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Place, social capital, and mental health: A mixed-methods case study of a community-based intervention

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A B S T R A C T

This study collaborated with the "Neighbourhoods in Solidarity" (NS) action research intervention to understand place, social capital, and mental health for older adults in one Swiss town. It used a longitudinal mixed-methods design, combing a pre/post survey with ethnographic observations. It found that place was a recurring theme throughout the NS intervention and how the NS were able to build social capital. Older adults who participated in the NS experienced an increase in structural social capital, but many participants already had high levels of structural social capital before the intervention. Participants did not experience a significant change in cognitive social capital, but this may have been due to a general decline in cognitive social capital in the area. Neither changes in cognitive nor structural social capital predicted depressive symptoms after one year.

1. Introduction

There is an overall lack of consistent evidence on social capital (SC) interventions for older adults (Coll-Planas et al., 2017). SC interventions for mental health depend on contexts, but the role that place plays in these interventions needs to be further investigated (Ehsan et al., 2019). This study aims to highlight the role that place, which refers to the social and spatial construction of a given space, could play during one SC intervention for mental health. It also aims to investigate whether and how the intervention improved SC, and to see if these changes were subsequently associated with depressive symptoms. This study uses a longitudinal mixed-methods design to quantitatively measure changes in SC and mental health outcomes, and to qualitatively investigate and document place-related processes related to building SC.

1.1. SC and mental health promotion in older adults

SC is an umbrella term that broadly refers to the social resources that individuals and groups can access via their social connections (Kawachi and Berkman, 2000; Moore and Kawachi, 2017). SC interventions enhance the quality and quantity of these relationships in different settings (Ehsan et al., 2019). Even though there are many ways to define and operationalize SC, this study focuses on cognitive (perceived) and structural (participatory) SC. Cognitive SC refers to perceptions of social cohesion, trust, and reciprocity within individuals and groups. Structural SC refers to participation in community groups and associations (McKenzie and Harpham, 2006). That said, researchers have also distinguished between bonding, bridging, and linking SC (Moore and Kawachi, 2017), and some would even argue that social identification is a form of SC (Fong et al., 2019; Ehsan et al., 2019). Other scholars have viewed SC as a process (Campbell et al., 1999; Campbell and Jovchelovitch, 2000). While it is important to be precise in how SC is defined (Carpiano and Hystad, 2011), it is also useful to consider that dimensions of SC can overlap and influence one another. For example, cognitive aspects of SC (such as trust) could influence structural aspects (such as participation), and vice versa.

SC is a known predictor of mental health in older adults (Cao et al., 2015; Forsman et al., 2012; Haseda et al., 2018) and on trajectories of depression in old age (Park, 2017). Researchers have shown that perceived social cohesion (cognitive SC) predicts depression for older adults in many countries (Baranyi et al., 2019; Ruiz et al., 2019; Ruiz et al., 2018). A study on twins showed that cognitive SC was associated with depressive symptoms, without confounding by genetic or environmental factors (Cohen-Cline et al., 2018). The evidence on cognitive SC as a predictor of mental health is convincing, whereas the relationship between structural SC and mental health seems to vary by context (Ehsan et al., 2015). In older adults, structural SC is protective against depression in some countries (e.g., Japan, Finland, Sweden, Korea)

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(Forsman et al., 2012; Haseda et al., 2018; Park, 2017) and not others (e.g., China) (Cao et al., 2015). These differences may be due to a variety of socio-environmental factors, as well as the amount of structural SC individuals access. For example, too much involvement in different groups (structural SC) can increase depressive symptoms (Gallagher et al., 2019) and could result in stress or obligations that can have detrimental consequences (Ehsan et al., 2019).

SC has high potential for health promotion (Hawe and Shiell, 2000; Maass et al., 2016), and researchers have investigated SC interventions to promote mental health (Flores et al., 2018). Scholars have concluded that the burden of poor mental health could be improved by targeting cognitive SC (Fone et al., 2014), and that health policies should focus on improving the physical environment and social ties within communities (Baranyi et al., 2019). However, evidence on SC interventions for health in older adults remains inconclusive (Coll-Planas et al., 2017). This may be because SC interventions are not always comparable: They are defined broadly and have taken place on different continents (e.g., Asia, Oceania, Europe, North America) and in different settings (e.g., hospitals, nursing homes, and communities) (Coll-Planas et al., 2017). They can also depend on how SC is defined, and whether they target specific populations. SC interventions depend on many factors that vary from one place to another, and it is difficult to compare them without documenting and understanding how place is related to each intervention.

1.2. SC interventions and place

Place is a construct that is simultaneously physical and social: It occupies a material space but is also a social construct when considering place-making processes, such as developing a relationship with or feeling attached to a space (Crooks et al., 2018). SC and place are closely related (Lewicka, 2011; Subramanian et al., 2003), and SC varies from place to place (Wood and Giles-Corti, 2008). Place attachment, which is generally understood as having an emotional bond to a specific place, is related to high levels of social cohesion within communities (Bambra, 2018), and increased place attachment results in higher civic engagement and social trust in communities (Stefaniak et al., 2017). Place attachment is also related to place-based social interactions that can lead to various forms of SC (Mihaylov and Perkins, 2014). Currently, the role that place plays in SC interventions for health should be further investigated (Carpiano and Moore, 2020). Understanding how place influences SC interventions within specific communities can play a vital role in designing and implementing future SC interventions for mental health.

1.3. Methodological approaches to investigating SC interventions

To date, few studies have used mixed-methods approaches to investigate SC and health (Becares and Nazroo, 2013; Browne-Yung et al., 2013; Buck-McFadyen, 2018; Ziersch et al., 2005), and none of these have investigated SC interventions for mental health in older adults. To our knowledge, existing mixed-methods studies on SC and health have only used-cross sectional quantitative data, which limits the conclusions they can draw. They have also looked at in-depth individual interviews as sources of qualitative data, whereas ethnographic approaches are especially useful to observing the intergroup relationships and other processes through which cognitive and structural forms of SC are constructed (Svendsen, 2006). Longitudinally investigating how SC and other neighbourhood characteristics can influence mental health is paramount to promoting mental health along the life course (Ruiz and Chaix, 2019), and these approaches are particularly novel to understanding health in place (Pearce et al., 2016).

1.4. The Neighbourhoods in Solidarity intervention

This study will look at the "Neighbourhoods in Solidarity" (NS) as a SC intervention that may promote mental health. The NS are a community-based intervention that uses action research to empower older adults (55+) in the canton of Vaud to participate in their respective communities. To date, the NS have implemented their method in over 20 different neighbourhoods or towns. The NS aim to improve active community participation, social relationships, and the general quality of life for older adults in a given community. The NS are particularly interesting to study, as they use an action research method to adapt each project to the community it takes place in. While each NS intervention is adapted to each community, all of them last between three to five years, and have five phases: (1) diagnostic, (2) construction, (3) project design, (4) implementation, and (5) autonomy. This research focuses on the diagnostic phase of one case study, where the cohabitant group identified and discussed problems that they wanted to address in their town. For more information on the methodological approaches used by the NS, please see Zwygart et al. (2017).

