

# Social network position mediates the effect of education on active political party membership

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## Abstract

Research has shown that education is positively correlated with political party membership at the individual level. It is thus puzzling that increased education at the aggregated level in most Western countries has not resulted in an aggregate increase in levels of party membership. One explanation for this paradox is provided by the sorting model of education, according to which there is no direct effect of education on political participation; education affects individuals' social network positions, which in turn affects political participation. Prior research on the sorting model has focused on the observable predictions derived from the model. The hypothesized causal mechanism, i.e. social network position, has not been sufficiently tested. This article employs Swedish data with comprehensive measures of social relations and utilizes structural equation modelling to test the hypothesized causal relationship. The results confirm that social network position mediates the effect of education on active political party membership.

## Keywords

Education, party membership, political participation, political socialization, social networks

## The problem

Research on participation in political parties has shown that active party members have generally had a substantially higher education than average citizens (e.g. Cross and Young, 2008; Scarrow and Gezgor, 2010; Whiteley, 2009, 2011).<sup>1</sup> However, research in this area seldom problematizes the possible causal mechanisms linking education with active party membership, i.e. exactly *why* do the high-educated participate in political parties to a greater extent than the low-educated? According to the conventional view, education increases civic skills and cognitive capabilities, factors that in turn increase the likelihood of participation in political parties (Lewis-Beck et al., 2008; Verba et al., 1995). One of the major puzzles in political behaviour research is therefore why increased education at the aggregated level in Western countries has not resulted in a corresponding aggregate increase in levels of political party participation (Brody, 1978).

Since the literature on party membership has widely ignored this paradox, we turn to the broader literature on political participation in order to find a theoretical explanation. One explanation of the paradox is suggested by the sorting model of education, originally proposed by Nie

et al. (1996) (henceforth NJS) and refined by Campbell (2009). According to this model, social network position is the causal mechanism linking education with political participation: education functions as a sorting mechanism that influences individuals' social network positions, which in turn affects political participation.

NJS claim that education is the primary factor influencing social network position. By obtaining a higher level of education, individuals make contacts that form and facilitate high-status social network positions. Access to high-status social networks encourages political participation, mainly by increasing the likelihood of being recruited. In other words, high-educated people are more likely to be tied to networks that consist of active political participants, and are therefore more likely to be recruited to participate themselves. Education determines who the people with these important network ties are. There are several reasons

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why the most educated individuals in a population are the ones with the most high-status social network ties. NJS (1996: 49–53) claim that, in addition to the fact that individuals make contacts at educational institutions, education also affects occupational prominence, family wealth and membership in voluntary associations, which in turn affects social network status. Hence, through a series of interlinked factors, education promotes contacts with a wide range of persons.

This model stands in sharp contrast to the conventional view that education is a direct cause of political participation. Previous studies on the sorting model have investigated the predictions derived from the model. This article takes another approach. It does not focus on studying education inflation *per se*; instead it aims to test the causal mechanism pointed out by NJS, i.e. whether social network position mediates the relationship.

The article makes two contributions. First, it contributes to the literature on party membership by providing a better understanding of the relationship between education and participation in political parties. Finding out which model can correctly explain the relationship between education and participation has important theoretical implications. If the sorting model is correct, then the effect of education on party membership found in most political behaviour research is misinterpreted. Despite the severe implications for our understanding of one of the most central predictors as to why people become active in politics, the sorting model has been widely ignored within research on participation in political parties. Second, it contributes to the wider debate on educational inflation by directly studying the causal mechanism in the sorting model (social networks), which has been widely ignored in previous research. The study presents a research approach that improves on approaches used in prior research on the sorting model of education. Although a small number of studies have re-examined and refined the sorting model following NJS, all of them focus on the observable implications derived from the sorting model, i.e. whether the effect of education at the individual level is conditioned on the level of education in the environment (Campbell, 2009; Helliwell and Putnam, 2007; Tenn, 2005). The hypothesized full causal path including the causal mechanism – social network position – is only modelled in NJS's original study. However, as I argue, both the data used by NJS and the modelling strategy they employ have serious shortcomings. Hence, the extent to which social network position actually mediates the relationship remains hidden in the 'black box'.

This study is the first to explicitly test whether the hypothesized causal path is valid in another context than that of the US. It is a hard test of the generalizability of the model by testing it in Sweden, a context where it is reasonable to expect that less sorting takes place than in the US. The analysis employs Swedish survey data with more

comprehensive measures on social connections compared to the data employed by NJS on the US case. Instead of using traditional regression path analyses as do NJS, this study makes use of a more powerful and robust modelling strategy: structural equation modelling with bias-corrected percentile interval bootstrap tests for the indirect effects. The study focuses on one central form of political participation – active political party membership. Drawing on previous studies on the sorting model, active participation in political parties should be one of the forms of participation for which sorting applies the most (e.g. Campbell, 2009). The results show that most of the effect of education on active political party membership is mediated via social network position. When the indirect effect is taken into account, the direct effect of education is small and insignificant.

The outline of the article is as follows. The next section presents the theory and a literature review. Thereafter, data and techniques of analyses are discussed. Results are subsequently presented and the article concludes with a discussion on the implications of the results.

## Theory

Whether education has a direct causal effect on political participation is a matter of dispute in political behaviour research (Berinsky and Lenz, 2011; Burden, 2009; Campbell, 2009; Dee, 2004; Henderson and Chatfield, 2011; Highton, 2009; Hillygus, 2005; Kam and Palmer, 2008, 2011; Milligan et al., 2004; Mayer, 2011; Nie and Hillygus, 2001; Niemi and Junn, 1998; Persson, 2011, 2012; Persson and Oscarsson, 2010; Sondheimer and Green, 2010; Tenn, 2005, 2007). While some argue that education is a direct *cause* for political participation, others argue that there is no direct causal effect and that education is just a *proxy* for other factors.

