



Kent Academic Repository

Davies, Ben, Abrams, Dominic, Horsham, Zoe and Lalot, Fanny (2024) *The Causal Relationship Between Volunteering and Social Cohesion: A Large Scale Analysis of Secondary Longitudinal Data*. Social Indicators Research, 171 (3). pp. 809-825. ISSN 1573-0921.

Downloaded from

<https://kar.kent.ac.uk/105166/> The University of Kent's Academic Repository KAR

The version of record is available from

<https://doi.org/10.1007/s11205-023-03268-6>

This document version

Publisher pdf

DOI for this version

Licence for this version

CC BY (Attribution)

Additional information

Versions of research works

Versions of Record

If this version is the version of record, it is the same as the published version available on the publisher's web site. Cite as the published version.

Author Accepted Manuscripts

If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding. Cite as Surname, Initial. (Year) 'Title of article'. To be published in **Title of Journal**, Volume and issue numbers [peer-reviewed accepted version]. Available at: DOI or URL (Accessed: date).

Enquiries

If you have questions about this document contact ResearchSupport@kent.ac.uk. Please include the URL of the record in KAR. If you believe that your, or a third party's rights have been compromised through this document please see our [Take Down policy](https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies) (available from <https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies>).



The Causal Relationship Between Volunteering and Social Cohesion: A Large Scale Analysis of Secondary Longitudinal Data

Ben Davies¹ · Dominic Abrams¹ · Zoe Horsham¹ · Fanny Lalot^{1,2}

Accepted: 13 November 2023 / Published online: 5 January 2024
© The Author(s) 2023

Abstract

It is often taken for granted that social cohesion and volunteering are inextricably related. Previous research suggests both that social cohesion creates a conducive environment for volunteering to emerge and that volunteering itself facilitates feelings of social cohesion. Despite this, much of the existing evidence on this relationship is limited to cross-sectional research that precludes any assessment of potential causality. In this paper we present a secondary analysis of two large scale and longitudinal social surveys in the UK: the Understanding Society Household Longitudinal Study and the Beyond Us and Them project. Using data from these surveys we estimate a cross-lagged longitudinal model to assess the causal relationships between social cohesion and volunteering over time. Across both data sources, involving different time intervals, we find significant cross-lagged bi-directional relationships between social cohesion and volunteering. These findings provide much needed empirical support for the proposition that social cohesion and volunteering are causally related over periods of both months and years. Implications for theory and policy are discussed.

Keywords Social cohesion · Volunteering · Longitudinal effects · Secondary analysis

1 Introduction

Social cohesion is often recognized as a core benefit to any community system. Feeling connected and bound together contributes to a multitude of positive community attributes, such as community resilience (Jewett et al., 2021) and social progress (Borisov & Vinogradov, 2018). Alongside this, social cohesion is commonly thought to contribute to the key community behavior of volunteering. Volunteering is vital to the upkeep of communities and maintenance of social support networks, as most recently highlighted by the COVID-19 pandemic. For example, in the UK it was suggested that up to 12.4 million

✉ Dominic Abrams
d.abrams@kent.ac.uk

¹ School of Psychology, University of Kent, Canterbury, Kent CT2 7NP, UK

² Faculty of Psychology, University of Basel, Basel, Switzerland

people (or one in four people) volunteered to provide support to vulnerable individuals (Talk Together, 2021). Despite a surge in volunteering in the UK—and elsewhere—during the pandemic, volunteering rates in the UK are now at a five-year low (Hill, 2023), and trends in social cohesion appear to suggest a decline (Schiefer & Van der Noll, 2017). Understanding the causal connections between social cohesion and volunteering may provide important insights into how these two core elements of community functioning might be sustained.

There is surprisingly limited empirical evidence that directly tests the causal relationship between social cohesion and volunteering. In this article we conduct an analysis of secondary data from two large scale longitudinal social surveys to formally test what causal relationship, if any, exists between social cohesion and volunteering. We assess the widespread assumption that social cohesion and volunteering are inherently linked. In doing so, we aim to provide an empirical foundation for the direction of investment in infrastructures for either social cohesion or volunteering, or indeed, both.

1.1 Defining Social Cohesion and Volunteering

1.1.1 Defining Social Cohesion

Social cohesion lacks a consensually agreed upon definition and conceptualization. The term is often construed and used as a broader catch-all construct (Chan et al., 2006) consisting of many related elements, such as a sense of belonging, various forms of trust (e.g., social, institutional, political) and civic engagement, among others. Being studied in several different fields, such as psychology, sociology, and political science, and through both academic and policy lenses, it is unsurprising there is no agreed definition of social cohesion, and authors have offered a variety of conceptualizations of the construct (for a full review, see e.g., Abrams et al., 2023; Horsham et al., 2023).

Earlier work on social cohesion from Jenson (1998), and extended by Bernard (1999), conceptualized the construct as comprising five elements that each exist on a continuum: (1) belonging versus isolation, (2) inclusion versus exclusion, (3) participation versus non-involvement, (4) recognition versus rejection, and (5) legitimacy versus illegitimacy. Chan et al. (2006) refined these ideas, developing a two-by-two dimensional framework consisting of an objective versus subjective dimension and an orthogonal horizontal (cohesion between other people) versus vertical (cohesion with the state) dimension. Chan and colleagues identified nine indicators of social cohesion captured by these dimensions: trust in others, a willingness to help others (including those from other social groups), a sense of belonging or identity (all corresponding to the horizontal-subjective category), trust in public figures and confidence in institutions (vertical-subjective), social participation and volunteering (horizontal-objective) and finally political participation such as voting and the presence or absence of inter-group alliances (vertical-objective).

Subsequently, Schiefer and van der Noll (2017) collated multiple definitions of social cohesion from the literature and distilled six dimensions: social relations, identification, orientation towards the common good, shared values, quality of life, and (in)equality. Each dimension embodies sub-components; for example, social networks and trust fall under the umbrella of social relations, whilst psychological well-being and physical health come under quality of life. Abstracting from these identified dimensions, Schiefer and van der Noll (2017) concluded that the core elements of social cohesion were social relations, attachment/belonging, and an orientation towards the common good, and offered an

inclusive definition of social cohesion as “a descriptive attribute of a collective, indicating the quality of collective togetherness” (p. 592).

