978-3-030-21237-7>
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Greenwood.
- Cass, N., Shove, E., & Urry, J. (2005). Social exclusion, mobility and access. *The Sociological Review*, 53(3), 539–555. <https://doi.org/10.1111/j.1467-954X.2005.00565.x>
- Crossley, N. (2013). Interactions, juxtapositions, and tastes: Conceptualizing “relations” in relational sociology. In C. Powell & F. Dépelteau (Eds.), *Conceptualizing relational sociology: Ontological and theoretical issues* (pp. 123–144). Palgrave Macmillan.
- Csardi, G., & Nepusz, T. (2006). The igraph software package for complex network research. *InterJournal, Complex Systems*, 1695(5), 1–9. <https://www.bibsonomy.org/bibtex/bb49a4a77b42229a427fec316e9fe515>
- Ellard, C. (2015). *Places of the heart: The psychogeography of everyday life*. Bellevue Literary Press.
- Emirbayer, M., & Mische, A. (1998). What is agency? *American Journal of Sociology*, 103(4), 962–1023.
- ESPON. (2017). *PROFECY—Processes, features and cycles of inner peripheries in Europe: Inner peripheries: National territories facing challenges of access to basic services of general interest* (Final Report). <https://www.espon.eu/inner-peripheries>
- Feld, S. L. (1981). The focused organization of social ties. *American Journal of Sociology*, 86(5), 1015–1035. <https://doi.org/10.1086/227352>
- Feld, S. L. (1982). Social structural determinants of similarity among associates. *American Sociological Review*, 47(6), 797–801. <https://doi.org/10.2307/2095216>
- Gamper, M., Schönhuth, M., & Kronenwett, M. (2012). Bringing qualitative and quantitative data together. In M. Safar & K. Mahdi (Eds.), *Social networking and community behavior modeling* (Vol. 10, pp. 193–213). IGI Global. <https://doi.org/10.4018/978-1-61350-444-4.ch011>
- Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Polity Press.
- Granovetter, M. S. (1977). The strength of weak ties. *American Journal of Sociology*, 78(6), 1360–1380. <https://doi.org/10.1016/B978-0-12-442450-0.50025-0>
- Horgan, D. (2020). Placemaking. In A. Kobayashi (Ed.), *International encyclopedia of human geography* (pp. 145–152). Elsevier. <https://doi.org/10.1016/B978-0-08-102295-5.10680-8>
- Horgan, D., & Dimitrijević, B. (2021). Social innovation in the built environment: The challenges presented by the politics of space. *Urban Science*, 5(1). <https://doi.org/10.3390/urbansci5010001>
- Husztai, É., Albert, F., Cszimady, A., Nagy, I., & Dávid, B. (2021). When spatial dimension matters: Comparing personal network characteristics in different segregated areas. *Social Inclusion*, 9(4), 375–387. <https://doi.org/10.17645/si.v9i4.4520>
- Keim-Klärner, S., Bernard, J., Bischof, S., van Dülmen, C., Klärner, A., & Steinführer, A. (2021). *Analyzing social disadvantage in rural peripheries in Czechia and Eastern Germany: Conceptual model and study design* (Working Paper No. 170). Thünen Institute of Rural Studies. [https://www.thuenen.de/media/publikationen/thuenen-workingpaper/ThuenenWorkingPaper\\_170.pdf](https://www.thuenen.de/media/publikationen/thuenen-workingpaper/ThuenenWorkingPaper_170.pdf)
- Klärner, A., & Knabe, A. (2019). Social networks and coping with poverty in rural areas. *Sociologia Ruralis*. Advance online publication. <https://doi.org/10.1111/soru.12250>
- Knabe, A., Fischer, H., & Klärner, A. (2018). *Armut als relationales Konstrukt: Die (Re-)Produktion sozialer Ungleichheiten durch Stigmatisierung und Kontrollversuche in sozialen Netzwerken* [Poverty as a relational construct: The (re)production of social inequalities through stigmatisation and control attempts in social networks]. In A. Gefken, P. A. Berger, & F. Eckert (Eds.), *“Doing Inequality”: Prozesse sozialer Ungleichheit im Blick qualitativer Sozialforschung* [“Doing inequality”: Processes of social inequality in the perspective of qualitative social research] (pp. 167–190). Springer.
- Kühn, M. (2015). Peripheralization: Theoretical concepts explaining socio-spatial inequalities. *European Planning Studies*, 23(2), 367–378. <https://doi.org/10.1080/09654313.2013.862518>
- Lager, D., van Hoven, B., & Huigen, P. P. (2015). Understanding older adults’ social capital in place: Obstacles to and opportunities for social contacts in the neighbourhood. *Geoforum*, 59, 87–97. <https://doi.org/10.1016/j.geoforum.2014.12.009>

- Lefebvre, H. (1996). *Writings on cities: Selected, translated and introduced by Eleonore Kofman and Elizabeth Lebas*. Blackwell.
- Lubbers, M. J., García, H. V., Castaño, P. E., Molina, J. L., Casellas, A., & Rebollo, J. G. (2020). Relationships stretched thin: Social support mobilization in poverty. *The ANNALS of the American Academy of Political and Social Science*, 689(1), 65–88. <https://doi.org/10.1177/0002716220911913>
- Lubbers, M. J., Small, M. L., & García, H. V. (2020). Do networks help people to manage poverty? Perspectives from the field. *The ANNALS of the American Academy of Political and Social Science*, 689(1), 7–25. <https://doi.org/10.1177/0002716220923959>
- Matthews, P., & Besemer, K. (2015). Social networks, social capital and poverty: Panacea or placebo? *Journal of Poverty and Social Justice*, 23(3), 189–201. <https://doi.org/10.1332/175982715X14448122286274>
- Mazelis, J. M. (2020). “My crying is not a cry by itself”: Building sustainable social ties through a poor people’s organization. *The ANNALS of the American Academy of Political and Social Science*, 689(1), 110–128. <https://doi.org/10.1177/0002716220918165>
- McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 27(1), 415–444. <https://doi.org/10.1146/annurev.soc.27.1.415>
- Mollenhorst, G., Volker, B., & Flap, H. (2014). Changes in personal relationships: How social contexts affect the emergence and discontinuation of relationships. *Social Networks*, 37, 65–80. <https://doi.org/10.1016/j.socnet.2013.12.003>
- Newman, K. S. (2020). Ties that bind/unwind: The social, economic, and organizational contexts of sharing networks. *The ANNALS of the American Academy of Political and Social Science*, 689(1), 192–201. <https://doi.org/10.1177/0002716220923335>
- Offer, S. (2012). The burden of reciprocity: Processes of exclusion and withdrawal from personal networks among low-income families. *Current Sociology*, 60(6), 788–805. <https://doi.org/10.1177/0011392112454754>
- Ortiz, F., & Bellotti, E. (2021). The impact of life trajectories on retirement: Socioeconomic differences in social support networks. *Social Inclusion*, 9(4), 327–338. <https://doi.org/10.17645/si.v9i4.4476>
- Perry, B. L., Pescosolido, B. A., & Borgatti, S. P. (2018). *Egocentric network analysis: Foundations, methods, and models* (Vol. 44). Cambridge University Press. <https://doi.org/10.1017/9781316443255>
- R Core Team. (2019). *R: A language and environment for statistical computing* [Computer software]. <https://www.R-project.org>
- Schwanen, T., Lucas, K., Akyelken, N., Cisternas Solsona, D., Carrasco, J.-A., & Neutens, T. (2015). Rethinking the links between social exclusion and transport disadvantage through the lens of social capital. *Transportation Research Part A: Policy and Practice*, 74(1), 123–135. <https://doi.org/10.1016/j.tra.2015.02.012>
- Sevilla-Buitrago, A. (2015). Capitalist formations of enclosure: Space and the extinction of the commons. *Antipode*, 47(4), 999–1020. <https://doi.org/10.1111/anti.12143>
- Shucksmith, M., Brown, D. L., Shortall, S., Vergunst, J., & Warner, M. E. (Eds.). (2012). *Rural transformations and rural policies in the US and UK*. Routledge.
- Skvoretz, J. (2013). Diversity, integration, and social ties: Attraction versus repulsion as drivers of intra- and intergroup relations. *American Journal of Sociology*, 119(2), 486–517. <https://doi.org/10.1086/674050>
- Small, M. L. (2009). *Unanticipated gains: Origins of network inequality in everyday life*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195384352.001.0001>
- Small, M. L., & Adler, L. (2019). The role of space in the formation of social ties. *Annual Review of Sociology*, 45, 111–132. <https://doi.org/10.1146/annurev-soc-073018-022707>
- Small, M. L., & Gose, L. E. (2020). How do low-income people form survival networks? Routine organizations as brokers. *The ANNALS of the American Academy of Political and Social Science*, 689(1), 89–109. <https://doi.org/10.1177/0002716220915431>
- Stanley, K., Yoo, E.-H., Paul, T., & Bell, S. (2018). How many days are enough? Capturing routine human mobility. *International Journal of Geographical Information Science*, 32(7), 1485–1504. <https://doi.org/10.1080/13658816.2018.1434888>
- Therborn, G. (2013). *The killing fields of inequality*. Polity Press.
- Viry, G., Kaufmann, V., & Widmer, E. D. (2009). Social integration faced with commuting: More widespread and less dense support networks. In T. Ohnmacht, H. Maksim, & M. M. Bergman (Eds.), *Transport and society. Mobilities and inequality* (pp. 121–144). Ashgate Publishing.
- Witzel, A., & Reiter, H. (2012). *The problem-centred interview*. SAGE.
- Zelizer, V. A. (2012). How I became a relational economic sociologist and what does that mean? *Politics & Society*, 40(2), 145–174. <https://doi.org/10.1177/0032329212441591>

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Article

## The Role of Spatial Context in Shaping Adolescents' Peer Relationships

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### Abstract

This article explores the role of neighbourhoods as a spatial context for peer relationships among adolescents. We examine the correlations between neighbourhood composition and places suitable for young people for friendship intimacy and peer belonging. We hypothesise that favourable demographic and social neighbourhood compositions, knowledge, and use of places suitable for young people, as well as the spatial appropriation of such places, promote peer relationships. The present study carries out empirical testing of the spatial hypotheses with survey data from adolescents (N = 3225) in two German cities with 30 neighbourhoods. Our results show that neighbourhood composition is not related to peer relationships. Nevertheless, knowledge of safe places suitable for adolescents, as well as the appropriation of unsupervised (hang out) places, correlate with peer relationships. Interestingly, there are divergent results for 7th and 9th graders that can be explained by the developmental stages of the adolescents.

### Keywords

adolescence; belonging; friendship; neighbourhood; peer relationship; spatial appropriation; spatial context

### Issue

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### 1. Introduction

Decades of research in sociology, developmental psychology, and education science have produced sizeable and compound knowledge on socialisation in adolescence, youth development, and processes of youth' social inclusion into communities as well as processes of their societal integration. Two main findings that are relevant here are the increasing importance of peer relationships (e.g., Brown & Larson, 2009) and the embeddedness of human development into socio-spatial contexts as claimed by socio-ecological approaches (e.g., Bronfenbrenner & Morris, 1998; Evans, 2007; Melton et al., 2021).

The growing literature on peer relationships shows that during adolescent years, interest in other people beyond the family increases, and friendship and peer

relationships in general gain greater importance and complexity (Allison et al., 1999; Flynn et al., 2017; Larson & Richards, 1991; Melton et al., 2021). Communicating and interacting with peers is important for identity processes (Eder, 1985; Larson & Richards, 1991; Ragelienė, 2016; Swanson et al., 1998) and well-being (Appau et al., 2019; Brown & Larson, 2009; Cuadros & Berger, 2016; Guhn et al., 2013). For instance, literature on well-being discovered joint impacts and interconnectedness of relationships to peers and adults on a wide range of well-being and development indicators, such as (mental) health, resilience, or life satisfaction (e.g., Guhn et al., 2013; Oberle, 2018).

There is growing attention to spatial contexts like neighbourhoods for peer relations that goes beyond the question of whether neighbourhood matters or not (Sharkey & Faber, 2014; White et al., 2021). For example,

Sharkey and Faber (2014) suggest a flexible neighbourhood model that takes different spatial scales, temporal effects, and effect heterogeneities into account. Furthermore, there is a growing policy interest at the municipal level to address spatial inequalities that mean unequal development opportunities for adolescents (not only) in Germany (Petermann et al., 2019). The article contributes to this field by investigating friendship intimacy and peer group belonging as two forms of peer relationships among adolescents. Our primary dataset originates from the 2019 UWE survey (the acronym is for *Umwelt, Wohlbefinden und Entwicklung*, which translates to “environment, well-being, and development”). This is a trend survey monitoring the well-being and development of all adolescents in grades seven and nine in the German cities Herne and Bottrop, which provides information about the neighbourhood the adolescents live in and the attended school.

The contribution of this article to research on the nexus between neighbourhood characteristics and peer relationships is threefold. First, demographic and social compositions of neighbourhoods shape opportunities to establish peer relationships. Second, the spatial context may affect peer relationships as it serves as youth-specific meeting opportunities like youth and community centres, clubs, playgrounds, and hang out places. Hence, we examine the localisation of adolescents’ social worlds in the neighbourhood. Third, in recognising spatial characteristics, we empirically study effect heterogeneity due to the relevance of these characteristics in early and middle adolescence.

## 2. Literature Review

In the following, we briefly summarise the literature on peer relationships during adolescence, covering individual and spatial factors for peer relationship formation. While both kinds of factors are relevant and influential, we draw attention to spatial factors by deriving four hypotheses from the literature, dealing with neighbourhood demography and deprivation, youth-suitable places and spatial appropriation by adolescents.

### 2.1. Peer Relationships in Adolescence

Adolescence is the transitional stage in the life course from childhood to adulthood and is defined primarily as a time of physical, cognitive, social, and emotional changes. This period is usually associated with the teenage years, although there are discussions about extending this stage to 24 when the brain stops developing. However, the empirical analysis of this article focuses on early and middle adolescence, roughly bounded between approximately 11 to 13 years and 14 to 17 years respectively (Salmela-Aro, 2011). Adolescents’ development occurs through relationships (Varga & Zaff, 2018). They interact with larger groups of peers and learn to identify and belong to groups of peers based on simi-

lar characteristics (Eder, 1985). However, recent research has revealed that it is not the number of relationships or the size of a social network that is important to improving positive development, but the quality of relationships, for girls especially (Cuadros & Berger, 2016; Melton et al., 2021). Relying on a very detailed model of adolescent friendships, Flynn et al. (2017) find that high-quality friendships are more likely among young people who are strongly tied in a social network, with regular contacts, more friends, and more mutual support—quantity does correlate with quality.

Compared to early childhood, young people’s peer relationships grow more complex. According to Brown and Larson (2009), we distinguish between friendship intimacy (dyadic friendship) and peer belonging (peer crowd). Dyadic friendship is a question of a confident and intimate relationship while peer crowd is a question of belonging and orientation towards a wider community. Hence, we investigate peer relationships from an ego-centric perspective on social networks. Moreover, we focus on qualitative aspects of relationships within the social networks of adolescents.

Before we address the influence of spatial context, we will briefly summarise some factors that have emerged as significant in previous research. Empathy, defined as the “capacity...to secondarily experience and understand the feelings of another person” (Wölfer et al., 2012, p. 1295), can evolve independently from social integration. It is not clear whether empathy is a precondition of social relationships, but at least it reinforces processes of relationship formation and deepening.

The socio-economic disposition of young people might also influence how they form peer relationships. While it would be bold to assume that economic advantage or disadvantage determines the strength or intimacy of peer relationships, there are different possible paths leading from affluence to peer relationships. There is an obvious connection between affluence and opportunity structure. Concerning socialisation, certain parenting practices (e.g., less direct control and restrictive practices, granting more autonomy, to involve their children in activities in the larger community) are more prevalent among families with higher than lower socioeconomic status (Hoff & Laursen, 2019). The socio-economic disposition could influence peer relationships through school selection, as Garner et al. (2006) report different peer group structures that are present in different schools. In societies like Germany that feature highly stratified school systems, we also find reinforcement of social inequality and segregation through education (Horr, 2016).

It is a quite stable finding that female adolescents feature higher levels of relationship quality and intimacy than males, while the latter tend to have larger networks (Flynn et al., 2017; Helsen et al., 2000; Radmacher & Azmitia, 2006). This may be related to gender roles, e.g., girls are expected to be more prosocial in general and more caring in particular, or to parenting practices, e.g.,

gender heterogeneous monitoring of adolescents (Rose & Rudolph, 2006).

Despite the decreasing range of immediate parental oversight during adolescence, family relations still have an impact on peer interactions (Flynn et al., 2017). There are different arguments on how parent–child relationships influence peer relationships in adolescence. Among others, the compensation argument views peer relationships as a substitute for missing parental social support; the reinforcement argument suggests that healthy parent-child links enable the formation of healthy peer relations, as good parents raise autonomous adolescents (Helsen et al., 2000, pp. 321–322). Compensation would imply that poor family relations go along with good peer relations, while reinforcement predicts the opposite.

Our focus is on young people in grades seven and nine, about the ages of 13 and 15, respectively, in Germany. Both grades are at the secondary education level and there are no school transitions in these grades. Hence, we keep a factor constant that usually would affect peer relations substantially. However, the development of social skills and networks can significantly differ between 7th and 9th graders, as autonomy and the importance of peer relations grow (Allison et al., 1999; Brown & Larson, 2009; Helsen et al., 2000; Stotsky & Bowker, 2018; Swanson et al., 2010).

## 2.2. *The Role of Spatial Contexts*

Whether the spatial context of peer relationships plays a role depends on how strongly these relations are bound to the social contexts of family, school, neighbourhood, and local community according to the ecology of human development (Bronfenbrenner & Morris, 1998; Evans, 2007; Guhn et al., 2013). Most of the time in adolescent life is undoubtedly spent in the first two, family and school (Blanke & Cornelißen, 2005). However, spatial contexts like the neighbourhood or local community are increasingly important during adolescence, because beginning in early adolescence, spatial settings beyond the home are more and more explored and social interactions with people outside the family and school contexts are growing (Allison et al., 1999). In a way, neighbourhoods embody an important market of possibilities to join in common activities (Galster, 2008, p. 12). A neighbourhood is not only a relevant site for several activities but also one of the most important starting points for social contact. In the words of Verbrugge (1977, p. 577), “people whose daily rounds intersect are more likely to become acquaintances than others.” Moreover, this exposure to the neighbourhood and local community is often unsupervised and is undertaken with peers and creates supportive network ties with local people and local organisations (Pretty et al., 1996). Supportive network ties, in the scope of this study, aren’t necessarily positively influencing behaviour or development but are viewed as emotionally close by the adolescents themselves.

Adolescents often spend leisure time near their homes, meaning that unplanned encounters and many more or less regular interactions are located within the limited space of neighbourhoods. The residential environment should be considered an important opportunity context for inter-personal relationships and peer relationships in particular. “Residential context...structures friendship choices,” Welch et al. (2001, p. 5) suggest. Spatial contexts like neighbourhoods offer opportunities for peer encounters that are structured, e.g., by residential segregation and the usage of public space. We distinguish between two aspects of spatial context that influence the formation of social network relationships: neighbourhood-level composition and youth-suitable places in the public sphere.

The demographic and social composition of the neighbourhood is independent of the subjective view and usage of the adolescents but can impede or facilitate processes of peer relationship formation, i.e., to get in touch and meet each other. Demographic composition in terms of a sufficiently large number of peers and residential stability in the neighbourhood may foster peer relationships. It may be easier to find friends and to select adolescents with preferred characteristics as friends if there are many young people around (Blau, 1994). Furthermore, it could be difficult to form high-quality relationships with peers if they are moving away as the development and consolidation of these relations need time. We assume that a high proportion of adolescents among the total population of a neighbourhood and high residential stability offer favourable opportunities for peer relationship formation. Hence, we formulate the neighbourhood demography hypothesis (H1): The more favourable the demographic composition of the neighbourhood, the more likely peer relationships are.

Socially deprived neighbourhoods are critical determinants, particularly for disadvantaged adolescents (Kohen et al., 2008). While neighbourhood characteristics like disadvantaged economic conditions negatively affect a wide range of youth outcomes such as school achievement and emotional and behavioural problems (Leventhal & Brooks-Gunn, 2000), there is little knowledge about neighbourhood effects on peer relationships. One possible outcome might be a uniting effect that leads to the formation of close friendships to support coping in adverse circumstances. However, we assume that deprived neighbourhoods create a climate of mistrust, withdrawal, and low enforcement of social norms, making it difficult to establish confident peer relationships. Hence, we assume the neighbourhood deprivation hypothesis (H2): The lower the social deprivation of the neighbourhood, the more likely peer relationships are.

Feld’s (1981) focus theory states that contact and social relationship is often an unintended consequence of everyday activities within joined foci like encountering in public spaces or being at the same site (sites of recreation, youth-suitable places, etc.). Youth-suitable

places in the public sphere are needed to spend free time with peers in different activities. Our research is concerned with such foci places in the neighbourhood. Managing their leisure time and finding the time to connect with peers outside of school and organised afternoon activities has become increasingly challenging, as living environments and leisure time schedules are more diverse and individual than they have been in the past (Harring et al., 2010, pp. 11–12). It is, however, an important step to explore one's own identity and social roles. Unfortunately, adolescents face a dilemma when it comes to spatial appropriation. They usually are unwanted in the adult world, because of the unpredictability and immaturity of their behaviour, because they are loud and sometimes destructive, non-adult, and deviant (Gestring & Neumann, 2007, p. 138; Wehmeyer, 2013, p. 11). Whitlock (2007) found that the available opportunities for creative engagement like group involvement are directly related to youth development of connectedness to community. One of these rare opportunities is the shopping mall, the (stereotypical) "natural habitat" of youths and adolescents. The shopping mall holds a wide range of qualities valued by young people (see Gestring & Neumann, 2007): While protected from the weather and being watched by security infrastructure, there is no physical harm to be expected in the mall. In the streets, for instance, there is a chance to be mugged or physically victimised by other youths—something that is usually prevented by security personnel. Secondly, malls are designed to be pleasant places to spend time. There are benches, fountains, restrooms, and all kinds of comfortable infrastructure for public use. Not least, the mall represents an opportunity to meet with friends, the clique, or potential romantic partners. In short, it hosts all commonalities of common places while being exceptionally appealing to those seeking consumption and social exchange.

However, adolescents can be found in other public spaces as well, despite being regularly frowned upon. Together, places assigned to youths and adolescents as well as places they regularly seek out voluntarily are what we call youth-suitable places in the following. Consequently, we argue that the knowledge, as well as spatial appropriation of youth-suitable places, facilitates the social integration of adolescents. Finally, we derive two related hypotheses. Neighbourhood places hypothesis (H3): When adolescents know youth-suitable places in their neighbourhoods, peer relationships are more likely. Spatial appropriation hypothesis (H4): When adolescents use youth-suitable places, peer relationships are more likely.

Research in different areas of adolescent life and development, such as subjective well-being (Knüttel et al., 2021), educational outcomes (Horr, 2016), or delinquency (Oberwittler, 2010), consistently found that spatial effects, particularly related to the neighbourhood level are, compared to individual factors, of minor importance. Yet, Sellström and Bremberg (2006) observe

that up to 10% of the variation in child behavioural outcomes may be explained by neighbourhood level qualities. Moreover, extensive research on neighbourhood contexts concerning the adjustment of adolescents derives mostly from North American studies of disadvantaged neighbourhoods (Kohen et al., 2008; Sharkey & Faber, 2014), while less is known about neighbourhood effects in other parts of the world, where the urban concentration of disadvantage is not so pronounced as in the US.

### 3. Data and Analysis

The data source for the following descriptions and analyses is the 2019 UWE survey (UWE, 2019). The UWE study is an adaption of the Canadian "middle years development instrument" (Schonert-Reichl et al., 2013), but was developed further and tested to fit the German context. It has a whole-child subjective well-being approach (see Moore, 2020, p. 724) and seeks to understand the respective impact of social environments and relationships with peers and adults. This multi-topic survey asks about social and emotional development, school experiences, social relationships, leisure behaviour, health and socio-demographics, and includes variables on school and small area contexts.

The survey itself was conducted using questionnaires that were handed out by interviewers in 23 schools at the secondary education level in the two German cities of Herne and Bottrop. They are mid-sized cities with more than 100 thousand inhabitants and are part of the Ruhr area, Germany's largest urban area. Both are struggling with child poverty, relatively high numbers of school dropouts and decreasing population. The spread of socio-economic hardship among the population means that the social structure is rather homogeneous. That is, *inter alia*, why they were chosen for the project. The inferential population consisted of 4788 eligible students in grades seven and nine. Of this group, 3225 youths took part in the survey, resulting in a response rate of 68% (Schwabe et al., 2021). The theoretical framework of the study and further analysis of subjective well-being can be found in Knüttel et al. (2021). The study is also relevant for policy research. Reports to the participating schools, as well as to the two cities involved, were published to derive measures to ensure and improve the well-being of the youth.

#### 3.1. Peer Relationship Variables

The two dependent variables are measures of peer relationship quality. The first variable is related to the quality of dyadic peer relationships and is operationalised by a scale that combines three items on friendship intimacy: (a) "I have at least one really good friend I can talk to when something is bothering me," (b) "I have a friend I can tell anything," and (c) "there is somebody my age who really understands me." We measured agreement

to these items on a five-point Likert scale. The second dependent variable is related to the quality of belonging to peers, though not necessarily a clique. Again, the variable is a scale that combines three items on peer belonging measured on a five-point scale: (a) “I feel part of a group of friends that do things together;” (b) “I feel that I usually fit in with other kids around me;” and (c) “when I am with other kids my age, I feel I belong.” At least two of them must have been answered, which is the case for 99% of our respondents. Both variables are reliable in terms of internal consistency: Cronbach’s alpha for friendship intimacy is 0.75 and 0.81 for peer belonging. Unfortunately, the additive scores are heavily skewed towards strong agreement because almost all adolescents have best friends and belong to a peer crowd. Thus, we decided to dichotomise the scales separating respondents agreeing much on all three items of the respective scale from respondents with any other answer combination (the cut-off point is 4.5 on the five-point scale). Of our respondents, 69% scored high on friendship intimacy and 47% on peer belonging (see Table 1 for summary statistics of all variables).

### 3.2. Neighbourhood Level Characteristics

In the scope of this article, a neighbourhood is one of 30 administrative units in both cities. These are defined by federal and local statistical offices and reflect historical as well as administrative boundaries. The neighbourhoods’ populations and spatial dimensions range from 1,479 to 23,600 inhabitants and 0.66 to 25.47 km<sup>2</sup> respectively. Statistical data at the neighbourhood level was accessed from open data portals of Herne (<https://opendata.herne.de>) and Bottrop (<https://www.offenesdatenportal.de/organization/stadt-bottrop>).

We employ two indicators for the demographic composition at the neighbourhood level. First, we measure the density of the population under the age of 15 per square kilometre accounting for the number of peers to potentially socialise with. Second, residential stability is operationalised by the residential turnover rate, which describes the share of the population that is replaced due to migration in 2018:

$$\text{residential turnover rate}_{n2018} = \frac{\max(\text{vol. of immigration}_{n2018}, \text{vol. of emmigration}_{n2018})}{\text{mean}(\text{population}_{n2018}, \text{population}_{n2017})}$$

**Table 1.** Summary statistics of all variables.

variable	min	max	mean	standard deviation	n
<i>peer relationship</i>					
friendship intimacy	0	1	0.691		3175
peer belonging	0	1	0.471		3176
<i>neighbourhood level characteristics</i>					
density of u15 population per km <sup>2</sup>	6.56	1207.69	371.33	270.58	30
residential turnover rate	2.28	4.19	3.19	0.58	30
prop. u15 in social benefit households in u15 population	1.8	50.5	23.59	10.90	30
<i>neighbourhood places and spatial appropriation</i>					
places that provide youth services	0	1	0.583		3126
safe places to hang out	0	1	0.767		3121
at outdoor places at least once a week	0	1	0.430		3082
at hangout places at least once a week	0	1	0.437		3096
<i>control variables</i>					
Herne (ref: Bottrop)	0	1	0.544		3217
male	0	1	0.497		3181
migration background	0	1	0.464		3191
single parent	0	1	0.149		3170
single child	0	1	0.256		3168
financial capacities of the household	1	4	3.20	0.55	3160
empathy	1	5	3.93	0.79	3189
quality of relationships with adults at home	1	4	2.32	0.97	3019
secondary school	0	1	0.343		3217
comprehensive school	0	1	0.273		3217
academic secondary school	0	1	0.384		3217
9th grade (ref: 7th grade)	0	1	0.532		3217

*Volume of immigration and emigration* specify the total volume of population movement from 1 January to 31 December. The key date for *population* is 31 December. Social deprivation at the neighbourhood level is measured by the proportion of the population under 15 living in social benefit households out of the total population under 15. *n* stands for neighbourhood.

### 3.3. Neighbourhood Places and Spatial Appropriation

Respondents were asked about their knowledge of places suitable for young people in the neighbourhood. We use their responses to the questions about whether they know of safe places in their neighbourhood to meet their friends and places in their neighbourhood with offers for young people. We use them as dummy variables, where the answers “no” and “I don’t know” are combined as not knowing these places.