According to the education as a cause view, education increases civic skills, which functions as the causal mechanism triggering participation (e.g. Lewis-Beck et al., 2008; Verba et al., 1995; Wolfinger and Rosenstone, 1980). In their seminal work, Verba et al. (1995: 305) claim that: 'Education enhances participation more or less directly by developing skills that are relevant to politics – the ability to speak and write, the knowledge of how to cope in an organizational setting.' Furthermore, according to the education as a cause view, education also increases political knowledge and political interest. As Lewis-Beck et al. (2008: 102) put it: 'With more formal education comes a stronger interest in politics, a greater concern with elections, greater confidence in playing one's role as a citizen, and a deeper commitment to the norm of being a good citizen.' The education as a cause view has been confirmed in numerous studies on political participation in a wide array of democracies around the world. However, an important implication of the education as a cause view is that

aggregate increases in education should lead to commensurate increases in political participation, which clearly has not been the case. Hence, despite the vast number of studies that show support for the conventional view, it fails to explain the paradoxical relation between education and participation at the individual and aggregate levels.

NJS claim that the conventional view is mistaken and that there are no direct effects of education on political participation. According to the sorting model, education is only a proxy for social position (NJS, 1996).<sup>2</sup> NJS claim that it is the social network position gained through education and not the skills and capabilities received during education that increases participation. Persons with high social status are exposed to social networks that encourage participation and are thus more likely to be recruited to political activities. Similarly, individuals with low education are outside recruitment networks that mobilize individuals into political activities.

An important implication of the sorting model is that the effect of individual education is conditioned on the level of education in the environment. In a low-education environment, less education at the individual level is needed in order to gain a high-status social network position. Hence the impact of education on political participation is relative rather than absolute.

### Previous research on the sorting model

There are two major controversies in the literature on the sorting model: the scope of the model and the relevant unit of aggregation for the educational environment. As regards the scope of the model, NJS (1996) claim that the sorting model is valid for all forms of political participation. In Campbell's (2009) further development of the model, he argues that if social network position is the causal mechanism, the model should not be valid on the individualistic forms of participation. Campbell shows that only the forms of political participation that require individuals to be involved with other individuals or organizations in order to perform the acts are subject to sorting through social networks. For political activities that one can perform without interaction with other people, social network position does not seem to matter. Hence, according to Campbell the sorting model has a narrower scope than NJS claim.

The modelling strategies employed in previous studies have mainly differed with respect to how the educational environment is defined. NJS compare each respondent's levels of education to the mean national levels among individuals aged 25–50 when the respondent was 25. Tenn (2005) uses intra-birth cohort measures of the educational environment. Helliwell and Putnam (2007) use geographically narrower measures in order to better capture the local context. Campbell (2009) uses even finer measures for both age and place (zip codes). And Persson (2011) uses data on mean educational levels in municipalities. Subsequent to

NJS, all studies on the sorting model rely on empirical tests of the relationship between individual-level education and the level of education in the environment (Campbell, 2009; Helliwell and Putnam, 2007; Persson, 2011, 2012; Tenn, 2005). To test this, data with variation in the contextual mean levels of education are needed, either over-time data and/or data with geographical variation in mean levels of education. However, if we have data on the causal mechanism, it is possible to use cross-sectional data – without information about the contextual levels of education – to test the sorting model.

Modelling the relation between individual level of education and the educational level in the environment is a feasible strategy for testing the implications of the sorting model. It facilitates tests of educational inflation over time and estimation of the effect of individual education in environments with different mean levels of education. However, it is a crude way of measuring an individual's social network position and does not allow for direct examination of the causal mechanism. In this study, I do not aim at testing the educational inflation hypothesis directly. The aim is much more modest – to test the causal mechanism pointed out by NJS, i.e. whether social network position mediates the relationship between education and political participation.

The main reason for the lack of research on the full relationship is the absence of high-quality data on social network connections together with measures of the dependent and independent variables. To date, the only study examining the indirect effect of education via social network position is NJS's (1996: ch. 4) original study, in which they use data from the 1991 Current Population Survey. They use an additive scale constructed of the number of high-status people that the respondents claim known them.<sup>3</sup> Regression path models are used to estimate the indirect effects of education via social network connections. They find that social network position (and verbal cognitive proficiency) explains almost the entire relationship between education and voting, and that social network position is the main factor determining participation in 'difficult political activities'.<sup>4</sup>

However, NJS's path analyses are problematic for several reasons. First, NJS do not perform any significance tests of the indirect effects and thus leave it an open question whether education has a significant indirect effect via social network position. Even though the path from an independent variable to a mediator (a) and the path from a mediator to a dependent variable (b) are statistically significant, it does not follow that the indirect effect (ab) is statistically significant. The indirect effect needs to be significance tested in order to draw such conclusions (cf. Preacher and Hayes, 2008).

A second problem is that NJS's measure of social network position includes only connections with elected officials and persons working with news media. This problem

concerns the causal direction in the model. It is not obvious that these connections are consequences of education (as the sorting model states); they can also (perhaps even more likely) be consequences of political participation. When you get active in politics, you obviously expand your own social network (Quintelier et al., 2012) and become more likely to get to know people such as elected officials. If social network position instead were measured by social connections that are not as likely to be consequences of political participation, this problem would be less severe.

A third problem is that in NJS's analysis, social network position is treated as a manifest variable defined as a simple additive index rather than a latent variable. Social network position is a complex phenomenon that is obviously not possible to directly measure with only a few items, since it is unobservable. NJS's modelling strategy forces each of the items to contribute equally to the social network position measure, although this is likely not realistic. The more sound approach employed in this article is to treat social network position as a latent variable in a structural equation model that allows the different indicators to vary in their contribution to the measure. Hence, structural equation modelling can be used to estimate the underlying dimensionality of the factors. Structural equation modelling also has the benefit of taking measurement error into account.

## Social networks and participation

Previous studies on the sorting model provide very little information about how social networks mediate the relationship between education and participation and what aspects of social networks are important. NJS (1996: 44) define social network centrality as 'proximity to governmental incumbents and political actors who make public policy and to those in the mass media who disseminate and interpret issues, events, and activities of people in politics'. This is a very narrow definition of social network position, since it only takes into account relations to two sorts of people. Even if relations to persons working with media and politics are crucial for inducing political activity, relations to other people might also trigger participation.