The work of Chan et al. (2006), Schiefer and van der Noll (2017) and others focused largely on theoretical, rather than operational, definitions of cohesion, producing a gap between theory and measurement (Dickes et al., 2010). Subsequently, Bottoni (2018) operationalized cohesion based on Chan et al.’s (2006) work. Bottoni holds that social cohesion exists at *micro* (relations with other individuals), *meso* (relations with groups), and *macro* (relations with wider society) levels, and involves subjective (e.g., interpersonal trust, social support, openness, and institutional trust) and objective (e.g., density of social relations, civic participation, and legitimacy of institutions) components. Using data from 29 countries represented in the European Social Survey, Bottoni found cross-cultural support for the proposed model. However, there remains no clear academic or policy consensus about exactly what the component parts of social cohesion are and how they should be measured.

1.1.2 Social Cohesion and Social Capital

Although the present paper specifically focusses on the relationship between social cohesion and volunteering, it is important to briefly disentangle social cohesion from another closely related construct: social capital. Like social cohesion, social capital is a multidimensional construct that has often been conceptualized and defined in a multitude of ways (Cook, 2022). One of the more widely cited conceptualizations of social capital comes from Putnam (1993), who considered social capital to be the “features of social organization, such as networks, norms and trust, that facilitate coordination and cooperation for mutual benefits” (p. 36). Putnam (2001) argues that these networks and reciprocity between people have value and act as a resource that individuals and groups can utilize, which allows them to better work together and achieve collective goals.

Within social capital, three different forms are typically identified: bonding capital, bridging capital, and linking capital (Granovetter, 1973). Bonding capital refers to the networks between individuals within a group, which are usually emphasized in homogenous groups (Claridge 2018). Bridging capital reflects the networks and connections between different groups, which usually cross the divide between homogenous groups, (Claridge, 2018). Finally, linking capital refers to the connections between individuals who belong to groups at different levels of power, such as individuals working in a community level charity networking with individuals working in the Government. Crucially, as noted by Chan et al. (2006), social capital differs from social cohesion in its scope. Specifically, social capital is primarily concerned with the networks between individuals and groups. In contrast, social cohesion typically adopts a more societal level focus, although it can also encompass individual or group level relationships (e.g., Bottoni, 2018).

1.1.3 Defining Volunteering

The definitional and conceptual issues surrounding volunteering are comparatively less complex, but also lack consensus. Volunteering is generally regarded as involving helping behaviors that are intentionally offered of one’s own free will, extended over time, and often performed on the behalf of formal organizations (Omoto & Packard, 2016; Snyder & Omoto, 2008). However, definitions differ in emphasis and scope. Some, such as that in Snyder and Omoto’s (2008) Volunteer Process Model, do not make a strong distinction

between formal volunteering (conducted on behalf of an organization) and informal volunteering (occurring outside of a structured organizational context, and more akin to general helping behaviors such as collecting shopping for a neighbor; see Pearce & Kristjansson, 2019). Omitting the explicit inclusion of informal volunteering may lead to underestimates in volunteering rates (Thomson, 2002) through failing to embrace prevalent but smaller scale micro-expressions of volunteering (Paine et al., 2010). Conceptualizing volunteering as behaviors that capture both formal and informal forms of volunteering may therefore result in more complete assessments of the construct.

1.2 The Relationship Between Volunteering and Social Cohesion

Empirical evidence that directly assesses the relationship between volunteering and social cohesion is scarce. In part, this is because many conceptualizations of social cohesion include volunteering as an element (e.g., Chan et al., 2006; Dickes & Valentova, 2012). Such conceptualizations are problematic as they result in tautological definitions, in which the consequences and antecedents of social cohesion are intertwined with the concept itself (Green et al., 2009). Indeed, there has been some recognition of this issue in the social cohesion literature already. For example, Chan et al. (2006) excluded economic factors from their conceptualization of social cohesion as these were considered an environmental precondition that may enhance feelings of social cohesion, rather than being a direct component. Schiefer and van der Noll (2017) excluded inequality from their core elements of social cohesion for similar reasons, as well as excluding quality of life and well-being, which they propose reflects an outcome of cohesive societies (see also Lalot et al., 2022).

In a similar vein, we argue that volunteering is an outcome of social cohesion rather than an integral component of it. A community in which individuals volunteer is not intrinsically cohesive (especially when volunteering is typically motivated by internal prosocial dispositions; Zischka, 2019). However, socially cohesive societies may be more likely to elicit volunteering and assistance to others within a neighborhood. In addition, the act of volunteering itself may promote feelings of identity and togetherness. Consequently, we position social cohesion and volunteering behaviors as separate entities that nonetheless may be causally linked.

The limited evidence that does explore the relationship between volunteering and social cohesion generally points to a positive association between the two. Pearce and Kristjansson (2019) found that perceived social cohesion was associated with both formal and informal volunteering. Lalot et al. (2022) found districts that invested in social cohesion infrastructure (e.g., community programs and initiatives) reported higher levels of volunteering and other civic participation behaviors. A key limitation of much of the evidence on the relationship between social cohesion and volunteering is that it is cross-sectional and correlational (Hill & Stevens, 2010; Miller, 2010), precluding any assessment of potential causality.

Previous research has also observed that many elements of social cohesion, such as a strong social network or a feeling of connectedness and belonging with the community, incentivize volunteering among older members of the population (Lu et al., 2021). This implies a relatively long lead time. In a longitudinal study, Nakamura et al. (2022) found that individuals with higher levels of social contact (e.g., meeting with friends multiple times a week) were significantly more likely to volunteer, an effect that was persistent for up to four years.

There is also some evidence that the act of volunteering increases perceptions of social cohesion. Theoretically, some authors suggest that volunteering contributes positively to social cohesion via the affordance of opportunities for intra and inter-community contact (Putnam, 2000; Ramsey, 2012). Experimental evidence from Dolan et al. (2021) compared individuals who volunteered as part of the UK's NHS Volunteer Responder program (established during COVID-19 to assist vulnerable individuals) with non-volunteers. They found that volunteers reported higher feelings of social connectedness and community belonging than their non-volunteering counterparts. Likewise, Fox's (2019) longitudinal study found that volunteering was linked to the later generation of social capital (measured as neighborhood cohesion and involvement in community associations). Taken together, the limited extant evidence suggests that social cohesion and volunteering may be bi-directionally influential.