1.6. Aims and objectives

The quantitatively oriented objectives of this study were to determine (1) if individuals in different places had different levels of SC before the diagnostic phase of the NS intervention, (2) whether individuals residing in two different places participated in the NS, (3) whether individuals who participated in the NS experienced a change in SC, and (4) whether changes in SC predicted depressive symptoms. The qualitatively oriented objectives of this study were to describe (5) how place played a role in the NS process, and (6) how the NS helped foster SC in the community. The overall aim was to understand whether and how a SC intervention could increase SC and mental health in older adults.

2. Methods

This study used a longitudinal embedded mixed-methods design (Creswell and Clark, 2017) to investigate the role that place played in a SC intervention for mental health during the diagnostic phase of one NS intervention being conducted in one town. The advantage of this design was that it could both (1) quantitatively investigate how place of residence was associated with participating in the NS, change in SC, and depressive symptoms, and to (2) qualitatively describe the importance of place-related processes that helped increase SC. We administered a pre/post survey at the beginning and end of the diagnostic phase of the NS (over the course of one year) in order to measure how place of residence was related to SC and participation in the NS, and if participation in the NS was associated with change in SC, and if changes in SC were related to depressive symptoms after the diagnostic phase. The first author used an ethnographic approach between the two waves of the survey in order to observe and document processes She gained access to the field because of a long-standing working relationship between her doctoral supervisor (the second author) and the NS director at the time. The NS director agreed to collaborate with us, and gave us permission to research the intervention. NS participants were aware of the research and her position as a researcher. This project obtained ethical approval from the Swiss Ethics Board on research involving humans in the Swiss canton of Vaud, and approval from the NS team and the municipality.

2.1. Quantitative approach

2.1.1. Sampling strategy and respondents

The authors of this study designed the quantitative approach, which is not usually included in NS interventions. We randomly selected a sample of older adults (55+) using civil registry data from the municipality. Individuals received a questionnaire and a letter that explained the study. Participants were aware that returning the envelope with their questionnaires implied their informed consent. The town has close to 10,000 residents, and 3456 were aged 55+ at the time of the first survey. We sent the first wave of the survey by mail to 1276 residents

(55+) in May 2018 ($n = 467$, 37% response rate[1]), and the second wave to the same 467 individuals who returned the first survey, in May 2019 ($n = 281$, 60% response rate). For the first wave of data, we randomly selected 1200 inhabitants from the civil registry. We sent an additional 76 questionnaires to individuals who had attended an NS information session and who had shared their contact information. We used this strategy to ensure that some NS participants could be included in the quantitative sample.

We excluded 12 respondents because it was not the same person who responded (identified by different birthdays and genders), and individuals with missing information on key variables of interest participation in the NS (9), cognitive SC (23), structural SC (5), and depressive symptoms (15). The final analytic sample included 217 respondents (M *age* = 71.06, $SD = 7.95$ in Wave 2). Table 1 describes sample characteristics for both waves.

Table 1
Sample characteristics of respondents in Waves 1 and 2.

	Wave 1 (including those who did not reply to Wave 2)[a]		Wave 1		Wave 2	
	n	%	n	%	n	%
Gender						
Men	199	43.0	92	42.4	92	42.4
Women	264	57.9	125	57.6	125	57.6
Total	463	100.00	217	100.0	217	100.0
Age						
55–59	83	17.9	36	16.6	12	5.5
60–64	70	19.4	34	15.7	42	19.3
65–69	82	17.7	40	18.4	43	19.8
70–74	90	19.4	49	22.6	43	19.8
75–79	66	14.3	33	15.2	44	20.3
80–84	43	9.3	20	9.2	24	11.1
85–89	18	3.9	4	1.8	7	3.2
90–94	9	1.9	1	0.5	1	0.5
95–100	2	0.4	0	0.0	1	0.5
Total	463	100.0	217	100.0	217	100.0
Education						
No university education	304	65.7	136	62,7	136	62,7
University education	159	34.3	81	37.3	81	37.3
Total	463	100.0	217	100.0	217	100.0
Financial satisfaction						
Unsatisfied	54	11.7	22	10.1	25	11.5
Satisfied	155	33.5	65	30.0	60	27.7
Extremely satisfied	254	54.9	130	59.9	132	60.8
Total	463	100.00	217	100.0	217	100.0
Living arrangements						
Living with other person(s)	337	72.8	155	71.4	154	71.0
Living alone	126	27.2	62	28.6	63	29.0
Total	463	100.0	217	100.0	217	100.0
Nationality						
Swiss	409	88.3	195	89.9	195	89.9
Other	46	9.94	20	9.2	20	9.2
Total	455	100.0	217	100.0	217	100.0
Health (self-rated)						
In poor health	123	26.6	52	24.0	53	24.4
Healthy	340	73.4	165	76.0	164	75.6
Total	463	100.0	217	100.0	217	100.0

Note. Wave 1 had eight missing values for nationality.

[a] This sample includes individuals who responded to Wave 1 but not Wave 2 to show differences in socio-demographic variables between individuals who did and did not respond to a second wave. Sample characteristics were generally the same, despite the high attrition.

[1] Our survey was unfortunately sent at the same time as another survey that concerned improving public transport. Some NS participants told us this was confusing, or that they were tired of answering questionnaires. This could explain the low response rates.

2.1.2. Measures

Place was measured by neighbourhood residence. To incorporate social understandings of place, the first author asked NS participants to define the North and the South of their town during one cohabitant group meeting Around 40 individuals participated in this. She asked participants to collectively state whether they thought specific neighbourhoods were in the North or South of the town. The North-South distinction will be explained in the results section.

Participants clearly identified and agreed on most neighbourhoods. When there was disagreement, the first author discussed this with NS professionals who had conducted more detailed interviews with residents. The NS professionals had found a similar disagreement and designated these areas as "No-Man's-Land", which is a term that is often used in a military context, to define an area between two enemy groups that neither group controls nor crosses. It can also refer to ambiguous areas. We regrouped neighbourhoods from the survey to reflect how the participants' understood place in their town. Place of residence depended on whether individuals lived in the South, the North, or area designated "No-Man's-Land" (0 = South [$n = 88$, 40.6%], 1 = No-Man's-Land [$n = 21$, 9.7%], 2 = North [$n = 108$, 49.8%], in both waves).

Participation in the NS was based on whether individuals did or did not participate in the NS (0 = did not participate [$n = 193$, 88.9%], 1 = participated [$n = 24$, 11.1%]) in Wave 2. In this case, participation referred to participating in the cohabitant group that we discuss in the qualitative part of this study, since it was before formal activities started.

Cognitive SC was measured using a 5-item social cohesion scale (Sampson et al., 1997). Responses could range from 0 = do not agree at all, to 5 = definitely agree ($M = 2.30$, $SD = 0.69$, $\alpha = 0.85$ in Wave 1; $M = 2.27$, $SD = 0.68$, $\alpha = 0.84$ in Wave 2). Scores ranged from 0 to 3.5. Change in cognitive SC was measured by the difference in average cognitive SC scores between Waves 1 and 2 ($M = -0.03$ $SD = 0.54$). Changes in cognitive SC ranged from −1.5 to 1.4.