Research on social networks, social capital and political participation can help us refine this part of the sorting model. The size and composition of the social networks are seen as central in determining the effects on political participation. Usually, research in this field emphasizes social connections to a wide range of people in each individual's surroundings (e.g. Mutz, 2002; McClurg, 2003; Siegel, 2009). Three factors of social networks are suggested to have a positive impact on political participation: information, recruitment and mobilization (e.g. Kotler-Berkowitz, 2005). Research has found that large networks have a strong positive effect on participation: the more people you

know, the broader the opportunities for recruitment.<sup>5</sup> As Kotler-Berkowitz (2005: 152) puts it:

[T]ies to a diverse set of people – or to a set of people located across a diverse set of social groups – facilitate greater access to varied and non-redundant types of information that in turn enhance opportunities for undertaking social action, engaging in social activities, and reaping social and personal benefits.

Another important distinction in the literature is the impact of strong versus weak social ties. How strong do social network ties need to be in order to boost political participation? Is it enough to have a large social network of remote acquaintances or does one need to have strong friendships? Most research arrives at the latter conclusion – strong social ties have a greater impact on political participation than weak ties (Brady et al., 1999; Verba et al., 1995). The rationale behind this conclusion is twofold. First, recruitment proposals come more frequently from people one is closely acquainted with than from those one is only weakly acquainted with. Second, individuals are more likely to accept invitations to participate from close acquaintances, while invitations from remotely acquainted people or strangers are more likely to be turned down.

These ideas are reinforced by the recent developments in studies on social networks and social capital. According to social capital theory, social networks help build social capital. Lin (1999a, b) focuses on social capital as the 'access to and use of resources embedded in social networks'. These resources include factors such as information and certification of social credentials, and reinforcement of identity and recognition. The access and use of social capital resources are determined by the position in the hierarchical structure. Extensive meta-studies on the effects of education on social capital conclude that education has strong and robust effects on social capital (Huan et al., 2009).

While little previous research exists on the links between social networks and party activism, some research focuses on the effects on social movement activity. This research generally concludes that diverse networks increase social movement activism, yet some studies also indicate that the causality runs in the opposite direction, i.e. that social movement activities increase the network size (Tindall et al., 2012). However, within research on social networks and social capital, studies on political outcomes such as party activities are pointed out as a largely ignored issue (cf. Erickson, 2003).

Hence, our understanding of the causal mechanism in the sorting model can be refined by drawing on recent research on social networks, social capital and participation. More precisely, we arrive at the refined hypothesis that having strong ties to a large network of high-status persons mediates the relationship between education and political participation.

## Sweden as a test case

Compared to the US, Sweden is a hard case for testing the sorting model. Several factors in the Swedish context indicate that the hypothesized causal relationship should be less prominent in Sweden than in the US. First, the labour movement constitutes an influential alternative pathway to participation with no counterpart in the US. Verba et al. (2005: 108) point out that in democracies ‘where there are strong labor unions or competitive labor or social democratic parties, the links between social class and political participation are weaker than they are in the United States’. In Sweden, the Social Democrats and the Labour Union dominated the political scene from the 1930s to the early 2000s. Second, the level of economic inequality is lower in Sweden, which indicates that the social distance between individuals with different socio-economic status is smaller (cf. Erikson and Jonsson, 1996). When there is a great social distance between individuals with different social networks, the sorting model is more likely to be supported. Third, the Swedish educational system was designed with the objective of promoting social equality (Meghir and Palme, 2005), resulting in for example free higher education for all citizens. To conclude, if the sorting model is valid in a hard test case like Sweden, it is most likely valid in democracies with less egalitarian educational systems, such as the US, as well.

In a comparative perspective, Sweden has experienced high levels of political participation. For example, Sweden ranks 21 in the world league table of voter turnout 1945–2001 (mean 84.1 percent), while the US ranks 138 (47.7) (Lopez Pintor et al., 2002). More importantly for this research is that Sweden has also had a relatively high level of political party membership. At the time the data used in this article were collected, about 5.5 percent of the total Swedish electorate were members of a political party. The European mean level at the time was somewhat lower (5 percent) (Mair and van Biezen, 2001). However, while the levels of participation in political parties have declined during the past few decades, the mean level of education has increased. Since the mid-1980s, the mean level of education has increased from less than 10 years to more than 11 years. The change in mean levels of education is even more prominent among 26–36 year olds, where it has increased from approximately 11.5 to 13 years.

## Data

The analysis employs the Swedish Society, Opinion and Media (SOM) survey from 2001, which draws on a representative sample of 6000 Swedish adults (15–85 years old residing in Sweden), and the response rate was 67.2 percent.<sup>6</sup> The survey, distributed as a postal questionnaire, includes a battery of items on the respondents’ relations to persons with different occupations – usually referred to

as the ‘position generator’ (Lin, 2001), which is intended to measure social network position.<sup>7</sup> Lin (1999b) claims that this technique has important advantages compared to other ways of measuring social networks. For example, it can be used with representative samples and measures both strong and weak social ties. The strong utility of the position generator has been confirmed in a large number of studies on social capital in a wide range of contexts (see the Lin, 1999a, b for overviews of the field). The position generator items construct the measure of social position for this study. To my knowledge, this is the only survey conducted in a Western democratic country that draws on a nationally representative sample and includes position generator items as well as measures of political party membership. Unfortunately, the lack of corresponding data from other countries makes comparative studies impossible.<sup>8</sup>

The respondents were asked the following question: ‘Do one or more persons among your friends and acquaintances have the following occupations?’ The list includes 20 different occupations, such as lawyer, member of national parliament, professor, journalist, doctor, etc. (see Appendix A for a complete list). These indicators were used to construct the latent variable for social network position in the analyses.

It could be argued that these items do not measure exactly what the sorting model states. According to the sorting model, education affects social network *centrality*. Drawing on these data we do not know whether the individuals have central positions in the networks, but only whether they have connections to persons with these occupations. The key here is how many connections individuals have to people in occupations that are likely to draw them toward participation. In other words, certain people know others who are more involved in political participation, and this draws them to participate.