Finally, because prior research is predominantly cross-sectional or only examines longitudinal relationships in one direction of causality, it is of interest to consider the possible duration of any causal linkages between volunteering and cohesion. Nakamura et al.'s (2022) research suggests causal effects may last, or take, several years to emerge. But the presence of cross-sectional connections suggests that causal effects may be more dynamic and could arise over shorter periods. Thus, it is of interest to consider whether cohesion and volunteering can influence one another over periods of months as well as years.

2 Method

2.1 Data Sources, Samples, and the UK Context

In this paper, we investigate the bi-directional relationship between social cohesion and volunteering across time, analyzing secondary data from two large scale, longitudinal social surveys in the UK; the UKRI Understanding Society Household Longitudinal Study (Institute for Social & Economic Research, 2022) spanning a four-year period, and the Nuffield Foundation's Beyond Us and Them survey (Belong: The Cohesion and Integration Network, n.d.) spanning a seven-month period. Both datasets are based in the UK, which we focus on primarily for practical reasons. Specifically, there is limited empirical evidence from elsewhere that assesses both social cohesion and volunteering. We therefore focus specifically on the UK context because of the availability of these two large scale longitudinal datasets that included measures of both constructs. Compared to other European countries, the UK has middling to higher levels volunteering (European Commission, 2010; Plagnol & Huppert, 2010), although there is a similar trend of decline in volunteering across Europe (Damian, 2019). In contrast, trends in social cohesion appear much more varied across Europe with social cohesion being stable in some countries but increasing in others (European Commission, 2021).

Understanding Society is a large-scale household panel survey that has occurred annually since 2009. It surveys approximately 40,000 individuals each year, covering a diverse scope of topics which vary each year. We draw on data from waves six (2014–15), eight (2016–17), and nine (2017–18) as these contain measures of both social cohesion and volunteering. A total of 29,034 participants provided data for all three waves, of which 12,921 (44.50%) were male, 16,111 (55.49%) were female, and two did not report their gender. The mean age of participants (taken at wave six) was 39.49 years ($SD = 17.58$ years).

The Beyond Us and Them survey, developed and conducted by Belong and a research team including the present authors at the University of Kent, was an eight-wave survey conducted during 2020 and 2021. Surveying an average of approximately 5000 people at each wave, the survey assessed topics such as inter-group unity and division, social and political trust, and civic participation during the COVID-19 pandemic. We analyzed data from waves six (December 2020), seven (March 2021), and eight (June 2021) as these included the most consistent set of measures of volunteering and cohesion. Across these three waves there were a total of 2496 participants of which 1028 (41.19%) were male, 1454 (58.25%) were female, and 13 identified as other. The mean age of participants was 47.98 years ($SD = 16.39$ years).

2.2 Measures

2.2.1 Understanding Society

The volunteering and social cohesion measures from Understanding Society were not simultaneously present across all waves. Wave six of the survey contained both measures of volunteering and social cohesion. However, wave eight only contained measures of volunteering and wave nine only contained measures of social cohesion. The measures used for each construct are described below.

2.2.1.1 Social Cohesion Social cohesion was measured using Buckner's (1988) Neighborhood Cohesion Instrument. This consists of eight items that assess three sub-components of social cohesion: *neighboring* ('If I needed advice about something I could go to someone in my neighborhood'; 'I borrow things and exchange favors with my neighbors'; and 'I regularly stop and talk with people in my neighborhood'), *psychological sense of community* ('I feel like I belong to this neighborhood'; 'The friendships and associations I have with other people in my neighborhood mean a lot to me'; 'I would be willing to work together with others on something to improve my neighborhood'; and 'I think of myself as similar to the people that live in this neighborhood'), and *attraction to the neighborhood* ('I plan to remain a resident of this neighborhood for a number of years'). Items were measured on a 5-point Likert scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

2.2.1.2 Volunteering Volunteering was assessed with a single binary response item: "In the last 12 months, have you given any unpaid help or worked as a volunteer for any type of local, national or international organization or charity?". Responses were coded as 0 = "No" and 1 = "Yes".

2.2.2 Beyond Us and Them

In contrast to the Understanding Society survey, the Beyond Us and Them survey employed a wider set of items to assess several components of cohesion. We selected for analysis those that most closely represented Chan et al.'s (2006) subjective dimensions of horizontal and vertical social cohesion.¹

¹ We focus specifically on the subjective dimension as the objective dimension includes behaviors that were likely to confound a causal assessment of the relationship between cohesion and volunteering. For example, the objective dimension specifically includes volunteering as an indicator itself, as well as closely related behaviors such as social and political participation.

2.2.2.1 Horizontal Cohesion Horizontal cohesion was measured using three survey items and one composite index score. Survey item one was ‘How much do you feel that you belong to your neighborhood?’, akin to the ‘sense of belonging or identity’ component of Chan et al.’s (2006) model. Item two was ‘Would you say that most people in your neighborhood can be trusted?’, akin to social trust. Item three was ‘How much do you feel a responsibility to try to improve your neighborhood?’, akin to a willingness to help others. Each of these items was measured from 1 (*Not at all*) to 5 (*Very much so*). As these items did not include an element of a willingness to help people from ‘other’ social groups that is present within Chan et al.’s model, we additionally included a composite score of feelings towards people from various social groups that was rated on a feeling thermometer from 1 (*Very cold feelings*) to 11 (*Very warm feelings*). The feeling thermometer assessed participants’ feelings towards several groups, specifically: wealthy people, poor people, older people, young people, legal immigrants, asylum seekers, black people, Muslim people, seasonal workers, and illegal immigrants.² Responses were aggregated into a standardized (z-score) index of people’s general openness towards people from different social groups.

2.2.2.2 Vertical Cohesion Vertical cohesion was measured using five items. Three of these items assessed the *political trust* element of Chan et al.’s (2006) model: ‘Most members of the UK Parliament are honest’; ‘I trust my local member of parliament to represent the interests of all communities across the constituency’; and ‘Politicians are mainly in politics for their own benefit and not for the benefit of the community’ (Reverse coded). Two items assessed the *confidence in political and social institutions* component of Chan et al.’s model: ‘I believe the UK Government is handling the causes and consequences of the pandemic competently’ and ‘I believe my local council (i.e., town or city or district) is handling the causes and consequences of the pandemic competently.’ All items were measured on a five-point Likert scale, from 1 (*Strongly disagree*) to 5 (*Strongly agree*).