Structural SC was measured by the sum of different types of community associations that individuals were members of outside the NS, out of a possible total of 14 ($M = 1.50$, $SD = 1.31$ in Wave 1; $M = 1.51$, $SD = 1.31$ in Wave 2). Change in structural SC was measured by the difference in structural SC between Waves 1 and 2 ($M = 0.03$ $SD = 1.05$). Change in structural SC ranged from −3 to 3. We chose to assess SC as change scores because we were interested in how a change in SC would influence depression in Wave 2. However, because there is debate as to whether looking at change scores as outcomes is appropriate (Tennant et al., 2019), we also tested to see whether participation in the NS influenced SC in Wave 2, while controlling for SC in Wave 1. This did not affect our results.

Depressive symptoms were measured using the 10-item Revised

Table 2
Mean cognitive SC, structural SC, and depressive symptoms by place of residence in Waves 1 and 2.

	n	Cognitive SC		Structural SC		Symptoms of depression (CESD-10-R)	
		Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2
		M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
South	88	2.38 (0.71)	2.40 (0.63)	1.24 (1.22)	1.41 (1.34)	5.35 (4.08)	5.32 (4.10)
No-Man's Land	21	2.34 (0.67)	2.32 (0.62)	1.43 (1.36)	1.43 (1.29)	5.81 (4.24)	5.76 (5.35)
North	108	2.22 (0.67)	2.16 (0.71)	1.69 (1.41)	1.60 (1.30)	5.43 (4.25)	5.67 (4.29)

Note: In Wave 1, the median scores for each neighbourhood were the same. The median cognitive SC score was 2.00, the median structural SC score was 1.00, and the median depression score was 6.00. In wave 2, the median cognitive and structural SC scores remained the same, but the median CESD-R-10 score was 7 for both the North and the South. The median score in No Man's Land was 6.5.

Centre for Epidemiological Studies Depression Scale (CES-D-R-10) (Radloff, 1977; Andresen, et al., 1994). Responses could range from 0 = rarely or none of the time (less than 1 day a week), to 3 = all of the time (5–7 days a week). We calculated the sum score of each item out of a maximum possible total of 30 ($M = 5.43$, $SD = 4.16$, $\alpha = 0.71$ in Wave 1; $M = 5.53$, $SD = 4.31$, $\alpha = 0.74$ in Wave 2), and did not calculate CES-D-R-10 scores if there were more than two items missing (Andresen et al., 1994). Our main outcome was the sum CES-D-R-10 score, but we also looked at changes in depressive symptoms in some additional analyses, which was measured by taking the difference in CES-D-R-10 scores between Waves 1 and 2 ($M = 0.10$ $SD = 3.82$). Mean outcome measures for SC and depression scores by neighbourhood residence are in Table 2.

2.1.3. Quantitative data analysis

The first author conducted statistical analyses using Stata 14 SE software (StataCorp, 2015). We used multiple ordinary least squares (OLS) regression models to determine whether there was an association between neighbourhood residence and cognitive SC at baseline, and multiple negative binomial regression to determine whether there was an association between place of residence and structural SC at baseline (objective 1). We used logistic regression to see if participating in the NS varied significantly by place of residence (objective 2). We used multiple OLS regression to determine if NS participants experienced a significant change in both structural and cognitive SC between waves (objective 3), and if changes in SC were associated with a change in depressive symptoms in Wave 2 (objective 4). We controlled for socio-demographic characteristics in each regression model: Age, gender, education, financial satisfaction, and whether the person lived alone.

2.2. Qualitative approach

2.2.1. Information sources

The qualitative findings were based off two main sources: Ethnographic observations and an open-ended section of the same survey described above. The first author conducted 82 hours of observations in the context of the cohabitant and resource groups, taking the observer as a participant stance (Gold, 1958). The cohabitant group meetings had around 50 individuals who identified and debated issues in their community every two to three weeks. Of these individuals, 40 attended regularly. The resource group had around ten stakeholders (representatives from local associations and municipal authorities) who discussed the NS every month. The NS also held a community forum to get opinions from a larger audience. Around 250 town residents participated in the forum, where they were able to contribute to on-going debates in smaller focus groups. NS professionals provided minutes for all group meetings. Meetings and informal interviews were not audio-recorded as it was inappropriate to the setting. Finally, we analysed the qualitative *additional comments* from the quantitative survey. This provided an additional 102 perspectives of the town in Wave 1, and 72 in Wave 2 (27 comments were provided by the same respondents).

2.2.2. Qualitative data analysis

The first author coded the field observations, informal interviews, minutes, and questionnaire comments in MAXQDA (VERBI Software, 2017) and analysed them using thematic analysis (Guest et al., 2011) to address objectives 5 and 6. Her field notes were taken in a combination of French and English, but she translated everything that is presented to English for consistency and further anonymisation. We present some of her ethnographic field notes in boxes throughout the results section.

3. Results

This research is based on one NS case study that took place in an unnamed town in a French-speaking canton of Switzerland. The town is on a slope and has two train-lines running through it: One runs along Lake Geneva, and another divides the town horizontally. The town is split between a Northern area around the upper train line, and a Southern area facing the shores of the lake. The North consists mostly of residences and vineyards, and lacks commercial infrastructure. The South has a medieval town centre, local shops, and homes that have been passed between families for generations. Most town activity is in the South, and Northern residents often complained that they had difficulty accessing the South.

3.1. Sense of place in the North and the South

The North-South divide was a recurring theme throughout the diagnostic phase. Residents from all over the town repeatedly mentioned it as an integral part of the town's identity ("You can't understand [the town] if you don't understand the North and the South"; "For as long as I've known [the town], there's been a divide between North and South"; "The division between the North and South is historic"; "There will always be a division"). This was particularly prominent among Northern residents.

The North and the South each had a train station, with trains that went to neighbouring cities but did not connect to one another. Many town residents noted difficulties getting from the North to the South (and vice versa) due to limited public transportation and expensive parking in the South. Some residents found it easier to access nearby cities than to navigate the slope within the town itself, and some Northerners said that it was easier for them to do their weekly errands in the closest city rather than crossing down to the town centre (in the South). The North was largely residential, and residents complained that they couldn't withdraw money, get groceries, or meet for coffee without leaving their area. One man noted that the "interaction point" for town members living in the North and the South was in the nearest city, where both train lines met.

The North-South divide was more than material, and residents in both areas had a strong sense of identity and attachment to where they lived. Northerners frequently said they felt neglected by the South ("we've been left to rot"; "everything is always for the South"), and had a strong mistrust towards the municipality (located in the South), which they felt had the South's best interests at heart. These sentiments appeared to date back generations: Many individuals said that the North-South divide was as old as the town itself. These comments came through in cohabitant group meetings, the forum, and the questionnaires.

> The tension between the government and the North seems to be recurring, and they keep repeating that everything is always for the South. Today [a participant] told me that he used to be part of an old association for the North of [the town], but that it got shut down because the South didn't want it. [Another man] nodded in agreement. They are not alone: many individuals have mentioned resentment about this.

Southerners were generally perceived to be wealthier than Northerners, even if this was not necessarily true. They often had ancestors from the town, and many lived in homes that were passed down generations. Overall, Southerners seemed to be much more content with the town and the municipality, though some were aware that Northerners were less satisfied. This came through in cohabitant group meetings and in the "other comments" sections of our questionnaires.

> As I'm entering the wave 2 data, I'm noticing that there are multiple discourses going on. Many people acknowledge that they are perfectly happy to live in [the town], that [the town] is much better than many other communes, and that the municipality has done a lot to make them happy. However, people went out of their way to specify that they only feel this way because they live in the South.