An explanatory factor analysis was conducted to evaluate the dimensionality of the items on social network position. The RMSEA value was used as a criterion to judge the model fit. As it turned out, treating the social network position items as a one-factor model yields an acceptable model fit.<sup>9</sup> The measure of social network position has a bias towards high-status people, which is in accordance with the theoretical foundation of the sorting model. It also measures the size of the social network in a reliable way since it takes into account relationships with persons in 20 different occupations. NJS’s empirical analyses had no reliable measure of network size, despite the fact that network size is heavily emphasized by social network research. Hence, these indicators have a wider scope than the NJS measure and are thus not as vulnerable for critique about reversed causality.

In the original data, these variables are coded so that 0 reflects no acquaintanceship, 1 represents weak acquaintanceship and 2 represents strong acquaintanceship.<sup>10</sup> Since the hypothesis to be tested states that strong ties mediate the relationship, the variables in the main models are recoded so that 1 reflects strong ties while 0 reflects weak or no

acquaintanceship. However, as a robustness check the additional impact of weak ties is tested in a subsequent model and the coding with three values for each variable is then used.

As for education, a question on highest achieved education is used, and is recoded so that it corresponds to years of education.<sup>11</sup> The models also include controls for a number of factors that previous studies have shown influence participation: age, age squared, immigrant status, urban/rural residence, gender and marital status (see, e.g., Verba et al., 1995).

The dependent variable measures active political party membership, defined as having some kind of assignment in a party. This is a form of political participation that should be subject to sorting via social networks regardless of whether we depart from NJS's (1996) original version or Campbell's (2009) refined version of the sorting model. Unfortunately, items measuring other forms of political participation were not included in the survey. The dependent variable is a dichotomous variable coded 1 for members who have some kind of assignment in the party and 0 for non-members and non-active members.<sup>12</sup>

## Results

Structural equation modelling (SEM) is used to test the indirect effect of education via social network position on active political party membership.<sup>13</sup> Compared to traditional path regression analyses, SEM is more powerful to use for path analysis. SEM facilitates simultaneous estimation of the different regression paths in the model via latent mediators and tests of the indirect effects (cf. Muthen and Muthen, 1998–2010).

The results section proceeds as follows. First, Model 1 estimates the effect of education on active political party membership without taking social network position into account. This is to show whether there is a significant relationship between education and political party membership to begin with, i.e. whether an effect that possibly could be mediated exists. Model 2 introduces the latent variable and the indirect path. Model 3 offers a robustness check for the argument about reversed causality; the model is estimated without the network connections (political representatives) that are most likely consequences of party membership. Model 4 corroborates the effect of strong and weak ties. In this model, weak ties are added to the model to gauge the additional contribution. Model 5 is a final robustness check that estimates the combined effect of strong and weak ties without indicators for relationships with political representatives.

### *Model 1 – The effect of education on active party membership*

Model 1 estimates the direct effect of education on the dependent variable under control for the covariates without

taking social network position into account. Probit regression is used in all models since the dependent variable is dichotomous, and weighted least square estimation (WLSMV) is the estimator employed. The upper left part of Figure 1 presents the standardized estimates from Model 1 (unstandardized estimates and standard errors from the model can be found in Table 1).<sup>14</sup> The results reveal that education has a significant positive effect at the 95 percent significance level (all estimates reported are two-tailed). Besides urban/rural residence, this is the only independent variable that has a significant effect. This initial model confirms what previous studies have demonstrated: education appears to be the strongest predictor of active participation in political parties.

### *Model 2 – The indirect effect via strong network ties*

The middle left part of Figure 1 presents the results from Model 2, which is a full model that estimates the indirect effect of education via strong social network ties on active political party membership. The graph only illustrates the focal relationship, while estimates for the controls can be found in Table 2. In this model, the control variables are estimated on both the dependent variable and the mediating variable in order to get as accurate estimates as possible for the main paths of interest. The reason for this is that we have reason to believe that the same controls that influence participation also affect social network position.

Most importantly, however, when adding social network position we find that there is no longer a significant direct effect of education on active political party membership. However, the effect of education on social network position is statistically significant. Likewise, the effect of social network position on active party membership is of considerable size and statistically significant.

This provides a first indication that the effect of education is mediated via social network position. Yet even though both paths are significant, it does not follow that the indirect effect is significant (Mallinckrodt et al., 2006). Thus, the next step is to compute and significance test the indirect effect. The standardized indirect effect, which is simply the product of the two path coefficients, is 0.117. This indicates that about 68 percent of the total effect of education (0.171) is mediated via social network position. The significance test of the indirect effect is performed using the bias-corrected percentile interval bootstrap test (2000 bootstrap sample draws) as proposed by Shrout and Bolger (2002). Simulation studies have shown that the bias-corrected bootstrap method performs better than other methods (such as the Sobel test) when it comes to statistical power (Mallinckrodt et al., 2006). More precisely, it has been found that when using the standard normal theory method for significant tests of indirect effects, the confidence intervals are 'too wide in the direction of the null