2.2.2.3 Volunteering Volunteering was measured using a question that asked participants whether or not they had voluntarily engaged in any of several forms of pro-social action during the last month. From this measure, we created a binary variable for participants who had (1) or had not (0) volunteered.

2.3 Analytic Strategy

For each dataset, we first conducted a confirmatory factor analysis for the social cohesion measure to assess both the validity and temporal invariance of the measure. Measurement invariance assesses whether the measures capture the same constructs similarly at each time point, and consists of testing several increasingly constrained models to assess whether different components of a measurement model are equal across time. Broadly, there are four models to be tested in measurement invariance (Mackinnon et al., 2022): configural, metric, scalar, and residual invariance. Configural invariance assesses whether the basic structure of the model is consistent across time. Metric invariance assesses whether the representativeness of each item remains consistent over time. Scalar invariance assesses

² These items were displayed in two question blocks within the survey, so that participants only evaluated one set of five social groups instead of all ten items. The question blocks were randomly distributed across participants.

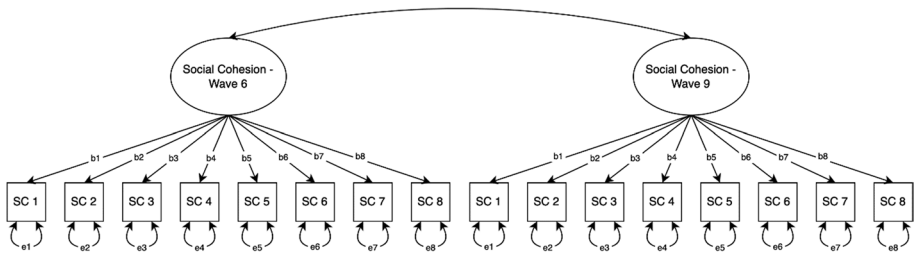


Fig. 1 Measurement invariance model for social cohesion (Understanding Society). Note: ovals represent latent factors and rectangles represent observed variables. In all invariance models, the residual covariance between observed items was constrained to be equal across waves. This model achieved residual invariance in which the factor loadings, item intercepts, and residual variances of items were constrained to be equal across waves

whether mean scores on each item remain consistent over time and finally, the most restrictive model of residual invariance assesses whether the influence of external factors on the model are equal over time. Each progressive model is taken as stronger evidence of the invariance of the measure over time. Crucially, it is necessary to establish invariance to accurately measure changes in a variable over time. The absence of measurement invariance means that the appearance of change (e.g., mean levels of a variable increasing over time) may be due to changes in the interpretation of the measure rather than reflecting true change. Although residual invariance indicates a fully invariant measure, many authors consider the requirement of residual invariance too stringent for practical use, as constraining external influences to be equal is not necessary for assessing mean levels of change (Putnick & Bornstein, 2016; Vandenberg & Lance, 2000).

We then conducted a longitudinal cross-lagged structural equation model in which social cohesion and volunteering predicted each other across time. We focus on a longitudinal analysis in order to facilitate causal conclusions about the relationship between volunteering and social cohesion. Although other methods, such as experimental research designs, allow for stronger inferences of causality (as they allow for the control of extraneous influences), they are not applicable for the present analysis of secondary data. Given the dearth of causal evidence, we utilize the longitudinal analysis as an important first step in providing causal evidence of the relationship between social cohesion and volunteering.

3 Results

3.1 Confirmatory Factor Analysis and Measurement Invariance

3.1.1 Measurement Invariance

To assess the robustness of the social cohesion models in the Understanding Society and Beyond Us and Them datasets we first tested for measurement invariance across waves. For brevity we summarize the outcomes of the measurement invariance analysis below. A full technical description of the analysis is available in the supplementary materials. All models were estimated using the *lavaan* package in R (Rosseel, 2012).

Table 1 Factor loadings for the residual invariance social cohesion model (Understanding Society dataset)

Variable	Factor loading	SE	p	95% CI lower	95% CI upper
Item 1	0.84	0.005	<0.001	0.83	0.85
Item 2	0.72	0.006	<0.001	0.71	0.73
Item 3	0.74	0.005	<0.001	0.73	0.75
Item 4	0.68	0.004	<0.001	0.67	0.69
Item 5	0.78	0.004	<0.001	0.77	0.79
Item 6	0.48	0.005	<0.001	0.47	0.49
Item 7	0.69	0.005	<0.001	0.68	0.70
Item 8	0.64	0.006	<0.001	0.63	0.65

Items are reported in the order they appear in text. As factor loadings were constrained equal, coefficient values for each item are identical across waves. Standardized estimates are shown

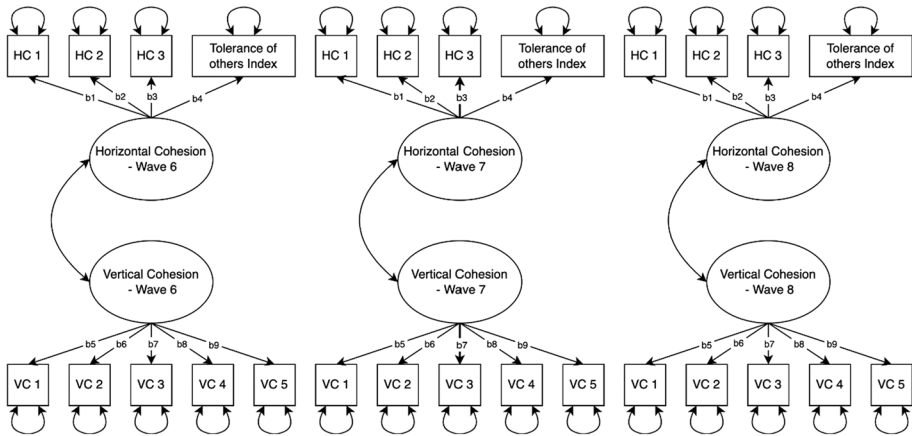


Fig. 2 Measurement invariance model for horizontal and vertical cohesion (Beyond Us and Them dataset). Note: items are numbered in the order they appear in text. Ovals represent latent factors and rectangles represent observed variables. In all invariance models, the residual covariance between observed items was constrained to be equal across waves. This model achieved metric invariance in which the factor loadings of items were constrained to be equal across waves