In addition, spatial appropriation is operationalised by two items about places where respondents usually go after school: how often they visit parks, playgrounds and sports fields, and how often they hang around in public, e.g., in shopping malls. Respondents told us how many days they did so, but as both variables are heavily skewed, we dichotomised them to differentiate between no usage at all and at least once a week.

### 3.4. Control Variables

Individual variables like empathy, socio-economic disposition, gender, and family characteristics that had been influential to peer relations in previous research are included to test the effect stability of our central spatial characteristics. We operationalised empathy as a reliable additive score of three items. Since it is very unlikely that adolescents know their families’ income, we operationalised the financial capacities of the household by a reliable additive score of three items: (a) “my family can afford many things,” (b) “I can do many things with my friends that cost money,” and (c) “my family often has to save money”—all were measured on a four-point scale of agreement that has been used in different surveys (Andresen et al., 2019; Schräpler et al., 2020). We included variables for single-parent households, single-child families, and a measure for the quality of relationships with adults at home as proxy measures of family influence, which has been acknowledged as influential for peer relationships in previous research (see an overview in Brown & Larson, 2009, p. 98). The variable *quality of relationships with adults at home* consists of four items measured on a four-point scale. Respondents rated how much they agreed with having a parent or another adult in their home (a) “who believes that I will be successful,” (b) “who listens to me when I have something to say,” (c) “to whom I can talk about my problems,” and (d) “to whom I am really important.”

A migration background is defined as being born in another country or having at least one parent who

was born outside of Germany. There was some uncertainty in the data, as many respondents did not provide information on these questions. Item non-responses are replaced as having a migration background if respondents reported speaking languages other than German or English at home.

Furthermore, the German school system is highly stratified and different types of schools tend to attract students from certain social classes. We include the type of school our respondents attend and differentiate between three types: secondary, comprehensive, and academic secondary. We included a dummy variable to distinguish the cities of Herne and Bottrop.

### 3.5. Analysis

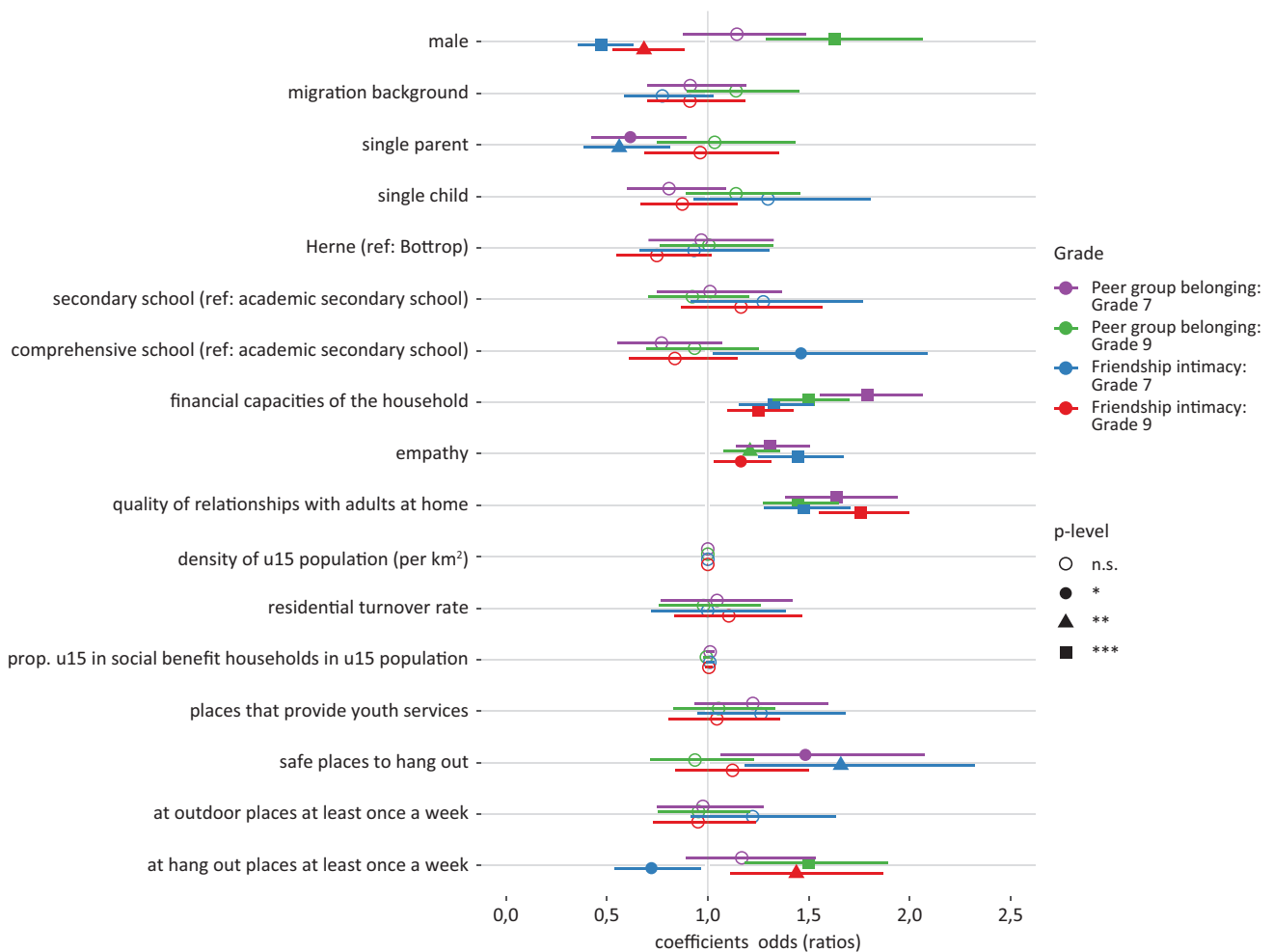
We conducted the analysis using multilevel logistic regression models with R 4.1.2 (R Core Team, 2021) and the lme4-package (Bates et al., 2015). To investigate heterogeneous effects depending on different stages in adolescence, we will present separate models for 7th and 9th graders (seventh graders have a median and mode age of 13 and 98% are between 12 and 14 years old. Ninth graders have a median and mode age of 15 and 96% and are between 14 and 16 years old). For each grade and dependent variable, we fitted a series of four models (see Tables 2 and 3 in the Supplementary File):

- Null model 1: no independent variables, just to decompose multilevel variances
- Basic model 2: just control variables
- Context model 3: additional neighbourhood level characteristics
- Final model 4: additional neighbourhood place and spatial appropriation

## 4. Results

Figure 1 compares the effect sizes of all final models. Neither peer belonging nor friendship intimacy has substantial neighbourhood level variation (see Tables 2 and 3 in the Supplementary File). Therefore, no relevant impact of neighbourhood level characteristics can be identified. Moreover, the values of the Akaike Information Criterion (AIC) show that adding context variables is not preferable at all.

Despite the lack of impact of demographic and social compositions at the neighbourhood level, some neighbourhood effects depend on the individual knowledge and appropriation of public space. They differ for age groups and outcomes: Knowing safe places in the neighbourhood to hang out with friends is important for the 7th graders but irrelevant for 9th graders. For 9th graders, hanging out, e.g., at malls, seems to be much more important for their peer relations than knowledge of safe places. In contrast, spending time at such hangout places is related to lower values for friendship intimacy among the 7th graders. The period between 7th and 9th grade



**Figure 1.** Effect sizes of final models.

seems to be one of transition, where adolescents gain the autonomy that is necessary to form relationships with peers independently. Spatial independence and the appropriation of public spaces increase from early to middle adolescence.

Consistent with previous findings for other outcomes, neighbourhood effect sizes on peer relationships are small compared to effects at the individual level. Male adolescents have significantly lower values for friendship intimacy in both age groups. For peer belonging, the gender pattern is reversed, but only the coefficient for the 9th graders is significant. While girls are more likely to form close relationships with peers as previous studies suggest, boys have a stronger sense of belonging. The number of adults in the household is especially relevant for early adolescence. Once again, the differences between the grades illustrate the growing independence from the nearby environment in the process of growing up.

Three effects are consistent for both dependent dimensions and both age groups: financial capacity of the household, empathy, and quality of relationships with adults at home—all positively affect friendship intimacy and peer belonging. Adolescents rating their economic

background higher also report better peer relationships, *ceteris paribus*. This effect—of financial capacities of the households—points to the core of social and political concerns: Economic inequality and its consequences are already present in adolescence. Empathy is positively correlated with both dependent variables, suggesting that it reinforces processes of relationship formation and deepening indeed. The positive effect of quality of relationships with adults at home supports the reinforcement argument and contradicts the compensation argument.

### 5. Discussion

The purpose of this contribution is to (a) evaluate the relationship between neighbourhood characteristics, including constructs for adolescents’ perceptions of youth-suitable places in the neighbourhood and the time spent in such places as well as demographic and social qualities of neighbourhoods and the qualitative aspects of peer relations (intimacy and belonging) and (b) identify effect heterogeneity of neighbourhood characteristics between different grades.

We developed two hypotheses on the demographic and social compositions at the neighbourhood level.

We cannot report significant effects of neighbourhood level characteristics on any of our dependent variables, i.e., friendship intimacy and peer belonging. Neither demographic opportunities measured by population density and residential stability (H1) nor social deprivation measured by social welfare recipients impact the quality of peer relationships (H2). There might be several reasons for these empirical findings. Demographic and social compositions of neighbourhoods might influence the formation of relational ties rather than the qualitative aspects of relationships like intimacy, strength and feelings of belonging. Verbrugge (1977, p. 577) explains friendship processes and hence peer relationship formation as a two-stage development of meeting and mating. Meeting as getting in touch with other peers is more opportunity-driven while mating as selecting in-depth friends is more preference driven. Neighbourhood compositions might affect the meeting aspect of peer formation much more than the qualitative mating aspect. In addition, the effects of demographic compositions might not be linear (Quercia & Galster, 2000; Sharkey & Faber, 2014). Once a certain threshold of favourable demographic compositions is reached, more dense and more residentially stable neighbourhoods are ineffective. This might be particularly true for urban settings. There might be threshold effects for social deprivation as well, but the argument would be that the researched German cities have moderate levels of social segregation compared to cities in the US. Both researched cities slightly differ in the observed characteristics and are generally considered to be on the lower end of social stratification and are comparably homogenous in that sense. They don't reach the relevant threshold of social deprivation that significantly turns processes of confident peer relationships. Data from different and more heterogeneous areas might yield different results.

Another hypothesis was formulated on the influence of youth-suitable places in the adolescent's neighbourhood (H3). We see the hypothesis confirmed, but with a limited scope. While it is irrelevant whether adolescents know places with age-appropriate offers, knowing safe places to hang out increases relationships among peers. However, this only applies to 7th graders. We would argue that outdoor places like parks, playgrounds and sports fields are relevant for spending leisure time with peers but aren't relevant for peer relationships. Only when these places are assessed as safe are they of importance for peer relations. That such safe places for close friendships and peer belonging are only significant for 7th graders is probably due to the influence of parents, who see 7th graders as more vulnerable in unsafe places than 9th graders.

Finally, we hypothesised how regularly spending leisure time in places suitable for young people promotes peer relationships (H4). This hypothesis is confirmed, albeit with limitations. Even if adolescents regularly spend time at outdoor places such as parks, playgrounds and sports fields, they do not have high-quality peer

relationships because of it. In contrast, time spent regularly in places to hang out proves to be influential. While for 9th graders both friendship intimacy and peer belonging are strongly promoted, for 7th graders friendship intimacy is weakened when they regularly spend time in such places. We suspect that these correlations are strongly related to adolescent development. For 9th graders, hanging out and being unsupervised in outdoor places seems not only to be part of "normal" development but an essential part of their lives and fostering social relationships. For 7th graders, on the other hand, this is not yet true. Unsupervised spending of free time at this stage of development is probably still too early and rather detrimental for their social relationships.

This article examines the neighbourhood influences on adolescents' peer relationships. Other influences were covered by control variables as much as possible. Here, the findings put forth by previous research are confirmed: Boys feel a stronger sense of belonging to peer groups and girls are more likely to maintain intimate friendships; empathy and sound, close parental relationships, as well as the financial capacities of the parental household, promote peer relationships, while single-parent households limit the peer relationships of 7th graders. We are thus confident that we have meaningfully expanded the state of research on adolescent peer relationships to include the spatial aspects of the neighbourhood.

However, there are some limitations to our research. First, by looking at the quality of peer relationships (intimacy and belonging), we focused on the social inclusion of young people but neglected the social structure of relationships and networks and the conflicts within them. Secondly, we looked at the spatial context of peer relationships, especially the neighbourhood composition and the respondent's knowledge and social appropriation of youth-relevant places. We did not investigate the neighbourhood composition of peers or processes of spatial appropriation by adolescents or spatial barriers. Nor did we examine the spatial complexity of friendship formation processes. Thirdly, we have analysed cross-sectional data and can thus only prove correlations, not causalities. We were also unable to examine possible self-selections into specific neighbourhoods, but we assume that it is not the adolescents but their parents who are subject to self-selections. Further research may want to shed more light on the network structure (e.g., egocentric networks on emotional and instrumental support), spatial complexities (e.g., conducting egohoods and measuring spatial distances by GPS data), and underlying mechanisms as well as causality and self-selection issues (e.g., collecting longitudinal survey data and using more complex approaches, like SEM).

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## Conflict of Interests

The authors declare no conflict of interests.

## Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

## References

- Allison, K. W., Burton, L., Marshall, S., Perez-Febles, A., Yarrington, J., Kirsh, L. B., & Merriwether-DeVries, C. (1999). Life experiences among urban adolescents: Examining the role of context. *Child Development, 70*, 1017–1029.
- Andresen, S., Wilmes, J., & Möller, R. (2019). *Children's Worlds+: Eine Studie zu Bedarfen von Kindern und Jugendlichen in Deutschland* [Children's Worlds+: A study on needs of children and adolescents in Germany]. Bertelsmann Stiftung.
- Appau, S., Churchill, S. A., & Farrell, L. (2019). Social integration and subjective wellbeing. *Applied Economics, 51*(16), 1748–1761.
- Bates, D., Maechler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software, 67*(1), 1–48.
- Blanke, K., & Cornelißen, W. (2005). German adolescents time use from 1991 to 2001: Is gender symmetry in sight? *Society and Leisure, 2*, 11–30.
- Blau, P. M. (1994). *Structural contexts of opportunities*. University of Chicago Press.
- Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (pp. 993–1028). Wiley.
- Brown, B., & Larson, J. (2009). Peer relationships in adolescence. In R. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (pp. 74–103). Wiley.
- Cuadros, O., & Berger, C. (2016). The protective role of friendship quality on the wellbeing of adolescents victimized by peers. *Youth Adolescence, 45*, 1877–1888.
- Eder, D. (1985). The cycle of popularity: Interpersonal relations among female adolescence. *Sociology of Education, 58*(3), 154–165.
- Evans, S. D. (2007). Youth sense of community: Voice and power in community contexts. *Journal of Community Psychology, 35*, 693–709.
- Feld, S. L. (1981). The focused organization of social ties. *American Journal of Sociology, 86*, 1015–1035.
- Flynn, H. K., Felmler, D. H., & Conger, R. D. (2017). The social context of adolescent friendships: Parents, peers, and romantic partners. *Youth & Society, 49*(5), 679–705.
- Galster, G. C. (2008). Quantifying the effect of neighbourhood on individuals: Challenges, alternative approaches, and promising directions. *Schmollers Jahrbuch, 128*(1), 7–48.
- Garner, R., Bootcheck, J., Lorr, M., & Rauch, K. (2006). The adolescent society revisited: Cultures, crowds, climates, and status structures in seven secondary schools. *Journal of Youth and Adolescence, 35*, 1023–1035.
- Gestring, N., & Neumann, U. (2007). Von Mall Rats und Mall Bunnies: Jugendliche in Shopping Malls [About mall rats and mall bunnies: Adolescents in shopping malls]. In J. Wehrheim (Ed.), *Shopping malls* (pp. 135–152). Springer.
- Guhn, M., Schonert-Reichl, K. A., Gadermann, A. M., & Hymel, S. (2013). A population study of victimization, relationships, and well-being in middle childhood. *Journal of Happiness Studies, 14*, 1529–1541.
- Harring, M., Böhm-Kasper, O., Rohlf, C., & Palentien, C. (2010). Peers als Bildungs- und Sozialisationsinstanzen—Eine Einführung in die Thematik [Peers as instances of education and socialisation: An introduction to the topic]. In M. Harring, O. Böhm-Kasper, C. Rohlf, & C. Palentien (Eds.), *Freundschaften, Cliques und Jugendkulturen. Peers als Sozialisations- und Bildungsinstanzen* [Friendships, cliques and youth culture. Peers as instances of education and socialisation] (pp. 9–19). Springer.
- Helsen, M., Vollebergh, W., & Meeus, W. (2000). Social support from parents and friends and emotional problems in adolescence. *Journal of Youth and Adolescence, 29*, 319–335.
- Hoff, E., & Laursen, B. (2019). Socioeconomic status and parenting. In M. H. Bornstein (Ed.), *Handbook of parenting: Biology and ecology of parenting* (pp. 421–447). Routledge.
- Horr, A. (2016). Nachbarschaftseffekte [Neighbourhood effects]. In C. Diehl, C. Hunkler, & C. Kristen (Eds.), *Ethnische Ungleichheiten im Bildungsverlauf* [Ethnic inequality in educational trajectories] (pp. 397–430). Springer.
- Knüttel, K., Stefes, T., Albrecht, M., Schwabe, K., Gaffron, V., & Petermann, S. (2021). *Wie geht's Dir? Ungleiche Voraussetzungen für das subjektive Wohlbefinden von Kindern in Familie, Schule und Stadtteil* [How are you? Unequal requirements for subjective well-being of children in family, school, and neighbourhood]. Bertelsmann Stiftung; ZEFIR.
- Kohen, E. D., Leventhal, T., Dahinten, V. S., & McIntosh, C. N. (2008). Neighborhood disadvantage: Pathways of effects for young children. *Child Development, 79*, 156–169.
- Larson, R., & Richards, M. (1991). Daily companionship in late childhood and early adolescence: Changing developmental contexts. *Child Development, 62*(2), 284–300.
- Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin, 126*, 309–337.
- Melton, T. N., Brehm, M. V., & Deutsch, N. L. (2021).

- Broadening the perspective on youth's systems of support: An ecological examination of supportive peer and adult relationships during adolescence. *Journal of Community Psychology*, 49, 1334–1357.
- Moore, K. A. (2020). Developing an indicator system to measure child well-being: Lessons learned over time. *Child Indicators Research*, 13(2), 729–739.
- Oberle, E. (2018). Early adolescents' emotional well-being in the classroom: The role of personal and contextual assets. *Journal of School Health*, 88(2), 101–111.
- Oberwittler, D. (2010). Jugendkriminalität in sozialen Kontexten—Zur Rolle von Wohngebieten und Schulen bei der Verstärkung von abweichendem Verhalten Jugendlicher [Youth crime in social contexts: About the role of living areas and schools on the reinforcement of deviant behaviour of adolescents]. In B. Dollinger & H. Schmidt-Semisch (Eds.), *Handbuch Jugendkriminalität* [Handbook of juvenile delinquency] (pp. 213–227). Springer.
- Petermann, S., Strohmeier, K. P., & Yaltzis, K. (2019). Kleinräumige Kontexte des Wohlbefindens von Kindern und Jugendlichen. Integrierende Stadtentwicklung mit dem kommunalen Monitoring-Instrument UWE [Small-scale contexts of well-being of children and adolescents: Integrative city development with the local monitoring instrument UWE]. *Raumforschung und Raumordnung*, 77(4), 383–400.
- Pretty, G. M. H., Conroy, C., Dugay, J., Fowler, K., & Williams, D. (1996). Sense of community and its relevance to adolescents of all ages. *Journal of Community Psychology*, 24, 365–379.
- Quercia, R. G., & Galster, G. C. (2000). Threshold effects and neighborhood change. *Journal of Planning Education and Research*, 20(2), 146–162.
- R Core Team. (2021). *R: A language and environment for statistical computing*. <https://www.R-project.org>
- Radmacher, K., & Azmitia, M. (2006). Are there gendered pathways to intimacy in early adolescents' and emerging adults' friendships? *Journal of Adolescent Research*, 21, 415–448.
- Ragelienė, T. (2016). Links of adolescents identity development and relationship with peers: A systematic literature review. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 25(2), 97–105.
- Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin*, 132(1), 98–131.
- Salmela-Aro, K. (2011). Stages of adolescence. In B. B. Brown & M. J. Prinstein (Eds.), *Encyclopedia of adolescence* (pp. 360–368). Academic Press.
- Schonert-Reichl, K. A., Guhn, M., Gadermann, A. M., Hymel, S., Sweiss, L., & Hertzman, C. (2013). Development and validation of the middle years development instrument (MDI): Assessing children's well-being and assets across multiple contexts. *Social Indicators Research*, 114(2), 345–369.
- Schräpler, J.-P., Lehmkuhl, D., Farwick, A., Petermann, S., & Schmitt, J. (2020). *Leben an der "Neuen Emscher"—Analyse des sozialen Wandels der Bezirke entlang der Emscher* [Life on the "New Emscher": Analysis of the social change in areas along the Emscher]. ZEFIR.
- Schwabe, K., Albrecht, M., Stefes, T., & Petermann, S. (2021). *Konzeption und Durchführung der UWE-Befragung 2019* [Concept and implementation of the UWE survey 2019]. ZEFIR.
- Sellström, E., & Bremberg, S. (2006). The significance of neighborhood context to child and adolescent health and well-being: A systematic review of multilevel studies. *Scandinavian Journal of Public Health*, 34, 544–554.
- Sharkey, P., & Faber, J. F. (2014). Where, when, why, and for whom do residential contexts matter? Moving away from the dichotomous understanding of neighborhood effects. *Annual Review of Sociology*, 40(1), 559–579.
- Stotsky, M., & Bowker, J. (2018). An examination of reciprocal associations between social preference, popularity, and friendship during early adolescence. *Journal of Youth and Adolescence*, 47, 1830–1841.
- Swanson, D. P., Edwards, M. C., & Spencer, M. B. (2010). *Adolescence: Development during a global era*. Elsevier Academic Press.
- Swanson, D. P., Spencer, M. B., & Petersen, A. (1998). Identity formation in adolescence. In K. Borman & B. Schneider (Eds.), *The adolescent years—Social influences and educational challenges: Ninety-seventh yearbook of the National Society for the Study of Education, part 1* (pp. 18–41). The National Society for the Study of Education.
- UWE. (2019). *Umwelt, Wohlbefinden und Entwicklung von Kindern und Jugendlichen (UWE) Befragung 2019* [Environment, well-being, and development of children and youths (UWE) survey 2019]. <https://doi.org/10.7802/2350>
- Varga, S., & Zaff, J. (2018). Webs of support: An integrative framework of relationships, social networks, and social support for positive youth development. *Adolescent Research Review*, 3, 1–11.
- Verbrugge, L. M. (1977). The structure of adult friendship choices. *Social Forces*, 56, 576–597.
- Wehmeyer, K. (2013). *Aneignung von Sozial-Raum in Kleinstädten: Öffentliche Räume und informelle Treffpunkte aus der Sicht junger Menschen* [Appropriation of social space in small towns: Public space and informal meeting sites from the viewpoint of young people]. Springer.
- Welch, S., Sigelman, L., Bledsoe, T., & Combs, M. (2001). *Race and place. Race relations in an American city*. Cambridge University Press.
- White, R. M., Witherspoon, D. P., Wei, W., Zhao, C., Pasco, M. C., Maereg, T. M., & Winkler, E. (2021). Adolescent development in context: A decade review of neighborhood and activity space research. *Journal*

of *Research on Adolescence*, 31(4), 944–965.  
Whitlock, J. (2007). The role of adults, public space, and power in adolescent community connectedness. *Journal of Community Psychology*, 35, 499–518.

Wölfer, R., Cortina, K. S., & Baumert, J. (2012). Embeddedness and empathy: How the social network shapes adolescents' social understanding. *Journal of Adolescence*, 35(5), 1295–1305.

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Article

# “We Don’t Meet [Any]where Else, Just Here”: Spatiality of Social Capital in Urban Allotments

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## Abstract

Unlike many other types of urban micro-publics, allotment gardens provide a spatial opportunity for everyday social contact and encounters between heterogeneous user groups who share a common interest. While these micro-publics have an evidenced capacity for generating social capital, scholars have questioned the extent to which social capital accessed within the allotment garden transcends its physical boundary—and thus the relevance of the micro-public for social integration by fostering resource transfers between socially-distant members of the population. In this article, we investigate for whom and to what extent social ties and resources accessed within the garden extend beyond its physical boundary and into other domains of urban life (i.e., scaling resource transfers) in Vantaa, the most multicultural city in Finland. Utilizing a mixed-methods approach, we integrated crisp-set qualitative comparative analysis and thematic analysis to explore which configurations of gardener characteristics relate to different resource transfers. We found that although new contacts—including boundary-crossing contacts—were formed within the micro-public, they evidenced little potential for scaling resource transfers across social difference, and in some cases even sparked intergroup tensions. These findings illustrate that despite the common interest shared by individuals within this micro-public, contact between different groups alone is not necessarily sufficient to foster positive social encounters, scaling or otherwise. To improve scaling resource transfers and, more broadly, deepen social connections formed within the micro-public network, facilitated intercultural dialogue by relevant institutions is needed.

## Keywords

allotment garden; micro-public; resource transfer; segregation; social capital; social mixing

## Issue

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## 1. Introduction

In Finnish cities, urban growth has been significant in recent decades, increasing from 50% to 84.9% since the 1970s (Vantaan kaupunki, 2021). The Helsinki Capital Region (HCR), in particular, has also witnessed a steep increase in immigrant population since 1990. It is now home to 55% of all foreign-language speaking residents in Finland (City of Vantaa, 2018). Combined, these

trends have contributed to more ethnically diverse urban populations, resulting in spatial changes to neighborhoods’ socio-demographic structure and social dynamics (Laitinen et al., 2016). This has included the clustering of indicators of disadvantage—such as high unemployment and low education and income—in neighborhoods with high proportions of foreign-language speaking residents (Vilkama et al., 2014). The growing dissimilarity and segregation between neighborhoods hinders

migrant social integration into the majority society and challenges Nordic ideals of egalitarianism and justice (Tunström et al., 2016). For these reasons, and that immigration is likely to increase due to national policies (Rotkirch, 2021), the prevention of urban residential segregation is an important priority for HCR municipalities, particularly Vantaa (City of Vantaa, 2018)—the case region of this study, which is situated on the outskirts of Helsinki.

To prevent socio-spatial polarization and associated spatial accumulation of social problems, social mixing policies have been implemented in the Finnish housing sector since the 1970s. Like similar programs in other European countries (Münch, 2010), they are based on the premise that spatial proximity of groups with different socio-economic or ethnic backgrounds leads to social proximity, helping disadvantaged groups build beneficial social ties and exchange resources across other social and ethnic groups. Initially intended to mix income groups, the focus later extended to ethnic groups to aid their integration into society (Dhalmann, 2013). Whilst tenure mix has been successful in distributing population groups in Finnish cities, the capacity of social mixing policies to prevent neighbors from living different realities, and promote their social relations, remains unclear (Vaattovaara et al., 2018). Indeed, several European studies indicate there are minimal interactions between advantaged and disadvantaged groups sharing the same neighborhood (Kleinmans, 2004).

Furthermore, whereas social mixing policies focus predominantly on the neighborhood level, several scholars point to the significance of specific places within the neighborhood to promote intergroup contacts and resource transfer. Among few network studies paying attention to migration processes, Hans and Hanhörster (2020) point to newcomers' lack of locally embedded social networks and emphasize the subsequent significance of more "informal" ways of gaining access to certain kinds of resources—through interaction with other residents in semi-public spaces. Amin (2002) points to the importance of "local micro-publics of everyday interaction," such as sports or music clubs, theater groups, or urban gardens, in facilitating meaningful encounters. Given the combination of joint interests and less formal social and power relations present, urban allotment gardens (UAGs) in particular can play a significant role as micro-publics for newcomers' resource access and integration into society (Christensen et al., 2019).

As the fastest growing and most multicultural city in Finland, increased residential segregation between Vantaa neighborhoods has been particularly visible over the last 20 years (Vilkama et al., 2014). The City of Vantaa is nearing the completion of a new city master plan, committing to zone 15 new land parcels as UAGs. Preliminary interviews with stakeholders revealed not only significant interest from ethnic minority groups to gain access to allotment plots, but also a desire from UAG managers for them to be more inclusive. This suggests the

City of Vantaa is uniquely situated to explore the coordination of green infrastructure planning with multicultural affairs objectives. However, previous research questioning the role of UAGs in constructing social capital—that is, the aggregate resources of a person being tied to membership in social networks—has pointed to reinforced rather than challenged boundaries between different social and ethnic groups (Blokland, 2008). Hence, the question arises whether, and under which conditions, UAGs can promote the formation of social capital between diverse groups that also transcends the physical boundary of the UAG.