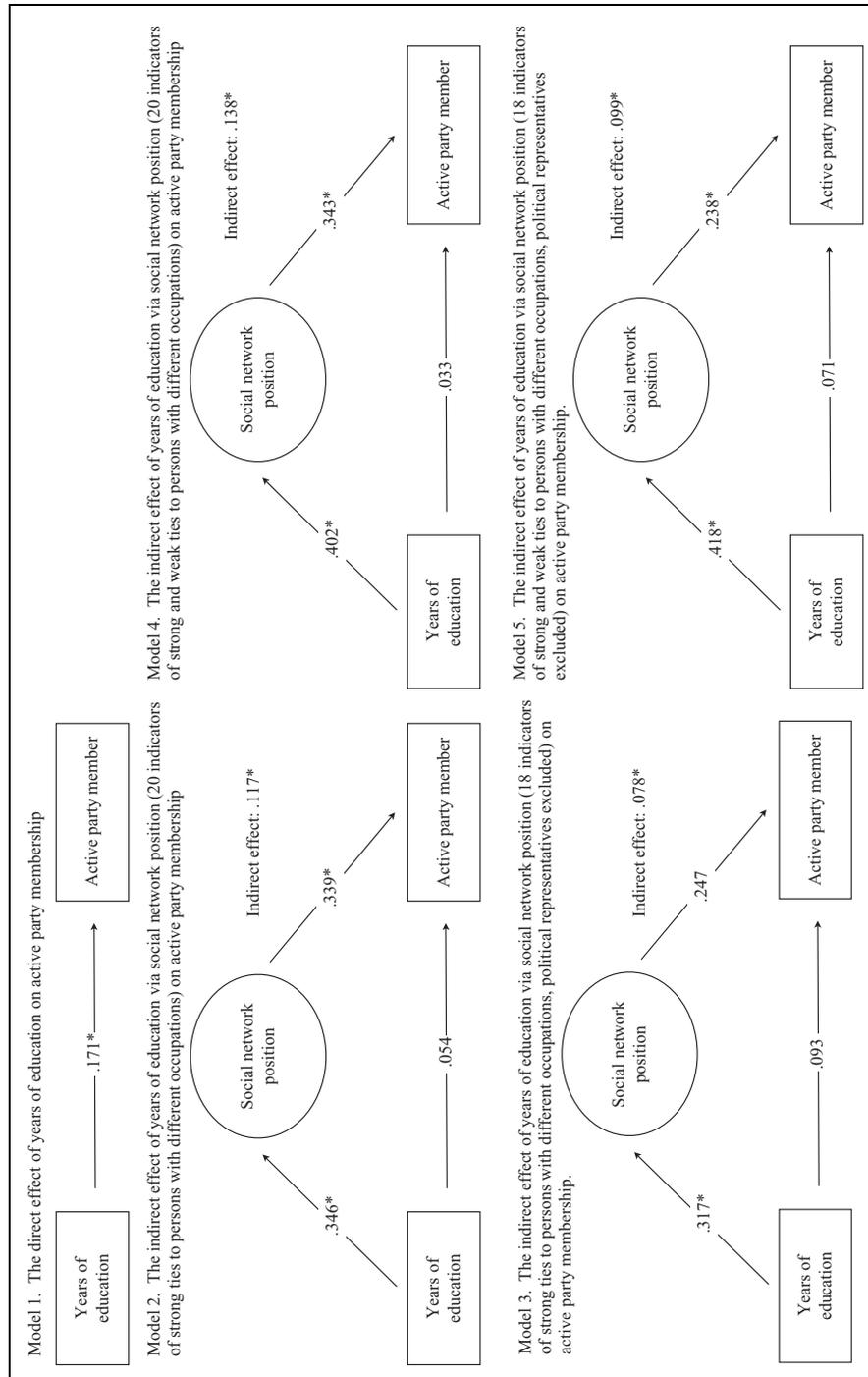


Figure 1. Illustrations of the direct and indirect effects from models 1-5.

hypothesis but too narrow in the direction of the alternative hypothesis' (Shrout and Bolger, 2002: 426). Whether the indirect effect is significant or not is judged by whether the percentile confidence interval includes zero. In this case, the confidence intervals run from 0.05 (lower 2.5 percent) to 0.15 (upper 2.5 percent) and we can thus conclude that social network position indeed significantly mediates the effect of education on active political party membership.

### Model 3 – Robustness check 1

As always when using cross-sectional survey data, one cannot completely rule out reversed causality or alternative causal paths. In this case it could be that the causal path between social network position and political party membership is, at least partially, reversed. Social network position could be an outcome of active party membership,

**Table 1.** Estimates from model 1.

	Standardized estimate	Unstandardized estimate	Standard error of unstandardized estimate
Education → Active party member	0.171	0.068	0.029
Age → Active party member	0.507	0.036	0.030
Age <sup>2</sup> → Active party member	-0.211	0.000	0.000
Urban → Active party member	-0.187	-0.128	0.049
Immigrant → Active party member	-0.022	-0.088	0.275
Married → Active party member	0.003	0.007	0.171
Gender → Active party member	-0.072	-0.154	0.140
n	1254		
Weighted root mean square Residual	2.508		

**Table 2.** Estimates from model 2.

	Standardized estimate	Unstandardized estimate	Standard error of unstandardized estimate
Social network position → Active party member	0.339	3.614	1.261
Education → Social network position	0.346	0.013	0.002
Age → Social network position	0.765	0.005	0.002
Age <sup>2</sup> → Social network position	-1.095	0.000	0.000
Urban → Social network position	0.022	0.001	0.002
Immigrant → Social network position	-0.028	-0.010	0.010
Married → Social network position	0.055	0.013	0.007
Gender → Social network position	-0.015	-0.003	0.006
Education → Active party member	0.054	0.022	0.028
Age → Active party member	0.248	0.017	0.042
Age <sup>2</sup> → Active party member	0.160	0.000	0.000
Urban → Active party member	-0.194	-0.133	0.051
Immigrant → Active party member	-0.013	-0.051	1.756
Married → Active party member	-0.016	-0.039	0.180
Gender → Active party member	-0.067	-0.143	0.142
Indirect effect: Education → Social network position → Active party member	0.117	0.047	0.013
<i>Latent variable indicators (social network position)</i>			
Police	0.254	1.000	0.000
Doctor	0.382	1.655	0.406
Officer	0.385	1.406	0.332
Banker	0.389	1.769	0.389
Company owner	0.345	1.546	0.371
Journalist	0.503	1.823	0.449
Union ombudsman	0.279	1.260	0.356
Headmaster	0.457	1.593	0.383
Lawyer	0.381	1.237	0.328
Member of local parliament	0.494	1.908	0.473
Member of national parliament	0.392	0.639	0.192
Professor	0.396	1.198	0.315
Farmer	0.343	1.643	0.381
Priest	0.469	1.599	0.412
Actor	0.293	0.709	0.251
Librarian	0.355	0.971	0.331
Communications officer	0.323	0.982	0.309
Social worker	0.317	1.193	0.390
Employee at the employment office	0.199	0.506	0.191
Employee at the social insurance office	0.290	0.860	0.247
n	1254		
Weighted root mean square residual	1.187		