The measurement model of social cohesion for the Understanding Society dataset is displayed in Fig. 1. For this dataset, we concluded that the model was residually invariant. For determining model fit, we utilize the common fit indices of the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). The residual invariance model showed good fit to the data, $\chi^2(119) = 13903.95, p < 0.001, CFI = 0.936, RMSEA = 0.064, SRMR = 0.047$, and the CFI and RMSEA metrics did not substantially differ from the less restrictive scalar model ($\Delta CFI = 0.001, \Delta RMSEA = 0.002$; see Chen, 2007; Cheung & Rensvold, 2002; Rutkowski & Svetina, 2014). Consequently, we concluded that the social cohesion measure was fully invariant across time. The factor loadings for the final residual invariance model are displayed in Table 1.

The proposed measurement model of social cohesion for the Beyond Us and Them dataset is presented in Fig. 2. For this dataset we concluded that the social cohesion

Table 2 Factor loadings for the metric invariance social cohesion model (Beyond Us and Them dataset)

Variable		Factor Loading	SE	<i>p</i>	95% CI lower	95% CI upper
Horizontal cohesion	Item 1	0.91	0.02	<0.001	0.88	0.94
	Item 2	0.74	0.02	<0.001	0.72	0.77
	Item 3	0.78	0.02	<0.001	0.75	0.82
	Tolerance of others index	0.30	0.02	<0.001	0.27	0.34
Vertical cohesion	Item 1	0.85	0.02	<0.001	0.82	0.88
	Item 2	0.67	0.02	<0.001	0.63	0.71
	Item 3	0.65	0.02	<0.001	0.62	0.68
	Item 4	0.61	0.02	<0.001	0.56	0.65
	Item 5	0.50	0.02	<0.001	0.46	0.54

As factor loadings were constrained equal, coefficient values for each item are identical across waves. Standardized estimates are shown

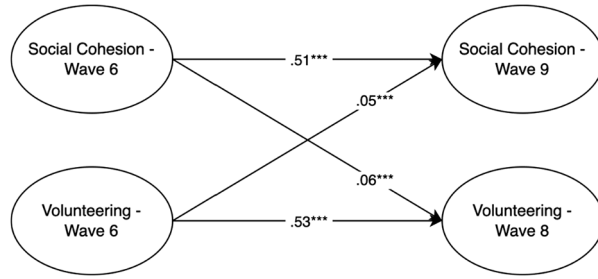
measure was metrically invariant. The metric invariance model showed good fit to the data, $\chi^2(318)=1511.93$, $p<0.001$, CFI=0.972, RMSEA=0.039, SRMR=0.056, and the CFI and RMSEA metrics did not substantially differ from the less restrictive configural model ($\Delta\text{CFI}=0.002$, $\Delta\text{RMSEA}<0.001$). However, the more restrictive scalar model provided significantly worse fit than the metric model, $\Delta\chi^2(18)=690.20$, $p<0.001$, and there was a sizable change in CFI ($\Delta\text{CFI}=0.015$). We conservatively concluded that the model was not scalar invariant. We therefore adopted the metric invariant model for analysis. The factor loadings for the final metric invariance model are displayed in Table 2.

3.2 Longitudinal Analysis

3.2.1 Understanding Society

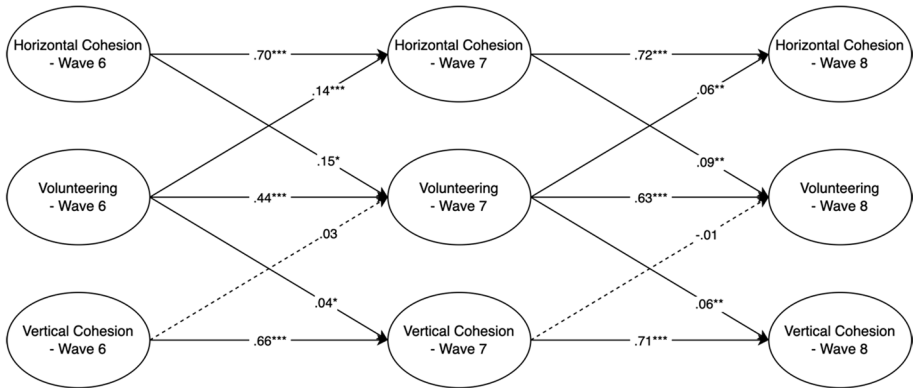
To assess the relationship between volunteering and social cohesion within the Understanding Society dataset we estimated a structural equation model which included the full residual invariance measurement model as described above, with the addition of cross-lagged pathways between the latent social cohesion variables and the binary volunteering items over time. Due to differences in the items measured at different time points, social cohesion and volunteering measured at wave six was cross-lagged onto cohesion measured at wave nine and volunteering measured at wave eight. Participants' age, gender, and race (dichotomized as White vs. Non-White) were included in the model as covariates.³ The structural component of this model is displayed in Fig. 3. The overall model provided good fit to the data; $\chi^2(193)=20026.34$, $p<0.001$, CFI=0.95, RMSEA=0.07, SRMR=0.06. As shown in Fig. 3, the cross-lagged paths between volunteering and social cohesion were significant at all waves.

³ Measures of income, status, and political orientation were not available in the Understanding Society dataset, and hence could not be included as additional covariates as they were in the Beyond Us and Them model.



*** $p < .001$

Fig. 3 Longitudinal cross-lagged relationships between social cohesion and volunteering (Understanding Society dataset)



*** $p < .001$ ** $p < .01$ * $p < .01$

Fig. 4 Longitudinal cross-lagged relationships between horizontal and vertical cohesion and volunteering (Beyond Us and Them dataset)

3.2.2 Beyond Us and Them

To assess the relationship between horizontal cohesion, vertical cohesion and volunteering in the Beyond Us and Them dataset, we similarly estimated a structural equation model. This included the metric invariance measurement model as described above, as well as the structural model in which the cross-lagged pathways between horizontal cohesion and volunteering and vertical cohesion and volunteering were estimated.⁴ Participant’s age, gender, race (dichotomized as White vs. Non-White), political orientation, subjective socioeconomic status, and income were included in the model as covariates. The structural component of the model is displayed in Fig. 4. The overall model provided marginally

⁴ As it was not of primary interest to the study we did not include the cross-lagged pathways between horizontal cohesion and vertical cohesion. However, the results are similar with these pathways included.

adequate fit to the data, $\chi^2(533)=7180.894$, $p<0.001$, CFI=0.87, RMSEA=0.08, SRMR=0.08.