This research aims to investigate social interactions and resource exchange in UAGs in Vantaa, specifically whether or not, to what extent, and for whom social capital accessed within the UAG "scales out" into other domains of urban life. We understand "scaling out" as a social process with core spatial implications involving a transfer of resources between individuals, which subsequently supports upward social mobility. The spatial element of this resource transfer, however, is integral to the process. The micro-public facilitates contact between members of the community, and thus opportunities to access the aggregate resources held and formed by the community (i.e., the network's social capital). If resources supporting upward social mobility accessed within the UAG are transferred between individuals within the network, the process inevitably engages social and spatial domains that extend outside the physical boundary of the micro-public (i.e., employment, housing, education). With such contact comes the potential for resource transfers to support integration and multiculturalism. Going forward, Section 2 discusses social mixing policies as well as social capital and underlying theories, and more recent academic critiques and alternatives. Section 3 outlines the case's context as well as the methods used for data construction and analysis. Lastly, the results of this research are presented and discussed in Section 4. The study is concluded in Section 5.

## **2. Contradictions in Research and Practice: Social Mixing Policy, Resource Transfer, and Integration**

Despite quite successful social mixing policies in place since the 1970s (Vaattovaara et al., 2018) social disadvantage (e.g., unemployment, decreasing income levels) has been concentrating since the economic downturn in the early 1990s in certain Finnish neighborhoods (Bernelius & Vaattovaara, 2016), often those with increasing shares of migrant population. Even though ethnic residential segregation in Finland remains moderate compared to other Nordic capital regions (Tunström et al., 2016), the increasing trend reflects a rise in social inequalities and a decline in equity related to education (Bernelius & Vaattovaara, 2016) and housing (Vaattovaara et al., 2018).

To counteract increasing levels of socio-spatial polarization (Bernelius & Vilkama, 2019; Musterd et al., 2017;

Skifter Andersen, 2019), the promotion of resident mixing in neighborhoods has become a central dimension of urban development programs in many European countries (Münch, 2010). Social mixing policies are a reaction to the potential negative effects of residential segregation and the concentration of poverty through so-called “context effects,” arguing that living in deprived urban neighborhoods can negatively impact inhabitants’ access to resources, lead to stigmatization and discrimination, and limit their upward social mobility (Andersson & Malmberg, 2018; Galster et al., 2010; Hedman & Galster, 2013; van Ham & Manley, 2012). In this way, network inequality is linked to place, assuming that people in poor neighborhoods are excluded from resource-rich networks since they do not encounter better-off residents (Nast & Blokland, 2014). Social mixing policies are thus linked to the hope that mixed neighborhoods promote social interaction and resource exchange between different social and ethnic groups, from which disadvantaged residents can benefit. Therefore, they are linked tightly to theories on social capital (Bourdieu, 1986; Lin, 2001). The network-based transfer of resources for generating social capital is classified into “bonding” and “bridging” (social ties within and between distinct groups, respectively; see Putnam, 2001). In some studies, the transfer of resources with divergent functions is assigned to these different types of contacts: Bonding ties are associated with support in coping with everyday life (“getting by”), whereas bridging is associated with the transfer of resources supporting upward social mobility (“getting ahead”; see de Souza Briggs, 1997). Residents’ social interactions might thus enable the exchange of getting by and getting ahead resources in the form of information, small and large help, or emotional support, which can particularly assist socially disadvantaged groups in managing their own daily lives or even support their upward social mobility.

Aside from the intention to promote social interaction and resource transfer, social mixing attempts aim for the potential of everyday low-level interactions of people with diverse backgrounds to improve mutual understanding and community cohesion, as pointed to by previous research (Amin, 2002; Nast & Blokland, 2014). They are thus linked to the preservation of socially stable resident structures and the attempt to counteract the feared threat to social cohesion caused by social and spatial segregation.

However, whereas the potential of social mixing remains high on the agenda in policy and urban planning, it is increasingly questioned in research. First, social mixing policies are based on social capital approaches, which are more and more criticized for “blaming the victims” and ignoring structural inequality by assuming that certain groups have a deficit of social capital, that simply having contact with well-resourced groups will solve their issues and combat inequality (Nast & Blokland, 2014; Small, 2009). Second, research points to resource-rich middle-class households’ tendencies

of closure and disassociation in mixed neighborhoods (Blokland & van Eijk, 2010; Frank, 2013; Savage et al., 2005; Watt, 2009; Weck & Hanhörster, 2015), indicating little or no evidence that mixed tenure produces “bridging” social capital or a “role model” effect (Allen et al., 2005). Even if spatial proximity leads to intergroup contacts, they may be nothing more than “illusory” (Wood & Landry, 2008, p. 92) and offer little potential for resource transfer (Amin & Thrift, 2002). This similarly applies to ethnic mixing (Musterd, 2003) and its role in the social integration of migrants. In this article, we follow the understanding of integration outlined by Ager and Strang (2008), who define four key themes and 10 core domains shaping the concept of integration. According to their understanding, “processes of social connection within and between groups” represent only one of those four themes. Thus, although the focus of our research is on social interactions and resource exchange, we acknowledge that social capital is an important but not the only part contributing to successful integration—which challenges a common policy assumption that “integration and social cohesion can be achieved through social connection alone” (Ager & Strang, 2008, p. 186). Third, some scholars even warn against idealistic ideas of cohesiveness and connectivity through (enforced) spatial proximity of groups that are culturally and socially alien to each other. Encounters with difference may foster conflicts, intolerance, and prejudice rather than promoting tolerance and understanding (Valentine, 2008).

Since mixing policies at the neighborhood level might not be sufficient to promote meaningful intergroup encounters and resource transfer, Amin (2002) points to the importance of “local micro-publics of everyday interaction” in facilitating those. These micro-publics, such as sports or music clubs, theater groups, or urban gardens, bring together people with different backgrounds and enable meaningful encounters by allowing them to break out of fixed patterns of social interaction. As semi-public, partly institutionalized micro-publics that include (in)formal rules, UAGs bring people of different (social or ethnic) backgrounds together over a common interest and enable the bridging of group-related boundaries.

### 3. Methodological Approach

The purpose of this mixed-methods study was to describe and interpret the spatiality of social encounters within the case micro-public network. Two data construction methods—semi-structured interviews and a name generator survey—were integrated to construct data on the social and network circumstances during which social capital scales (or not) outside of the UAG network. Following data construction, two methods for data reduction and analysis—crisp-set qualitative comparative analysis (csQCA) and thematic analysis (TA)—were employed to explore causal relationships between these circumstances. Combined, this mixed-method

design integrates and balances the qualitative benefits of case-specific detail and social nuance (the data constructed during the semi-structured interviews and later analyzed during iterations of TA) with the quantitative benefit of systematic comparison (the data constructed during the name generator survey and later analyzed by csQCA; see Cox et al., 2021).

### 3.1. Micro-Public Context: The UAGs of Vantaa, Finland

Vantaa’s greenspace network currently includes 15 UAGs, zoned by city planners in the city’s master plan. The land for each UAG is leased by the City of Vantaa via short-term contracts to a neighborhood association that independently manages the garden and is thus responsible for developing, disseminating, and enforcing the cultivation guidelines for their particular UAG. Typically, these associations are led by a group of neighborhood volunteers, who then lease single plots to individual gardeners. As such, the network’s governance structure is characterized by three levels of regulation: municipal, association, and plot level. The practical implications of this decentralized governance structure include: (a) significant variation in the levels of social organization between associations; (b) discrepancies in the availability and accessibility of information provided to the public about each UAG, which is largely based on the resources available to the resident volunteers serving on the association leadership boards; and (c) an absence of aggregate member information on all individuals cultivating within the network, and thus, the resulting inability to quantify the demographic breakdown of gardeners in the network.

### 3.2. Data Construction: Semi-Structured Interviews and Name Generator Survey

Ten rigorous data construction sessions were conducted on-site between May and July 2021. When selecting our sample, we targeted individuals related to the bounded UAG network of Vantaa. Given the absence of aggregate network population data, we employed the non-probability quota method to construct our sample. This provides the key function of producing a sample comprised of select characteristics that mirror their distribution in the overall population, without first needing to identify each individual member (Blaikie & Priest, 2019). To do so, a set of relevant selection categories were first defined including gender, age structure, and mother tongue. The number of participants recruited from each category was determined based on their proportion within the municipality. Thus, the target ratio of key characteristics within our sample was defined as 50% women, 50% men, 80% with Finnish national mother tongue, 20% with foreign mother tongue, 65% of working age, and 35% of non-working age. Our target ratio was achieved for gender and mother tongue, but slightly overrepresents the proportion of retired residents within the municipality’s population. This can be explained by, likely, a greater proportion of retired individuals active in the UAGs than those residing in the municipality. Here it is of note that the decentralized nature of the micro-public network, compounded by the ongoing Covid-19 crisis, resulted in steep challenges in gaining access to participants for this study. The resulting sample included 12 egos, who elicited the name of 92 alters. Detailed social attribute data for these egos are provided in Table 1.

**Table 1.** Social attributes of the research participants.

Ego	Social attributes						Number of alters	
	Age	Gender	Employment status	Education	Duration at plot (years)	Mother tongue	Bonding	Bridging
1 + 2	70–79	W; M	Retired; retired	Master’s; High school	36	Finnish	9	1
3	40–49	M	Employed	Bachelor’s	5	Finnish	10	1
4 + 5	60–69	W; M	Retired; retired	Masters; Master’s	42	Finnish	4	4
6	50–59	W	Employed	Comprehensive	11	Finnish	6	1
7	60–69	M	Retired	Master’s	<1	Finnish	5	1
8	70–79	W	Retired	Master’s	6	Finnish	5	2
9	40–49	M	Unemployed	Vocational school	3	not-Finnish	9	4
10	18–29	W	Employed; student	Bachelor’s	2	Finnish	8	2
11	40–49	M	Employed	Master’s	<1	not-Finnish	7	6
12	70–79	W	Retired	Bachelor’s	20	Finnish	9	0

Note: Two of the 10 sessions were constructed as pair interviews in which both participants contributed to the interview and one to the name generator survey.

Each session was comprised of an in-depth semi-structured interview and a structured name generator survey, lasting from 45 minutes to 3.5 hours (half in English, half in Finnish). The former focused on participants' social encounters within their UAG; within the latter, the interviewer led the participant through a name generator survey, where the participant (ego) was asked to identify specific people (alters) with whom they have exchanged certain resources. The types of resources inquired about (Table 2) stem from previous research on networks of exchange within UAGs (Resler & Hagolani-Albov, 2021) and resource transfers at the neighborhood scale (Hans & Hanhörster, 2020; Weck & Hanhörster, 2015). For each alter named by the ego, socio-demographic characteristics were recorded using the ego's free recall from memory.

### 3.3. Data Reduction and Analysis: CsQCA and TA

Following construction, these data were reduced and analyzed using csQCA and TA. CsQCA is a set-theoretic analytic technique that was explicitly designed to uncover complex causal regularities among small samples ranging from five to 50 (Cox et al., 2021; Ragin, 2014), which is particularly useful in situations where it is not possible to identify every member of a population such as ours. Additionally, unlike the correlational analyses conventionally used in quantitative social science, csQCA can identify asymmetrical set-theoretic relationships among variables—meaning, csQCA provides the added value of testing for the presence of a cause (condition) and presence of the effect (outcome) separately from the absence of a cause and the absence of the effect (Ragin, 2014), which correlational analysis can not. As such, the technique is able to systematically investigate situations in which multiple combinations of conditions may produce the same outcome, or conversely, when the same condition may affect the outcome differently, depending on how it intersects with other conditions (Sehring et al., 2013). In the context of this study, this “assumption of multi-causality” (Cox et al., 2021) translates to combinations of social attributes that together have led to a scaling outcome in the UAG, while on their own, or in another combination, might have resulted in a different outcome. Stated plainly, csQCA is well suited for situations in which “who you are” matters. To protect the anonymity of research participants, potential links between the egos' alters were excluded from the analysis.

Following the 6-stage procedure outlined by Rihoux and Ragin (2009), we conducted the csQCA using the TOSMANA software and accompanying qualitative comparative analysis add-in for Excel (Cronqvist, 2019). The procedure begins by first defining the outcomes of interest and identifying the context-specific social and network characteristics (i.e., conditions) relevant to these outcomes (step 1 was to build a dichotomous data table). Derived from our research questions, our two out-

comes of interest were defined as: (a) *the scaling outcome*—where social encounters originating within the micro-public led to resource transfers that transcend the physical boundary of the garden (typically, “getting-ahead” resources)—and (b) *the non-scaling outcome*—the former's logical opposite. In the case of the UAGs of Vantaa, four conditions were identified using theoretical and substantive reasoning: two sourced from social capital theory (“DIVERSE” and “LARGE”) and two sourced from our TA codebook (“ARRIVAL” and “EST”).

The first of these conditions relates to the gardeners' migration background (“ARRIVAL”). Previous integration research conducted in Finland has illustrated that UAGs can promote migrants' self-confidence and independence and create opportunities for social interaction; however, they also pointed to intercultural differences regarding the preferences and use of urban nature between immigrants and autochthonous Finns (Leikkilä et al., 2013). The latter's preference for less interaction might therefore challenge the role of UAGs for resource transfer and integration in Vantaa. Against this background, this study is particularly interested in analyzing to what extent social ties in the UAGs are created within and between social groups (autochthonous Finns and gardeners with a late-stage arrival background).

The second condition structuring the csQCA relates to the duration of time a gardener has spent tending their plot. Given the cold climate and high latitude of Vantaa, gardening activities are distinctly seasonal, resulting in temporally concentrated social encounters. It is generally understood that the most important features of social capital—trust and norms of reciprocity—emerge from repeated and regular interactions bounded in time and space (Bridger & Alter, 2006). For this reason, the second condition necessary for exploring social capital in this context—established plot (“EST”)—is useful to distinguish between gardeners who had experienced a full season or more at their plot and those who had not, with the former having had greater opportunities for repeated, regular interactions with others.

The third selected condition refers to the diversity of the gardeners' social networks accessed through the UAG (“DIVERSE”). This is based on scientific debates about social capital (Bourdieu, 1986)—defined as resources, such as knowledge, information, capabilities, or economic capital (being tied to access to social networks; see van Eijk, 2010)—and the related transfer of those resources. The disposable social capital of a person is strongly tied to the resources of the network members and the diversity of network relationships. As mentioned, while this network-based transfer of resources is classified into “bonding” and “bridging” (Putnam, 2001), some studies also classify the transferred resources according to their level of support (“getting by” or “getting ahead”; see de Souza Briggs, 1997). Thus, we assume that gardeners with more bridging ties in their UAG social network will have access to greater disposable social capital and “getting ahead” resources. In our case, social ties



were operationalized as bonding when the ego and alter shared the same code for the condition “ARRIVAL” and as bridging when they did not. While similar methods of operationalizing the bonding-bridging dichotomy have been critiqued for ignoring the power positions of individuals within ethnic communities (Sommer & Gamper, 2021), we employed the method given how this study was not directly interested in power dynamics within and between migrant communities, but rather, with the overarching context of social integration.

Lastly, the disposable social capital of a person is strongly tied to the size of their network, highlighting the fourth condition included in our csQCA (“LARGE”). According to Bourdieu (1986), the volume of social capital possessed by an individual depends on the size of the network of connections they can effectively mobilize, and on the volume of the capital (economic, cultural, or social) possessed by each of those to whom they are connected. Thus, the size of an individual’s UAG social network is tied to network diversity in our case micro-public network.

Once identified, the raw values for each of these conditions were then dichotomized into the Boolean algebraic binary language of 0 and 1. For example, before dichotomization, raw data for the condition “EST” appeared in the number of months or years that an ego had tended their plot. After dichotomization, however, egos who had tended their plot for longer than one complete season were assigned the condition code [1], implying the presence of the condition. Egos who had not tended their plot for longer than one complete season were assigned the condition code [0], implying the condition’s absence. This process was applied to each of the four conditions, whereby each was coded so that their presence could be theoretically associated with a positive outcome (Table 3). Thus, if an ego had the value [1] for each condition, it would be theoretically assumed their outcome would also be [1] (i.e., one or more scaling outcomes were observed). Once dichotomized, all egos with the same binary sequence of condition codes and outcomes were grouped (thus step 2 was to construct the truth table).

The truth table allowed us to investigate and resolve any cases in which the same configuration of conditions resulted in different outcomes (thus step 3 was to resolve contradictory configurations). Once all contradictions were resolved, we proceeded with csQCA’s key operation in TOSMANA (step 4: Boolean minimization). This process uses Boolean minimization algorithms to reduce long complex expressions into their most parsimonious form (Rihoux & Ragin, 2009). We performed this operation four times: once for each outcome, both with the observed configurations and with all possible configurations (thus step 5: consideration of logical remainders). Together, these steps resulted in a list of configurations of conditions (i.e., minimal formulas) that are both “necessary and sufficient” in leading to the scaling and non-scaling outcomes (Rihoux & Ragin, 2009). The final

stage of the procedure (step 6: interpretation), marked a key point of intersection between our csQCA and TA. This stage of the csQCA was assisted by an iterative series of 1st and 2nd cycle coding strategies, performed in the computer-assisted qualitative data analysis software (CAQDAS) Atlas.ti. The resulting TA codebook book-ended the csQCA analysis process by (a) identifying the four relevant conditions and their thresholds before initiating the software-aided components of the csQCA procedure, as well as, at the end of the procedure, (b) to validate, interpret, and illustrate the csQCA minimal formulas (see the following sections for a further discussion of this interpretation).

#### 4. Results and Discussion

As outlined in the previous section, we employed the mixed methods approach of csQCA integrated with TA to explore status and network conditions related to our two outcomes of interest. Table 2 outlines all observed instances of a resource transfer between contacts formed within the micro-public, scaling or otherwise.

##### 4.1. The Scaling Outcome

To what extent did the social capital constructed within the UAG “scale out” into other domains of urban life? To answer this question, we first synthesized raw data from the name generator survey to identify instances when social ties accessed within the micro-public led to a “getting-ahead” resource transfer that transcended the boundary of the UAG. In total, 7/48 such instances were observed—14.6% of all observed encounters. However, only two of them occurred between bridging ties (resources transferred from an autochthonous Finnish gardener to a gardener who arrived in Finland later in life). One instance involved practical support with language translation, the other with searching for housing. The five remaining scaling encounters included resource transfer between co-ethnic contacts, namely, practical support or place-based information.

After identifying these instances, we were able to explore the causal regularities between social conditions that explain the scaling outcome (using the csQCA procedure). Six unique configurations of conditions (i.e., pathways) emerged, three for each outcome (see Appendix A in the Supplementary File). These pathways illustrate the key findings to the second half of our research question: for whom? The causal regularities pinpointed by the Boolean minimization process found that the three following configurations of conditions were sufficient for scaling social capital out of the UAG into other domains of urban life: for (a) egos who have both a diverse and a large UAG social network, (b) egos with a diverse UAG social network and an established plot, and (c) egos who have both a large UAG social network and an established plot. Examples of “getting-ahead” resources exchanged in this case network included assistance

**Table 2.** Observed resource transfers with contacts formed in the micro-public.

Direction of exchange	“Getting-by” resources exchanged			“Getting-ahead” resources exchanged		
	Garden-related advice	Allotment harvest	Gardening tools/resources	Help with searching for housing	Covid-19 related assistance	Help navigating an administrative issue <sup>a</sup>
# of alters given to	20	11	10	3	4	3
# of alters received from	19	14	8	4	4	1

Note: <sup>a</sup>Examples elicited by participants included assistance with voting in municipal elections, filing taxes, language translation, and searching for employment.

navigating a tax issue, assistance with language translation, and support with searching for housing—thus highlighting three other domains of urban life to which these social resources spread: housing, health, and employment (Ager & Strang, 2008).

But what can these minimal formulas, or pathways, tell us about the spatiality of resource transfers within the micro-public? First, while certain participants in our sample share the same configuration of conditions, the narrative behind how those conditions intersect within the micro-public varies greatly. This is where the TA’s pattern codebook aids our interpretation of the csQCA’s minimal formulas. For example, interviewees 4 + 5 and 9 share three of the four conditions associated with the scaling outcome; however, one case arrived in Finland at a later stage in life and the other did not. This brings into question the (ir)relevance of the condition “ARRIVAL” in the csQCA’s minimal formulas. Its absence in either formula implies that it is not consistently sufficient in explaining either scaling outcome in any of the configuration sets. Therefore, from the csQCA alone we can assume that whether a gardener arrived in Finland at a later stage in life does not independently constrain or enable their participation in scaling resource transfers.

The pattern codebook constructed from in-depth interview transcripts and field notes, however, depicts this data story differently. One key pattern constructed during the TA was the barrier to entry to this micro-public network present for residents who do not speak Finnish, and particularly, for those who are unfamiliar with this type of public space. As a late-stage arrival gar-

dener, interviewee 11 shares their experience with this pattern: “Even though I was living [in Finland] from the year 2007, I didn’t know that something like this exists until...like 2016. I hadn’t heard anything about this from anyone.” The decentralized governance structure of the UAG network outlined in Section 3.1 plays an additional role in perpetuating this entry barrier for migrant gardeners. In describing their experience with obtaining a plot, interviewee 11 continues:

The problem comes in the beginning stage when I first [emailed the association] in English and the reply came saying: “*En puhu englantia,*” I don’t speak English. Speaking the language helps a little bit, to get it, but after that, it’s not [a big barrier].

These illustrative quotes highlight a pattern of experiences shared by late-stage arrival gardeners in the network. While “ARRIVAL” may not be a relevant condition for our outcome of interest once a gardener is already an active member of the network, the language barrier experienced by many late-stage arrival residents poses a clear obstacle in gaining entry into the community itself, and thus also, to the aggregate resources held and formed by the community’s members. This key discrepancy demonstrates the failure of csQCA to alone untangle social nuances embedded within urban cases, and thus, evidences the importance of a mixed-methods approach. Our integration of TA within stages one and six of the csQCA displays a novel possibility for retaining the benefits of the csQCA’s systematic comparison while

**Table 3.** Truth table.

Ego(s)	Condition codes				Outcome codes
	ARRIVAL = Ego didn’t arrive in Finland at a later stage in life	DIVERSE = Ego’s garden network has 2+ bridging ties	LARGE = Ego’s garden network has 5+ ties	EST = Ego has tended plot >1 season	
11	0	1	0	0	[0]
9	0	1	1	1	[1]
1 + 2; 3; 6; 8; 12	1	0	0	1	[0]
7; 10	1	0	1	0	[0]
4 + 5	1	1	1	1	[1]

Notes: The remaining 10 theoretically possible configurations for which we have no observed cases are excluded from the truth table. Condition codes: 1 = presence of condition, 0 = absence of condition. Outcome code: [1] = one or more scaling ties were observed, [0] = one or more scaling ties weren’t observed.

leveraging TA as a mechanism for results-testing and case context interrogation in future mixed methods research.

#### 4.2. The Non-Scaling Outcome

The scaling outcome was thus the minority outcome of observed resource transfers. For whom were social encounters within the micro-public *not* associated with resource transfers that scaled out of the UAG? Most observed resource transfers (85.4%, or 41/48 instances) were spatially contained within the boundary of the UAG. As outlined in Appendix A in Supplementary File, the minimal formula for the non-scaling outcome is the logical opposite of the scaling outcome. This means that the observed cases of the non-scaling outcome can also be reduced to three pathways. More than any other type of resource transfer, interviewees characterized their encounters in the UAGs as spontaneous, casual discussions on place-specific topics of conversation. Interviewee 7 explains this as “some discussion and some small talk [like] asking [if there] are...any special things growing this year, and this kind of thing.” Dissimilarly to the scaling outcome, the majority of observed cases of the non-scaling outcome occurred between two autochthonous Finnish gardeners. Though the non-probability quota sampling method employed to construct our sample eliminates the possibility of concluding the representativeness of the sample, the configuration of conditions shown in Table 3 shared by half of our participants suggests this to be a commonly held set of conditions within the micro-public.

An emergent consideration arose during stage six of the csQCA regarding the network condition “DIVERSE.” Though initially shadowed during the software-aided stages of the csQCA, a clear pattern of intergroup tension within the micro-public was constructed during the TA. The most prominently cited example of such tension, mentioned by 7/12 participants, relates to the purpose of the space itself. From their perspective as an autochthonous Finn, interviewee 12 explains:

Asian people...they use quite a lot of water, and also too much fertilizers. It’s professional....They sell probably all the products that they are [growing] here. And that’s actually not the idea. Also, there is one from Turkey and Iraqis who are really professionals....It’s a very big issue and it gets worse now.

Similar statements of frustration regarding how the (in)formal rules and normative behavior expectations within the micro-public are understood differently between individuals from different social, and particularly ethnic backgrounds, were expressed by the majority of the interviewed sample. From their perspective as a late-stage arrival gardener, interviewee 9 explains:

[A fellow migrant friend] told me that it’s not just coming here and going, we also need to talk to oth-

ers. Because, otherwise, they may think something bad about us. Because if something is gone from their field, they may think that maybe I have taken it....So I learned that from him. And now I at least try to say hi.

Though unplanned for within the original research design, this emergent pattern of intergroup tension mirrors the findings of previous research highlighting the potential of face-to-face contact across social cleavage in urban public spaces to harden prejudices and foster intolerance (Blokland, 2008). Importantly, this pattern highlights a second key finding of this study; though the UAG micro-public creates opportunities for social encounters across difference, spatial proximity is alone insufficient in fostering *positive* encounters.

#### 5. Conclusion

This article examines the potential of a local micro-public network of UAGs in promoting intergroup contacts and resource transfers between UAG community members. Specifically, whether or not, to what extent, and for whom, social capital accessed in the garden scales out to other urban domains. To do so, we used a name generator survey to determine how many, of what nature, and between whom, instances of resource transfer occurred, and integrated csQCA and TA to explore which configurations of gardener background and network conditions were related to different social capital scaling outcomes. We observed only a small number of scaling resource transfers and identified two characteristics of a gardener’s social network—size and diversity—as well as the duration of time a gardener has tended their plot, which influences that gardener’s potential for these transfers. Specifically, three configurations of these characteristics were associated with the scaling outcome: gardeners with both diverse and large UAG social networks; gardeners with diverse networks who have tended their plot longer than one growing season; and gardeners with large networks who have tended their plot longer than one growing season. The TA revealed further nuance to these findings, including barriers to obtaining a garden plot for minority groups (negating their opportunity to access resources) and intergroup tensions between gardeners of different social groups. This also exposed an inability of the csQCA method alone to fully make sense of the social circumstances that enable scaling resource transfers.

Combined, the three configurations of conditions associated with the scaling outcome represent promising entry points for future intervention seeking to improve resource transfers and social relations in the case of micro-public networks. In the case of Vantaa, this translates to applied research, policy, and grassroots action working to increase the size and diversity of gardener social networks, as well as the security of UAG land tenure. Several specific policies and action recommendations were constructed by research participants during the process of data collection itself. Gardeners and

association leadership members recommend (a) focused efforts to address the key hesitations preventing new gardeners from taking up a plot, such as the steep initial investment in new knowledge, labor, tools, and resources, which may manifest as programs to encourage co-tending a plot or the creation of shared tool and resource libraries; (b) longer and more secure land tenure contracts with the City; and (c) increased municipal support with the UAG's communal maintenance and landscaping work, which is currently delegated to the volunteers who make up the UAG's association leadership boards—for example, embedding a paid position for this work in Vantaa's Youth Summer Job Program (*Nuorten kesätyöseteli*). While tailored to the context of the Vantaa UAG network, these recommendations highlight not only the added value of the qualitative interview data in interpreting the csQCA's configurations of conditions but also in constructing stakeholder recommendations for future action. Each of these potential interventions stands to be supported by joint collaboration and action between the historically siloed urban planning and multicultural affairs departments at the municipal level, as well as via improved opportunities for deliberative processes along the stakeholder power hierarchy.

At best, these findings suggest that though new contacts—including boundary-crossing contacts—are formed within the micro-public of UAGs, they evidence little potential for scaling resource transfers across social distance. At worst, these findings evidence the potential for encounters within the micro-public to foster intergroup tension and intolerance, thus reproducing challenges between social, and particularly, ethnic groups. Together these findings reinforce the critique against the implicit assumption behind many social mixing programs: spatial proximity and frequent everyday encounters across social difference—despite the common interest shared by individuals within the case micro-public—are not alone sufficient to foster positive social encounters, scaling or otherwise. They also highlight the potential for further research into deliberative processes to address power hierarchies and cultural misunderstandings, as well as additional policies and practices to remove barriers for minority groups in accessing the micro-public.

Thus, while the overarching research points to the micro-public scale—rather than the neighborhood scale—in drawing people together, the results from this study highlight the potential for intergroup tension within micro-publics when no moderator is present. We chose UAGs as our case micro-public in this study, based on the assumption that the threshold to access UAGs is lower than other micro-publics, but we found they too had socially-selective barriers regarding who can access the spaces. Methodologically, this “invisible fence” was only revealed when the interview data were integrated with data from the name generator survey. In combination with our theoretical approach, these results imply that while micro-publics may bring socially-diverse urban residents together, it's critical for

future research to consider which micro-publics bring which social groups together, and what potential barriers raise the threshold for accessing the spaces.

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### Conflict of Interests

The authors declare no conflict of interests.

### Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

### References

- Ager, A., & Strang, A. (2008). Understanding integration: A conceptual framework. *Journal of Refugee Studies*, 21(2), 166–191. <https://doi.org/10.1093/jrs/fen016>
- Allen, C., Joseph Rowntree Foundation, & Chartered Institute of Housing. (2005). *Mixed tenure, twenty years on: Nothing out of the ordinary*. Chartered Institute of Housing.
- Amin, A. (2002). Ethnicity and the multicultural city: Living with diversity. *Environment and Planning A: Economy and Space*, 34(6), 959–980. <https://doi.org/10.1068/a3537>
- Amin, A., & Thrift, N. (2002). Cities and ethnicities. *Ethnicities*, 2(3), 291–300. <https://doi.org/10.1177/14687968020020030101>
- Andersson, E. K., & Malmberg, B. (2018). Segregation and the effects of adolescent residential context on poverty risks and early income career: A study of the Swedish 1980 cohort. *Urban Studies*, 55(2), 365–383. <https://doi.org/10.1177/0042098016643915>
- Bernelius, V., & Vaattovaara, M. (2016). Choice and segregation in the “most egalitarian” schools: Cumulative decline in urban schools and neighbourhoods of Helsinki, Finland. *Urban Studies*, 53(15), 3155–3171. <https://doi.org/10.1177/0042098015621441>
- Bernelius, V., & Vilkkama, K. (2019). Pupils on the move: School catchment area segregation and res-

- idential mobility of urban families. *Urban Studies*, 56(15), 3095–3116. <https://doi.org/10.1177/0042098019848999>
- Blaikie, N., & Priest, J. (2019). *Designing social research*. Polity Press. [https://ebookcentral.proquest.com/lib/%5bSITE\\_ID%5d/detail.action?docID=5638724](https://ebookcentral.proquest.com/lib/%5bSITE_ID%5d/detail.action?docID=5638724)
- Blokland, T. (2008). Gardening with a little help from your (middle class) friends: Bridging social capital across race and class in a mixed neighbourhood. In T. Blokland & M. Savage (Eds.), *Networked urbanism: Social capital in the city* (pp. 161–184). Routledge.
- Blokland, T., & van Eijk, G. (2010). Do people who like diversity practice diversity in neighbourhood life? Neighbourhood use and the social networks of “diversity-seekers” in a mixed neighbourhood in the Netherlands. *Journal of Ethnic and Migration Studies*, 36(2), 313–332. <https://doi.org/10.1080/13691830903387436>
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Greenwood.
- Bridger, J. C., & Alter, T. R. (2006). Place, community development, and social capital. *Community Development*, 37(1), 5–18. <https://doi.org/10.1080/15575330609490151>
- Christensen, S., Malberg Dyg, P., & Allenberg, K. (2019). Urban community gardening, social capital, and “integration”: A mixed method exploration of urban “integration-gardening” in Copenhagen, Denmark. *Local Environment*, 24(3), 231–248. <https://doi.org/10.1080/13549839.2018.1561655>
- City of Vantaa. (2018). *Vantaa: Strengthening partnerships towards a more inclusive city*.
- Cox, A. B., Steinbugler, A. C., & Quinn, R. (2021). It’s who you know (and who you are): Social capital in a school-based parent network. *Sociology of Education*, 94(4), 253–270. <https://doi.org/10.1177/00380407211029655>
- Cronqvist, L. (2019). QCA add-in (Version 1.1) [Computer software]. <https://www.qca-addin.net>
- de Souza Briggs, X. (1997). Moving up versus moving out: Neighborhood effects in housing mobility programs. *Housing Policy Debate*, 8(1), 195–234. <https://doi.org/10.1080/10511482.1997.9521252>
- Dhalmann, H. (2013). Explaining ethnic residential preferences: The case of Somalis and Russians in the Helsinki Metropolitan Area. *Housing Studies*, 28(3), 389–408. <https://doi.org/10.1080/02673037.2013.759178>
- Frank, S. (2013). Innere Suburbanisierung? Mittelschichteltern in den neuen innerstädtischen Familienklaven [Inner suburbanization? Middle-class parents in the new inner-city family enclaves]. In M. Kronauer & W. Siebel (Eds.), *Polarisierte Städte* (pp. 69–89). Campus Verlag.
- Galster, G., Andersson, R., & Musterd, S. (2010). Who is affected by neighbourhood income mix? Gender, age, family, employment and income differences. *Urban Studies*, 47(14), 2915–2944. <https://doi.org/10.1177/0042098009360233>
- Hans, N., & Hanhörster, H. (2020). Accessing resources in arrival neighbourhoods: How foci-aided encounters offer resources to newcomers. *Urban Planning*, 5(3), 78–88. <https://doi.org/10.17645/up.v5i3.2977>
- Hedman, L., & Galster, G. (2013). Neighbourhood income sorting and the effects of neighbourhood income mix on income: A holistic empirical exploration. *Urban Studies*, 50(1), 107–127. <https://doi.org/10.1177/0042098012452320>
- Kleinhans, R. (2004). Social implications of housing diversification in urban renewal: A review of recent literature. *Journal of Housing and the Built Environment*, 19(4), 367–390. <https://doi.org/10.1007/s10901-004-3041-5>
- Laitinen, K., Jukarainen, P., & Boberg, H. (2016). *Maa-hanmuutto & turvallisuus—Arvioita nykytilasta ja ennusteita tulevaisuudelle* [Immigration & security—Assessments of the current situation and projections for the future] (No. 7/2016). Valtioneuvoston selvitys- ja tutkimustoiminta.
- Leikkilä, J., Faehnle, M., & Galanakis, M. (2013). Promoting interculturalism by planning of urban nature. *Urban Forestry & Urban Greening*, 12(2), 183–190. <https://doi.org/10.1016/j.ufug.2013.02.002>
- Lin, N. (2001). *Social capital: A theory of social structure and action*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511815447>
- Münch, S. (2010). *Integration durch Wohnungspolitik? Zum Umgang mit ethnischer Segregation im europäischen Vergleich* [Integration through housing policy? Dealing with ethnic segregation in European comparison]. Springer.
- Musterd, S. (2003). Segregation and integration: A contested relationship. *Journal of Ethnic and Migration Studies*, 29(4), 623–641. <https://doi.org/10.1080/1369183032000123422>
- Musterd, S., Marcińczak, S., van Ham, M., & Tammaru, T. (2017). Socioeconomic segregation in European capital cities. Increasing separation between poor and rich. *Urban Geography*, 38(7), 1062–1083. <https://doi.org/10.1080/02723638.2016.1228371>
- Nast, J., & Blokland, T. (2014). Social mix revisited: Neighbourhood institutions as setting for boundary work and social capital. *Sociology*, 48(3), 482–499. <https://doi.org/10.1177/0038038513500108>
- Putnam, R. D. (2001). *Bowling alone: The collapse and revival of American community*. Simon & Schuster.
- Ragin, C. C. (2014). *The comparative method: Moving beyond qualitative and quantitative strategies* (2nd ed.). University of California press.
- Resler, M. L., & Hagolani-Albov, S. E. (2021). Augmenting agroecological urbanism: The intersection of food sovereignty and food democracy. *Agroecology and Sustainable Food Systems*, 45(3), 320–343. <https://doi.org/10.1080/21683565.2020.1811829>
- Rihoux, B., & Ragin, C. (2009). *Configurational com-*

- parative methods: Qualitative comparative analysis (QCA) and related techniques*. SAGE. <https://doi.org/10.4135/9781452226569>
- Rotkirch, A. (2021). *Population policy guidelines for the 2020s*. Prime Minister's Office. <https://shorturl.at/dejU5>
- Savage, M., Bagnall, G., & Longhurst, B. (2005). *Globalization and belonging*. SAGE. <https://doi.org/10.4135/9781446216880>
- Sehring, J., Korhonen-Kurki, K., & Brokhaus, M. (2013). *Qualitative comparative analysis (QCA): An application to compare national REDD+ policy processes*. Center for International Forestry Research (CIFOR).
- Skifter Andersen, H. (2019). *Ethnic spatial segregation in European cities*. Routledge; Taylor & Francis Group.
- Small, M. L. (2009). *Unanticipated gains: Origins of network inequality in everyday life*. Oxford University Press.
- Sommer, E., & Gamper, M. (2021). Beyond structural determinism: Advantages and challenges of qualitative social network analysis for studying social capital of migrants. *Global Networks*, 21(3), 608–625. <https://doi.org/10.1111/glob.12302>
- Tunström, M., Anderson, T., & Perjo, L. (2016). *Segregated cities and planning for social sustainability—A Nordic perspective* (Working Paper No. 3). Nordic Centre for Spatial Development (NORDREGIO).
- Vaattovaara, M., Joutsiniemi, A., Kortteinen, M., Stjernberg, M., & Kemppainen, T. (2018). Experience of a preventive experiment: Spatial social mixing in post-World War II housing estates in Helsinki, Finland. In D. B. Hess, T. Tammaru, & M. van Ham (Eds.), *Housing Estates in Europe* (pp. 215–240). Springer. [https://doi.org/10.1007/978-3-319-92813-5\\_10](https://doi.org/10.1007/978-3-319-92813-5_10)
- Valentine, G. (2008). Living with difference: Reflections on geographies of encounter. *Progress in Human Geography*, 32(3), 323–337. <https://doi.org/10.1177/0309133308089372>
- van Eijk, G. (2010). *Unequal networks: Spatial segregation, relationships and inequality in the city*. Delft University Press.
- van Ham, M., & Manley, D. (2012). Neighbourhood effects research at a crossroads. Ten challenges for future research introduction. *Environment and Planning A: Economy and Space*, 44(12), 2787–2793. <https://doi.org/10.1068/a45439>
- Vantaan kaupunki. (2021). *Tilastokatsaus* [Statistical review]. [https://www.vantaa.fi/instancedata/prime\\_product\\_julkaisu/vantaa/embeds/vantaawww\\_structure/156765\\_Tilastokatsaus\\_3\\_2021\\_Vantaan\\_vaestonkasvu\\_Suomen\\_suurinta\\_vuonna\\_2020.pdf](https://www.vantaa.fi/instancedata/prime_product_julkaisu/vantaa/embeds/vantaawww_structure/156765_Tilastokatsaus_3_2021_Vantaan_vaestonkasvu_Suomen_suurinta_vuonna_2020.pdf)
- Vilkama, K., Lönnqvist, H., Väliniemi-Laurson, J., & Tuominen, M. (2014). *Erilaistuva pääkaupunkiseutu—Sosioekonomiset erot alueittain 2002–2012* [Diversifying metropolitan area: Socio-economic differences by region 2002–2012]. Helsingin kaupungin tietokeskus.
- Watt, P. (2009). Living in an oasis: Middle-class disaffiliation and selective belonging in an English suburb. *Environment and Planning A: Economy and Space*, 41(12), 2874–2892. <https://doi.org/10.1068/a41120>
- Weck, S., & Hanhörster, H. (2015). Seeking urbanity or seeking diversity? Middle-class family households in a mixed neighbourhood in Germany. *Journal of Housing and the Built Environment*, 30(3), 471–486. <https://doi.org/10.1007/s10901-014-9425-2>
- Wood, P., & Landry, C. (2008). *The intercultural city: Planning for diversity advantage*. Earthscan.

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Article

## The Power of Places in Building Cultural and Arts Education Networks and Cooperation in Rural Areas

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### Abstract

Volunteering plays a central role in cultural and arts education in rural areas in Germany. However, a decrease in the number of volunteers in structurally weak regions can be observed in recent years. This poses existential challenges for cultural and arts education. The promotion of social networks and regional cooperation, as well as a sense of place, can counteract this decline. This article aims to explore how sense of place influence cooperation and thus social networks between actors of different institutions in the context of cultural and arts education in rural areas. A total of 34 interviews and egocentric network maps were conducted with different local actors (e.g., volunteers in the theatre association, mayors, etc.) in four municipalities. The data were analysed using qualitative content analysis. Our results show that, through active participation in cultural events and associations, new cooperation is created and maintained, which also expands the social network. This active participation can be positively influenced by the existing attachment to the region and cultural places.

### Keywords

cooperation; cultural and arts education; qualitative research; sense of place; social networks

### Issue

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### 1. Introduction

In recent years, cultural and arts education has increasingly gained importance in academic, political, and public discourses (Liebau, 2018, p. 1221). The rising attention is based on high expectations of positive impacts, such as the promotion of political engagement (Fobel & Kolleck, 2021, p. 324), personal development (e.g., Hallam, 2010), and social participation (e.g., German Bundestag, 2007). These effects are indispensable for the promotion of regional development (German Bundestag, 2007, p. 9) due to increasing regional disparities (Authoring Group of the National Education Report, 2018, p. 15) and low trust in the political system (Kenny & Luca, 2021, pp. 19–20).

The field of cultural and arts education is characterised by diversity, heterogeneity, and complexity (Liebau, 2018, p. 1221). It can be said that grassroots cultural infrastructures (e.g., country women’s clubs, scouts, carnival clubs) are more likely to be found in rural areas. Grassroots culture encompasses a broad, diverse concept of culture and thus also many forms of cultural and artistic activities (German Bundestag, 2005; Kegler et al., 2017). Finally, this concept can contain features of high-brow culture (e.g., amateur music ensemble) and low-brow culture (e.g., school band) on the content level (German Bundestag, 2005, pp. 3–4). This kind of cultural and arts education tends to be organised in associations, receives little public funding, and runs mainly voluntarily (German Bundestag, 2005; Kegler et al., 2017). However,

rural areas are confronted with dynamic change processes, such as demographic change (BMFSFJ, 2017, p. 477), migration (Priemer et al., 2019, p. 19) and advancing urbanisation (Svendsen & Svendsen, 2016, p. 68). These exert a strong influence on local cultural engagement (BMFSFJ, 2017, p. 477).

Studies show that the number of voluntary activities in the cultural sector has increased and the percentage of volunteers in rural areas has been higher than in urban regions for years (Paarlberg et al., 2022; Priemer et al., 2019). At the same time, a downward trend in association membership in structurally weak regions can be observed, which is attributed, for example, to the declining number of inhabitants in rural areas (Priemer et al., 2019, p. 20). One possible approach to promoting volunteering, especially in the field of cultural and arts education in rural areas, is to strengthen social networks and regional cooperation on the one hand (German Bundestag, 2007, pp. 141–142) and a sense of place on the other (Gooch, 2003; Newman et al., 2017).

A social network consists of actors who are connected through social relations (Fuhse, 2018; Payer, 2008). Active cooperative relationships can serve as the basis of networks. Furthermore, existing cooperative relationships can foster new social contacts and thus also relationships (Payer, 2008, p. 13). In recent years, the topic of cultural and arts education in connection with social networks and cooperation in rural areas has received increased attention. Accordingly, the focus is on cooperation and networking between local actors from different institutions in the cultural sector. Nevertheless, hardly any studies can be found on this topic. Instead, especially in Germany, there are either programmatic cultural policy and practice-oriented publications (e.g., Institut für Kulturpolitik der Kulturpolitischen Gesellschaft, 2015) or there has been more research on social capital—which can be described as a resource of social networks (Lin, 1999, p. 35) and cultural participation (Burton & Griffin, 2008; Wilks, 2011).

In addition to social networks and cooperation, a sense of place can also function as a catalyst for promoting volunteering (Gooch, 2003; Newman et al., 2017). Referring to Gooch (2003, p. 9), feelings of belonging to certain places can be an important factor for long-term volunteering, especially in rural areas. While the link between social networks and a sense of place has already been discussed (Acedo et al., 2017; Mihaylov et al., 2020), cultural and arts education in rural areas has received little attention in empirical studies. Instead, studies on cultural places (such as libraries or cultural centres) as a lubricator for social interactions, for example, can be found (e.g., Svendsen & Svendsen, 2016). Thereby, a sense of place can strengthen the cohesion within a community and is thus more likely to form long-term cooperation and social networks between different local people (Acedo et al., 2017, pp. 512–513), which is indispensable for securing cultural and arts education (German Bundestag, 2007, pp. 141–142).

Due to this dearth of studies, this article shows how a sense of place contributes to the development of cooperation, which is seen as the foundation of social networks, and thus also to the maintenance of cultural programmes and engagement. To understand how social networks in the cultural sector can be fostered and expanded through the physical environment, it is important to clarify how cooperation emerges. Hence, the following question arises: How does local people's sense of place influence cooperation and social networks in cultural and arts education in rural areas in Germany? A brief theoretical introduction to social networks and cooperation as well as sense of place is given. This is followed by a description of the recruiting process, data material, and data interpretation. Seven subcategories were developed during the analysis and are examined in more detail in the fourth section. Finally, we conclude with a discussion of our results.

## 2. Theoretical Background

### 2.1. Social Networks and Cooperation

A network consists of nodes connected by lines. Nodes in a social network can represent actors such as institutions, organisations, groups, or individuals. These actors are connected through social relationships (Fuhse, 2018; Payer, 2008). In this context, cooperation is seen as the basis for social networks. Cooperation is defined as an alliance between at least two actors who share a common goal and exchange mutual resources—e.g., money, information, and time (Payer, 2008; Quilling, 2013). Recent studies show that participation in cultural activities has a positive impact on social interactions and networks (e.g., Laing & Mair, 2015; Lizardo, 2013). Consequently, new social relationships may be formed through cultural participation (Laing & Mair, 2015, p. 264), which can also expand social networks (Lizardo, 2013, p. 321). Vice versa, networks also play a crucial role in securing and expanding cultural infrastructures (Schneider, 2017, p. 38). According to Born (2016, p. 17), associations in rural areas work closely together by sharing infrastructures and carrying out collaborative projects. For example, actors from different sectors (e.g., retail, art associations, volunteer fire brigade) are involved in the joint organisation of events. Such cooperative relationships are less contractually regulated and tend to take place on an informal level, which is why the cooperation of the respective actors can depend heavily on personality (Born, 2016, pp. 17–18). Social networks can be secured and expanded through active cooperation. The network can in turn function as a breeding ground and pool for new social relationships, which can also give rise to new cooperation (Payer, 2008, pp. 11–14).

Meeting places such as libraries, churches, and clubs can act as an incubator for social interactions in this context (Svendsen & Svendsen, 2016; van Dülmen & Klärner,



2022). Accordingly, the promotion of cultural and arts education in rural areas also requires places where cultural activities are carried out, cultural offers are implemented, and social networks are organised. Conversely, the function of certain places, such as libraries, is fulfilled if social actions are created in them (Schneider, 2017, p. 38).

## 2.2. Basic Theoretical Assumptions of Sense of Place

Descriptions of relationships between people and places are usually associated with the concept of “sense of place” (Hashemnezhad et al., 2013; Kianicka et al., 2006). This concept encompasses a person’s accumulated, place-based experiences (Kianicka et al., 2006, p. 55) and the resulting attachment to specific places (Stokowski, 2002, p. 368). This connection is reinforced primarily through the physical environment and the ensuing sentiments for certain places (Stokowski, 2002, p. 368). External environmental characteristics such as smell, sound, and landscape, for example, can evoke special images and perceptions of place. Correspondingly, various influencing factors contribute to the development of a sense of place, which is why the attachment to a particular place is also formed differently for different people (Hashemnezhad et al., 2013, p. 7).

Sense of place is a complex construct (Pretty et al., 2003, p. 274) and encompasses several various sub-concepts and phenomena (Kianicka et al., 2006, p. 55). These include, for example, place attachment, place dependence, and place identity (Jorgens & Stedman, 2001, p. 234). While sense of place according to Hashemnezhad et al. (2013, p. 11) includes all forms of perception, feelings, and experiences of certain places, the concept of place attachment focuses on positive feelings that arise during human-environment interactions. Accordingly, it is an effect caused by emotional bonding to a specific place (Pretty et al., 2003, p. 273). In contrast, place dependency is conceptualised as personal goal attainment, which is primarily enabled by the given physical environment (Jorgens & Stedman, 2001, p. 234). As an example, individuals may develop personal goals within the context of their hobby such as white-water rafting. However, this can only be realised insofar as suitable fast, rushing rivers are present in the surroundings. Consequently, individuals with special goals are dependent on a certain physical setting (White et al., 2008, p. 649). Another sub-concept of sense of place is place identity. Here, the focus is on the formation of identity, which is influenced by different individual characteristics such as norms and values, feelings, (conscious or unconscious) ideas of place as well as by the physical environment (Proshansky, 1978, p. 155).

## 2.3. Integration of Social Networks and Sense of Place

Several scholars have tried to relate the concept of sense of place to social networks within communities. Perkins

and Long (2002, p. 293) followed a community psychological and spatial perspective and developed four concepts: sense of community, neighbouring, collective efficacy, and citizen participation. In terms of the literature, sense of community refers to the connection between people within a group or community and their belonging to the neighbourhood (Mannarini et al., 2006, p. 204). Persons who feel affiliated to a community thus receive the benefit of reciprocity and solidarity. In contrast, the concept of neighbouring takes a closer look at social relationships and symbolic interactions. Neighbourhoods are not only based on social networks but the collective attachment to the place of residence. Finally, neighbourhoods are created through social and spatial proximity (Unger & Wandersman, 1985, p. 141). Another concept is collective efficacy. This encompasses collective norms and values that are developed within a community, as well as influencing the emergence of organised, communal action (Perkins & Long, 2002, p. 295). Another conception is civic participation. Participating individuals can determine both the mode of participation and the goal (Rich et al., 1995, pp. 659–660), and are predominantly concerned with local needs, such as street festivals or the designing of parks (Perkins & Long, 2002, p. 296). It can thus be concluded that civic participation is an important resource for adapting and shaping the physical and social environment.

In summary, the spatial aspect plays an important role in all concepts, which is why these are often associated with sense of place (Acedo et al., 2017; Billig, 2005; Pretty et al., 2003). Sense of place is not only created by the connection between an individual and a place, but also between people (Pretty et al., 2003, p. 274), and is thus a product of social interactions (Butz & Eyles, 1997, p. 23). According to Mihaylov et al. (2020, p. 162), social networks can act as a catalyst for the development of place-based communities since a collective consensus of ideas and perceptions of place emerge through social interactions. Consequently, a sense of community can be built through a sense of place so that an environment for cooperation and social networks between different actors is created simultaneously (Acedo et al., 2017, pp. 512–513). In contrast, however, too strong a sense of place can also have negative effects on the expansion of social networks, especially in smaller communities. For example, people with a strong sense of place may be sceptical about innovative transformation processes and have difficulties being open to new, unfamiliar newcomers, which may lead to exclusion (Dale et al., 2008, p. 267).

## 3. Methodological Approach

This study aims to understand how local people’s sense of place influences cooperation and social networks in the context of cultural and arts education in rural areas. Due to the dearth of studies in this area, an exploratory research design was used. A total of 34 semi-structured

interviews in combination with the hierarchical mapping technique were conducted in four structurally weak regions. Finally, the interview data were audio-recorded, transcribed, and analysed using qualitative content analysis.

### 3.1. Recruiting and Data Collection

The data collection took place in four rural, peripheral areas across Germany (two from East Germany and two from West Germany), each belonging to a different federal state. Just as there is a variety of rural areas, there are also different cultural infrastructures (Institut für Kulturpolitik der Kulturpolitischen Gesellschaft, 2015, p. 34), which is why we have examined several regions in more detail. Despite the difference in cultural infrastructures, the focus of this study is to identify common conditions for promoting social relations as well as cooperation and thus also social networks. For a closer examination of social networks and cooperation between different institutions, we recruited cultural and arts education practitioners from various sectors (e.g., theatre association, museum, rural women's association), as well as their cooperation partners (e.g., other cultural professionals and voluntaries, mayors). To explore possible hindering conditions, other cultural and arts educators who are not part of the network of our cooperation partners were also recruited. To obtain homogeneous as well as heterogeneous cases and because of the explorative character of this study, we chose theoretical sampling for the selection of interviewees. The characteristics of the corpus were not defined in advance but developed during data collection and analysis.

Between June and November 2020, a total of 34 interviews (plus three pre-tests to revise the interview guide) ranging from 42 to 148 minutes were conducted based on a semi-standardised interview guide. The interview guide included egocentric network maps according to Kahn and Antonucci (1980) to stimulate narratives concerning the interviewees' personal relationships. Semi-standardised interviews offer the advantage of structuring, flexibility, and openness of the interview. The conversation was thematically divided into four sections: description of the position within the institution, social ties and cooperation, visualised network, and open topics. As narrative stimuli, the first question was about how the participants came to volunteer or work in their institution. Concerning this, a follow-up question about the activities and tasks of the interviewees was given. In this way, first insights into the respective institutions and the activities of the participants as such could be provided. In this telling of stories, current cooperation was often already mentioned, so these could be taken up in more detail in the topic area of social ties and cooperation. Using different narrative questions, for example, current cooperation partners could be identified, and the perception and description of the respective cooperation could be asked in more detail. For instance, the fol-

lowing question was asked: "You have just talked about person X. How did this cooperation arise?"

Egocentric network maps were used to stimulate narrations on the one hand and to visualise personal networks on the other (Hollstein & Pfeffer, 2010, p. 6). According to Hollstein and Pfeffer (2010, p. 2), there are three different types of network maps: unstructured, structured and standardised, and structured and unstandardised. Due to contact restrictions during the Covid-19 pandemic, the interviews were conducted by telephone. For this reason, structured, standardised network maps were used, which offer little room for respondent creativity compared to the other two types but allow for direct instructions during the implementation of the hierarchical mapping technique (Hollstein & Pfeffer, 2010, p. 7). In this way, the complexity of the application of this instrument could be reduced and thus a possible mental overload could be largely avoided. These visualisation tools were sent by post in advance of the interviews. The cooperation partners already identified during the interview could therefore be integrated into this procedure.

During the use of the hierarchical mapping technique, the participants were asked to put their cooperation partners on the egocentric network map. As the interview took place by telephone, the interviewees were asked to describe where each person was located on the map and to give reasons for this. The primary aim was not to map the entire network but to generate more detailed information about the respective social relationships during the conversation. Finally, social ties are important factors to understand and analyse social networks (Bernhard, 2018, p. 1). At last, the participants were given the opportunity to talk about other topics that were not mentioned or discussed in depth during the conversation. As evident, the importance of places was not explicitly asked in the interviews. Instead of this, this had only emerged during the conversation and analysis.

### 3.2. Data Analysis

As the network maps were mainly used to gain further information and were deeply involved in the conversations, only the interview data was analysed to answer the research question. After all, networks and thus social relations can be found and identified in stories (Bernhard, 2018, p. 3). To analyse the data, a qualitative content analysis approach according to Kuckartz (2014) was used. This is a rule-based and systematic methodology that aims to develop a content-analytical system of categories.

First, case summaries were written to get a rough overview of the data material. Subsequently, the main category *region and its cultural socialisation* was developed from the material. This was thematically defined in a codebook and tested through consensual coding. In the subsequent phases, data were coded using the

main category system and subcategories were inductively formed based on these coded passages. To answer the research questions, seven subcategories were created, which were subdivided into three areas: *sense of cultural community*, *sense of cultural places*, and *sense of region* (see Table 1).

Finally, to shed more light on the connection between places and social ties, both spatial subcategories (*regional attachment and perception*; *historical and ecological influences*; *decline of services of general interest and spatial mobility*; *personal bonding to cultural places*; *cultural places*) and social subcategories (*cultural participation*; *region-specific, cultural programmes*) were formed. The spatial categories focus more on the perception of the place-based environment, while the social categories highlight the framework for making new social contacts. These subcategories were also tested and defined in the codebook (see Table 1). During further analysis, category-based summaries were written and their interrelationships explored.

#### 4. Results

This section has been subdivided into segments regarding (a) sense of region, (b) sense of cultural places, (c) sense of cultural community, and (d) connections between the subcategories and their influence on the emergence of cooperation and social networks. Accordingly, the respective subcategories are briefly described in the first three subsections. Subsequently, it is explained in more detail how the respective subcategories relate to each other and how these subcategories are connected to the emergence and strengthening of cooperation and thus also social networks in the field of cultural and arts education in rural areas.

##### 4.1. Sense of Region

The interviewees often refer to their region without being explicitly asked. They show a close *relationship and attachment to the region*, which is mainly shaped by their experiences. One interviewed mayor said: “Basically, it has to do with the fact that if you grew up here in the region, [the region] is a very big identity factor for you in terms of home.” Growing up in the region is implicitly associated with local experiences, which are particularly influential during the first phase of life. However, the respondents perceive a lack of public interest in their communities, which fosters a sense of existential threat: “There are many economically minded people in the area who say that it is much more efficient and economically simpler and more economical overall if I let the rural areas die off and only think and develop in centres” (staff member in a cultural department). Here, the interviewee refers to the state and federal governments. This indicates that the politicians demand economic growth from the municipalities, but rural areas are not able to meet these expectations. In this way, the emergence of a communal “we-are-detached-feeling” (staff member of a cultural department) is promoted. The feeling of neglect on the part of the public interest seems to be shaped by *historical influences*. This is illustrated by the following quote:

No, we are, the [district] is such a small triangle, which more or less protruded like a corner into the area of the former GDR....That means we were far away from the large conurbations, and still are today. There is hardly any or virtually no industry here. Companies only settle here on a modest scale. That means it’s simple, it’s provincial, it’s an impoverished district. (staff member in a cultural department)

**Table 1.** Summary of the codebook.

	Subcategory	Description
sense of region	Regional attachment and perception	Descriptions and evaluations of the rural region are coded for this purpose.
	Historical and ecological influences	Narratives on regional history, settlement structure, and influence on the natural environment are assigned to this category.
	Decline of services of general interest and spatial mobility	This refers to the existing perception and description of the decline of basic infrastructures, such as schools and shopping facilities, as well as mobility.
sense of cultural places	Personal bonding to cultural places	Description of the personal attachment and subjective experiences to certain places or buildings are assigned to this.
	Cultural places	This category includes perceptions and descriptions of the use of places.
sense of cultural community	Cultural participation	This category is about which programmes interviewees participate in culturally and make new social contacts in the process.
	Region-specific, cultural programmes	This category is about cultural programmes that were created to archive and communicate historical-cultural events and are dependent on social relations for the purpose.