Both Northern and Southern residents felt strongly about where they

lived. Residents from both areas seemed to have diverging demands. In short, most Northerners wanted easier access to the South. They often complained that the town centre was "dying" because no one could access it due to limited North-South liaisons and expensive parking, and that the town needed to adapt. Most Southerners were content with the status quo, but others were unsatisfied and felt strongly about limiting outside entry into the South ("We've been invaded"; "They should close the streets to outsiders"; "Outsiders should have to pay to use our beach"). These sentiments seemed to be towards individuals who were *not* town residents (and not specifically towards Northerners).

The strong sense of place with the South or the North played a role in the town's cohesion as whole, as well as within the North and South. It also appeared that indicators of SC (e.g., social cohesion, trust in their local government, and access to various types of activities and organizations) were different based on where individuals lived.

3.2. Neighbourhood residence and SC before the NS

We investigated whether there were differences in cognitive and structural SC in the North and the South at baseline. Northerners had significantly less cognitive (perceived) SC compared to Southerners at baseline ($B = -0.23$, 95% CI [–0.43, −0.03], $p = 0.022$; see Table 3, column 1). This reflects the qualitative findings, which show that Northerners had less cognitive SC than their Southern counterparts. However, there were no statistically significant differences in structural (participatory) SC based on where individuals lived ($B = 0.21$, 95% CI [−0.04, 0.46], $p = 0.103$; see Table 3, column 2).

3.3. Including the North and the South in the NS intervention

The North-South divide became a key topic throughout the diagnostic phase of the NS intervention. At one point, NS professionals asked members of the cohabitant group to draw maps of their town from memory, in order to get a better sense of how residents viewed their town. Most participants said that it was very easy for them to draw the map, showing that they had clear senses of boundaries and divisions in their town. While each map was different, all of them showed a clear distinction between the North and the South. After many cohabitant group discussions, NS professionals identified that Northerners felt a higher need for an NS.

Even though there was a distinction between the North and the South, the municipality had only agreed to temporarily fund *one* NS intervention for the whole town (treating the North and South together). Furthermore, the municipality had only agreed to fund the diagnostic phase, and would fund the rest of the intervention if they determined that the diagnostic was successful.[2] The geographic scope of this NS was much larger than past NS interventions, and NS professionals had to adapt their strategies in order to accommodate a much larger geographical area with the same amount of resources available. They also had to prove that they were able to do this successfully in order to continue receiving funding.

> [The NS professionals] are debating whether they should call it Neighbourhoods in Solidarity (plural) or Neighbourhood in Solidarity (singular) with the idea of unifying [the town] as one. [One of them] tells me that the decision to make an NS for the whole town was one that came heavily out of political pressure, that the situation is not ideal, but that they have to do their best with what is available. They see a silver lining: if they call the NS a single Neighbourhood in Solidarity, maybe it will help build cohesion.

The NS professionals chose to change the location of the first three cohabitant group meetings, and let the group decide where they preferred to meet regularly. Cohabitant group members voted to have meetings and coffee gatherings in the North. The NS professionals subsequently held the meetings in the North, but helped organize alternative transportation (carpooling and communal taxis) so that everyone could participate, regardless of where they lived. They also organized an additional coffee meet-up in the South, in order to be as inclusive as possible and to accommodate a broader range of residents.

Despite the efforts to treat the town as one entity, NS professionals noted that some individuals only attended coffee gatherings in the South, and others only attended in the North. Our survey showed some residents were unaware that the NS was for the entire town. Other residents were aware of this, but chose not to participate because they disagreed with treating the North and the South as one entity ("The NS does not exist in my area"; "It's impossible to unify the North and the South"; "It's inappropriate").

Getting residents from all over the town to participate was challenging for the NS professionals. However, individuals who did participate said they appreciated the NS because it helped them "discover" their town and new areas that they would have not have gone to otherwise. While some NS participants liked extending their *umwelt*[3], others did not share this sentiment. Some Southerners vocally refused to attend NS meetings because they were held in the North ("Why should we have to go up there?"), and complained that it was difficult to navigate the large geographic space needed to attend NS meetings in the North. Interestingly, Northerners felt that they *had* to include the South if they wanted the NS to continue. In fact, some Northerners were so mistrustful of their local government that they frequently questioned whether the NS would continue to receive funding if they did not include the South.

> [A woman] raises her hand with a question: Is it the commune of [the town] who decides if the NS stay financed? [A man] says that if it's

Table 3
Results from analysis predicting cognitive SC (linear model) and structural SC (negative binomial model) with neighbourhoods at baseline, controlling for socio-demographic variables.

	(1)	(2)
	Cognitive SC at baseline	Structural SC at baseline
Neighbourhoods		
South	*Ref.*	*Ref.*
No-Man's-Land	−0.133	−0.057
	(0.170)	(0.217)
North	−0.232**	0.210
	(0.101)	(0.129)
Women	0.065	−0.129
	(0.098)	(0.122)
Age	−0.003	0.008
	(0.006)	(0.008)
Has university degree	−0.008	0.201
	(0.102)	(0.124)
Financial satisfaction		
Unsatisfied	*Ref.*	*Ref.*
Satisfied	0.135	0.203
	(0.173)	(0.266)
Extremely satisfied	0.375**	0.419*
	(0.166)	(0.253)
Living alone	−0.078	−0.482***
	(0.112)	(0.157)
Constant	2.386***	−0.493
	(0.465)	(0.621)
Observations	217	217
R-squared/Pseudo R-squared	0.062	0.045

Note. Standard errors in parentheses; ***p < 0.01, **p < 0.05, *p < 0.1.

[2] This project did receive funding for the next phases.

[3] *Umwelt* describes the subjective way an organism perceives and interacts with their environment (Kull, 2001).

Table 4
Odds ratios showing findings of logistic regression models predicting the participation in NS (wave 1) using as socio-demographic variables (model 1), and SC and depression (added in model 2).

	Model 1	Model 2
	Sociodemographic predictors	Sociodemographics, SC, and depression in Wave 1 as predictors
Neighbourhood		
South	Ref.	Ref.
No-Man's-Land	Omitted	Omitted
	–	–
North	1.746	1.436
	(0.842)	(0.721)
Women	2.662	3.078**
	(1.446)	(0.699)
Age	1.080**	1.080**
	(0.033)	(0.037)
University degree	1.401	1.969
	(0.729)	(0.581)
Financial satisfaction		
Unsatisfied	Ref.	Ref.
Satisfied	1.020	0.979
	(0.741)	(0.743)
Extremely satisfied	0.765	0.700
	(0.549)	(0.528)
Living alone	1.375	1.811
	(0.689)	(0.992)
Depressive Symptoms (Wave 1)	–	0.967 (0.064)
Cognitive SC (Wave 1)	–	0.641 (0.245)
Structural SC (Wave 1)	–	1.471** (0.262)
Constant	0.000***	0.000***
	(0.001)	(0.001)
Observations	196	196
Pseudo P-squared	0.093	0.136

Note. Standard errors in parentheses; ***p < 0.01, **p < 0.05, *p < 0.1.

> [the South] deciding, they will never finance something for [the North]. There is a murmur of agreement.