As shown in Fig. 4, the cross-lagged pathways between horizontal cohesion and volunteering (and vice versa) were significant across all waves. However, the relationship between vertical cohesion and volunteering was unidirectional: only the pathways from volunteering to vertical cohesion (shown with solid lines) were significant, and not the other way around (shown with dashed lines).

In summary, we find that in the four-year Understanding Society data there is consistent evidence that social cohesion predicts subsequent volunteering, and vice versa. The two effects appear to be of comparable size. In the seven-month Beyond Us and Them data, we find that horizontal cohesion predicts volunteering and vice versa; however, whereas volunteering predicts vertical cohesion, vertical cohesion does not predict volunteering. Moreover, the strength of relationships involving horizontal cohesion are substantially larger than those involving vertical cohesion.

4 Discussion

In this paper we sought to provide empirical evidence for the causal relationships between social cohesion and volunteering. Through a secondary analysis of data from two large scale social surveys in the UK, we found consistent evidence for a bi-directional, causal relationship between social cohesion and volunteering. Specifically, people who felt more cohesive were more likely to volunteer at later time points, and people who volunteered were more likely to feel socially cohesive later in time. However, this bi-directional relationship seems to apply only to horizontal forms of social cohesion. Vertical cohesion, which reflects cohesion with institutional authority, had a unidirectional relationship to volunteering. More concretely, people who volunteered felt more trusting of politicians and confident in government institutions at later time points, but these feelings of trust and confidence did not in turn affect future volunteering.

It is plausible that this unidirectional effect may be due to the differing scopes of volunteering and vertical cohesion. Specifically, volunteering is usually focused on local community issues, whereas vertical cohesion (as operationalized here) concerns trust in national institutions and Government. There appears little reason to assume that trust in national institutions would impact the likelihood of volunteering in local community contexts. It may be the case that more localized levels of vertical cohesion (e.g., trust in local councils) may exhibit a bi-directional relationship, but the present data indicate that nationally focused levels of vertical cohesion do not impact volunteering.

Overall, the present findings are consistent with earlier evidence that social cohesion and volunteering are linked. However, previous research supporting the relationship between social cohesion and volunteering (e.g., Lalot et al., 2022; Pearce & Kristjansson, 2019) has largely been correlational in nature (Hill & Stevens, 2010; Miller, 2010). Causal evidence, such as that from longitudinal research designs (e.g., Fox, 2019; Nakamura et al., 2022), has been far more limited and restricted either to specific samples (e.g., elderly populations) or to exploring only unidirectional pathways (e.g., volunteering to social cohesion). The present research addresses these limitations of earlier research by explicitly assessing the bi-directional relationships between volunteering and social cohesion, contributing a critical extension to previous efforts by supporting the plausibility of the contention that social cohesion and volunteering are indeed causally related.

The present findings also highlight the need for a more precise and comprehensive conceptualization of social cohesion. Previous theoretical models of social cohesion have positioned volunteering as a constituent part of cohesion (Chan et al., 2006). However the present study challenges that conceptualization and demonstrates the importance of positioning social cohesion and volunteering as separate entities in order to study the relationships between the two. For example, our approach enabled us to identify that horizontal and vertical forms of cohesion have different relationships with volunteering. The present evidence also reinforces previous calls for research to conceptualize social cohesion in a manner that differentiates it from its antecedents and consequences (e.g., Schiefer & van der Noll, 2017).

Identifying the causal relationship between social cohesion and volunteering can also help inform investment strategies in these areas. For one, the causal relationship should affirm confidence in existing government investments into social cohesion and volunteering infrastructure (Abrams et al., 2020). The bi-directional relationship indicates that investment in either social cohesion or volunteering initiatives will be beneficial in promoting more cohesive and inclusive societies. However, given that volunteering additionally promoted feelings of vertical cohesion, it is likely that investment that supports volunteering will have broader benefits beyond cohesion within local communities.

A further important conclusion from the present research is that efforts to support either social cohesion or volunteering can yield gains in both a relatively short time frame (a few months) and a longer one (a few years). This means that fundholders can have confidence that investments in promoting strategies to support social cohesion, volunteering, or both will 'pay off' within a politically relevant timeframe as well as the longer term.

Notwithstanding the strengths and contributions of this research, the present work also has some limitations. First, the measures available for study were limited, requiring us to explore different operationalizations of cohesion across the two datasets. Although the models are conceptually similar and show consistent findings, there are important differences between the two sources of evidence. Most notably, the Understanding Society model did not include an element of vertical cohesion, and our having to use different operationalizations of cohesion reflects the broader limitation in the literature that there remains no consensual definition or conceptualization of cohesion, and consequently little consensus in its operationalization (Horsham et al. 2023). Additional research is needed to unify and standardize the measurement of social cohesion in order to support progression of research in the field.

Secondly, the social cohesion measure in the Beyond Us and Them data was only metric invariant, which limits confidence in its stability over time. However, this may be inconsequential as the constraining of item intercepts in the scalar model accounts for grand mean level changes over time, and does not affect evidence for the relationship between constructs. Consequently, the metrically invariant scale was appropriate for the purpose of the current study. Additionally, the lack of a fully invariant measure of social cohesion may be expected due to the COVID-19 context in which the Beyond Us and Them data was collected. During this period several elements of social cohesion, such as political trust, were more volatile (Davies et al., 2021) and therefore some level of variation in the mean levels of social cohesion constructs over time was to be expected.

Finally, whereas the items used to measure cohesion were quite multi-faceted and involved a range of items, those of volunteering were more limited. This may mean that the strength of relationships between volunteering and cohesion have been somewhat underestimated. Despite any such limitations of measurement it remains clear that these relationships do exist and persist over time.