**Table 3.** Estimates from model 3.

	Standardized estimate	Unstandardized estimate	Standard error of unstandardized estimate
Social network position → Active party member	0.247	2.336	1.358
Education → Social network position	0.317	0.013	0.003
Age → Social network position	0.639	0.005	0.002
Age <sup>2</sup> → Social network position	-1.179	0.000	0.000
Urban → Social network position	0.042	0.003	0.002
Immigrant → Social network position	-0.024	-0.010	0.010
Married → Social network position	0.040	0.011	0.007
Gender → Social network position	-0.019	-0.004	0.005
Education → Active party member	0.093	0.037	0.030
Age → Active party member	0.349	0.025	0.042
Age <sup>2</sup> → Active party member	0.080	0.000	0.000
Urban → Active party member	-0.197	-0.135	0.051
Immigrant → Active party member	-0.017	-0.065	1.756
Married → Active party member	-0.007	-0.017	0.181
Gender → Active party member	-0.068	-0.145	0.143
Indirect effect: Education → Social network position → Active party member	0.078	0.031	0.017
<i>Latent variable indicators (social network position)</i>			
Police	0.283	1.000	0.000
Doctor	0.522	2.124	0.520
Officer	0.436	1.454	0.366
Banker	0.457	1.908	0.453
Company owner	0.393	1.597	0.409
Journalist	0.584	1.994	0.529
Union ombudsman	0.308	1.252	0.382
Headmaster	0.527	1.706	0.445
Lawyer	0.436	1.293	0.360
Professor	0.470	1.310	0.355
Farmer	0.378	1.641	0.423
Priest	0.522	1.647	0.468
Actor	0.350	0.769	0.274
Librarian	0.392	0.974	0.359
Communications officer	0.404	1.120	0.358
Social worker	0.408	1.405	0.451
Employee at the employment office	0.217	0.495	0.197
Employee at the social insurance office	0.311	0.829	0.254
n	1254		
Weighted root mean square residual	1.162		

i.e. as one becomes active in a political party the social network expands. To some extent this must be true; of course one gets to know new people when becoming active in a political party. Yet without longitudinal data it is not possible to estimate the relative strength of the two causal paths.<sup>15</sup>

Hence, drawing on this kind of cross-sectional data, we cannot tell which social connections are consequences of education and which are consequences of political party activities (or of any other factor). However, two of the occupations in the data are more likely to be consequences of political party activities than the others: acquaintanceship with a member of the local parliament and/or a

member of the national parliament. To make sure that these occupations do not drive the entire relationship between active party membership and social network position, the previous model was estimated once more as a robustness check, but this time without the variables measuring relations to persons with these two occupations.

Model 3 is identical to Model 2 except for the fact that the latent variable is measured by 18 indicators (political representatives excluded) instead of 20. Standardized estimates from the main relationship in Model 3 are shown in the lower left part of Figure 1 (all estimates can be found in Table 3). As can be seen, they are substantially similar to the results from Model 2. The direct effect of education

remains insignificant, although the indirect effect is slightly reduced. The standardized estimate for the indirect effect is 0.078, which corresponds to about 45 percent of the total effect of education. The 95 percent confidence interval from the bootstrap test indicates significant mediation (0.00, lower 2.5, to 0.16, upper 2.5). Hence, it should be noted that the amount of mediation via strong social ties is reduced from 68 to 45 percent when political representatives are excluded from the social network measure. Still, this robustness check shows that when excluding the social ties that most likely are not causes but consequences of political party activities, the results are substantially the same as in the original model: the direct effect of education is insignificant and the significant part of the effect is mediated via strong ties.

#### **Model 4 – Robustness check 2**

Having concluded that strong social network ties mediate most of the relationship between education and participation, we now move forward to evaluate the additional effect of weak ties. Do additional weak ties increase the amount of mediation? The impact of weak ties is tested by including all of the 20 indicators with variable values for weak ties (0 = no acquaintanceship, 1 = weak acquaintanceship, 2 = strong acquaintanceship). Model 4 is identical to Model 2 except for the coding of the social network items. The standardized estimates from the main relationship are presented in the upper right part of Figure 1 and all estimates from the model are presented in Table 4.

When including both weak and strong network ties, the standardized estimate of the indirect effect increases from 0.117 to 0.138 (the 95 percent confidence interval runs from 0.08 to 0.20). Comparing Models 2 and 4, the difference in mediation corresponds to an increase in mediation from 68 to 80 percent of the total effect of education. One important conclusion can be drawn from this result: strong social network ties account for the majority of the indirect effect via social network position. Adding weak ties increases the amount of mediation only marginally. When taking the combined effect of weak and strong ties into account, the direct effect of education accounts for only about 20 percent of the total effect of education and is insignificant.

#### **Model 5 – Robustness check 3**

Having concluded that the combined effect of weak and strong ties mediates almost the entire relationship, a last model is estimated as a robustness check in order to gauge the influence of political representatives on the latent variable in the previous model. Hence, in Model 5 we re-estimate the previous model with political representatives excluded from the model. The standardized coefficients are presented in the lower right part of Figure 1, while all

estimates can be found in Table 5. Again we find that the level of mediation decreases when political representatives are excluded. The amount of mediation is about 58 percent when political representatives are excluded from the combined measure of weak and strong ties. Yet the indirect effect is significant (standardized estimate 0.099, the 95 percent confidence interval goes from 0.03 to 0.17) and the direct effect of education remains insignificant.

Table 6 summarizes the amount of the total effect that is mediated via social network position when different operationalizations of the latent variable are applied. We can conclude that strong ties account for the majority of the indirect effect. Moreover, weak social ties increase the amount of mediation only marginally. Yet, the important conclusion is that all models show that the entire significant effect of education is mediated via social network position whichever operationalization is applied. The direct effect of education is insignificant in all models when the indirect effect is taken into account.<sup>16</sup>

## **Conclusion**

This article explicitly tests a central claim in the sorting model that has not previously been sufficiently tested: whether social network position mediates the relationship between education and active party membership. The results confirm this central hypothesis from the sorting model. While the study does not supply a full test of the sorting model, it focuses on the causal mechanism and thereby refines our understanding of how the sorting model functions by showing what kind of social networks are important. Drawing on research on social networks and the empirical analyses, we arrive at a refined conclusion on how sorting works: strong ties to a large social network of high-status persons mediate the relationship between education and active party membership. Since the results indicate that the causal path proposed by NJS is confirmed in the Swedish case, we can also expect that it is relevant in other countries, such as in the US where social inequality is higher.