3.4. Neighbourhood residence and participation in the NS

Our survey showed that individuals from different areas participated in the NS: 16 lived inthe North, 9 lived in the South, and 1 lived in No-Man's-Land. Place of residence did not significantly predict the odds of participating in the NS intervention (Table 4, Column 1). We controlled for both types of SC and depressive symptoms at Wave 1, to see whether individuals who already had more SC and less depressive symptoms had higher odds of participating in the NS at Wave 2. Neither cognitive SC nor depressive symptoms in Wave 1 predicted whether individuals participated in the NS. However, individuals with high structural SC in Wave 1 had one and a half times the odds of participating in the NS ($OR = 1.471$, 95% CI [1.04, 2.08], $p = 0.030$; see Table 4, column 2). Women had three times the odds of participating ($OR = 3.08$, 95% CI [1.05, 9.06], $p = 0.041$), and individuals had slightly more odds of participating in the NS with age ($OR = 1.08$, 95% CI [1.01, 1.15], $p = 0.023$).

3.5. Place-related processes that helped foster SC

The NS encouraged residents from all over the town to come together, and helped bridge divisions between the North and the South. Bridging this division helped foster both cognitive and structural SC within the group.

3.5.1. Fostering cognitive SC

The cohabitant group meetings were spaces that enabled individuals to make connections. Individuals could develop their cognitive SC by getting to know other town residents in a new light, and by developing meaningful relationships with one another. These relationships went beyond exchanging information and finding new activities: Members of the cohabitant group showed signs of cohesion and reciprocity with one another. Group members made a sign up sheet to bring homemade cakes at coffee gatherings, and also brought local wine and cheese to share with one another. When some group members or their spouses were unwell, others signed cards wishing a fast recovery. When regular cohabitant group members did not attend a meeting, others asked where they were, and more often than not, someone had already checked in on them and reported back to the group. Individuals also visited group members when they were sick or in the hospital. For example, one woman who was very active in the cohabitant group was hospitalized and was unable to attend a few group meetings. Once she recovered, she gave a speech at a group celebration to mark all the progress they had made, and what it had meant to her:

> [She] gave a really moving presentation. She said that with respect to the NS, she felt like she had already received everything she had wanted to give to others. She was referring to when she had an accident, and many of the members of the NS came to visit her in the hospital and were asking about her recovery. This sense of reciprocity is how I understand social capital- and in a way, it perfectly illustrates how a community intervention created social capital outside of the formal space designated to the NS. As friendships blossomed, the group turned into more than the sum of the friendships within it- it turned into something that had true solidarity.

In addition to promoting relationships within the NS group, the NS provided a platform to connect and have discussions with municipal representatives. One representative frequently attended cohabitant group meetings near the end of the diagnostic phase, and cohabitant group members often capitalized on the opportunity to ask questions.

> [He] interrupts [the NS professional] and asks [the municipal representative] about the cost of parking. There is an immediate outpour of questions, and everyone is speaking over one another. [The representative] answers the questions as [the NS professional] tries to bring the conversation back to the forum. Participants seem to be more interested in what [the representative] has to say.

Directly communicating with municipal representatives could have helped increase social trust. The NS gave participants the opportunity to represent their own interests and to make their voices heard. This resulted in more dialogue between the municipality and town residents from both the North and the South.

3.5.2. Fostering structural SC

Regular NS participants were able to broaden their networks outside and to develop friendships with other town members. In this case study, participants were keen to start planning activities together. This was not part of the diagnostic phase, so NS professionals told them to be patient, but participants started meeting up in smaller groups outside of the cohabitant group meetings. In a way, the diagnostic phase of this NS case study served as a place where individuals could exchange information concerning on-going activities, and meet others with similar interests. They used these connections to become aware of and to get involved in other groups outside of the NS. These were usually other clubs or associations based on interests, such as dinner groups or fitness activities. One man even recruited other NS participants to join an existing club for men who used to work in technical fields, and they went on a tour to see the Large Hadron Collider at CERN. These connections and outside activities resulted in some group conviviality within the NS.

3.5.3. Sense of place and SC

It appeared that participating in the NS helped foster both cognitive

and structural SC for those who participated. Individuals who participated in the NS also started to perceive their town differently.

> [She] said that by participating in the NS, and by trying to make her community a better place, she had actually felt more attached to it. This is contrary to ideas that individuals only participate in their communities if they are already attached to them. What's interesting is that she referred to the community as [the town] as a whole, not the North or the South.

The NS adapted their method to include the North and the South, and helped create a new sense of place. This was exemplified by residents who had to navigate new areas to attend the NS, and befriended individuals from all over the town, regardless of where they lived. Northern and Southern residents were able to connect one another, and used the NS as a platform to share information and build relationships. Bridging the North-South divide helped individuals develop SC that they may not have been able to access otherwise.

3.6. Participation in the NS and change in SC

We investigated whether participating the NS predicted a change in SC. Out of 24 NS participants, 6 experienced an increase, 6 experienced no change, and 12 experienced a reduction in cognitive SC, $\chi 2$ (2, $N = 217$) = 1.87, $p = 0.392$. On the other hand, 15 individuals experienced an increase, 5 experienced no change, and 4 experienced a reduction in structural SC, χ^2 (2, $N = 217$) = 20.4, $p < 0.001$ (see Appendix A). We found that participating in the NS significantly predicted a change in structural SC ($B = 0.70$, 95% CI [0.25, 1.15], $p = 0.003$; see Table 5 column 2), but not cognitive SC ($B = -0.05$, 95% CI [–0.29, 0.19], $p = 0.676$; see Table 5 column 1).

3.7. Participation in the NS, change in SC, and depression in Wave 2

Finally, we investigated whether changes in SC between Waves 1 and 2 significantly predicted depressive symptoms in Wave 2. After controlling for depressive symptoms in Wave 1, we found that neither an increase in cognitive SC ($B = -0.67$, 95% CI [–1.53, 0.19], $p = 0.128$; see Table 6, column 1) nor structural SC ($B = 0.22$, 95% CI [–0.24, 0.67], $p = 0.359$; see Table 6, column 2) predicted depressive symptoms in Wave 2.

While there was a significant cross-sectional association with depressive symptoms and cognitive SC within both Wave 1 ($B = -0.83$, 95% CI [–1.65, −0.01], $p = 0.046$) and Wave 2 ($B = -1.26$, 95% CI [–2.08, −0.43], $p = 0.003$; see Appendix B), the relationship was not as we expected: Changes in depressive symptoms predicted cognitive SC in Wave 2 ($B = -0.02$, 95% CI [–0.03, 0.00], $p = 0.040$; see Appendix C; column 1). Structural SC was cross-sectionally associated with depressive symptoms in Wave 1 ($B = -0.42$, 95% CI [–0.84, −0.01], $p = 0.044$) but not in Wave 2 ($B = -0.00$, 95% CI [–0.44, 0.43], $p = 0.984$; see Appendix B). Changes in depressive symptoms did not predict structural SC in Wave 2 ($B = -0.00$, 95% CI [–0.03, 0.03], $p = 0.977$; see Appendix C; column 2).

Table 5
Findings from multiple linear regression models concerning change in cognitive SC (Model 1) and change in structural SC (Model 2) for all respondents, while accounting for NS participation and neighbourhood residence.