The terms “corner” and “far away” indicate a feeling of a lack of integration into society, which is due to historical and spatial factors alone. The municipality thus occupies an outsider position, unable to keep up with other municipalities despite its efforts. This indicates the influence of the historical and political course and the spatial conditions on the community.

Another recurring theme mentioned by respondents is the *decline of services of general interest* in the respective regions: “The schools were cancelled in our village. So [in the village] there were no more schools, they practically disappeared, let’s say....And yes, bakers, it was no longer worth it” (volunteer in a theatre club). This issue can influence cultural and arts education in rural areas. The interviews indicate that some cultural institutions have difficulties in attracting members from certain age groups due to the lack of certain services of general interest:

This means that all pupils who leave the fourth grade then naturally go to the music school there, where they also have the afternoon off school. So, if they are in grammar school, then they go to the music school in [town 1] or in [town 2] directly afterwards, but not in [our small town]. (head of a music school)

This shows that, due to the absence of a secondary school as well as the spatial distance and mobility associated with it, participants in a cultural institution tend to take a pragmatic approach and are more likely to consider cultural offers with the least additional effort, as associated with long journeys. Hence, it is harder for cultural institutions to attract and retain members over an extended period. This indicates that spatial distance and mobility also play an important role in participation in cultural activities.

#### 4.2. Sense of Cultural Places

Based on the data, it can be interpreted that the *bonding to social, cultural places* often grows with a personal connection to the region, which is strengthened above all by specific experiences gained in a particular place: “And I was also converted/baptised and confirmed here in this church and I also have a relationship there” (volunteer in a cultural foundation). In addition to such formative experiences, the personal network also promotes a relationship with certain places. Family in particular plays an important role in the formation of a sense of place, as exemplified by the following:

But now it plays a big role for me, for my child earlier, when he was still at primary school, because I went to all the festivals, and I wanted to show him everything. What’s there and how the people, like my grandma, great grandma, for example, lived and where I was everywhere. (volunteer in a hiking club)

Here it is indicated that the transmission of one’s sense of place is regarded as passing on the tradition to the descendants. This is to ensure that each successor generation has similar experiences of place as their ancestors or at least gains insights into the generation- and place-specific experiences. In this way, sense of place can be promoted. According to the respondents, *cultural places* can be described, for example, as mediators of music and artistic skills (e.g., music schools), as mediators of cultural-historical events (e.g., museums), and as historical buildings (e.g., sights) with unique (architectural) features, which is illustrated in the following quote:

No, this is run by the district, even with modest means, but still, this is an open-air museum; a very special one, because it has a unique selling point. As the name suggests, it focuses on the history of the [village settlements], the [regionally specific village settlements]. (staff member in a cultural department)

The data show that cultural places also function as places of social interactions, where cultural and arts education are declared a common theme. This is illustrated in the following quote, referring to an older, historic music school:

And this house we would like to focus on even more and develop a bit of a museum concept, so to speak, in inverted commas, that people come here to the house. And in general, [my colleague] always says so well, when you come in here, it’s about music. (head of a music school)

At this point, it becomes clear that cultural places can function as a point of attraction for people. In doing so, cultural places can take on different concepts—in this case as a music school and as a museum, which increases the possibility of promoting social interactions. The phrase “when you come in here, it’s about music” also suggests that a musical space is also produced within this structure. However, our interviews also indicate that the development of cultural places does not always attract people and that certain people distance themselves from such events: “Within the local council we are sometimes seen as troublemakers because we endanger the local, I don’t want to say peace, but that on weekends there is a bit more hustle and bustle” (volunteer in a theatre club). This illustrates that some local actors find it difficult to cooperate with the organisers of cultural events. This challenge is based particularly on different conceptions of using places, in the sense of place dependency. Consequently, in the above example, the idea and use of the living space as a place of recreation or rest and the living space as a place of cultural promotion and social interactions contradict each other.

#### 4.3. Sense of Cultural Community

Another important dimension is *cultural participation*. Participation in cultural events offers the advantage that contacts with cooperation partners can be maintained. This is illustrated by the following quote:

Yes, these are the connections [light laughter] that you have, you send each other e-mails. So, it's primarily via e-mails or WhatsApp....Or even the contacts that you have, well, I'm excluding the Corona phase, the contacts that you also see at other events. (volunteer in a cultural foundation)

This quote illustrates that participation in cultural events functions as a means of communication for the cooperating actors. Thus, direct interactions are needed to maintain social relations, which are more likely at cultural events. In addition, the data make clear that active participation in cultural associations promotes social interaction and thus also the formation of social networks and cooperation: "If you are in the association for so long, then you become known, or yes, you just meet once, make return visits and then, yes, then a relationship is built up, I would say" (Fool's Guild Association). At this point, it should be noted that while people become potential cooperation partners through their active cultural participation, a social relationship develops over time through multiple conversations.

Another important subcategory is *region-specific, cultural programmes*. According to the interviewees, cultural programmes are important strategies for influencing the physical environment, as shown by this quote:

The local history society does many events, including a spring festival, an autumn festival and Christmas. And we have tried to beautify our village. For example, all those who were interested had [a workshop] for several years with artists who were with us [in the village]....And we carved a fountain there, or designed the benches downstairs, so we carved the [region-specific stone] ourselves, to do something for the village. (volunteer in a theatre club)

This quotation exemplifies that cultural institutions are important breeding grounds for the promotion of social interactions and potentially also for the emergence of cooperation. However, it seems to be essential that the local people feel responsible to contribute to the village. Accordingly, it can be interpreted as a certain sense of place that positively influences participation in cultural offerings as well as the development of cooperative structures. Conversely, such programmes seem to promote the bond with specific places. Using regional resources (e.g., rocks) as well as the shaping of the physical environment, the respective participants gather intensive, regular experiences of the certain place.

#### 4.4. Connections Between Subcategories and Their Influence on the Emergence of Cooperation and Social Networks

The spatial (*regional attachment and perception; historical and ecological influences; decline of services of general interest and spatial mobility; personal bonding to cultural places; cultural places*) and social (*cultural participation; region-specific, cultural programmes*) subcategories identified in our analyses cannot always be clearly separated. Therefore, these categories do not function independently but are coherently interwoven.

Cooperation in the context of cultural and arts education in rural areas is closely linked to—above all personal—social networks within each regional community, according to the data. Additionally, informal cooperation based on trust appears to consist of only a short- to mid-term period in the regions studied. As described above, social relationships and thus potential cooperation can be promoted through participation in cultural events. Finally, cultural events create a space for encounters and consequently direct interactions with potential cooperation partners and thereby also for the extension of social networks: "Or you go to his events in the concert hall when he presents a book or reads something....And then you talk to him about it and ask him, do you have time for a meeting" (volunteer in a hiking club). As indicated here, not only an event but also a place for social interaction is needed, which in this case is the concert hall. This suggests that a connection is made between cultural participation and cultural places. Such places are furthermore maintained through existing experiences and personal attachment to these cultural places. Through the specific experiences in particular places, common awareness and interest in securing places develop, according to the interviewees. Thus, local actors from different institutions share a common goal, which also directly influences their willingness to cooperate and their social relationships. This is exemplified by the following quotation:

But it was also about the preservation of monuments, i.e., historical buildings, but also churches or prayer houses, which are to be preserved. And that's where he's also involved, the [museum employee]. And in that respect, we also have things in common. (volunteer in a cultural foundation)

In the interviews, several respondents suggest that they feel connected to their region and at the same time have concerns and worries about regional development. These are partly fuelled by perceptions of a decline in services of general interest, as well as environmental and historical baseline conditions. The material shows that the associated existential fears lead to cooperation within the community. As an effect, a social network develops, in which cultural-historical places are instrumentalised as a possible strategy for regional promotion:

And then we considered with a few neighbouring municipalities, with really across [the region], how can we define this, where are our points? And then we concluded that we said that important points for us are A, that we see ourselves as places, that we develop and promote an exchange within the places, [and] B, that we have certain [cultural places]. (mayor)

The expression “we see ourselves as places” shows that residents feel connected to the physical environment and living space. An existing sense of place seems to be an important influencing factor for the formation of a cooperation network that extends beyond the respective village community. This also requires a relevant phenomenon or event which simultaneously functions as a common theme and could cause a potentially negative change in the respective lifeworld of the local actors. To counteract this dynamic, an attempt is made to hold on to regionally specific objects, such as cultural places in the above example, and instrumentalise them at the same time. Here, a connection between sense of region and sense of cultural places becomes apparent. Finally, cultural places can be declared a unique selling point of a region and therefore also as a brand of a municipality: “I just know that [small town] has always been proud of the fact that they have a music school in town and that it is always well supported” (head of a music school). This offers the advantage that cooperation, especially between municipalities and cultural institutions, is created and possibly maintained in the long term.

Furthermore, the data also show a connection between the subcategories of regional attachment and perception as well as regional-specific, cultural programmes. According to the interviewees, cultural offerings and cooperation mainly emerged to promote and preserve the region-specific culture, which is illustrated in the following example:

And to promote that this [regionally specific language] continues to be cultivated and kept alive, the district started, for example, years ago to organise a so-called [name of the event], i.e., a [language-specific day] once a year. (staff member in a cultural department)

This idea arose from a deficit perception, namely the diminishing use of the regionally specific language. To preserve this aspect of regional culture, cooperation with different cultural associations is established:

This is such an [event], where different [groups] perform on stage, who do theatre, who make music, who sing, who dance, who perform sketches, and other things. And for this, we cooperate with all the [regionally specific] groups that exist, for example. (staff member in a cultural department)

Consequently, it can be interpreted that due to the perception of a potential threat of negative regional develop-

ment, cultural events are organised to communicate this threat. However, this requires social support, which offers an occasion for cooperation and networking. In addition, by organising a region-specific, cultural event, a cultural place is created whereby new social contacts can potentially be established and thus the social network can be extended. This expansion is important to also develop potential new cooperation within the network.

## 5. Discussion and Conclusions

The question of our study was: How does local people’s sense of place influence cooperation and social networks in cultural and arts education in rural areas in Germany? Addressing this question is important to eventually develop the first indications for the extension of cooperation and social networks in the cultural sector, which are regarded as an important indicator for the establishment of cultural and arts education programmes and volunteering in rural areas. In summary, “cultural places” and “regional attachment and perception” play a central role in the formation of cooperation and social networks in the field of cultural and arts education in rural areas. Our analyses suggest that local actors develop ties with specific places and, because of these existing connections, tend to participate in region-specific, cultural programmes. Through cultural participation, cultural actors establish new social contacts. In this way, new cooperation can potentially emerge, and thus social networks can be expanded.

Our findings support Mihaylov et al. (2020, p. 173), who argue that a sense of place can be instrumentalised as a motivator for creating social relations in new, dynamic processes of change that might be perceived as a threat (e.g., natural disasters). In this study, we were able to show that in cultural and arts education, existing ties to the physical environment evoke a desire to make an important contribution to the promotion of the region. Due to sense of place, individuals and groups in rural areas develop new cultural and arts education programmes that often refer to regional characteristics. Initial networking and cooperation structures emerge while conceptualising these offers. During the realisation of cultural events, cultural places that function as breeding grounds for social networks are created, as Svendsen and Svendsen (2016, pp. 58–59) had already indicated. In this way, further opportunities for strengthening and building social networks can be opened up. Within these networks, cooperation can potentially occur (Payer, 2008, p. 12) to support cultural programmes. While participating in cultural and arts education, participants find themselves in a space to work on regionally specific issues, which can reinforce a sense of place. Consequently, an iterative process commences, which is why we consider sense of place an important resource for promoting social networks, cooperation, and cultural participation. Otherwise, the literature suggests that too strong a sense of place can

have negative effects, especially in smaller communities. It can, for example, lead to people with a strong sense of place being sceptical of innovative transformation processes and having difficulties being open to new, unfamiliar residents (Dale et al., 2008, p. 267), which can prevent the emergence of new cooperation and thus also the expansion of social networks.

Quantitative surveys of sociocentric networks could verify these results. Since the study was conducted with a qualitative research approach, the results can be generalised only to a limited extent. Furthermore, many characteristics of the actors and places involved in the networks could not be included, so only a fraction of these connections between places and networking could be shown. For example, we assume that the duration of residence also plays an important role. Overall, however, the qualitative analyses for this study provided valuable first insights into the importance of sense of place concerning social networks and cooperation in the field of cultural and arts education in rural areas.

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### Conflict of Interests

The authors declare no conflict of interest.

### References

- Acedo, A., Painho, M., & Casteleyn, S. (2017). Place and city: Operationalizing sense of place and social capital in the urban context. *Transactions in GIS*, 21(3), 503–520. <https://doi.org/10.1111/tgis.12282>
- Authoring Group of the National Education Report. (Eds.). (2018). *Bildung in Deutschland 2018: Ein indikatorengestützter Bericht mit einer Analyse zu Bildung und Migration* [Education in Germany 2018: An indicator-based report with an analysis on education and migration]. <https://www.bildungsbericht.de/de/bildungsberichte-seit-2006/bildungsbericht-2018>
- Bernhard, S. (2018). Analyzing meaning-making in network ties—A qualitative approach. *International Journal of Qualitative Methods*, 17(1). <https://doi.org/10.1177/1609406918787103>
- Billig, M. (2005). Sense of place in the neighbourhood, in locations of urban revitalization. *GeoJournal*, 64(2), 117–130. <https://doi.org/10.1007/s10708-005-4094-z>
- BMFSFJ. (2017). *Zweiter Bericht über die Entwicklung des bürgerschaftlichen Engagements in der Bundesrepublik Deutschland* [Second report on the development of civic engagement in the Federal Republic of Germany] (Working Paper No. 18/11800).
- Born, K. M. (2016). Aspekte der Governance von Kooperationen in Kommunen [Aspects of the governance of cooperation in municipalities]. In D. Schmieid & Wüstenrot Stiftung (Eds.), *Kooperation in ländlichen Räumen* [Cooperation in rural spaces] (pp. 5–23). Cuvillier.
- Burton, C., & Griffin, J. (2008). More than a museum? Understanding how small museums contribute to social capital in regional communities. *Asia Pacific Journal of Arts and Cultural Management*, 5(1), 314–332.
- Butz, J., & Eyles, J. (1997). Reconceptualizing senses of place: Social relations, ideology and ecology. *Geografiska Annaler*, 79(1). <https://www.jstor.org/stable/490471>
- Dale, A., Ling, C., & Newman, L. (2008). Does place matter? Sustainable community development in three Canadian communities. *Ethics, Place & Environment*, 11(3), 267–281. <https://doi.org/10.1080/13668790802559676>
- Fobel, L., & Kolleck, N. (2021). Cultural education: Panacea or amplifier of existing inequalities in political engagement? *Social Inclusion*, 9(3), 324–336. <https://doi.org/10.17645/si.v9i3.4317>
- Fuhse, J. (2018). *Soziale Netzwerke: Konzepte und Forschungsmethoden* [Social networks: Concepts and research methods] (2nd ed.). Utb Sozialwissenschaften.
- German Bundestag. (2005). *Antwort der Bundesregierung auf die Große Anfrage der Abgeordneten Gitta Connemann, Dr. Wolfgang Bötsch, Günter Nooke, weiterer Abgeordneter und der Fraktion der CDU/CSU* [Answer by the Federal Government to the major question by Gitta Connemann, Dr Wolfgang Bötsch, Günter Nooke, other MPs and the CDU/CSU parliamentary group]. <https://dserver.bundestag.de/btd/15/059/1505910.pdf>
- German Bundestag. (2007). *Schlussbericht der Enquete-Kommission "Kultur in Deutschland"* [Final report of the Commission of Inquiry "Culture in Germany"]. <https://dserver.bundestag.de/btd/16/070/1607000.pdf>
- Gooch, M. (2003). A sense of place: Ecological identity as a driver for catchment volunteering. *Australian Journal on Volunteering*, 8. <https://search.informit.org/doi/10.3316/ielapa.200312557>
- Hallam, S. (2010). The power of music: Its impact on the intellectual, social and personal development of children and young people. *International Journal of Music Education*, 28(3), 269–289. <https://doi.org/10.1177/0255761410370658>

- Hashemnezhad, H., Heidari, A. A., & Hoseini, P. M. (2013). "Sense of place" and "place attachment" (A Comparative study). *International Journal of Architecture and Urban Development*, 3(1), 5–12.
- Hollstein, B., & Pfeffer, J. (2010). *Netzwerkkarten als Instrument zur Erhebung egozentrierter Netzwerke* [Network maps as an instrument for surveying ego-centred networks]. In H.-G. Soeffner (Ed.), *Unsichere Zeiten* [Uncertain times] [CD-Rom version]. Springer. <https://doi.org/10.1007/978-3-531-92035-1>
- Institut für Kulturpolitik der Kulturpolitischen Gesellschaft. (2015). *Förderpotenziale für die kulturelle Infrastruktur sowie für kulturelle Aktivitäten in ländlichen Räumen: Eine Bestandsaufnahme* [Funding potentials for cultural infrastructure as well as for cultural activities in rural areas: An inventory]. [www.kupoge.de/download/Studie\\_laendliche-kulturarbeit.pdf](http://www.kupoge.de/download/Studie_laendliche-kulturarbeit.pdf)
- Jorgens, B. S., & Stedman, R. C. (2001). Sense of place as an attitude: Lakeshore owners attitudes toward their properties. *Journal of Environmental Psychology*, 21(3), 233–248. <https://doi.org/10.1006/jevp.2001.0226>
- Kahn, R. L., & Antonucci, T. C. (1980). Convoys over the life course: Attachment, roles, and social support. In P. B. Baltes & O. G. Brim (Eds.), *Life-span development and behavior* (pp. 383–405). Academic Press.
- Kegler, B., Koß, D., & Schneider, W. (2017). Introduction. In W. Schneider, B. Kegler, & D. Koß (Eds.), *Vital Village* (pp. 19–26). transcript. <https://doi.org/10.14361/9783839439883-003>
- Kenny, M., & Luca, D. (2021). The urban-rural polarisation of political disenchantment: An investigation of social and political attitudes in 30 European countries. *Cambridge Journal of Regions, Economy and Society*, 14(3), 565–582. <https://doi.org/10.1093/cjres/rsab012>
- Kianicka, S., Buchecker, M., Hunziker, M., & Müller-Böker, U. (2006). Locals' and tourists' sense of place: A case study of a Swiss alpine village. *Mountain Research and Development*, 26(1), 55–63. <https://doi.org/10.5167/UZH-2621>
- Kuckartz, U. (2014). *Qualitative text analysis: A guide to methods, practice & using software*. SAGE. <https://doi.org/10.4135/9781446288719>
- Laing, J., & Mair, J. (2015). Music festivals and social inclusion—The festival organizers' perspective. *Leisure Sciences*, 37(3), 252–268. <https://doi.org/10.1080/01490400.2014.991009>
- Liebau, E. (2018). Kulturelle und Ästhetische Bildung [Cultural and aesthetic education]. In R. Tippelt & B. Schmidt-Hertha (Eds.), *Handbuch Bildungsforschung* [Handbook of educational research] (pp. 1219–1239). Springer.
- Lin, N. (1999). Building a network theory of social capital. *Connections*, 22(1), 28–51.
- Lizardo, O. (2013). Variety in cultural choice and the activation of social ties. *Social Science Research*, 42(2), 321–330. <https://doi.org/10.1016/j.ssresearch.2012.09.014>
- Mannarini, T., Tartaglia, S., Fedi, A., & Greganti, K. (2006). Image of neighbour, self-image and sense of community. *Journal of Environmental Psychology*, 26(3), 202–214. <https://doi.org/10.1016/j.jenvp.2006.07.008>
- Mihaylov, N., Perkins, D., & Stedman, R. (2020). Community responses to environmental threat: Place cognition, attachment, and social action. In L. C. Manzo & P. Devine-Wright (Eds.), *Place attachment: Advances in theory, methods and applications* (pp. 160–176). Routledge. <https://doi.org/10.4324/9780429274442-10>
- Newman, G., Chandler, M., Clyde, M., McGreavy, B., Haklay, M., Ballard, H., Gray, S., Scarpino, R., Hauptfeld, R., Mellor, D., & Gallo, J. (2017). Leveraging the power of place in citizen science for effective conservation decision making. *Biological Conservation*, 208, 55–64. <https://doi.org/10.1016/j.biocon.2016.07.019>
- Paarlberg, L. E., Nesbit, R., Choi, S. Y., & Moss, R. (2022). The rural/urban volunteering Divide. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 33(1), 107–120. <https://doi.org/10.1007/s11266-021-00401-2>
- Payer, H. (2008). Netzwerk, Kooperation, Organisation-Gemeinsamkeiten und Unterschiede [Network, cooperation, organisation-commonalities and differences]. In S. Bauer-Wolf, H. Payer, & G. Scheer (Eds.), *Erfolgreich durch Netzwerkkompetenz* [Successful through network competence] (pp. 5–22). Springer. [https://doi.org/10.1007/978-3-211-73127-7\\_2](https://doi.org/10.1007/978-3-211-73127-7_2)
- Perkins, D. D., & Long, D. A. (2002). Neighborhood sense of community and social capital. In C. R. Snyder, A. T. Fisher, C. C. Sonn, & B. J. Bishop (Eds.), *The Plenum series in social/clinical psychology. Psychological sense of community* (pp. 291–318). Springer. [https://doi.org/10.1007/978-1-4615-0719-2\\_15](https://doi.org/10.1007/978-1-4615-0719-2_15)
- Pretty, G., Chipuer, H., & Bramston, P. (2003). Sense of place amongst adolescents and adults in two rural Australian towns: The discriminating features of place attachment, sense of community and place dependence in relation to place identity. *Journal of Environmental Psychology*, 23. [https://doi.org/10.1016/S0272-4944\(02\)00079-8](https://doi.org/10.1016/S0272-4944(02)00079-8)
- Priemer, J., Bischoff, A., Hohendanner, C., Krebstakies, R., Rump, B., & Schmitt, W. (2019). Organisierte Zivilgesellschaft [Organised civil society]. In H. Krimmer (Ed.), *Datenreport Zivilgesellschaft* [Civil society data report] (pp. 7–54). Springer. [https://doi.org/10.1007/978-3-658-22958-0\\_3](https://doi.org/10.1007/978-3-658-22958-0_3)
- Proshansky, H. M. (1978). The city and self-identity. *Environment and Behavior*, 10(2), 147–169. <https://doi.org/10.1177/0013916578102002>
- Quilling, E. (2013). *Praxiswissen Netzwerkarbeit* [Practical knowledge of networking]. Springer. <https://doi.org/10.1007/978-3-531-18899-7>



- Rich, R. C., Edelstein, M., Hallman, W. K., & Wandersman, A. H. (1995). Citizen participation and empowerment: The case of local environmental hazards. *American Journal of Community Psychology, 23*(5), 657–676. <https://doi.org/10.1007/BF02506986>
- Schneider, W. (2017). Grassroots culture as a phenomenon of Vital Villages: Common cultural and artistic activity with individual participation and civic engagement at a non-commercial, interdisciplinary and cross-policy level. In W. Schneider, B. Kegler, & D. Koß (Eds.), *Vital Village* (pp. 29–39). transcript.
- Stokowski, P. A. (2002). Languages of place and discourses of power: Constructing new senses of place. *Journal of Leisure Research, 34*(4), 368–382. <https://doi.org/10.1080/00222216.2002.11949977>
- Svendsen, G. L. H., & Svendsen, G. T. (2016). *Trust, social capital and the Scandinavian welfare state: Explaining the flight of the bumblebee*. Edward Elgar Publishing.
- Unger, D. G., & Wandersman, A. (1985). The importance of neighbors: The social, cognitive, and affective components of neighboring. *American Journal of Community Psychology, 13*(2), 139–169. <https://doi.org/10.1007/BF00905726>
- van Dülmen, C., & Klärner, A. (2022). Places that bond and bind: On the interplay of space, places, and social networks *Social Inclusion, 10*(3), 248–261. <https://doi.org/10.17645/si.v10i3.5309>
- White, D. D., Virden, R. J., & van Riper, C. J. (2008). Effects of place identity, place dependence, and experience-use history on perceptions of recreation impacts in a natural setting. *Environmental Management, 42*(4), 647–657. <https://doi.org/10.1007/s00267-008-9143-1>
- Wilks, L. (2011). Bridging and bonding: Social capital at music festivals. *Journal of Policy Research in Tourism, Leisure and Events, 3*(3), 281–297. <https://doi.org/10.1080/19407963.2011.576870>

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Article

## “Whom Should I Talk To?”: Role Prescription and Hierarchy Building in Supervised Living Groups

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### Abstract

Adolescent asylum seekers have been an independent, yet understudied group in the German Youth welfare service since 2016. Due to the separation from their familiar surroundings, young people must establish new connections with their peers in supervised living groups. However, little is known about this special group in the youth welfare system as there are only a few studies covering the situation of adolescent asylum seekers in residential groups. In our study, we apply a mixed-methods approach to analyse the self-understanding of adolescent asylum seekers, social comparisons between the perceived own group and outside group and link them with data on the emergence of friendship ties among adolescent asylum seekers. Analytically, we describe institutional factors and narratives (qualitative focus) and access structural mechanisms (demographics, network organization principles) via network regression models (quantitative focus). Our results indicate a strong influence of a high level of upstreamness in the network in the tie creation and less influence from factors like age and religion. Following this, our study provides first indications about patterns of connection and separation in this niche group.

### Keywords

migration; mixed methods; network analysis; supervised living groups; unaccompanied minors; residential care

### Issue

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### 1. The Case of Supervised Living Groups

In February 2019, almost 39,000 children, adolescents, and young adults who have fled from their home countries were under the care of youth welfare in Germany; around 15,000 of them were underage and around 24,000 were young adults (Deutscher Bundestag, 2020). It is easily overlooked that these adolescents do not form a homogeneous group, but differ in terms of cultural background, religious affiliation, language, and family upbringing. The underage unaccompanied refugees came not only from geographical Arabic countries but also from African countries (Deutscher Bundestag, 2020).

In addition, the youths from Germany who are under the care of the youth welfare are also accommodated in stationary residential groups. Both the heterogeneity of the groups that emerged and the mechanisms of communalisation between arrivants, that were effective within and outside the group, are of interest to sociological research. In addition, some adolescents have to establish new relationships with their peers due to the separation from their familiar environment, while other adolescents still have contact with parents and siblings, who make certain demands on their children and thus become an external factor for the mutual behaviour in the residential groups and the people they interact with.

This influence of the family on young adults' friendship behaviour occurs in two ways: It can favour the emergence of some relationships while preventing the formation of others. In residential houses, the juveniles are supervised by caregivers, with whom they establish relationships (Jehles & Pothmann, 2016). An issue is that research focuses on care leavers or consequences of residential education. Consequently, there is a lack of studies that present and explain the reality of life for adolescents in residential groups (Strahl, 2020). Our study focuses on the influence of ethnic and religious backgrounds and hierarchical structures in living groups on the development and maintenance of friendships. To this end, qualitative and quantitative data will be collected in two living groups. We apply exponential random graph models (ERGMs) to investigate the factors favouring the emergence and the sustaining of friendships.

The article innovates in three ways: First, we can illustrate structuration processes for an under-researched special population with a strong institutional set of rules by choosing a subject-related research strategy to give the participants room for articulation while also gathering information for a more quantitative oriented design. Second, the interviews showed patterns of argumentation and decision-making in the network, following the assumption that edges in social networks are not just structural markers but rather observations, which must be revealed in a comprehensive approach (Basov & Kholodova, 2021). Third, by using ERGMs we can distinguish between different effects of homophily and hierarchy parameters obtainable by the upstreamness of nodes and thus showing the rivalling effects of order and similarity in exogenously constructed social groups.

## 2. Background

### 2.1. Underage Unaccompanied Refugees in Germany

Youth welfare in Germany has a broad spectrum of tasks and functions that must always be determined in interplay with social developments (Jordan et al., 2012). On the one hand, Youth welfare services shape these social developments to create, restore, or maintain positive living conditions for young people. On the other hand, it also reacts to the living conditions/life circumstances of its addressees and the different support and promotion offers that emerge (Jordan et al., 2012). As soon as the unaccompanied minor refugee arrives in Germany, they are taken into care by the local Youth Welfare Office (Federal Office of Justice, 2012, §42a). The Youth Welfare Office is responsible for finding a suitable living arrangement for the minor (Federal Office of Justice, 2013, § 1773, para. 1). Arriving refugees, including minors, are distributed throughout Germany via the Königssteiner Schlüssel. The Königssteiner Schlüssel is based on the tax revenue and the number of inhabitants of a municipality (Deutscher Caritasverband, 2017). In 2015, when the system was established as it is in place

nowadays, this entailed the challenge that some federal states and Youth Welfare Offices, that had little contact with minor refugees before, had neither the facilities nor the necessary quality standards for residential groups (Deutscher Caritasverband, 2017). The accommodation of underage unaccompanied refugees differs regionally in Germany, most unaccompanied minors (87%) are cared for in group homes (Jehles & Pothmann, 2016). This form of accommodation thus accounts for the largest share of placements.