This study moves beyond previous research by confirming the causal path proposed by NJS. It uses the best data available on social network position and analyses them with a more accurate technique than has previously been employed. However, all studies have their limitations and this is of course no exception. In this case, the problem is that this study is limited to one single country, Sweden, and one form of political participation, i.e. active political party membership. Further research is needed in order to evaluate whether the conclusions are generalizable to other forms of participation in other contexts. Moreover, as always in research drawing on cross-sectional data, there is a problem with possible reversed causality: not only education but also political activities are likely to affect social network position. Panel data are needed to establish the relative

**Table 4.** Estimates from model 4.

	Standardized estimate	Unstandardized estimate	Standard error of unstandardized estimate
Social network position → Active party member	0.343	1.248	0.279
Education → Social network position	0.402	0.044	0.005
Age → Social network position	1.050	0.020	0.004
Age <sup>2</sup> → Social network position	-1.041	0.000	0.000
Urban → Social network position	0.003	0.001	0.005
Immigrant → Social network position	-0.060	-0.064	0.029
Married → Social network position	0.064	0.044	0.019
Gender → Social network position	-0.010	-0.006	0.016
Education → Active party member	0.033	0.013	0.027
Age → Active party member	0.147	0.010	0.042
Age <sup>2</sup> → Active party member	0.146	0.000	0.000
Urban → Active party member	-0.188	-0.128	0.050
Immigrant → Active party member	-0.002	-0.008	1.755
Married → Active party member	-0.019	-0.047	0.180
Gender → Active party member	-0.069	-0.147	0.142
Indirect effect: Education → Social network position → Active party member	0.138	0.055	0.012
<i>Latent variable indicators (social network position)</i>			
Police	0.380	1.000	0.000
Doctor	0.505	1.360	0.121
Officer	0.425	1.078	0.111
Banker	0.477	1.372	0.125
Company owner	0.389	0.921	0.097
Journalist	0.537	1.337	0.135
Union ombudsman	0.343	0.999	0.117
Headmaster	0.531	1.282	0.129
Lawyer	0.433	0.986	0.109
Member of local parliament	0.547	1.428	0.141
Member of national parliament	0.478	0.691	0.084
Professor	0.445	0.953	0.108
Farmer	0.405	1.161	0.119
Priest	0.524	1.268	0.125
Actor	0.422	0.787	0.102
Librarian	0.439	0.908	0.118
Communications officer	0.418	0.899	0.114
Social worker	0.415	1.075	0.125
Employee at the employment office	0.342	0.663	0.091
Employee at the social insurance office	0.401	0.872	0.106
n	1254		
Weighted root mean square residual	1.615		

strength of these paths. Hence, this study brings some important insights to our knowledge of how the relationship between education and participation functions, yet the black box remains far from totally illuminated.

The results have important policy implications: providing more education will not *per se* get more people active in political parties. It is their networks that are of primary importance for the probability of getting active in political parties, not their skills and capabilities gained through education. Isolated individuals are not very likely to participate in political parties no matter how well educated

they are. This conclusion stands in sharp contrast to the conventional view on the effects of education on political participation. For example, Lewis-Beck et al. (2008: 102) claim that 'effective citizen participation depends on the operation of a nation's educational system'. The results presented here indicate that this might be a false claim; the content of education has negligible importance – what matters is the social position you gain by obtaining education. This is indeed disappointing news for social engineers hoping to increase participation by education reforms.

**Table 5.** Estimates from model 5.

	Standardized estimate	Unstandardized estimate	Standard error of unstandardized estimate
Social network position → Active party member	0.238	0.844	0.298
Education → Social network position	0.418	0.047	0.005
Age → Social network position	1.034	0.020	0.004
Age <sup>2</sup> → Social network position	-1.048	0.000	0.000
Urban → Social network position	0.033	0.006	0.006
Immigrant → Social network position	-0.057	-0.063	0.030
Married → Social network position	0.062	0.043	0.020
Gender → Social network position	-0.020	-0.012	0.016
Education → Active party member	0.071	0.029	0.027
Age → Active party member	0.261	0.018	0.042
Age <sup>2</sup> → Active party member	0.039	0.000	0.000
Urban → Active party member	-0.195	-0.133	0.051
Immigrant → Active party member	-0.009	-0.035	1.755
Married → Active party member	-0.012	-0.029	0.181
Gender → Active party member	-0.068	-0.144	0.142
Indirect effect: Education → Social network position → Active party member	0.099	0.040	0.014
<i>Latent variable indicators (social network position)</i>			
Police	0.389	1.000	0.000
Doctor	0.555	1.470	0.128
Officer	0.426	1.056	0.107
Banker	0.494	1.391	0.125
Company owner	0.385	0.892	0.094
Journalist	0.549	1.340	0.134
Union ombudsman	0.335	0.951	0.113
Headmaster	0.538	1.271	0.127
Lawyer	0.442	0.985	0.108
Professor	0.446	0.933	0.107
Farmer	0.397	1.111	0.115
Priest	0.522	1.234	0.124
Actor	0.421	0.768	0.100
Librarian	0.441	0.892	0.115
Communications officer	0.435	0.916	0.113
Social worker	0.425	1.078	0.124
Employee at the employment office	0.336	0.635	0.089
Employee at the social insurance office	0.396	0.842	0.102
n	1254		
Weighted root mean square residual	1.586		

**Table 6.** Summary of results.

Specification of the latent variable for social network position	Percent of the total effect of education mediated via social network position
Strong social ties (20 occupations)	68
Strong social ties (18 occupations)	46
Strong social ties + weak social ties (20 occupations)	80
Strong social ties + weak social ties (18 occupations)	54

Given the positive effect of education on political participation reported in numerous studies, researchers have found it paradoxical that political party membership has declined in almost all Western countries despite the fact

that the aggregate levels of education have increased. This article does not solve the paradox as such, since it is still an open question why party membership is declining. However, the study clarifies the relationship between education

and active party membership and indicates that these two factors might not be as closely related as is often assumed. Education is not a direct cause of participation in political parties; social network position mediates the relationship.