	(1)	(2)
	Change in cognitive SC	Change in structural SC
Participated in NS	−0.051	0.697***
	(0.121)	(0.229)
Neighbourhood		
South	Ref.	Ref.
No-Man's-Land	−0.030	−0.011
	(0.133)	(0.252)
North	−0.086	−0.266*
	(0.079)	(0.149)
Women	0.084	0.169
	(0.078)	(0.148)
Age	−0.005	−0.007
	(0.005)	(0.009)
University degree	−0.119	−0.048
	(0.080)	(0.152)
Financial satisfaction		
Unsatisfied	*Ref.*	*Ref.*
Satisfied	−0.083	0.050
	(0.131)	(0.248)
Extremely satisfied	−0.024	0.088
	(0.124)	(0.234)
Living alone	0.009	0.346**
	(0.088)	(0.166)
Constant	0.441	0.344
	(0.378)	(0.716)
Observations	217	217
R-squared	0.036	0.094

Note. Standard errors in parentheses; ***p < 0.01, **p < 0.05, *p < 0.1.

Table 6
Multiple linear regression model showing depressive symptoms in Wave 2 while controlling for depression in Wave 2, by change in cognitive SC (Model 1), structural SC (Model 2) and both SCs (Model 3).

	Model 1	Model 2	Model 3
	Change in cognitive SC	Change in structural SC	Change in cognitive and structural SC
Change in cognitive SC	−0.667	–	−0.654
	(0.437)	–	(0.437)
Change in structural SC	–	0.216	0.204
	–	(0.232)	(0.232)
Participation in the NS	−0.063	−0.183	−0.206
	(0.764)	(0.780)	(0.778)
Neighbourhood			
South	Ref.	Ref.	Ref.
No-Man's-Land	1.121	0.274	0.250
	(0.848)	(0.843)	(0.840)
North	0.346	0.627	0.565
	(0.497)	(0.503)	(0.503)
Women	0.066	−0.023	0.032
	(0.494)	(0.496)	(0.496)
Age	0.082***	0.088***	0.084***
	(0.031)	(0.032)	(0.032)
University degree	−0.164	−0.077	−0.154
	(0.507)	(0.506)	(0.507)
Financial satisfaction			
Unsatisfied	*Ref.*	*Ref.*	*Ref.*
Satisfied	−2.508***	−2.490***	−2.530***
	(0.839)	(0.842)	(0.840)
Extremely satisfied	−2.824***	−2.858***	−2.857***
	(0.802)	(0.806)	(0.803)
Living alone	−0.474	−0.544	−0.539
	(0.555)	(0.562)	(0.560)
Depressive symptoms Wave 1	0.534***	0.525***	0.530***
	(0.060)	(0.060)	(0.060)
Constant	−0.902	−1.258	−0.972
	(2.385)	(2.387)	(2.387)
Observations	217	217	217
R-squared	0.419	0.414	0.421

Note. Standard errors in parentheses; ***p < 0.01, **p < 0.05, *p < 0.1.

4. Discussion

This study found that place played an important role in a SC intervention for mental health. The strong perceived division between the North and the South, and how NS professionals navigated it, was paramount to this case study. Individuals who lived in the North had less cognitive SC than those who lived in the South before the start of the diagnostic phase. The North-South divide played a recurring role in the NS intervention, and NS professionals adapted their strategies to

account for place. The strategies NS professionals utilized to include residents from all over the town seemed to pay off: there were no significant differences between place of residence and participation in the NS. The NS provided opportunities to bridge the North-South divide by creating a new sense of place for town residents to come together, and to build SC. NS participants were able to share information, access different types of activities, and build friendships with others. Participants qualitatively referred to increased participation in group activities, as well as trust and reciprocity within the NS and their town. Quantitatively, participation in the NS led to an increase in structural SC, but not cognitive SC. However, changes in neither cognitive nor structural SC predicted depression in Wave 2.

A key finding was that the NS were able to build structural but not cognitive SC in the diagnostic phase of the NS. The NS seemed to be an information channel for outside activities, by providing participants with an opportunity to meet like-minded individuals, and to join even more clubs and associations (structural SC). However, we found that individuals who already had higher structural SC at Wave 1 had one and a half times the odds of participating in the NS to begin with, which suggests that the NS increased structural SC for already active individuals in this case study. This could point to accessibility issues, and might suggest that the diagnostic phase of the NS may not be inclusive enough for older adults who are inactive. This may accidentally exclude older adults who are less socially active, or who have reduced physical or cognitive abilities.

Participating in the NS did not predict a change in cognitive SC, even though we observed aspects of cognitive SC during the NS intervention. This may be for three reasons: First, it might take more time to change perceptions, and cognitive SC could change in the next phases. Second, it is possible that individuals developed cognitive SC within the cohabitant group only, but not in their neighbourhoods. Third, and in our opinion most likely, is that cognitive SC may have already been declining in the area. We noted that 106 individuals (48.9%) in our sample experienced a decrease in cognitive SC. In other words, the NS may have been fighting an uphill battle to on-going changes in the area.

Finally, neither changes in structural nor cognitive SC predicted depressive symptoms in Wave 2. While cognitive SC was cross-sectionally associated with depression in each wave, it appeared that the relationship between cognitive SC and depression was the other way around in this particular sample: Changes in depression predicted cognitive SC in Wave 2. This is contrary to findings from longitudinal studies with much larger sample sizes, which have showed that elements of cognitive SC, like perceived neighbourhood cohesion, protect older adults against depression (Baranyi et al., 2019; Ruiz et al., 2019; Ruiz et al., 2018).

This research is, however, consistent with other research on the NS in Vaud, which showed that participating in the NS was associated with structural and not cognitive SC. The study, which compared 10 neighbourhoods with and without the NS, also showed that collaborative competence, or the psychological ability to create social relationships (Christens, 2012), plays an important role in mediating the relationship between the NS, SC, and depressive symptoms (Ehsan, 2020). Future research studying place, SC interventions, and mental health may also wish to look more deeply at these psychological aspects. It could also explore whether cognitive and structural dimensions of SC reinforce one another during SC interventions.

4.1. Strengths and limitations

The longitudinal mixed-methods approach in this study showed complimentary perspectives that provide a deeper understanding of whether and how the NS could improve SC. A particular strength was that we combined repeated quantitative measures with an ethnographic approach that permitted us to observe intergroup relationships that helped construct SC (Svendsen, 2006). To our knowledge, it is the first longitudinal mixed-methods study to investigate the role that place played in a SC intervention for mental health.

This study also has limitations. For one, it investigated the diagnostic phase of the NS, which is only one of five NS phases. While the purpose of this was to inform next phases, it also limits the conclusions that we can draw on the effectiveness of the NS as a SC intervention for mental health promotion. It is possible that further changes in SC would have been identified at the end of the NS intervention. Furthermore, this phase of the NS targeted fewer individuals by design, and only 25 out of approximately 40 participants responded to both waves of the survey. There may be more participants in the next phases, which cater to a larger audience.

There was some bias in our quantitative data as well. Our sample had some attrition between the two waves, where only 60% of respondents who replied to the first wave replied to the second. While we received notice that some participants had moved or passed away, this does not account for all of the non-response. Even though socio-demographic characteristics and health status of individuals between waves remained similar, it could have introduced an important source of bias: Is possible that individuals who more interested in community life were more willing to reply to the second wave of the questionnaire. Furthermore, in our quantitative findings, we chose to look at how SC changed from Wave 1 to Wave 2 as change scores. While this is a common way to look at outcomes between two waves, some authors have argued that looking at change scores in observational data does not estimate causal effects (Tennant et al., 2019). Lastly, our findings do not speak to the depth of engagement in the NS, which could have played an important role in building SC.