### 2.2. Homophily and the Role of Physical Space on Friendship Emergence

The orientation towards friendship begins with the onset of puberty and becomes more intense with increasing age. In this phase, adolescents distance themselves more strongly from their parents and attach greater importance to relationships with peers of the same age to develop their own identity and a normative framework (Hurrelmann & Quenzel, 2013). Puberty begins around the age of 12 (Klima, 2020). Through digitalisation and social networks, it becomes harder to identify and cluster friendship networks of adolescents. Generally, we would associate young people's friendships with layers to classify the friends of adolescents: A particularly close and personal friend, a set of around five peers of the same sex and a loose compound of 10–20 adolescents who are also classified as "friends." This number rises if friends from digital settings are included (Hurrelmann & Quenzel, 2013).

Constituting factors of friendships are often school- or free-time activities. It should be noted that most relationships are generated through school, work, or voluntary employment (Louch, 2000). Feld (1981, 1982, 1984) noted that primarily purposeful activities create contact between individuals, resulting in a network of relationships. The neighbourhood already establishes proximity, as playgrounds and schools are shared by children. This is backed by Shrum et al. (1988) whose findings indicate that 88% of the friendships of third graders within their own grade level are found in the same school. School choice tends to group students with similar socio-economic backgrounds, abilities, and achievements into classes, thus supporting homophilic relationships (Kubitschek & Hallinan, 1998). Neckerman (1996) marks that especially among children and youths, this institutional setting is a key component for the stability of friendships. More recent research includes the places where people live, especially since residential areas usually show socio-economic and ethnic homogeneity (Kruse et al., 2016). In short, intra-ethnic friendship relationships arise from living in similar residential areas, which makes meetings easier to realize and the probability of meeting in contexts outside of school is higher (Mouw & Entwisl, 2006). Düvell (2005) writes that asylum seekers mostly find themselves isolated from other members of their community or other members

of the host society. Beirens and colleagues evaluated two community projects and showed that social bridges were created and strengthened by services that promoted emotional and social literacy skills and create opportunities for non-verbal communication and interaction (Beirens et al., 2005). This makes it clear that above all, opportunities and connections to other institutions are necessary to establish friendships outside the facilities where the youths live.

Kruse et al. (2016) point out that adolescents more frequently indicate adolescents from their neighbourhood as friends (Clément & Noels, 1992; Noels et al., 2010). Noels et al. (2010) suggest that people who were born in another country and generally have little contact with people in the host society identify more strongly with their society of origin, especially in intimate social situations. A study conducted by Leszczensky and Pink (2019) indicates that students with a strong ethnical identity tend to have a higher chance to have friends with a similar strong ethnic identity. They conclude that ethnically homophile friendship networks emerge from the interplay of the ethnic identification of both students. In their study, Verkuyten and Steenhuis (2005) investigated the stereotypes of youths about asylum seekers in the Netherlands. Therefore, they used focus groups discussion to get a deeper inside view of the stereotypes about Dutch, Moroccan, and asylum-seeking peers, and under which conditions the youths, which were between 10 and 12 years old, thought about friendships with group members of this category. It became clear that the described characteristics of Dutch and Moroccan children were quite similar. In contrast, in the descriptions of the asylum-seeking youths were put more emphasis on living conditions like living in an asylum seeker centre. The first reason why asylum seekers and Moroccan peers were rejected was that they were described as arrogant, aggressive, mean, dishonest, dirty, stupid, not nice, or quarrelsome. These characteristics were described by the interviewed persons as factual or as having an empirical nature. McPherson et al. (2001) emphasise that relationships among people who belong to the same religion are more likely to be close and more trusting, including help or support in emergencies. Collins (2004) developed a theory for religious belonging in which he assumes that rituals contribute to activating mechanisms that are focused on emotions and generate solidarity and belonging through common interactions. Contrarily, religion plays a rather subordinate role in more superficial relationships (McPherson et al., 2001). While religion has a high impact on socialisation, the experiences during puberty also play an important role.

While peer-related experiences are of utter importance, family factors also matter. Mak et al. (2018), as well as Rice et al. (1997), uncovered the unique role fathers play in youth's social anxiety and adjustment. Lam and colleagues showed that youths who spent more time with their fathers reported higher levels of social competence and self-worth (Lam et al., 2012). In the

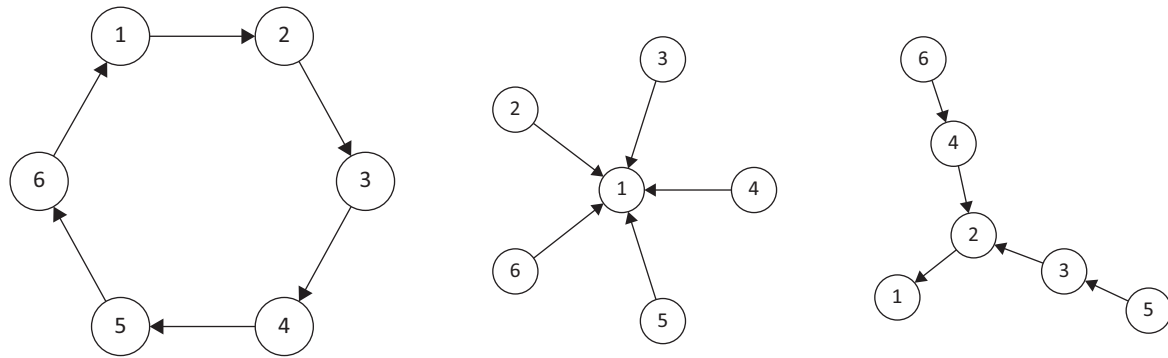
case of underage unaccompanied refugees, it is important that parents can still express their dislike when the adolescents have contact with groups of people who, according to the parents, have a bad influence on them. However, they are not on-site, which can cause the adolescents to have conflicts of loyalty toward their parents. This led to a situation where the adolescents have the impression that they are sitting on a fence, and this causes emotional stress (Hurrelmann & Quenzel, 2013). Due to the responsibility of the youth welfare service, the parents have no influence on which facilities their children live in, and which rules they have to obey, even if adolescents with different social and biographical backgrounds live there together. It is therefore likely that the social situation in the living group influences the development of friendships.

### 2.3. Types of Hierarchy

Accessing the hierarchical structure of a network can be difficult, especially when there is more than one root (Harary, 1955). Analogous to a biological tree, we can not identify a single node to which all branches would combine at some point in this case and have multiple "starting points" when starting to walk from a node with no incoming edges through the network. For our research, a node is simply a person who is either questioned or is mentioned by a young person in the interviews. Edges, which signal connections between nodes, are constructed if a person is referred to by an interviewed youth.

To characterise the hierarchical structure on a node level we look at the upstreamness (simplified: how "forward" is a node in a network if we order all nodes from only outgoing to only incoming edges) to evaluate the position in, e.g., tree-like structures. Interest in the specific role a node has concerning the number of in- and outflows is nothing new. Previous work in the field of biology (role in the food chain), economics (trade flows), and mathematics (directedness in a network) (Antràs et al., 2012; Lindeman, 1942; MacKay et al., 2020) showed here that such a form of analysis can foster a deeper understanding about path-dependencies in information flows and the relevance of position work.

In our case of a contact network in two supervised living groups, we can define high differences in upstreamness as an indicator for hierarchical grouping (Figure 1, right subfigure), while a dichotomic splitting in one group with a low level and another group with higher values would indicate a more star-like behaviour in the group processes (Figure 1, centric subfigure). The last can foster interpretations of a leader-centric organisation, a more diverse structure should rather indicate a form of social division of upkeep of relationships between the members of the living groups. Nevertheless, in contrast to an equal distribution of upstreamness, for example in a directed circle (Figure 1, left subfigure), such structures indicate the existence of some form of social control and boundaries between the actors in our network.



**Figure 1.** Prototypical representations of upstreamness structures. The left figure illustrates equal distribution, the figure in the middle shows a dichotomous distribution, and the right figure shows some differences in the levels.

**2.4. Hypothesis**

Following our previous considerations about connectivity structures in supervised living groups and hierarchical structuration, we specify the following hypothesis to evaluate which characteristics the youths and educators associate with friends.

We examine which characteristics adolescents associate with good friends. Since the literature emphasizes the trust component, we evaluate the youth’s trustees (Hurrelmann & Quenzel, 2013). In the qualitative analysis, we focus primarily on shared experiences and stories and how these influence the emergence and maintenance of friendships. We also analyse how potential conflict topics are dealt with. More quantitatively, we evaluate the following hypothesis:

H1: Structurisation in the networks follows homophilic tendencies in the demographic structure of the actors.

Here, we expect that shared cultural experiences ranging from religion to country of origin shape the in-group interaction processes between the adolescents because such manifest a frame of endogenous connectedness in the exogenously constituted supervised living groups. Furthermore, factors like a shared language should enable deeper communication between actors, enabling the formation of ties between the persons in the network.

While the institutional context imposes a dichotomous structure between caretakers and youths, we expect the processes to be much more granular because of the implicit restrictions in communicative patterns and establishment effects. Especially in the case of exogenous formation, as in our case, higher positioning and hierarchical closing can be a mechanism for youths to secure sparse resources and guarantee their influence in situations of a low trust level. Following this, we formulate our next hypothesis:

H2: The probability of an edge between two actors correlates with the nodes’ positions in the trophic structure of the network.

**3. Methods and Data**

We apply a sequential mixed method design, consisting of qualitative content analysis as a first step and an ERGM as a second.

For the qualitative content analysis, we used the method presented by Mayring (2015) to compare the two groups. Various institutions that run residential groups were contacted for the investigation. Only three organisations agreed to interview their staff and adolescents. Unfortunately, data from only two residential groups could be analysed, as no data from the third residential group was available from the educators. We conducted guideline interviews in two supervised living groups ( $N_{\text{caregiver}} = 11, N_{\text{youth}} = 10, \text{total} = 21$ ) in June and July of 2018 to collect data for qualitative content analysis. The interviewees were given aliases to prevent re-identification. The questionnaire for the youths consists of two parts. In the first part, quantifiable characteristics, such as origin (country of birth, ethnic affiliation, and spoken languages) and religious background (religious affiliation, religiosity) measured with items from the World Value Survey (Inglehart & Norris, 2015) and the International Social Survey Programme (ISSP Research Group, 2021) are asked for. In the second part, name generators (modification of the social support questionnaire by Fydrich et al., 2007), are conducted to define the adolescents’ network position. The questionnaire has already been used in a similar study by Metzner et al. (2018). For all friends mentioned in this name generator, the interviewee is asked to report their religiosity, place of residence, age, spoken languages, and country of birth. The questionnaire finishes with two questions about the characteristics of good friends.

A different questionnaire was conducted with caregivers. They were asked for their demographic characteristics and their reference juveniles. The name generator is aimed at their perception of the youths’ relationships. Furthermore, name generators for supervised youths, who have a positive or negative relationship with each other were applied. In the end, the caregivers are also asked about the characteristics of good friends.

Regarding institutional factors, the organisation of the two groups is rather small and local. Both groups share the same guiding principles. The living groups are located in a town of just over 20,000 inhabitants. Both residential groups are three kilometres apart and can be reached within 25 minutes of walking. As it can happen that staff members work in both residential groups and that there are also joint activities with other residential groups of the organisation it is expected that the network exists across group boundaries. In living group one, there are six workers (two educators, two social workers, an intern, and a housekeeper) and in the other group, there are seven workers (three educators, two social workers, an English teacher, and an intern). In further analysis, all persons working in the residential groups in an educational context are classified as educators. This has the background that for adolescents, there is no difference between the different professions. In both living groups, the oldest adolescents were 19, and the youngest person lived in the second living group and was 12 years old. In living group one, the average age was 17.2 years, in living group two, it was 16.6 years. The living groups also differ in terms of gender ratio: There were no female residents in living group one, whereas two girls lived in the other group. Adolescents of Christian and Muslim faith lived in both living groups. The inhabitants' countries of origin of both groups are Afghanistan, Cameroon, Eritrea, Ethiopia, Germany, Guinea, and Syria. Living group one only consists of underage unaccompanied refugees, while the second living group consists of mostly adolescents born in Germany and only two underage unaccompanied refugees. In the following analysis, the language Arabic is used in the meaning of Modern Standard Arabic which is a language used in articles, literature and so on but is not an everyday language.

For our quantitative approach, we show some descriptive findings and evaluate the potential influence of factors of homophilic tendencies like language, country of birth, religion, and similar position in the network (position via trophic level and diversity) on the presence of an edge with multilevel ERGMs (Stewart & Schweinberger, 2018; Stewart et al., 2019). For our descriptive evaluation, we describe three metrics, namely degree, betweenness centrality, and network density. While degree simply describes the number of connections a node has, betweenness centrality allows for a more elaborate assessment of the position of a node  $i$  in a network via measuring the number of shortest paths between two nodes passing through it (Freeman, 1977). The network density enables the calculation of the share of realised versus potential connections via a simple division (Frey, 2018). While demographic variables were adopted from the interviews, tropicality and diversity were computed according to Kones et al. (2009) from the network structure to measure the upstreamness of a node. This means we utilize the relative values of ingoing edges, represented by

increasing numbers, starting with the most bottom node (normally with an in-degree of 0) in the network.

To do so we estimated the trophic level  $s_i$  for each node  $i$  according to:

$$s_i = 1 + \sum_{j=1}^n \left( \frac{T_{ij}^*}{T_i} \cdot TL_j \right)$$

with  $T_{ij}$  as edges from node  $j$  to  $i$ , where  $j$  represents the columns of the edge matrix and  $i$  the rows;  $T_{ij}^*$  is the edge matrix, excluding edges to and from external (nothing from outside the defined network).  $T_i$  is the total number of incoming edges (indegree). Following this, we observe that a node with no incoming edges has a trophic level  $s_1 = 1$ . Similarly, we can calculate each node's diversity structure via the trophic diversity via the formula:

$$d_i = \sum_{j=1}^n \left( TL_j - (TL_i - 1) \right)^2 \cdot \frac{T_{ij}^*}{T_i}$$

describing the differences in preference of connections between actors of varying upstreamness (Soetaert & Kones, 2014). To characterize the inequality in the distributions of  $s_i$  and  $d_i$  we use Lorenz curves (Gastwirth, 1971) to compare the cumulative shares against an equal distribution of such.

Following this, we use ERGMs. Such models are stochastic in a way that we utilise countable network structures and compare them with simulated random networks to identify the super random properties of actor pairs and network structures (e.g., triads) that stand out for the emergence of such a network. More simply, the dependent variable in the ERGMs is the existence of a tie between two actors. Then, we estimate the probability that a network connection will occur dependent on network statistics like the prevalence of homophily regarding node-wise attributes or local configurations like, e.g., triads or degree (in our case nodes with a degree of exactly 1 to model persons with exactly one reference person; see Lusher et al., 2013). In our model, we additionally assume local dependence as described by Schweinberger and Handcock (2015) to model in-group specific effects which should be ubiquitous due to distinct differences between the two supervised living groups. Therefore, we used all named persons in our network, containing everyone for whom information is available via the interviews. In the next steps, we first focus on the qualitative results of our analysis, featuring concise examples from the participants. Following, we illustrate some network measures before we evaluate the results of our network regression modelling. Finally, we double-check whether these results are also evident in the qualitative evaluation.

#### 4. Results

The qualitative interviews were analysed with the focus on how good and bad friends are described and how the

friendships developed. The focus relied on factors like the place where they met the person for the first time, religious affiliation and language. In both residential groups, the adolescents answered the question about what makes a good friend similarly. It was said that this person must be someone you can trust and who respects you: “A friend is someone who respects you, who you can confide in” (Arnaud, 16 years old, Christian from Cameroon). However, some young people also reported that they did not discuss religious issues or issues concerning the situation in their country with their best friends because they were afraid that this would lead to conflicts, and possibly break their friendship. When asked who he could trust, Aditya (18 years old, Shia from Afghanistan) replied: “My best friend is Yanis. He lives in a city 30 km away and is Sunnite. We don’t talk about religion, that would only lead to problems.” In contrast, many religious motives were also chosen in the interviews, for example, two young people answered the question of who they trust only with “God” (e.g., Arnaud, 16, Christ from Cameroon). Religious background plays a big part in their daily life but they do not have many people they can talk about this topic. Although some of the youths were involved in sports and were already members of various clubs, this did not lead to automatically establishing friendships outside the living group. On the contrary, especially young people who had not been living in the housing group for long had met their close friends either in their home country or during the flight. Here, a young person emphasizes that a friend is a person who can relate to personal pain: “A friend is the one who knows your pain and whatever you want, he will always stand by your side” (Abdoulaye, 16 years old, Muslim from Guinea). The interview with Abdoulaye was dominated by many negative emotions stemming from the flight. He described only the time he had spent with this friend as positive. He also mentioned that he would like to visit this friend, even though he lives so far away. The common flight contributed to a feeling of solidarity and this bond still lasts over the long distance. The friend resides 300 km away in another German city, but they still have close contact. The interviews with the first residential group were dominated by negative emotions and stories about the flight. This can be seen as an indicator that therapeutic interventions would be needed. In light of the number of persons working in the residential groups, this seems to be an impossible task.

Regarding the second living group, the situation was slightly different. One structural component that stands out is the common cleaning on Saturday. This means that all the young people must clean their rooms and take turns cleaning different shared rooms in the facility, e.g., the kitchen. Likewise, the evening meal is usually eaten in the group. These components show that the second living group pays more attention to joint activities in which the adolescents perceive themselves as equals. In the first living group, after the first adolescents had already lived there, such common rituals were

introduced, but it turned out that the youths resisted these activities. Therefore, the educators stopped trying to enforce a common dinner. This opens the space to maintain one’s own habits regarding food. A distinctive feature in the first living group was a shared meal during Ramadan among the Muslims. These results indicate that the joint dinners were an opportunity for the adolescents to meet as equals, thus creating a place where an exchange was possible. The educators answered the question about the characteristics of a good friend similarly to the adolescents but pointed out that most of them need a long time after their arrival before they trust people again. That is why they only speak of friendship-like relationships in living group one.

However, trust was central in all definitions of friendships, even educators and educated people agreed on this. The head of the first living group stated that adolescents who speak Arabic and have a basic knowledge of German are often used as support during conversations about conflicts. Regularly, the adolescents then translate the statements of the educators into Arabic and the statements of the respective adolescents into German. However, different dialects are typically subsumed under the term Arabic, although they are only apparently similar from the outside perspective. It should be noted that Arabic, as it is taught in most language courses, is usually a language that young people have hardly got to know. This makes people with certain languages feel disadvantaged. These tensions are then transferred to the youths who translate. The conflict is usually about the right translation and wording and which language/dialect is the “right” one. The adolescents feel unfairly treated as a result, and further tensions arise, especially if they feel that their native language is not considered equal to other languages. Likewise, this translation assistance puts the youths in a difficult position, as it makes them appear disloyal to the other youths. Another problem that arises from this is that the caregivers cannot check what exactly has been translated and the adolescents are additionally put in a position of power, which can lead to conflicts.

The head of living group one summarises: “If he is alone with Afghans, for example, the educator has no chance to guide them in any way, because he doesn’t understand a word.” The different languages and pronunciations accordingly make everyday pedagogical life difficult and can lead to the development of hierarchies among adolescents.

However, religious motives were not in the foreground in the interviews of the second group, and the young people seldom sought advice and help in religious scriptures. Furthermore, the young people spoke openly about religious topics among them. The interviews also showed that the young people in the second living group built up more relationships, so they named an average of three to four people in the name generators, among them also people who had not lived in the living group but belonged to the host society. They were also able

to name people they did not like and give reasons for that. These people lived in their immediate environment or encountered them in everyday life, which is different from the situation in living group one. When it comes to language, an issue that caused or strengthened many conflicts in living group one, the head of the second living group says that it is of little importance in everyday life because the adolescents are supposed to speak German with each other, a language most of them are fluent in.

In the following section, the network structure will be focused upon. Therefore, we first look at the overall network structure and some descriptive measures (Table 1). Regarding general network descriptors, we see a generally right-skewed degree distribution. We observe a similar type of behaviour for the betweenness centrality scores, indicating a generally hub-centric structuration of the network. Similarly, the relatively low network density (0.038) indicates a sparse connectivity structure in the network.

When assessing the diversity and trophicity scores for each node in our dataset (Figure 2), it is observable that in general, the distribution of trophicity is much

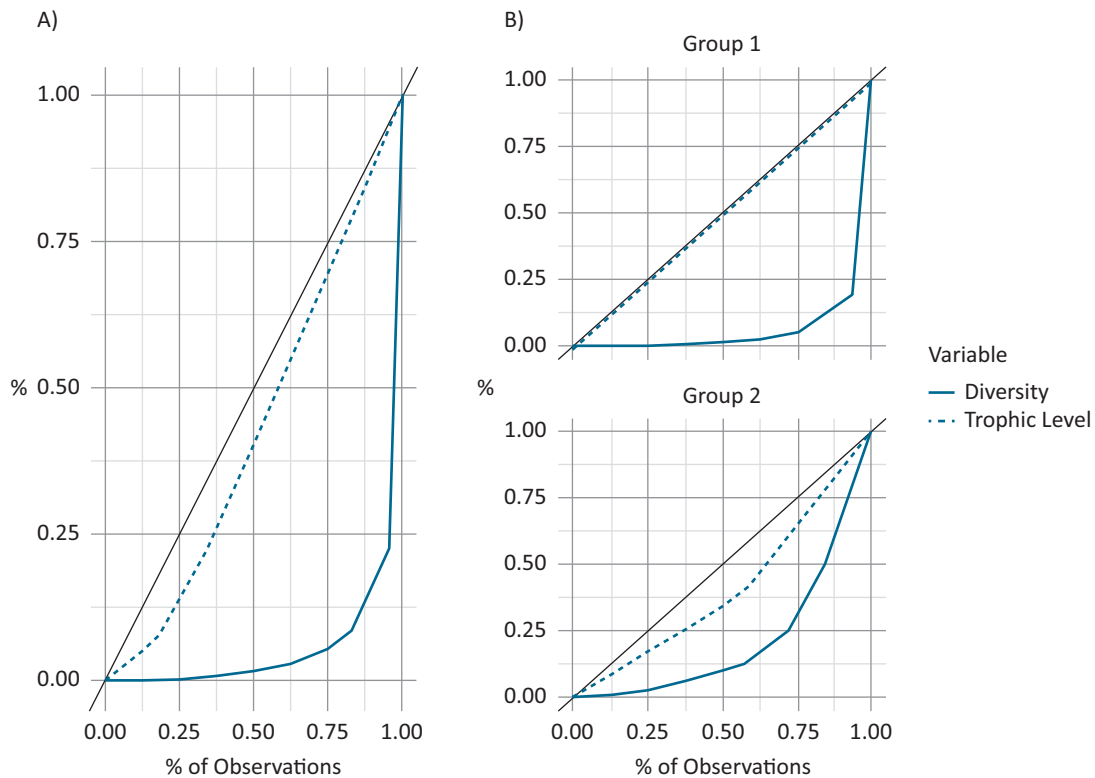
more equal than that of diversity. This effect is present even when looking at the living groups separately. An interpretation here might be the general tendency of actors to find their position in a not extremely hierarchical way (no one rules all). This indicates some hierarchical grouping because diversity in contact with members outside their hierarchical position is weakly pronounced.

To check which factors, show meaningful correlations with edge creation, we now discuss the results of our multilevel ERGMs (Table 2). For this, we describe the stepwise construction of selected terms and showcase significant results.

First, we start with a simple model (model 1), only containing an edge-coefficient. The negative, relatively high value indicates a low density of the bespoke network. In the next step, we included a degree term to account for low-to-moderate values in the frequency distribution for nodal degrees. Following this, we observe no significant effect ( $p > 0.05$ ) for the degree counts of 1 (model 2). In the following model (model 3), we included homophily terms for age, language, country of origin, and religion. Here, we found a positive, but no

**Table 1.** Measures of the network.

Metrics	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Degree	66	2.49	2.59	1	1	2	12
Betweenness Centrality	66	80.70	193.65	0.00	0.00	28.00	996.73



**Figure 2.** Distribution of trophic levels and diversity for both supervised living groups (subfigure A) and faceted for each group (subfigures B). Notes: All subfigures show the Lorenz Curves for the two variables; a reasonable fit with the diagonal line would symbolise near equal distribution.



**Table 2.** Results of the multilevel ERGMs.

	M1: Control		M2: Degree Effect		M3: Homophily		M4: Homophily + Status	
	Est.	Std. Error	Est.	Std. Error	Est.	Std. Error	Est.	Std. Error
Edges	-1.40***	0.22	-1.67***	0.22	-2.26***	0.46	-0.71	0.60
Degree 1			-1.19	0.70	-1.23	0.72	-1.06	0.67
Abs. Diff Age					-0.02	0.05	0.06	0.05
Homo. Language					2.05***	0.65	1.09	0.73
Homo. Country					-0.87	0.78	-1.04	0.85
Homo. Religion					0.13	0.56	0.48	0.62
Abs. Diff Trophic Level							-0.70***	0.21
Abs. Diff Diversity							0.22***	0.01
N	23		23		23		23	
BIC	139.79		140.97		148.19		135.39	

Notes: \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ ; "Abs.Diff" stands for "absolute difference" and "Homo." is for homophily regarding the term.

significant effect of age ( $p > 0,05$ ). We observed no significant effects for matching country of origin, and religion ( $p > 0.05$ ), and a strong positive, significant effect of language ( $p < 0.05$ ). When including hierarchy and diversity variables via homophily terms (model 4), we observe that a higher difference in trophic levels is connected to a significantly lower probability of observing an edge between two nodes ( $p < 0.05$ ). On the other hand, we observe an ever so slightly positive, significant effect of differences in the diversity level between nodes ( $p < 0.05$ ). This leads us to the conclusion that hierarchy is relatively tree-like in our sample, as high differences in the levels are associated with negative edge probabilities. We also conclude that positions, which bridge between levels, are not rewarded with higher connectivity, indicating a structurally "unattractive" position in the network for people addressing multiple persons of various levels. The BIC indicates a better fit for the model including the hierarchy terms (model 4) than for all previous models, showing the relevant role of these terms (in concordance with H2) and the relatively low relevance of factors like age, religion, and country of birth (contrary to H1).

## 5. Discussion

As the network analysis points out, bridging between diverse levels of hierarchy seems not to be rewarded, but a relatively high position in the structure correlates with a higher probability of forming an edge with another actor. Following this, we can provide some evidence for H2. This indicates some form of hierarchical structuration in the network. The observation that the inclusion of positioning terms in ERGMs leads to non-significant effects of demographic factors, like age and language, provides negative evidence for H1. A possible explanation derives from the qualitative interviews. The predominant problem here might be language issues, as educators and residents mostly have solely German as their common language. Adolescents who are fluent in

both Arabic (as a common youth language) and German (as the predominant language of the educators) might be in the place of translating between educators and youths with lower levels of German, which might put them in negative roles by the other adolescents. This can be illustrated by the quote from the head of group one: "Depending on the region or the country of origin. That you can put your foot in other pitfalls. So, you need to have some background knowledge about culture. Even things that we don't even think about." The mistakes that the educator makes are transferred to the adolescent, who translates. Furthermore, as highlighted above, the Arabic languages differ greatly from each other, and the correct translation of a term depends highly on the education level and country of origin of the mediator. Additionally, we observe no significant stable effect of nationality and age. While this is contrary to some previous research (Eckert, 2012; Hurrelmann & Quenzel, 2013), such effects may be partially influenced by the sample composition. The high amount of male-identifying individuals in combination with the small number of observations may dilute the effects of age-wise-separated groups in favour of wide, but shallowly structured groups (e.g., gangs of male youths cliques). Regarding country-wise effects, the divergence in the group composition may also give some clues about founding structuration. Consistent with Noels et al. (2010), our qualitative evaluation indicates differences in the way that foreign-born people are less open to creating relationships in a new environment when comparing groups one and two, but this may be confounded by the factor of a shared language (higher in group two), or the very different amounts of institutionalised common activities (Feld, 1981; Louch, 2000). The reason for the absence of friendships outside of the residential groups might be that the refugees, contrary to locals, do not yet attribute a social component to such activities. This reinforces the findings of the study by Beirens et al. (2005). Therefore, the clubs need to be particularly sensitive to

the fact that young people feel that they are in good hands there, otherwise regular sport is the only training that does not lead to the creation of social bridges. Especially for the educators, it was not comprehensible why no social ties were created outside the residential groups. The joint dinners in the second residential group were seen by the educators as an opportunity for the two refugees to bring in their culture and thus reduce prejudices from the other adolescents in the residential group. This confirms the findings of Verkuyten and Steenhuis (2005) that when negative stereotypes are broken down, there is more acceptance among adolescents and thus positive relationships are built. Furthermore, it is notable that the age distribution is relatively small which may prevent processes of age-wise disintegration. Another factor is religion. We were unable to observe a significant effect of shared belief on the building of connections between the youths. This is consistent with previous work by McPherson et al. (2001) stressing the subordinate role of religion in superficial relationships as in our case.