5 Conclusion

The present research provides an important basis for the argument that there are causal relationships between social cohesion and volunteering. The findings affirm previously held assumptions in the field that these relationships may be bi-directional. They therefore provide reassurance that investment in both social cohesion and volunteering infrastructure and initiatives will be beneficial in bolstering communities. Moreover, the evidence suggests that these effects can be observed both over shorter periods (months) and in the longer term (years). Therefore, this present evidence contributes a substantial first step in establishing an evidential basis for policy. Further conceptual work is needed to establish a broadly accepted definition and approach to measuring social cohesion. Further empirical work is also needed to understand how social cohesion, volunteering, and their relationship may be underpinned, attenuated or augmented by other societal and individual factors.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11205-023-03268-6>.

Acknowledgements We extend our thanks to Jo Broadwood, Jeni Vine and Belong: The Cohesion and Integration Network for their support and insight in the development of this paper.

Author Contributions All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by BD. The first draft of the manuscript was written by BD and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Funding This research was supported by funding from the Nuffield Foundation, (Grant/Award Number: WEL/FR-000022582) to the corresponding and 4th author, and from the UK Department of Culture, Media, and Sport (Belong_2022 Power of Connection) to the corresponding author.

Data Availability Analysis code for the study are available from the corresponding author on request. Data used from the Beyond Us and Them dataset are also available from the corresponding author on request. Data used from the Understanding Society dataset are publicly available at <https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=6614>.

Declarations

Conflicts of interest We have no conflicts of interest to disclose.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Abrams, D., Lalot, F., Broadwood, J., Davies Hayon, K., & Platts-Dunn, I. (2020). *The Social Cohesion Investment: Local areas that invested in social cohesion programmes are faring better in the midst of the Covid-19 pandemic*. Belong: The cohesion and integration network. <https://kar.kent.ac.uk/84003/1/The-Social-Cohesion-Investment-Final-2.pdf>.
- Abrams, D., Horsham, Z., & Davies, B. (2023). *Literature Review - Linking Volunteering and Social Cohesion: Causal Evidence in the UK and Beyond*. Project report. University of Kent and Belong Network.

- https://kar.kent.ac.uk/101468/3/Social%20cohesion%20and%20volunteering%20lit%20review_19_5_KAR.pdf.
- Belong: The Cohesion and Integration Network. (n.d.). *Beyond Us and Them: Societal cohesion in the context of Covid-19*. <https://www.belongnetwork.co.uk/research-projects/beyond-us-and-them-research-project/>.
- Bernard, P. (1999). *Social cohesion: A critique*. Canadian Policy Research Networks.
- Borisov, I. V., & Vinogradov, S. (2018). The role of social cohesion in social and economic processes. *Business and management sciences: New challenges in theory and practice*, 521–539. <https://www.researchgate.net/publication/329656315>.
- Bottoni, G. (2018). A multilevel measurement model of social cohesion. *Social Indicators Research*, 136(3), 835–857. <https://doi.org/10.1007/s11205-016-1470-7>
- Buckner, J. C. (1988). The development of an instrument to measure neighborhood cohesion. *American Journal of Community Psychology*, 16(6), 771–791. <https://doi.org/10.1007/BF00930892>
- Chan, J., To, H. P., & Chan, E. (2006). Reconsidering social cohesion: Developing a definition and analytical framework for empirical research. *Social Indicators Research*, 75, 273–302. <https://doi.org/10.1007/s11205-005-2118-1>
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, 14(3), 464–504. <https://doi.org/10.1080/10705510701301834>
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, 9(2), 233–255. https://doi.org/10.1207/S15328007SEM0902_5
- Claridge, T. (2018). Functions of social capital—bonding, bridging, linking. *Social Capital Research*. <https://www.socialcapitalresearch.com/wp-content/uploads/2018/11/Functions-of-Social-Capital.pdf>
- European Commission. (2010). *Volunteering in the European Union*. https://commission.europa.eu/system/files/2020-03/exec_summary_volunteering_eu_en.pdf.
- Cook, K. S. (2022). *Advanced introduction to social capital*. New York: Edward Elgar Publishing.
- Damian, E. (2019). Formal volunteering in Europe: Evidence across nations and time. *Cross-Cultural Research*, 53(4), 385–409. <https://doi.org/10.1177/1069397118802228>
- Davies, B., Lalot, F., Peitz, L., Heering, M. S., Ozkececi, H., Babaian, J., Davies Hayon, K., Broadwood, J., & Abrams, D. (2021). Changes in political trust in Britain during the COVID-19 pandemic in 2020: Integrated public opinion evidence and implications. *Humanities and Social Sciences Communications*. <https://doi.org/10.1057/s41599-021-00850-6>
- Dickes, P., & Valentova, M. (2012). Construction, validation and application of the measurement of social cohesion in 47 European countries and regions. *Social Indicators Research*, 113(3), 827–846. <https://doi.org/10.1007/s11205-012-0116-7>
- Dickes, P., Valentova, M., & Borsenberger, M. (2010). Construct validation and application of a common measure of social cohesion in 33 European countries. *Social Indicators Research*, 98(3), 451–473. <https://doi.org/10.1007/s11205-009-9551-5>
- Dolan, P., Krekel, C., Shreedhar, G., Lee, H., Marshall, C., & Smith, A. (2021). *Happy to help: The welfare effects of a nationwide micro-volunteering programme*. IZA Discussion Paper No. 14431. Institute of Labour Economics. <https://doi.org/10.2139/ssrn.3865456>.
- European Commission. (2021). *Cohesion in Europe towards 2050*. https://ec.europa.eu/regional_policy/information-sources/cohesion-report_en.
- Fox, S. (2019). *Volunteering and its Effects on Social Capital and Wellbeing in the UK: Insights from the United Kingdom Household Longitudinal Study*. Wales Institute of Social and Economic Research, Data and Methods. <https://wiserd.ac.uk/wp-content/uploads/Volunteering-and-its-Consequences-using-UKHLS.pdf>.
- Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, 78(6), 1360–1380. <https://doi.org/10.1086/225469>
- Green, A., Janmaat, G., & Han, C. (2009). *Regimes of social cohesion*. Centre for Learning and Life Chances in Knowledge Economies and Societies. <https://dera.ioe.ac.uk/id/eprint/10486/1/Z.-Regimes-of-Social-Cohesion.pdf>.
- Hill, M., & Stevens, D. (2010). *Measuring the impossible? Scoping study for longitudinal research on the impact of youth volunteering*. Institute for Volunteering Research. <https://www.bl.uk/britishlibrary/-/media/bl/global/social-welfare/pdfs/non-secure/m/e/a/measuring-the-impossible-scoping-study-for-longitudinal-research-on-the-impact-of-youth-volunteering-final-report.pdf>.