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### Notes

1. In a recent study, Scarrow and Gezgor (2010) show that party members have higher education than the general population in most European countries. However, some studies have suggested that the high-educated are less likely to join political parties in some contexts; see, e.g., Togeby (1992) for a study of the Danish case.
2. Not all researchers who adhere to education as a proxy view embrace the sorting model. The pre-adult socialization model suggests that education is a proxy for pre-adult factors that affect both educational choice and political participation in adulthood (e.g. Jennings and Niemi, 1974; Kam and Palmer, 2008; Langton and Jennings, 1968; Sears, 1989). Education works as a proxy only for factors such as family socio-economic status, parents' level of political participation, parents' political orientations and the discussion climate at home (Achen, 2002; Alwin and Thornton, 1984; Andolina et al., 2003; Beck and Jennings, 1982, 1991; Jennings and Niemi, 1968; McIntosh et al., 2007; Westholm, 1999). Other researchers argue that pre-adult factors such as intelligence (Deary et al., 2008; Luskin, 1990), genetic factors (Alford et al., 2005; Fowler et al., 2008) or personality types affect political participation in adulthood (Mondak and Halperin, 2008; Mondak et al., 2010).
3. In total, six different occupations: member of congress, member of state legislature, member of local council, member of other local official board, someone who works for the local media or someone who works for the national media.
4. More exactly, 'difficult political activities' cover working on political campaigns, community work, serving on local government boards and contacting officials.
5. In contrast to NJS's focus on high status social network connections, an important strand of research claims that politically diverse social networks increase participation. Previous research shows mixed results regarding this issue, yet results from panel data suggest a cross-lagged effect (Quintelier et al., 2012).
6. Evaluations of the representativeness of the survey concluded that, on the whole, the composition of respondents and the Swedish population only differ marginally in terms of age, gender and occupation (Nilsson, 2002).
7. However, as most questions in the SOM survey, the questions used in this study were only distributed to half of the sample, since the questionnaire would have been too long if everybody was to answer all questions. Hence the subset consists of 3000 respondents with a response rate of 69.2.
8. For example, the US General Social Survey 2008 includes position generator items but lacks items on party membership. Likewise, the Canadian Election Studies also include position generator items, while questions about party membership were not put to the same respondents.
9. Hu and Bentler (1999) suggest that a value below 0.06 indicates an acceptable model fit. This model's fit is 0.058, which indicates that it loads cleanly on one dimension.
10. In the original dataset, a fourth category was also included: whether one has the occupation oneself. However, since we are interested in acquaintanceship and not respondents' own occupations, this category was excluded as a separate category from the analyses. We assume that respondents have strong acquaintanceship with at least someone with the same occupation as oneself, and the variables are coded accordingly.
11. Following NJS (1996), respondents under 25 years of age are excluded since education is not supposed to have had full effects on social network position earlier in life.
12. The question wording is: 'Please indicate below which associations you are a member of, and how active you are in them.' Then follows nine associations including political parties. Response options are 'Not member', 'Member but have not been to any meetings in the last 12 months', 'Member and have been to meetings in the last 12 months', 'Member who has some kind of assignment'. About 4 percent of the respondents were classified as active party members.
13. Mplus 6.2 was used to fit the models.
14. All standardized estimates reported are based on the variances of both the latent and observed variables.
15. However, it is not very likely that individuals join political parties without having any social network at all and form their entire network based on the relations acquired through activities in the party. Previous research supports the primacy of social context over political participation due to the fact that choices of social networks and context derive primarily from non-political factors (see, e.g., Huckfeldt and Sprague, 1993; Kotler-Berkowitz, 2005).
16. Late in the process of writing this article, the SOM Institute released a survey conducted in 2011 in which the survey questions used in this article were replicated. The SOM survey of 2011 included 17 of the occupations that were also included in the 2001 survey. I have estimated models equivalent to those presented in the article on the 2011 data and the results are strikingly similar. The effect of education is

significant when social network centrality is not taken into account. When the indirect effect is taken into account the direct effect becomes insignificant, while the indirect path is significant. Hence, the results presented from the 2001 survey are substantially reconfirmed in an independent study 10 years later.

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## Appendix A – The SOM study 2001

**Design:** Postal survey to a national representative random sample of 6000 persons. Principal investigators for the

study were Sören Holmberg, Lennart Weibull and Lennart Nilsson. Principal investigators for items measuring social network position were Bo Rothstein and Henrik Oscarsson. Additional information available at <http://www.snd.gu.se/sv/catalogue/study/431>, study id: SND0797.

**Social network position, original question wording:**

‘Among your friends and acquaintances, are there some belonging to the following occupations?’

0 = ‘No there is no one with that occupation in my acquaintanceship’

1 = ‘Yes, remotely’

2 = ‘Yes, closely’

3 = ‘I have this occupation myself’

List of occupations:

Police

Doctor

Officer

Banker

Company owner

Journalist

Union ombudsman

Headmaster

Lawyer

Member of local parliament

Member of national parliament

Professor

Farmer

Priest

Actor

Librarian

Communications officer

Social worker

Employee at the employment office

Employee at the social insurance office

**Education:** Coded as years of education: 9 = compulsory only, 11 = two-year gymnasium or equivalent, 12 = three-year gymnasium, 14 = unfinished post-gymnasium studies, 16 = graduated from university.

**Active political party member:** Coded 1 for active member with some kind of commission, coded 0 for inactive members and non-members.

**Age:** Age in years.

**Gender:** 0 = women, 1 = men.

**Marital status:** 1 = married/living with partner, 0 = living alone.

**Urban/rural:** 1 = rural, 2 = small population centre, 3 = suburb to city, 4 = city, 5 = suburb to metropolitan area city, 6 = metropolitan.

**Immigrant status:** 0 = grew up outside Sweden, 1 = grew up in Sweden.

### Author biography

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