Next, the findings from this case study may not be generalizable to other NS interventions. Nine out of ten individuals in our sample were financially satisfied, and individuals who regularly attended the NS reported good self-rated health. It is possible that this particular NS catered to older adults who were wealthy and healthy, rather than others who were in more vulnerable situations. Special consideration should be given to who accesses similar interventions, and how they can cater to more vulnerable groups.

Finally, we chose to focus on structural and cognitive SC, which could be a false dichotomization of the relationship between SC and mental health. Indeed, SC has been conceptualized and operationalized in different ways when it comes to health research (Moore and Kawachi, 2017; Ehsan et al., 2019). Our decision to quantitatively measure cognitive and structural dimensions stemmed from the NS team being uncomfortable with us collecting network indications of SC that use name generators (such as bonding and bridging SC). We focused our qualitative analysis on these dimensions to be more coherent with the quantitative section. However, we could have also looked at bonding SC within NS participants, bridging SC within the North and the South, or even linking SC within NS participants and local authorities. Alternatively, we could have changed our theoretical positioning to consider SC as a process (Campbell, Wood & Kelly, 1999; Campbell and Jovchelovitch, 2000) that can lead to better mental health. Similarly, some authors have argued that SC is a mechanism that links community engagement and mental health (Burgess and Mathias, 2017). Any number of these decisions could have been justified, and could have resulted in slightly different research. The theoretical approach used to study SC interventions and mental health should be carefully selected and justified in future research.

4.2. Recommendations for SC interventions for health

This case study found that participants were able to increase structural, but not cognitive SC. This may have been because cognitive SC was already declining in the area due to external factors. Other SC interventions may wish to consider preventing a decline in SC, in addition to increasing it for older adults. In doing so, they should document place-related processes in the intervention, how this relates to different dimensions of SC, and whether individuals who could benefit from this the

most are the ones who get involved. They may also wish to look at power inequalities within communities, as this can important role in who develops SC and who cannot. This could have important implications for SC interventions and health promotion (Campbell, 2020).

Future SC interventions for mental health should pay special attention to how place plays a role throughout the intervention. Carpiano and Moore (2020) have recently highlighted why accounting for place is particularly important for SC interventions. Future studies could also look more deeply at the role that place plays in developing SC, as opposed to viewing SC as an aspect of place. Research on SC interventions is context-specific, so findings should ideally feed back into the places and interventions that were studied. In this case, the findings from this research will help inform the next phases of the same NS case study. We recommend that other researchers consider similar longitudinal mixed-methods approaches to study SC interventions for mental health in other socio-geographic contexts.

Author contributions

A.E. and D.S. designed the study. A.E. collected data, conducted data analyses, and wrote the manuscript. D.S. provided feedback on the final version of the manuscript.

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Declaration of competing interest

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.healthplace.2020.102386.

References

Andresen, E.M., Malmgren, J.A., Carter, W.B., Patrick, D.L., 1994. Screening for depression in well older adults: evaluation of a short form of the CES-D. Am. J. Prev. Med. 10 (2), 77–84. https://doi.org/10.1016/S0749-3797(18)30622-6.

Bambra, C., 2018. Placing health inequalities: where you live can kill you. In: Routledge Handbook of Health Geography. Routledge, London, pp. 50–58. https://doi.org/10.4324/9781315104584.

Baranyi, G., Sieber, S., Cullati, S., Pearce, J., Dibben, C., Courvoisier, D.S., 2019. The longitudinal association of perceived neighborhood disorder and lack of social cohesion with depression among adults aged 50 and over: an individual participant data meta-analysis from 16 high-income countries. Am. J. Epidemiol. https://doi.org/10.1093/aje/kwz209.

Becares, L., Nazroo, J., 2013. Social capital, ethnic density and mental health among ethnic minority people in England: a mixed-methods study. Ethn. Health 18 (6), 544–562. https://doi.org/10.1080/13557858.2013.828831.

Browne-Yung, K., Ziersch, A., Baum, F., 2013. 'Faking til you make it': social capital accumulation of individuals on low incomes living in contrasting socio-economic neighbourhoods and its implications for health and wellbeing. Soc. Sci. Med. 85, 9–17. https://doi.org/10.1016/j.socscimed.2013.02.026.

Buck-McFadyen, E., 2018. A Mixed Methods Study of Social Capital and Health Among Adults in Rural Ontario. Doctoral dissertation.

Burgess, R., Mathias, K., 2017. Community mental health competencies: a new vision for global mental health. In: The Palgrave Handbook of Sociocultural Perspectives on Global Mental Health. Palgrave Macmillan, London, pp. 211–235.

Cao, W., Li, L., Zhou, X., Zhou, C., 2015. Social capital and depression: evidence from urban elderly in China. Aging Ment. Health 19 (5), 418–429. https://doi.org/10.1080/13607863.2014.948805.

Campbell, C., 2020. Social capital, social movements and global public health: fighting for health-enabling contexts in marginalised settings. Soc. Sci. Med. 112153.

Campbell, C., Jovchelovitch, S., 2000. Health, community and development: towards a social psychology of participation. J. Community Appl. Soc. Psychol. 10 (4), 255–270.

Campbell, C., Wood, R., Kelly, M., 1999. Social Capital and Health. Health Education Authority, London.

Carpiano, R.M., Hystad, P.W., 2011. "Sense of community belonging" in health surveys: what social capital is it measuring? Health Place 17 (2), 606–617.

Carpiano, R.M., Moore, S., 2020. So what's next? Closing thoughts for this special issue and future steps for social capital and public health. Soc. Sci. Med. 113013.

Cohen-Cline, H., Beresford, S.A., Barrington, W., Matsueda, R., Wakefield, J., Duncan, G. E., 2018. Associations between social capital and depression: a study of adult twins. Health Place 50, 162–167. https://doi.org/10.1016/j.healthplace.2018.02.002.

Coll-Planas, L., Nyqvist, F., Puig, T., Urrútia, G., Solà, I., Monteserín, R., 2017. Social capital interventions targeting older people and their impact on health: a systematic review. J. Epidemiol. Community Health 71 (7), 663–672. https://doi.org/10.1136/jech-2016-208131.

Christens, B.D., 2012. Toward relational empowerment. Am. J. Community Psychol. 50 (1–2), 114–128.

Creswell, J.W., Clark, V.L.P., 2017. Designing and Conducting Mixed Methods Research. Sage publications, Thousand Oaks.

Crooks, V.A., Andrews, G.J., Pearce, J., 2018. Places and Spaces. Routledge Handbook of Health Geography, p. 32. https://doi.org/10.4324/9781315104584.

Ehsan, A.M., De Silva, M.J., 2015. Social capital and common mental disorder: a systematic review. J Epidemiol Community Health 69 (10), 1021–1028. https://doi.org/10.1136/jech-2015-205868.

Ehsan, A., Klaas, H.S., Bastianen, A., Spini, D., 2019. Social capital and health: A systematic review of systematic reviews. SSM-population health 8, 100425. https://doi.org/10.1016/j.ssmph.2019.100425.

Ehsan, A., 2020. Community-based social capital interventions and mental health promotion for older adults. Doctoral thesis. University of Lausanne, Switzerland.