- Hill, A. (2023, May 2). 'I do what's needed': extraordinary UK volunteers doing the extraordinary. *The Guardian*. <https://www.theguardian.com/society/2023/may/02/volunteers-doing-the-extraordinary-uk-volunteering>
- Horsham, Z., Abrams, D., Davies, B., & Lalot, F. (2023). Social cohesion and volunteering: Correlates, causes and challenges. *Translational Issues in Psychological Science*. <https://doi.org/10.1037/tps0000387>
- Institute for Social and Economic Research. (2022). *Understanding society: Waves 1-12, 2009-2021 and harmonised BHPS: Waves 1-18, 1991-2009* (SN 6614; 17th Edition). [Data set]. University of Essex, UK Data Service. 10.5255/UKDA-SN-6614-18
- Jenson, J. (1998). *Mapping social cohesion: The state of Canadian research*. Canadian Policy Research Network.
- Jewett, R. L., Mah, S. M., Howell, N., & Larsen, M. M. (2021). Social cohesion and community resilience during COVID-19 and pandemics: A rapid scoping review to inform the United Nations research roadmap for COVID-19 recovery. *International Journal of Health Services*, 51(3), 325–336. <https://doi.org/10.1177/0020731421997092>
- Lalot, F., Abrams, D., Broadwood, J., Davies Hayon, K., & Platts-Dunn, I. (2022). The social cohesion investment: Communities that invested in integration programmes are showing greater social cohesion in the midst of the COVID-19 pandemic. *Journal of Community and Applied Social Psychology*, 32(3), 536–554. <https://doi.org/10.1002/casp.2522>
- Lu, P., Xu, C., & Shelley, M. (2021). A state-of-the-art review of the socio-ecological correlates of volunteerism among older adults. *Ageing and Society*, 41(8), 1833–1857. <https://doi.org/10.1017/S0144686X20000082>
- Mackinnon, S., Curtis, R., & O'Connor, R. (2022). A tutorial in longitudinal measurement invariance and cross-lagged panel models using lavaan. *Meta-Psychology*. <https://doi.org/10.15626/MP.2020.2595>
- Miller, S. (2010). *Understanding impact in social and personal context: Making a case for life stories in volunteering research*. Institute for Volunteering Research. <https://www.bl.uk/britishlibrary/~media/bl/global/social-welfare/pdfs/non-secure/u/n/d/understanding-impact-in-social-and-personal-context.pdf>
- Nakamura, J. S., Lee, M. T., Chen, F. S., Lee, Y. A., Fried, L. P., VanderWeele, T. J., & Kim, E. S. (2022). Identifying pathways to increased volunteering in older US adults. *Scientific Reports*, 12(1), 1–16. <https://doi.org/10.1038/s41598-022-16912-x>
- Omoto, A. M., & Packard, C. D. (2016). The power of connections: Psychological sense of community as a predictor of volunteerism. *The Journal of Social Psychology*, 156(3), 272–290. <https://doi.org/10.1080/00224545.2015.1105777>
- Paine, A. E., Hill, M., & Rochester, C. (2010). 'A rose by any other name...'. *Revisiting the question: 'What exactly is volunteering?'* Working paper series: Paper one. Institute for Volunteering Research. <https://www.uea.ac.uk/documents/96135/2806072/Report+-+A+rose+by+any+other+name.pdf/b7143efa-d992-69a8-dc7d-35cfa0280a9c?t=1594977976678&download=true>
- Pearce, S., & Kristjansson, E. (2019). Physical and social perceptions of the neighbourhood and youth volunteerism: Canada's capital region. *Canadian Journal of Nonprofit and Social Economy Research*. <https://doi.org/10.22230/cjnser.2019v10n1a291>
- Plagnol, A. C., & Huppert, F. A. (2010). Happy to help? Exploring the factors associated with variations in rates of volunteering across Europe. *Social Indicators Research*, 97, 157–176. <https://doi.org/10.1007/s11205-009-9494-x>
- Putnam, R. D. (1993). *Making democracy work: Civic traditions in modern Italy*. Princeton University Press.
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. Simon and Schuster.
- Putnam, R. D. (2001). Social capital: Measurement and consequences. *Canadian Journal of Policy Research*, 2(1), 41–51.
- Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review*, 41, 71–90. <https://doi.org/10.1016/j.dr.2016.06.004>
- Ramsey, N. (2012). *Understanding how volunteering creates stronger communities- a literature review*. Institute for Volunteering Research. <https://www.bl.uk/collection-items/understanding-how-volunteering-creates-stronger-communities--a-literature-review>
- Rossee, Y. (2012). lavaan: An R Package for Structural Equation Modeling. *Journal of Statistical Software*, 48(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>

- Rutkowski, L., & Svetina, D. (2014). Assessing the hypothesis of measurement invariance in the context of large-scale international surveys. *Educational and Psychological Measurement, 74*(1), 31–57. <https://doi.org/10.1177/0013164413498257>
- Schiefer, D., & Van der Noll, J. (2017). The essentials of social cohesion: A literature review. *Social Indicators Research, 132*(2), 579–603. <https://doi.org/10.1007/s11205-016-1314-5>
- Snyder, M., & Omoto, A. M. (2008). Volunteerism: Social issues perspectives and social policy implications. *Social Issues and Policy Review, 2*(1), 1–36. <https://doi.org/10.1111/j.1751-2409.2008.00009.x>
- Thomson, M. (2002). Renewing volunteering for civic renewal. In W. Paxton & V. Nash (Eds.), *Any volunteers for the good society*. IPPR.
- Talk Together. (2021). *Our chance to reconnect: Final report of the talk /together project*. <https://together.org.uk/wp-content/uploads/2021/07/Our-Chance-to-Reconnect-1.pdf>
- Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods, 3*(1), 4–70. <https://doi.org/10.1177/109442810031002>
- Zischka, L. (2019). *Giving behaviours and social cohesion: How people who 'give' make better communities*. Edward Elgar Publishing.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.