## 6. Conclusion

In this article, we presented a mixed-method approach to characterise hierarchical patterns in the relationship structure of youths' supervised living groups. The research processes included a first qualitative step with guided interviews and a quantitative analysis using network measures for in-network hierarchies and multilevel ERGMs to provide a holistic view of legitimising (qualitative) and demographic (quantitative) factors. The results of our analysis indicate that language is a central aspect of the development of relationships in residential living groups. The qualitative analysis also shows why religious affiliation does not seem to have much influence: Since religious affiliation is a sensitive topic, and adolescents only discuss such topics with people they trust, it becomes clear that such topics are rarely discussed with other people because they hardly trust other adolescents. Likewise, a flight is a profound experience that has led some young people to forge friendships during this time. It was evident in all interviews that the young people found it particularly difficult to build trust with people. The educators also noticed this. This finding should be considered when caring for young people. This problem could be exacerbated by a high turnover of staff. Due to the lack of trust, superficial and pragmatic relationships were formed in group one which were based on a tit-for-tat approach. One example is the relation between Najafi (17 years old, Muslim from Afghanistan) who shared a bike with another adolescent from the group but not had any other contact with him. In the second residential group, more intimate relationships developed, which also seems to be based on the exchange of different young people at eye level. Due to the high importance of language, the country of origin also loses importance. Nevertheless, it must be noted

that language and country of origin often are inseparable. In addition, it shows that above all, group-specific processes lead to the development of friendships rather than the sole consideration of individual characteristics. Only the interaction between the adolescents explains the development of friendships.

Further research needs to address the processes leading to such structures on a broader level, including factors like the temporal dimension of network building and the geospatial distribution of resources potentially supporting the arouse of inequalities. While ERGMs help to differ the influence of network configurations like triadic closure, homophily, and reciprocity, methods for the evaluation of networks beyond dyad-wise structuring and towards hypergraphs can be of utter interest, which seems to enrich perspectives on group configurations and complex distribution (or spreading) behaviour (de Arruda et al., 2020; Seidman, 1981). Considerations expanding the classical network representation towards a hyperbolic representation of graphs (Keller-Ressel & Nargang, 2020) can help to foster a better understanding of rivalling effects between hierarchy and similarity in the observed network, but also more classical approaches like analysing specific brokerage roles (Gould & Fernandez, 1989) might help understanding node wise configurations in the supervised living groups. Further studies should additionally examine the extent to which an ethnic identity develops among adolescents and what factors it is made up of.

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## Conflict of Interests

The author declares no conflict of interests.

## References

- Antràs, P., Chor, D., Fally, T., & Hillberry, R. (2012). Measuring the upstreamness of production and trade flows. *American Economic Review*, 102(3), 412–416. <https://doi.org/10.1257/aer.102.3.412>
- Basov, N., & Kholodova, D. (2021). Networks of context: Three-layer socio-cultural mapping for a Verstehende network analysis. *Social Networks*. Advance online publication. <https://doi.org/10.1016/j.socnet.2021.03.003>
- Beirens, H., Hughes, N., Hek, R., & Spicer, N. (2007). Preventing social exclusion of refugee and asylum seeking children: Building new networks. *Social Policy and Society*, 6(2), 219–229. <https://doi.org/10.1017/S1474746406003484>

- Clément, R., & Noels, K. A. (1992). Towards a situated approach to ethnolinguistic identity: The effects of status on individuals and groups. *Journal of Language and Social Psychology, 11*(4), 203–232.
- Collins, R. (2004). *Interaction ritual chains*. Princeton University Press.
- de Arruda, G. F., Petri, G., & Moreno, Y. (2020). Social contagion models on hypergraphs. *Physical Review Research, 2*(2). <https://doi.org/10.1103/PhysRevResearch.2.023032>
- Deutscher Bundestag. (2020). *Unterrichtung durch die Bundesregierung: Bericht der Bundesregierung zur Situation unbegleiteter Minderjähriger in Deutschland* [Information by the federal government. report of the federal government on the situation of unaccompanied minors in Germany] (Bundesdrucksache 19/17810). <https://dserver.bundestag.de/btd/19/178/1917810.pdf>
- Deutscher Caritasverband. (2017). *Unbegleitete minderjährige Flüchtlinge in Deutschland* [Unaccompanied minor refugees in Germany: Legal requirements and their implementation]. Lambertus.
- Düvell, F. (2005). *Active participation of immigrants in the United Kingdom: Report of the European POLITIS research project*. University of Oldenburg.
- Eckert, R. (2012). *Die Dynamik jugendlicher Gruppen Über Zugehörigkeit, Identitätsbildung und Konflikt* [The dynamics of adolescent groups: About belonging, identity formation and conflict]. Beltz Juventa.
- Federal Office of Justice. (2012). Sozialgesetzbuch (SGB)—Achstes Buch (VIII): Kinder- und Jugendhilfe [Social security code—8th book: Child and youth welfare]. [https://www.gesetze-im-internet.de/sgb\\_8](https://www.gesetze-im-internet.de/sgb_8)
- Federal Office of Justice. (2013). *Bürgerliches Gesetzbuch* [German civil code]. [http://www.gesetze-im-internet.de/englisch\\_bgb](http://www.gesetze-im-internet.de/englisch_bgb)
- Feld, S. L. (1981). The focused organization of organizational ties. *American Journal of Sociology, 86*, 1015–1035.
- Feld, S. L. (1982). Structural determinants of similarity among associates. *American Sociological Review, 47*, 797–801.
- Feld, S. L. (1984). The structured use of personal associates. *Social Forces, 62*, 640–652.
- Freeman, L. C. (1977). A set of measures of centrality based on betweenness. *Sociometry, 40*(1). <https://doi.org/10.2307/3033543>
- Frey, B. (Ed.). (2018). *The SAGE encyclopedia of educational research, measurement, and evaluation*. SAGE. <https://doi.org/10.4135/9781506326139>
- Fydrich, T., Sommer, G., & Brähler, E. (2007). *F-SozU: Fragebogen zur Sozialen Unterstützung* [F-SozU: Social support questionnaire]. Hogrefe.
- Gastwirth, J. L. (1971). A general definition of the Lorenz curve. *Econometrica, 39*(6). <https://doi.org/10.2307/1909675>
- Gould, R. V., & Fernandez, R. M. (1989). Structures of mediation: A formal approach to brokerage in transaction networks. *Sociological Methodology, 19*, 89–126.
- Harary, F. (1955). The number of linear, directed, rooted, and connected graphs. *Transactions of the American Mathematical Society, 78*(2), 445–463. <https://doi.org/10.1090/S0002-9947-1955-0068198-2>
- Hurrelmann, K., & Quenzel, G. (2013). *Lebensphase Jugend: Eine Einführung in die sozialwissenschaftliche Jugendforschung* [The life phase of youth: An introduction to adolescent research in the social sciences]. Beltz Juventa.
- Inglehart, R., & Norris, P. (2005). *Rising tide: Gender equality and cultural change around the world*. Cambridge University Press.
- ISSP Research Group. (2021). *International social survey programme: Social inequality V—ISSP 2019*. <https://doi.org/10.4232/1.13829>
- Jehles, N., & Pothmann, J. (2016). Mengen, Verteilungen und Durchschnittswerte. Ausgewählte Daten zu unbegleiteten minderjährigen Flüchtlingen [Quantities, distributions, and averages: Selected data on unaccompanied minor refugees]. In D. J. Fischer & G. Graßhoff (Eds.), *Sozialmagazin Sonderband* [Social magazine special issue] (Vol 1, p. 33–43). Beltz Juventa.
- Jordan, E., Maykus, S., & Stuckstätte, E. C. (2012). *Kinder- und Jugendhilfe Einführung in Geschichte und Handlungsfelder, Organisationsformen und gesellschaftliche Problemlagen* [Child and youth welfare: Introduction to history and fields of action, forms of organisation, and social problems]. Beltz Juventa.
- Keller-Ressel, M., & Nargang, S. (2020). Hydra: A method for strain-minimizing hyperbolic embedding of network- and distance-based data. *Journal of Complex Networks, 8*(1). <https://doi.org/10.1093/comnet/cnaa002>
- Klima, R. (2020). Pubertät [Puberty]. In D. Klimke, R. Lautmann, U. Stäheli, C. Weischer, & H. Wienold (Eds.), *Lexikon zur soziologie* [Encyclopaedia of sociology] (p. 620). Springer Fachmedien Wiesbaden.
- Kones, J. K., Soetaert, K., van Oevelen, D., & Owino, J. O. (2009). Are network indices robust indicators of food web functioning? A Monte Carlo approach. *Ecological Modelling, 220*(3), 370–382. <https://doi.org/10.1016/j.ecolmodel.2008.10.012>
- Kruse, H., Smith, S., van Tubergen, F., & Maas, I. (2016). From neighbors to school friends? How adolescents' place of residence relates to same-ethnic school friendships. *Social Networks, 44*, 130–142. <https://doi.org/10.1016/j.socnet.2015.07.004>
- Kubitschek, W. N., & Hallinan, M. T. (1998). Tracking and students' friendships. *Social Psychology Quarterly, 61*(1), 1–15.
- Lam, C. B., McHale, S. M., & Crouter, A. C. (2012). Parent-child shared time from middle childhood to late adolescence: Developmental course and adjustment correlates. *Child Development, 83*(6), 2089–2103. <https://doi.org/10.1111/j.1467-8624.2012.01826.x>

- Leszczensky, L., & Pink, S. (2019). What drives ethnic homophily? A relational approach on how ethnic identification moderates preferences for same-ethnic friends. *American Sociological Review*, 84(3), 394–419. <https://doi.org/10.1177/0003122419846849>
- Lindeman, R. L. (1942). The trophic-dynamic aspect of ecology. *Ecology*, 23(4), 399–417.
- Louch, H. (2000). Personal network integration: Transitivity and homophily in strong-tie relations. *Social Networks*, 22(1), 45–64. [https://doi.org/10.1016/S0378-8733\(00\)00015-0](https://doi.org/10.1016/S0378-8733(00)00015-0)
- Lusher, D., Koskinen, J., & Robins, G. (2013). *Exponential random graph models for social networks: Theory, methods, and applications. Structural analysis in the social sciences* (Vol. 35). Cambridge University Press. <https://doi.org/10.1017/CBO9780511894701>
- MacKay, R. S., Johnson, S., & Sansom, B. (2020). How directed is a directed network? *Royal Society Open Science*, 7(9). <https://doi.org/10.1098/rsos.201138>
- Mak, H. W., Fosco, G. M., & Feinberg, M. E. (2018). The role of family for youth friendships: Examining a social anxiety mechanism. *Journal of Youth and Adolescence*, 47(2), 306–320. <https://doi.org/10.1007/s10964-017-0738-9>
- Mayring, P. (2015). *Qualitative Inhaltsanalyse Grundlagen und Techniken* [Qualitative content analysis: Basics and techniques]. Beltz.
- McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 27, 415–444.
- Metzner, F., Zimmer, I., Wolkwitz, P., Wlodarczyk, O., Wichmann, M., & Pawils, S. (2018). Soziale Unterstützung bei unbegleitet und begleitet geflüchteten Jugendlichen und jungen Erwachsenen nach der Ankunft in Deutschland. Ergebnisse einer Befragung in “Willkommensklassen” an Hamburger Berufsschulen [Social support for unaccompanied and accompanied refugee adolescents and young adults after arrival in Germany: Results of a survey in “welcome classes” at Hamburg vocational schools]. *Zeitschrift Für Flüchtlingsforschung*, 2(1), 3–31.
- Mouw, T., & Entwisle, B. (2006). Residential segregation and interracial friendship in schools. *American Journal of Sociology*, 112(2), 394–441. <https://doi.org/10.1086/506415>
- Neckerman, H. J. (1996). The stability of social groups in childhood and adolescence: The role of the classroom social environment. *Social Development*, 5, 131–145.
- Noels, K. A., Leavitt, P. A., & Clément, R. (2010). To see ourselves as others see us: On the implications of reflected appraisals for ethnic identity and discrimination. *Journal of Social Issues*, 66(4), 740–758.
- Rice, K. G., Cunningham, T. J., & Young, M. B. (1997). Attachment to parents, social competence, and emotional well-being: A comparison of Black and White late adolescents. *Journal of Counseling Psychology*, 44(1), 89–101. <https://doi.org/10.1037/0022-0167.44.1.89>
- Schweinberger, M., & Handcock, M. S. (2015). Local dependence in random graph models: Characterization, properties and statistical inference. *Journal of the American Statistical Association*, 77(3), 647–676. <https://doi.org/10.1111/rssb.12081>
- Seidman, S. B. (1981). Structures induced by collections of subsets: A hypergraph approach. *Mathematical Social Sciences*, 1(4), 381–396. [https://doi.org/10.1016/0165-4896\(81\)90016-0](https://doi.org/10.1016/0165-4896(81)90016-0)
- Shrum, W., Cheek, N. H., & Hunter, S. M. (1988). Friendship in school: Gender and racial homophily. *Sociology of Education*, 61, 227–239. <https://www.jstor.org/stable/2112441>
- Soetaert, K., & Kones, J. K. (2014). *Package NetIndices, network indices and food web descriptors in R*. Universidad Autónoma del Estado de Morelos. <http://www2.uaem.mx/r-mirror/web/packages/NetIndices/vignettes/NetIndices.pdf>
- Stewart, J., & Schweinberger, M. (2018). *mlergm: Multilevel exponential-family random graph models*. CRAN.R Project. <https://CRAN.R-project.org/package=mlergm>
- Stewart, J., Schweinberger, M., Bojanowski, M., & Morris, M. (2019). Multilevel network data facilitate statistical inference for curved ERGMs with geometrically weighted terms. *Network Science*, 59, 98–119. <https://doi.org/10.1016/j.socnet.2018.11.003>
- Strahl, B. (2020). *Heimerziehungsforschung in Deutschland: Eine Expertise für das Zukunftsforum Heimerziehung* [Institutional care research in Germany: An expert report for the future forum on institutional care]. Internationale Gesellschaft für erzieherische Hilfen.
- Verkuyten, M., & Steenhuis, A. (2005). Preadolescents’ understanding and reasoning about asylum seeker peers and friendships. *Journal of Applied Developmental Psychology*, 26(6), 660–679. <https://doi.org/10.1016/j.appdev.2005.08.002>

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Article

## Space and Interaction in Civil Society Organizations: An Exploratory Study in a US City

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### Abstract

Civil society organizations (CSOs) are sites for creating and strengthening social ties among participants. Ties are developed when participants in CSO convenings (meetings, events, activities) interact, but convenings vary in the amount of interaction they generate. Theory and research suggest that the physical spaces where convenings occur may impact participant interaction. However, previous methods lack sufficient scale to formally test related hypotheses. We introduce a method for collecting data at scale to examine how CSO convening spaces influence social interaction. The method—systematic social observation (SSO)—assembles comparable, quantitative data from many CSO convenings. As part of an exploratory study, we collected data from 99 CSO convenings from three organizations in Indianapolis, Indiana. For illustrative purposes, building on theories of spatial propinquity and configuration, we highlight two dimensions of spatial variation in CSO convenings—footprint and permeability—and examine how they relate to three indicators of participant interaction. Our findings suggest that controlling for the number of participants and other convening characteristics, medium-sized spaces foster more interaction than small or large ones. More broadly, this study demonstrates the viability of the SSO method for collecting data at scale and provides a model for future work on space, interaction, and networks.

### Keywords

civil society organizations; interaction; social network ties; space; systematic social observation

### Issue

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### 1. Introduction

Civil society organizations (CSOs) play essential roles in democratic societies (Edwards, 2014). Of central importance is bringing participants together at “convenings” (Baggetta & Bredenkamp, 2021)—meetings, events, and activities—where they interact with others, forming new social ties and strengthening existing ones (Rivera et al., 2010). While interaction in CSOs is common, its scope and form vary substantially across convenings (Blee, 2012; Eliasoph, 1998; Long, 2003; Staggenborg, 2020). What explains differences in interaction? While organi-

zational characteristics play a role (Andrews et al., 2010; Han, 2014; Weisinger & Salipante, 2005), the physical space where convenings occur is also a likely contributor (Small & Adler, 2019).

Social science research on space has flourished in recent years (Fuller & Low, 2017; Logan, 2012; Small & Adler, 2019). While research has examined settings from businesses to hospitals to schools, the perspective has made limited inroads into the study of civil society. Space is occasionally a dimension of analysis in ethnographic work on CSOs (e.g., Fine, 2012), and in studies of the geographic distribution of civic events (e.g., Sampson et al.,

2005). However, most studies of voluntary associations, civic engagement, and social movements leave the role of space implicit. Civil society scholars often note the critical role CSOs play in knitting society together through the interactions they facilitate (Baggetta, 2009; Fulton & Wood, 2018; Putnam, 2020). However, the field's insufficient attention to spatial analyses limits our understanding of how CSO convening spaces influence participant interactions.

This exploratory study examines the conditions conducive to informal interactions: What is the relationship of convening spaces to social interactions at CSO convenings? We analyze data from an exploratory study in Indianapolis, Indiana, that used systematic social observation (SSO) to collect comparable, quantitative, observational data from the convenings of three CSOs (Fulton & Baggetta, 2021). We find that the size of a convening space is related to the amount of informal interaction that occurs before and during the convening. In particular, medium-sized spaces facilitate greater interaction than smaller ones—and potentially also more than larger spaces (controlling for the number of participants and other convening characteristics). This finding suggests that participants interact more when they can easily move about a space but are constrained from spreading out too much. While data from the exploratory study are limited, our study highlights the importance of studying how physical space influences interaction in CSOs and is the first to apply SSO to the CSO context. Our study demonstrates the viability of using this method to collect such data and provides a model for future studies on space, interaction, and networks.

## 2. Theory and Hypotheses

CSOs bring people together in “convenings”—meetings, events, and activities (Baggetta & Bredenkamp, 2021). While convenings held by organizations like book clubs (Long, 2003), daycare centers (Small, 2009), choral societies (Baggetta, 2009), community organizing coalitions (Wood & Fulton, 2015), and social movement groups (Staggenborg, 2020) will look quite different, all of them function as “opportunities and inducements” for interaction among people connected to the CSO (Small, 2009, p. 62). Interactions at convenings can then lead to the formation or strengthening of social network ties (Rivera et al., 2010).

Convenings facilitate ties by repeatedly putting CSO participants close enough to interact (Small & Adler, 2019) and then, in some cases, giving them structured ways to do so (Han, 2014). Variations in participant proximity and the frequency and depth of interactions can produce different types of network ties. Participants who regularly see each other at convenings, but have no more substantial interaction, can build “invisible ties”—the “nodding relationships” among people who recognize one another (Felder, 2020). Interactions with some information exchange can produce “weak ties” through which

useful information flows (Granovetter, 1973). Longer, deeper interactions with substantial personal conversation can produce stronger, intimate ties that can be leveraged for social, material, and emotional support (Small, 2009).

A variety of factors influence the types of ties formed in a CSO, one of which is the level of interaction at its convenings. Studies based on ethnographic observation (Blee, 2012; Eliasoph, 1998; Long, 2003; Staggenborg, 2020), leader interviews (Andrews et al., 2010; Baggetta, 2009; Fulton, 2021b), participant surveys (Fulton, 2021a; Quintelier, 2013; Verba et al., 1995), and historical records (Skocpol, 2003) reveal substantial variation in the amount of convening interaction within organizations, across organizations, and over time.

Why might levels of interaction vary across CSO convenings? Organizational characteristics undoubtedly play a role. Some organizational structures, such as those that rely on deliberative decision-making, make interactive convenings more likely (Andrews et al., 2010; Baggetta, 2009; Han, 2014; Skocpol, 2003) and some convening organizers deliberately design activities (e.g., dividing participants into small groups) to allow or require participants to develop shared identities and stronger relationships (Braunstein et al., 2014; Han et al., 2021; Weisinger & Salipante, 2005). Beyond organizational characteristics, other dimensions such as time, culture, and environment can influence social interactions. For example, Can and Heath (2016) found that Turkish urban dwellers engaged in substantially more stationary interactions in public spaces on weekdays than Sundays. Guéguen et al. (2011) revealed that individuals who perceive cultural similarity with strangers (through the belief that they own similar objects) spend more time in proximity to those strangers; and McCreery et al. (2015) show that in virtual environments that loosely mimic real-world spaces, users interact more frequently when the environment encourages greater conversational intensity in each interaction.

In this study, we focus on the physical spaces where convenings are held and their impact on interactions among participants (Angelucci, 2019; Fuller & Low, 2017; Small & Adler, 2019). We theorize that convening spaces moderate CSO convenings' ability to facilitate social ties by impacting the amount of informal interaction among participants.

A convening space is a physical environment where a convening occurs, like a meeting room in an office building, the worship hall of a church, a café, or an outdoor public plaza. Fine (2010) conceives of convening space as an “arena” of activity that “provides participants with a context by which some performances are encouraged and others rejected” (Fine, 2010, p. 363). While groups adjust spaces to fit their purposes, the fixed nature of many space features can constrain or encourage various forms of convening activity. As Fine (2010, p. 364) summarizes: “Just as groups colonize settings, settings colonize groups.”

Our overarching hypothesis emerges from this literature: Space matters for participant interaction at CSO convenings, which sets the stage for creating and strengthening network ties. Space is not a unitary force, however. Several important dimensions of variation have been identified in spatial network analyses (Small & Adler, 2019). Two primary spatial mechanisms for fostering (or inhibiting) interaction are spatial propinquity (the physical closeness of participants) and spatial configuration (the segmentation of space).

### 2.1. Spatial Propinquity

Spatial propinquity is “the degree of physical proximity between actors” (Small & Adler, 2019, p. 115). While technically not a characteristic of space itself, the concept focuses on space features that encourage participants to be close together for long enough to interact. Studies have repeatedly shown that social network ties are more likely to form among people who are closer together (Small & Adler, 2019).

Of particular relevance to CSO convenings are studies of organizational settings in which individuals are placed very close together. For example, US Air Force soldiers became “best buddies” with soldiers randomly assigned to nearby sleeping bunks (Loether, 1960), and police academy cadets were more likely to befriend trainees assigned to adjacent classroom seats (Conti & Doreian, 2010). In settings like these, participants are assembled for a common purpose and put in very close physical proximity to one another—contexts that make longer, deeper interactions likely. Although these examples relate to very specific roles and ones that have tended to be relatively homogenous (i.e., white men), they provide evidence that spatial propinquity impacts the likelihood of social interaction even when controlling for racial and gender differences (as illustrated in Conti & Doreian, 2010).

CSO convenings may function similarly. The convening assembles participants and provides a shared focus. The space can then encourage participants to be closer together or farther apart. Space boundaries distinguish convening territory from surrounding space, and this space footprint helps determine how many participants come close enough to interact.

A footprint that limits the distance between participants is essential. Hall (1966) argued that Americans only interacted with others inside of 12 feet. While the maximum interaction distance varies somewhat by context (Albas, 1991; Gillespie & Leffler, 1983; Mehta, 2020), generally speaking, smaller distances increase interaction. For example, Allen (1977) demonstrated sharp declines in communication among engineers located farther apart, while companies whose workspaces foster employee “collisions” see increases in interactions (Waber et al., 2014). In a civic context, Zhao (1998) found that mobilizing for the 1989 Tiananmen Square protests was facilitated by high levels of spontaneous

interaction among students within Beijing’s walled university campuses.

Although smaller footprints increase propinquity, they may only increase social interaction to a point. Very crowded spaces restrict the ability of individuals to move through—even if a crowd as a whole can move from place to place (Sieben et al., 2017). In such situations, many people are close, but an individual can only interact with the handful of others next to them. If those adjacent people are not already intimate ties, interaction is unlikely (Hall, 1966). When strangers invade personal space, individuals’ stress levels rise significantly (Evans & Wener, 2007). If a convening space starts to feel like a crowded bus, an individual will have high levels of propinquity with everyone, but can only communicate with a small fraction of them, and may feel so uncomfortable that they choose to interact with no one.

These counteracting expectations for footprints suggest that ideal spaces must allow for a comfortable amount of space between participants, but not so much space that participants spread out beyond the zone of easy interaction. Experimental studies suggest that, within such Goldilocks parameters, individuals will optimally array themselves for interaction (e.g., Hendrick et al., 1974). As such, our hypothesis for space footprint is curvilinear:

Hypothesis 1: Relative to the number of participants, medium-sized convening spaces will have more interaction than small or large spaces.

Some CSO convenings take place outside. Unbounded outdoor spaces could function like very large indoor spaces, allowing participants to spread out, but the lack of a clear boundary could lead participants to cluster closer together. As such, our expectations for outdoor spaces are open-ended.

### 2.2. Spatial Configuration

Spatial configuration is “the segmentation of space into subunits with physical boundaries and pathways between them” (Small & Adler, 2019, p. 115). Examinations of cities (e.g., O’Brien et al., 2017), neighborhoods (e.g., Small, 2004), and buildings (e.g., Toker & Gray, 2008) have identified physical features that act as barriers to keep people apart or pathways that bring them together, with predictable impacts on social interaction. Marcuse (1997) distinguishes between different forms of spatial segregation and discusses their implications for social interaction. CSO convenings, however, require a tighter spatial focus as they often take place in a single, enclosed space.

One measure of spatial configuration is the *permeability* of a convening space—the ability the space affords to organizers to limit participation only to intended participants. Convenings are often private affairs—the CSO brings together a select set of



participants. Relatively impermeable spaces—those with limited, controllable access points—are more likely to shield participants from outsiders, which may encourage participants to interact more. For example, in business settings, employees with access to semi-private spaces (e.g., cubicles with high walls, offices with doors) compared to those in open floorplans interact with colleagues more often (Hatch, 1987) and form more network ties with co-workers (Fayard & Weeks, 2007; Taylor & Spicer, 2007; Zagenczyk et al., 2007). In the public sector, legislative assembly chambers and committee rooms that shield lawmakers from outside observers make for more collegial debates (Parkinson, 2012). In civil society settings, elite social clubs (Kendall, 2008) and broad-based fraternal orders (Skocpol, 2003) have long used exclusive spaces (country clubs, lodge halls) to allow members to interact and form strong social ties away from the eyes and ears of non-members. Similarly, Beijing's walled university campuses facilitated interaction among the 1989 Tiananmen Square protesters by shielding them from the gaze of authorities (Zhao, 1998). These studies all suggest a negative effect of space permeability on interaction at CSO convenings:

Hypothesis 2: More permeable convening spaces will have less interaction.

### 3. Data

We test our hypotheses using data from the first, exploratory wave of the Observing Civic Engagement project (Fulton & Baggetta, 2021), the first effort to use SSO techniques to collect data from community-based CSOs. The SSO approach sends trained observers into the field with a standardized form to collect detailed, quantitative, observational data on what occurs in social situations. Data are collected in closed-ended categories or counts based on preliminary qualitative observations and concepts in the literature. Non-participant observers—who can devote all of their attention to data collection—fill out the forms as the observed phenomenon occurs. SSO data can, therefore, be more detailed than data from surveys that rely on participant recall. SSO cannot, however, capture components of a situation that were not anticipated by the closed-ended items, as ethnography can. SSO has been fruitfully used to study a variety of phenomena, including police-citizen interactions (Reiss, 1971), the use of public spaces (Whyte, 1980), retail shopping behavior (Underhill, 1999), protest events (Schweingruber & McPhail, 1999), and urban disorder (Sampson & Raudenbush, 1999).

The SSO tool applied in the Observing Civic Engagement project collects data that describe characteristics of convenings—where they happen, who is there, what they do, and how they do it. Our tool is based on the one used by Baggetta and Bredenkamp (2021) to study college student organization convenings. We adapted that tool for use in community-based CSOs

throughout our 15-month study. We iteratively developed and revised items, categories, and observer instructions, expanding some areas of focus and eliminating others (for extended discussions of this process for the original tool see Baggetta & Bredenkamp, 2021; for our adaptation see Fulton & Baggetta, 2021). At the conclusion of the study, our tool included 97 items grouped into 10 thematic modules: physical space, participants, interaction, leadership, symbolic boundaries, norms and procedures, activities, decision-making, public-sphere focus, and group style.

We observed convenings held by three large CSOs: a business association, a community organizing coalition, and a neighborhood council. We selected these types of organizations for several reasons. First, each organization is a nonprofit membership organization whose members are organizations (businesses join the business association; religious congregations and other individual membership organizations join the community organizing coalition; neighborhood associations and other major community institutions join the neighborhood council). Second, while there are no data on the prevalence of organizations-of-organizations among all CSOs, similar organizations exist in every major US city and in many smaller cities as well (Bennett, 2011; McCabe, 2016; Wood & Fulton, 2015). Third, the organizations meet regularly and host a variety of convenings for members, constituents, and (occasionally) the general public. Lastly, the organizations vary somewhat in their political orientations (the neighborhood coalition hews to the center, the business association is center-right, and the community organizing coalition is center-left) and collectively represent the broad center of American politics at the local level.

All three organizations are located in the US in the city of Indianapolis, Indiana. Indianapolis, the capital of and largest city in the state of Indiana, is the 33rd most populous of the 384 metropolitan statistical areas (MSAs) in the US (US Census Bureau, 2022) and the 159th most racially/ethnically diverse (Logan, 2011). Politically, Marion County, the central county of the Indianapolis MSA, leans Democratic, voting roughly 60% for the Democratic candidate in the last two presidential elections, while its surrounding counties lean Republican, voting roughly 60% for the Republican candidate (“Election 2016: Indiana results,” 2017; “Presidential election results,” 2020).

The selection of organizations with similar organizational structures located in the same city provided advantages for an exploratory study. We could “hold constant” macro-political and economic contexts and local civic culture while looking for variation across an array of convening types and locations. Of course, such a design necessarily limits the generalizability of findings as interaction dynamics vary substantially across contexts (Sorokowska et al., 2017). While our exploratory, single-city study can offer a proof-of-concept that an SSO approach to studying convenings has analytic potential, it will leave open

questions about variation driven by local population demographics, national and local interaction cultures, organizational types, and other contextual dimensions.