Flores, E.C., Fuhr, D.C., Bayer, A.M., Lescano, A.G., Thorogood, N., Simms, V., 2018. Mental health impact of social capital interventions: a systematic review. Soc. Psychiatr. Psychiatr. Epidemiol. 53 (2), 107–119. https://doi.org/10.1007/s00127-017-1469-7.

Fone, D., White, J., Farewell, D., Kelly, M., John, G., Lloyd, K., Williams, G., Dunstan, F., 2014. Effect of neighbourhood deprivation and social cohesion on mental health inequality: a multilevel population-based longitudinal study. Psychol. Med. 44 (11), 2449–2460. https://doi.org/10.1017/S0033291713003255.

Fong, P., Tegan, C., Haslam, C., Haslam, S.A., 2019. Neighbourhood identification and mental health: how social identification moderates the relationship between socioeconomic disadvantage and health. J. Environ. Psychol. 61, 101–114.

Forsman, A.K., Nyqvist, F., Schierenbeck, I., Gustafson, Y., Wahlbeck, K., 2012. Structural and cognitive social capital and depression among older adults in two Nordic regions. Aging Ment. Health 16 (6), 771–779. https://doi.org/10.1080/13607863.2012.667784.

Gallagher, H.C., Block, K., Gibbs, L., Forbes, D., Lusher, D., Molyneaux, R., Richardson, J., Pattison, P., MacDougall, C., Bryant, R.A., 2019. The effect of group involvement on post-disaster mental health: a longitudinal multilevel analysis. Soc. Sci. Med. 220, 167–175. https://doi.org/10.1016/j.socscimed.2018.11.006.

Gold, R.L., 1958. Roles in sociological field observations. Soc. Forces 3, 217–223 (XXXVI).

Guest, G., MacQueen, K.M., Namey, E.E., 2011. Applied Thematic Analysis. Sage Publications, Thousand Oaks.

Haseda, M., Kondo, N., Takagi, D., Kondo, K., 2018. Community social capital and inequality in depressive symptoms among older Japanese adults: a multilevel study. Health Place 52, 8–17. https://doi.org/10.1016/j.healthplace.2018.04.010.

Hawe, P., Shiell, A., 2000. Social capital and health promotion: a review. Soc. Sci. Med. 51 (6), 871–885. https://doi.org/10.1016/S0277-9536(00)00067-8.

Kawachi, I., Berkman, L., 2000. Social cohesion, social capital, and health. In: Social Epidemiology. Oxford University Press, Oxford, pp. 174–190.

Kull, K., 2001. Jakob von uexkull: an introduction. Semiotica, La Haye Then Berlin 134 (1/4), 1–60. https://doi.org/10.1515/semi.2001.013.

Lewicka, M., 2011. Place attachment: how far have we come in the last 40 years? J. Environ. Psychol. 31 (3), 207–230. https://doi.org/10.1016/j.jenvp.2010.10.001.

Maass, R., Kloeckner, C.A., Lindstrøm, B., Lillefjell, M., 2016. The impact of neighborhood social capital on life satisfaction and self-rated health: a possible pathway for health promotion? Health Place 42, 120–128. https://doi.org/10.1016/j.healthplace.2016.09.011.

McKenzie, K., Harpham, T., 2006. Social Capital and Mental Health. Jessica Kingsley Publishers, London.

Mihaylov, N., Perkins, D.D., 2014. Community place attachment and its role in social capital development. In: Place Attachment: Advances in Theory, Methods and Applications. Routledge, London, pp. 61–74.

Moore, S., Kawachi, I., 2017. Twenty years of social capital and health research: a glossary. J. Epidemiol. Community Health 71 (5), 513–517. https://doi.org/10.1136/jech-2016-208313.

Park, M.J., 2017. Impact of social capital on depression trajectories of older women in Korea. Aging Ment. Health 21 (4), 354–361. https://doi.org/10.1080/13607863.2015.1088511.

Pearce, J., Shortt, N., Rind, E., Mitchell, R., 2016. Life course, green space and health: incorporating place into life course epidemiology. Int. J. Environ. Res. Publ. Health 13 (3), 331. https://doi.org/10.3390/ijerph13030331.

Radloff, L.S., 1977. The CES-D scale: a self-report depression scale for research in the general population. Appl. Psychol. Meas. 1 (3), 385–401. https://doi.org/10.1177/014662167700100306.

Ruiz, M., Chaix, B., 2019. Emerging opportunities for life course research on neighbourhoods and mental health. J. Epidemiol. Community Health 73, 689–690. https://doi.org/10.1136/jech-2019-212419.

Ruiz, M., Malyutina, S., Pajak, A., Kozela, M., Kubinova, R., Bobak, M., 2019. Congruent relations between perceived neighbourhood social cohesion and depressive symptoms among older European adults: an East-West analysis. Soc. Sci. Med. 237, 112454. https://doi.org/10.1016/j.socscimed.2019.112454.

Ruiz, M., Scholes, S., Bobak, M., 2018. Perceived neighbourhood social cohesion and depressive symptom trajectories in older adults: a 12-year prospective cohort study. Soc. Psychiatr. Psychiatr. Epidemiol. 53 (10), 1081–1090. https://doi.org/10.1007/s00127-018-1548-4.

Sampson, R.J., Raudenbush, S.W., Earls, F., 1997. Neighborhoods and violent crime: a multilevel study of collective efficacy. Science 277 (5328), 918–924. https://doi.org/10.1126/science.277.5328.918.

StataCorp, 2015. Stata Statistical Software: Release 14. StataCorp LP, College Station, TX.

Stefaniak, A., Bilewicz, M., Lewicka, M., 2017. The merits of teaching local history: increased place attachment enhances civic engagement and social trust. J. Environ. Psychol. 51, 217–225. https://doi.org/10.1016/j.jenvp.2017.03.014.

Subramanian, S.V., Lochner, K.A., Kawachi, I., 2003. Neighborhood differences in social capital: a compositional artifact or a contextual construct? Health Place 9 (1), 33–44. https://doi.org/10.1016/S1353-8292(02)00028-X.

Svendsen, G.L., 2006. Studying social capital in situ: a qualitative approach. Theor. Soc. 35 (1), 39–70. https://doi.org/10.1007/s11186-006-6780-3.

Tennant, P.W., Arnold, K.F., Ellison, G.T., Gilthorpe, M.S., 2019. Analyses of 'change Scores' Do Not Estimate Causal Effects in Observational Data arXiv preprint arXiv:1907.02764.

VERBI Software, 2017. MAXQDA 2018 [computer Software]. VERBI Software., Berlin, Germany.

Wood, L., Giles-Corti, B., 2008. Is there a place for social capital in the psychology of health and place? J. Environ. Psychol. 28 (2), 154–163. https://doi.org/10.1016/j.jenvp.2007.11.003.

Ziersch, A.M., Baum, F.E., MacDougall, C., Putland, C., 2005. Neighbourhood life and social capital: the implications for health. Soc. Sci. Med. 60 (1), 71–86. https://doi.org/10.1016/j.socscimed.2004.04.027.

Zwygart, M., Plattet, A., Ammor, S., 2017. The development of a "Neighborhood in solidarity" in Switzerland. J. Gerontol. Soc. Work 60 (6–7), 519–534. https://doi.org/10.1080/01634372.2017.1340386.