Within our limited sample of organizations, we attempted to observe every convening held by the three organizations during the study period. The organizations collectively held 184 convenings during the study; we observed 99 of them. We missed observations for several reasons including one organization barring us from top-level board meetings, ticketed events selling out before we could schedule an observer, last-minute schedule changes leaving observers unable to attend, and other logistical difficulties. A wide range of convening types was observed including business/planning meetings, member training workshops, networking events, community outreach sessions, and protests.

Observations were conducted by research assistants who had been oriented to the overall project, educated on coding categories and definitions, and trained on entering data during convenings. Data were entered on tablet computers into an online survey form hosted on Qualtrics.com (see Supplementary File 3). Unlike ethnographers, research assistants were not trying to observe all aspects of a convening; rather they focused on predetermined areas of interest that they recorded in predefined categories. This narrowing of focus, along with the easy-to-use electronic survey format, limited the cognitive demands of coding a convening in progress. Before conducting official observations, research assistants conducted practice observations (using the tablet computer survey tool) at convenings held by organizations not in the sample. To ensure accurate and consistent codes, observers regularly debriefed their observations with the project manager and with each other. In addition, 36 convenings were observed by more than one observer to assess inter-observer reliability. Coders regularly agreed on most items and most disagreements were due to confusion over code definitions which were clarified through additional training. When multiple debriefings suggested that coder disagreements were a function of categories or definitions, we revised the tool, fielded the new version, and assessed again. Given the small number of observations between revisions, we did not calculate intercoder reliability statistics at each iteration (or for the study overall, as the items had changed). Items that observers continued to struggle with were removed from the tool.

Because some items were revised or added over the course of the study, the effective Ns in our data vary from variable to variable. Older, established items have more useable cases than newer or revised items.

## 4. Measures

### 4.1. Dependent Variables: Interaction Through Conversation

While theoretically some interactions can be non-verbal (hugs, handshakes, winks), we limit our consideration

of interaction to two or more people intentionally talking to each other. Our analytic concern is the density of conversational interaction among a set of collocated persons. Conceptually, then, we are informed by Goffman's (1983, p. 2) definition of social interaction as "that which uniquely transpires in...environments in which two or more individuals are physically in one another's response presence," while focusing more narrowly on conversation as a type of interaction that can lead to network tie creation or maintenance. Three of our measures of conversational interaction had a sufficient number of useable cases for analysis: (a) whether informal conversation occurred *during* the convening, (b) the number of convening participants who arrived at the space and conversed *before* the convening began, and (c) the number of convening participants who remained in the space conversing *after* the convening ended. Each measure provides a different perspective on convening-level interactions that foster network ties.

The first measure offers a broad view of interaction during the planned portion of a convening. We capture whether *any informal conversation occurred during the convening*. Informal conversation is coded in contrast to conversation that has been requested and structured by the conveners (e.g., facilitated discussions, planned deliberations, professional "networking"). Informal conversation can happen before, after, between, and—illicitly—during structured activities. In all cases, informal conversation is talk that is not requested or structured by the conveners (making it easily visible to observers). We collected data on informal conversations as part of a battery of 24 activity options included on the SSO form (for all items, categories, and code definitions used in this analysis see the Supplementary Files). Most of the listed activities involve interaction of some kind, but informal conversation is conceptually distinct, as it is both essentially interactive (one cannot converse alone) and participant-driven (other interactions are prompted by conveners). We measure informal conversation as a dichotomous variable where 1 indicates that informal conversing occurred.

While most of the time that participants spend at a convening is during the scheduled and planned convening activity, pre- and post-convening time often offers the kind of unstructured situation most suited to interaction—especially if the formal proceedings are largely non-interactive (e.g., watching a movie). In these pre- and post-convening moments, when conveners have the least control over participant behavior, the effects of space characteristics may be most evident. As such, our second measure is the *number of participants present seven minutes before the convening who were engaged in extended pre-convening conversation*, and our third measure is the *number of convening participants who were engaged in extended post-convening conversation seven minutes after a convening ends*. The pre-convening count happens relative to the scheduled convening start time. The post-convening count

happens relative to the actual conclusion time (i.e., when planned activity ends), which does not always correspond to the scheduled end time. Early observations suggested that seven minutes pre- and post-convening were appropriate times for counts relative to trends in participant arrivals and departures and other start- and end-of-convening attention demands on observers.

#### 4.2. Independent Variables: Space Characteristics

Our first independent variable captures the space's physical footprint (i.e., size). Convening spaces can be inside or outside and can be of varying sizes. We capture *space footprint* features through four binary indicator variables: outside, inside-large (suitable for 100+ people, like a gymnasium), inside-medium (suitable for 26–99 people, like a lecture hall), inside-small (suitable for 25 people or fewer, like a meeting room). Inside-medium is the excluded reference category, allowing us to best test our nonlinear footprint hypothesis. Once we control for the number of participants and other convening characteristics, we expect both small and large inside spaces to have less interaction than medium-sized spaces. Relationships may differ across inside and outside spaces.

*Space permeability* is captured through an indicator for whether a space is controllable by the convener. A *convener controllable* space is one where the physical infrastructure allows the convener to effectively exclude unintended participants—often a room with a door that closes. Uncontrolled spaces are those where participants—intended or not—can enter the space without encountering a physical barrier. Meetings held in cafés or events in public parks are not convener controllable spaces. This measure is a dichotomous variable where 1 indicates a convener controllable space.

#### 4.3. Controls

Several factors beyond the convening's physical space could influence its estimated relationship with interactions. Of primary concern are the choices made by conveners—they must decide where to hold the convening and what to do during it. However, these decisions may not be primarily (or even largely) a function of space characteristics; organizers often face constraints in the spaces available. Still, a convener could select one space over another for reasons that might include geographic location, meaningfulness to the participants, or suitability for certain activities (e.g., choosing an auditorium for a public panel discussion). Similarly, while conveners likely choose activities that need to be done, they may also choose activities because of the availability of space types. For example, a convener with access to an auditorium with rows of fixed seats might design a training event that primarily features lectures rather than group breakout sessions. As such, we control for decisions made by conveners about the convening's nature that could shape interactions. In particular,

we control for convening types that typically include significant amounts of *intended interaction*. This measure is a dichotomous variable where 1 indicates a business meeting (where strategy discussion is typically intended), a member-benefit activity (where networking is typically intended), or a social/recreational event (where socializing is typically intended). These types stand in contrast to other convening types (performance/game, recruitment/call-out, rehearsal/practice, other member-based activity, other convening types) that could include interaction, but that also could be executed in ways where intended interaction is limited or absent.

Conveners also have options about who to invite. Convenings can be fully public (anyone can attend without registration or credentials, like an open meeting), excludable public (anyone can register and get credentials, but no one can enter without them, like a ticketed event), and exclusive (only people designated by the organization can attend, like an invitation-only event). We include the dichotomous variable *restricted attendance*, where 1 is exclusive or excludable public and 0 is fully public.

Beyond the selected space and planned activities, the number of participants sets an interaction baseline; with more people present, more interaction can occur. We include the log of the number of participants.

## 5. Results

How much interaction occurs in CSO convenings? Table 1 presents descriptive statistics. The statistics for our interaction variables show that about two-fifths of convenings included informal conversation (i.e., talk not prompted or structured by conveners) during the convening. During the other three-fifths of convenings, participants only interacted “formally” as requested by conveners.

The moments before and after convenings are other times for interaction. The distributions of convening pre- and post-talkers are skewed. At seven minutes prior to the posted start time, the average convening had 20 people engaged in conversation, while the median convening had nine. At seven minutes after the actual end time, the average convening had 28 people engaged in conversation, while the median convening had 13. Pre- and post-convening talk does not appear to replace informal conversation during a convening. There is no statistically significant difference between the numbers of pre- or post-convening talkers at convenings with and without informal conversation during the convening.

While the average values demonstrate that conversational interaction regularly occurs, they mask substantial variation among convenings (the ranges and standard deviations for the interaction measures are quite large)—which space characteristics may help explain. In what ways are features of physical space related to social interaction at convenings? Table 2 presents the results of regression models explaining variation in our three dependent variables. While we use consistent sets

**Table 1.** Descriptive statistics for interactions, space characteristics, and convening characteristics.

	N	Mean	Standard Deviation	Minimum	Maximum
Conversational interaction					
Any informal conversation	99	0.41	0.50	0	1
# of pre-convening talkers	68	20.22	33.67	0	200
# of post-convening talkers	68	28.00	60.13	0	400
Space characteristics					
Small footprint	92	0.16	0.37	0	1
Medium footprint	92	0.59	0.50	0	1
Large footprint	92	0.20	0.40	0	1
Outdoors	92	0.05	0.23	0	1
Convener controllable	99	0.82	0.39	0	1
Convening characteristics					
Intended interaction	99	0.81	0.40	0	1
Restricted attendance	99	0.84	0.37	0	1
Total # of participants	99	59.51	114.21	2	980

Note: The log of total participants is used in the analyses. Source: Based on the authors' analysis of the first wave of the Observing Civic Engagement project.

of independent variables throughout our analyses, we tailor our models to each dependent variable. For the dichotomous *any informal conversation* measure, we use a logit model. We use negative binomial models for the count variables.

The relatively small number of useable cases per model limits the precision of our estimates (i.e., standard errors are relatively large). Still, our tests for relationships between space footprint and interaction loosely support Hypothesis 1. Across all three models,

the coefficients for small and large footprints (relative to medium-sized footprints) are negative, and in two instances reach conventional statistical significance at  $p < .05$ . Controlling for the number of participants and other convening characteristics, compared to medium spaces, small spaces have lower estimated levels of conversational interaction among participants before, during, and after each convening.

Regarding permeability, the estimates for convener controllable spaces are positive for socializing during

**Table 2.** Estimated effects of space characteristics on conversational interaction.

	Any informal conversation	# of pre-convening talkers	# of post-convening talkers
Space characteristics			
Small footprint <sup>a</sup>	-2.557* (1.10)	-0.742* (0.34)	-0.432 (0.33)
Large footprint <sup>a</sup>	-0.216 (0.68)	-0.324 (0.30)	-0.282 (0.33)
Outdoors <sup>a</sup>	0.001 (1.26)	0.117 (0.49)	-0.573 (0.50)
Convener controllable	0.754 (0.71)	-0.119 (0.27)	0.204 (0.29)
Model type	Logit	Neg. Binomial	Neg. Binomial
Alpha (ln)		-0.567**	-0.541**
Model log-likelihood	-53.612	-216.930	-233.875
$\chi^2$	17.519*	45.968***	62.583***
Pseudo-R <sup>2</sup>	0.140	0.096	0.118
N	92	61	61

Notes: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; standard errors in parentheses; all models control for intended interaction, restricted attendance, and the log of total participants; <sup>a</sup> medium footprint spaces are the reference category. Source: Based on the authors' analysis of the first wave of the Observing Civic Engagement project (for complete sets of estimates, see Supplemental File 1, Table S1).

the convening and post-convening conversation, as anticipated by Hypothesis 2, but negative for pre-convening conversation. None of these relationships, however, reach conventional levels of statistical significance. The estimated magnitudes of the relationships for space permeability are small (and substantially smaller than the estimates for space size), suggesting that space permeability may not impact interaction, at least in the way that we have measured it, or that substantially larger samples are needed to detect a significant relationship.

To aid in the interpretation of results from these non-linear models, we derived predicted probabilities (from the logit model) and predicted values (from the negative binomial models) for the impacts of space footprint on conversational interaction. All predictions are for a convening where conveners intend participants to interact during the convening, where the convener controls the space, and where attendance is restricted. Predictions are generated for the mean number of convening participants within the relevant footprint category (generating estimates using the overall mean for participants does not make sense for small spaces where 60 people could not fit in the space).

As the regression results suggest, the predicted probability of any informal conversation occurring at a convening is quite similar for convenings held in medium (.46), large (.46), and outdoor (.50) spaces. Close to half of all such convenings are expected to have some side conversation unprompted by conveners. Convenings in small spaces, on the other hand, have a very low predicted probability (.06). Less than 10% of small convenings have unprompted side conversations. Some of the differences between small spaces and larger ones may be explained by high rates of intended interaction in small convenings; very small groups are convened in very small spaces so participants can engage in structured discussions. The hypothesized effects of footprint are likely also playing a role. Small spaces are inhibiting informal conversation as participants refrain from side conversations in settings where most or all participants can see the conversation occurring and hear what is said.

The substantial difference between small- and medium-sized spaces holds for pre-convening conversations as well. Predictions from the pre-talk model suggest that seven minutes prior to the convening, the typical small-space convening has about five participants talking while the typical medium-space convening has about 12 participants talking. In medium-sized spaces where there is more room to move about to find conversation partners and to create enough distance from other participants to attain a semblance of private conversation—more people interact.

The predicted number of pre-convening talkers for large spaces and outdoor spaces is about 26 and 28 respectively, suggesting that the positive impact of the larger number of participants in these spaces is overshadowing any potential negative effect of a larger space footprint (because the predicted values are derived from

the mean number of participants for each space size). The same is true for talking after convenings. The predicted number of post-convening talkers scales with the number of participants: small (8), medium (14), large (38), outside (18). While participants are spreading out more at convenings in large spaces, on average there are enough participants to ensure that people can still relatively easily engage in informal conversation despite the additional space.

## 6. Conclusion

Scholarly attention to the relationship between physical space and social ties is increasing (Small & Adler, 2019); its application to civil society settings, however, has been limited. We have taken an initial step toward expanding that focus by examining settings where much civil society activity occurs: CSO convenings. Using data from an exploratory study of CSOs, we analyzed the relationship of space characteristics to the amount of participant interaction in a set of convenings. Although our study is limited to three CSOs in one city, we found evidence suggesting that the size of a convening space may have a curvilinear relationship with interaction—small spaces have less interaction than medium-sized spaces; large spaces may also have less interaction net of the number of participants, although it is difficult to determine given the constraints of a small sample size. Evidence that spaces with features that shield participants from nonparticipants is equivocal; more information is needed.

Beyond the limited specific findings, our exploratory study provides proof-of-concept that SSO works for studying space and interaction in CSOs and provides a foundation for expansions. As an exploratory study intended, in part, to develop, refine, and test a tool, our sample was limited in scope, and data collection tools changed over time. Subsequent rounds of data collection with consistent variables, more-precise measures, more organizations, and more convenings will open opportunities to address more areas of theoretical interest. For example, future studies can include additional spatial propinquity and configuration measures such as the subdivisions of a space, the linear distance across different spaces, the measured area or maximum legal occupancy of the convening space, and the number of intermediate spaces between two or more participants. In addition to spatial propinquity and configuration, tremendous variation exists in the composition of convening spaces (Small & Adler, 2019). Moveable objects like chairs, tables, and podiums and built-in features like stairs, stages, and pillars break up a space and can encourage or inhibit interaction (e.g., Underhill, 1999; Whyte, 1980). More broadly, spatial morphology and the transformability of a space can influence organizers' control over a space and a convening's ability to facilitate social interaction (Habraken, 2000; see also the research developed by the Spatial Morphology Group at Chalmers University).

Methodological extensions of our SSO approach using photos or videos (e.g., Pallotti et al., 2020; Odgers et al., 2012) could allow for even more fine-grained accounting of convening spaces and set-ups, while further reducing the cognitive demands on coders, who could view materials multiple times. Combining such data with passively-collected interaction data (e.g., using RFID tags; see Cattuto et al., 2010) or surveys of participants (e.g., using field surveys at convenings; see Fisher et al., 2005), could provide additional insights into the relationship between space and social interaction.

Substantive extensions of the work will need to branch out well beyond a single city. Comparisons across neighborhoods, cities, states, regions, and countries will allow for the examination of the ways that space characteristics intersect with local and national cultures. Broader organizational samples within those geographies will allow for more careful examinations of variations in impacts across demographic groups, enabling researchers to ask, for example, whether certain spatial arrangements extend or reduce the marginalization of demographic groups in deliberations at convenings.

There are also important extensions of this work to be done at higher levels of analysis. Local markets for convening spaces can be tight, especially for marginalized groups (Lefebvre, 2020), meaning different CSOs may often rent, borrow, or share the same spaces. Future work should move beyond an analysis of space alone and into the intersection of space and organization. How much does interaction within one organization vary across different spaces—or across different organizations that use the same space at different times?

Findings from studies that successfully build on this exploratory study will have implications for practice and policy. The physical spaces where convenings are held impact interactions among participants. If CSOs want to foster interaction, conveners should seek spaces that are sized and designed most effectively to do so. In quarters that are too tight, participants may find it awkward to interact with each other, but with too much space they may spread to the point of non-interaction. Policymakers, architects, and developers should take note as well. The spaces available for CSO convenings are part of “social infrastructure” (Klinenberg, 2018)—elements of the built environment that foster social connection and civic engagement. The institutions that build, maintain, and provide such spaces in the hopes of fostering civic benefits should design spaces with the most interaction-amenable features possible.

More broadly, CSO convenings are vital sites for the creation and strengthening of network ties. The physical spaces where they occur, then, are the settings where valuable information is passed through weak ties (Granovetter, 1973), where communities extend networks that can foster a shared identity (Putnam, 2020), and where both elites (Kendall, 2008) and marginalized groups (Han et al., 2021) build the relationships that form the foundations of political power. To better under-

stand, and potentially shape, the trajectories of individuals, communities, and groups, a focus on CSO convening spaces and the interactions they foster will be important.

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### Conflict of Interests

The authors declare no conflicts of interest.

### Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

### References

- Albas, C. (1991). Proxemic behavior: A study of extrusion. *Journal of Social Psychology, 131*(5), 697–702.
- Allen, T. J. (1977). *Managing the flow of technology*. MIT Press.
- Andrews, K. T., Ganz, M., Baggetta, M., Han, H., & Lim, C. (2010). Leadership, membership, and voice: Civic associations that work. *American Journal of Sociology, 115*(4), 1191–1242.
- Angelucci, A. (2019). Spaces of urban citizenship: Two European examples from Milan and Rotterdam. *Social Inclusion, 7*(4), 131–140.
- Baggetta, M. (2009). Civic opportunities in associations: Interpersonal interaction, governance experience, and institutional relationships. *Social Forces, 88*(1), 175–200.
- Baggetta, M., & Bredenkamp, D. M. (2021). Systematic

- social observation in the study of civil society organizations. *Sociological Methods and Research*, 50(4), 1694–1724.
- Bennett, R. J. (2011). *Local business voice: The history of chambers of commerce in Britain, Ireland, and revolutionary America, 1760–2011*. Oxford University Press.
- Blee, K. M. (2012). *Democracy in the making: How activist groups form*. Oxford University Press.
- Braunstein, R., Fulton, B. R., & Wood, R. L. (2014). The role of bridging cultural practices in racially and socioeconomically diverse civic organizations. *American Sociological Review*, 79(4), 705–725.
- Can, I., & Heath, T. (2016). In-between spaces and social interaction: A morphological analysis of Izmir using space syntax. *Journal of Housing and the Built Environment*, 31(1), 31–49.
- Cattuto, C., Van den Broeck, W., Barrat, A., Colizza, V., Pinton, J., & Vespignani, A. (2010). Dynamics of person-to-person interactions from distributed RFID sensor networks. *PLoS ONE*, 5(7). <https://doi.org/10.1371/journal.pone.0011596>
- Conti, N., & Doreian, P. (2010). Social network engineering and race in a police academy: A longitudinal analysis. *Social Networks*, 32, 30–43.
- Edwards, M. (2014). *Civil society*. Polity Press.
- Election 2016: Indiana results. (2017, August 1). *New York Times*. <https://www.nytimes.com/elections/2016/results/indiana>
- Eliasoph, N. (1998). *Avoiding politics: How Americans produce apathy in everyday life*. Cambridge University Press.
- Evans, G. W., & Wener, R. E. (2007). Crowding and personal space invasion on the train: Please don't make me sit in the middle. *Journal of Environmental Psychology*, 27(1), 90–94.
- Fayard, A. L., & Weeks, J. (2007). Photocopiers and water-coolers: The affordances of informal interaction. *Organization Studies*, 28(5), 605–634.
- Felder, M. (2020). Strong, weak and invisible ties: A relational perspective on urban coexistence. *Sociology*, 54(4), 675–692.
- Fine, G. A. (2010). The sociology of the local: Action and its publics. *Sociological Theory*, 28(4), 355–376.
- Fine, G. A. (2012). *Tiny publics: A theory of group action and culture*. SAGE.
- Fisher, D., Stanley, K., Berman, D., & Neff, G. (2005). How do organizations matter? Mobilization and support for participants at five globalization protests. *Social Problems*, 52(1), 102–121.
- Fuller, M. G., & Low, M. (2017). Introduction: An invitation to spatial sociology. *Current Sociology*, 65(4), 469–491.
- Fulton, B. R. (2021a). Bridging and bonding: Disentangling two mechanisms underlying the diversity-performance relationship. *Nonprofit and Voluntary Sector Quarterly*, 50(1), 54–76.
- Fulton, B. R. (2021b). Engaging differences: How socially diverse organizations can mobilize their resources more effectively. *Social Forces*, 99(4), 1518–1546.
- Fulton, B. R., & Baggetta, M. (2021). Observing civic engagement: Using systematic social observation to study civil society organization convenings. *Voluntas*. Advance online publication. <https://doi.org/10.1007/s11266-021-00418-7>
- Fulton, B. R., & Wood, R. L. (2018). Civil society organizations and the enduring role of religion in promoting democratic engagement. *Voluntas*, 29(5), 1068–1079.
- Gillespie, D. L., & Leffler, A. (1983). Theories of nonverbal behavior: A critical review of proxemics research. *Sociological Theory*, 1, 120–154.
- Goffman, E. (1983). The interaction order. *American Sociological Review*, 48(1), 1–17.
- Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, 78(6), 1360–1380.
- Guéguen, N., Martin, A., & Meineri, S. (2011). Similarity and social interaction: When similarity fosters implicit behavior toward a stranger. *Journal of Social Psychology*, 151(6), 671–673.
- Habraken, N. J. (2000). *The structure of the ordinary: Form and control in the built environment*. MIT Press.
- Hall, E. T. (1966). *The hidden dimension*. Doubleday.
- Han, H. (2014). *How organizations develop activists: Civic associations and leadership in the 21st century*. Oxford University Press.
- Han, H., McKenna, E., & Oyakawa, M. (2021). *Prisms of the people: Power & organizing in twenty-first-century America*. University of Chicago Press.
- Hatch, M. J. (1987). Physical barriers, task characteristics, and interaction activity in research and development firms. *Administrative Science Quarterly*, 32(3), 387–399.
- Hendrick, C., Giesen, M., & Coy, S. (1974). The social ecology of free seating arrangements in a small group interaction context. *Sociometry*, 37(2), 262–274.
- Kendall, D. (2008). *Members only: Elite clubs and the process of exclusion*. Rowman and Littlefield.
- Klinenberg, E. (2018). *Palaces for the people: How social infrastructure can help fight inequality, polarization, and the decline of civic life*. Crown.
- Lefebvre, S. (2020). Space, religious diversity, and negotiation processes. *Social Inclusion*, 8(3), 251–261.
- Loether, H. J. (1960). Propinquity and homogeneity as factors in the choice of best buddies in the Air Force. *Pacific Sociological Review*, 3(1), 18–22.
- Logan, J. R. (2011). *Diversity & disparities: Racial and ethnic diversity, 1980–2010*. <https://s4.ad.brown.edu/projects/diversity/Diversitysorting/Default.aspx>
- Logan, J. R. (2012). Making a place for space: Spatial thinking in social science. *Annual Review of Sociology*, 38, 507–524.
- Long, E. (2003). *Book clubs: Women and the uses of reading in everyday life*. University of Chicago Press.
- Marcuse, P. (1997). The enclave, the citadel, and the ghetto: What has changed in the post-Fordist US city.

- Urban Affairs Review*, 33(2), 228–264.
- McCabe, B. J. (2016). *No place like home: Wealth, community, and the politics of homeownership*. Oxford University Press.
- McCreery, M. P., Vallett, D. B., & Clark, C. (2015). Social interaction in a virtual environment: Examining socio-spatial interactivity and social presence using behavioral analytics. *Computers in Human Behavior*, 51, 203–206.
- Mehta, V. (2020). The new proxemics: COVID-19, social distancing, and sociable space. *Journal of Urban Design*, 25(6), 669–674.
- O'Brien, J., Velez, L. G., & Austwick, M. Z. (2017). Visualizing the impacts of movement infrastructures on social inclusion: Graph-based methods for observing community formations in contrasting geographic contexts. *Social Inclusion*, 5(4), 132–146.
- Ogden, C. L., Capsi, A., Bates, C. J., Sampson, R. J., & Moffitt, T. E. (2012). Systematic social observation of children's neighborhoods using Google Street View: A reliable and cost-effective method. *Journal of Child Psychology and Psychiatry*, 53(10), 1009–1017.
- Pallotti, F., Weldon, S. M., & Lomi, A. (2020). Lost in translation: Collecting and coding data on social relations from audio-visual recordings. *Social Networks*, 69, 102–112.
- Parkinson, J. R. (2012). *Democracy and public space*. Oxford University Press.
- Presidential election results: Biden wins. (2020, November 3). *New York Times*. <https://www.nytimes.com/interactive/2020/11/03/us/elections/results-president.html>
- Putnam, R. D. (2020). *The upswing*. Simon & Schuster.
- Quintelier, E. (2013). Socialization or self-selection? Membership in deliberative associations and political attitudes. *Nonprofit and Voluntary Sector Quarterly*, 42(1), 174–192.
- Reiss, A. J. (1971). *The police and the public*. Yale University Press.
- Rivera, M. T., Soderstrom, S. B., & Uzzi, B. (2010). Dynamics of dyads in social networks: Assortative, relational, and proximity mechanisms. *Annual Review of Sociology*, 36, 91–115.
- Sampson, R. J., McAdam, D., MacIndoe, H., & Weffer-Elizondo, S. (2005). Civil society reconsidered: The durable nature and community structure of collective civic action. *American Journal of Sociology*, 111(3), 673–714.
- Sampson, R. J., & Raudenbush, S. W. (1999). Systematic social observation of public spaces: A new look at disorder in urban neighborhoods. *American Journal of Sociology*, 105(3), 603–651.
- Schweingruber, D., & McPhail, C. (1999). A method for systematically observing and recording collective action. *Sociological Methods and Research*, 27(4), 451–498.
- Sieben, A., Schumann, J., & Seyfried, A. (2017). Collective phenomena in crowds—Where pedestrian dynamics need social psychology. *PLoS ONE*, 12(6). <https://doi.org/10.1371/journal.pone.0177328>
- Skocpol, T. (2003). *Diminished democracy: From membership to management in American civic life*. University of Oklahoma Press.
- Small, M. L. (2004). *Villa Victoria: The transformation of social capital in a Boston barrio*. University of Chicago Press.
- Small, M. L. (2009). *Unanticipated gains: Origins of network inequality in everyday life*. Oxford University Press.
- Small, M. L., & Adler, L. (2019). The role of space in the formation of social ties. *Annual Review of Sociology*, 45, 111–132.
- Sorokowska, A., Sorokowski, P., Hilpert, P., Cantarero, K., Frackowiak, T., Ahmadi, K., Alghraibeh, A., Aryeetey, R., Bertoni, A., Bettache, K., Blumen, S., Błażewska, M., Bortolini, T., Butovskaya, M., Castro, F. N., Cetinkaya, H., Cunha, D., David, D., David, O. A., . . . Pierce, J. D., Jr. (2017). Preferred interpersonal distances: A global comparison. *Journal of Cross-Cultural Psychology*, 48(4), 577–592.
- Staggenborg, S. (2020). *Grassroots environmentalism*. Cambridge University Press.
- Taylor, S., & Spicer, A. (2007). Time for space: A narrative review of research on organizational spaces. *International Journal of Management Reviews*, 9(4), 325–346.
- Toker, U., & Gray, D. O. (2008). Innovation spaces: Workspace planning and innovation in U.S. university research centers. *Research Policy*, 37, 309–329.
- Underhill, P. (1999). *Why we buy: The science of shopping*. Simon & Schuster.
- US Census Bureau. (2022). *Explore census data*. <https://www.census.gov/data.html>
- Verba, S., Schlozman, K. L., & Brady, H. E. (1995). *Voice and equality*. Harvard University Press.
- Waber, B., Magnolfi, J., & Lindsay, G. (2014, October 1). Workspaces that move people. *Harvard Business Review*. <https://hbr.org/2014/10/workspaces-that-move-people>
- Weisinger, J., & Salipante, P. (2005). A grounded theory for building ethnically bridging social capital in voluntary organizations. *Nonprofit and Voluntary Sector Quarterly*, 34(1), 29–55.
- Whyte, W. H. (1980). *The social life of small urban spaces*. Project for Public Spaces.
- Wood, R. L., & Fulton, B. R. (2015). *A shared future: Faith-based organizing for racial equity and ethical democracy*. University of Chicago Press.
- Zagenczyk, T. J., Murrell, A. J., & Gibney, R. (2007). Effects of the physical work environment on the creation of individual- and group-level social capital. *International Journal of Organizational Analysis*, 15(2), 119–135.
- Zhao, D. (1998). Ecologies of social movements: Student mobilization during the 1989 prodemocracy movement in Beijing. *American Journal of Sociology*, 103(6), 1493–1529.



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