



# Disentangling the directions of associations between structural social capital and mental health: Longitudinal analyses of gender, civic engagement and depressive symptoms



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## ABSTRACT

The present paper analysed the directions of associations between individual-level structural social capital, in the form of civic engagement, and depressive symptoms across time from age 16–42 years in Swedish men and women. More specifically, we asked whether civic engagement was related to changes in depressive symptoms, if it was the other way around, or whether the association was bi-directional. This longitudinal study used data from a 26-year prospective cohort material of 1001 individuals in Northern Sweden (482 women and 519 men). Civic engagement was measured by a single-item question reflecting the level of engagement in clubs/organisations. Depressive symptoms were assessed by a composite index. Directions of associations were analysed by means of gender-separate cross-lagged structural equation models. Models were adjusted for parental social class, parental unemployment, parental health, and family type at baseline (age 16). Levels of both civic engagement and depressive symptoms were relatively stable across time. The model with the best fit to data showed that, in men, youth civic engagement was negatively associated with depressive symptoms in adulthood, thus supporting the hypothesis that involvement in social networks promotes health, most likely through provision of social and psychological support, perceived influence, and sense of belonging. Accordingly, interventions to promote civic engagement in young men could be a way to prevent poor mental health for men later on in life. No cross-lagged effects were found among women. We discuss this gender difference in terms of gendered experiences of civic engagement which in turn generate different meanings and consequences for men and women, such as civic engagement not being as positive for women's mental health as for that of men. We conclude that theories on structural social capital and interventions to facilitate civic engagement for health promoting purposes need to acknowledge gendered life circumstances.

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## 1. Background

Poor mental health, and depression in particular, constitutes a major threat to the wellbeing of both adults and young people worldwide (Patel et al., 2007; Van de Velde et al., 2010). Research on the determinants of depression and depressive symptoms is therefore crucial to develop successful strategies to promote mental health and prevent ill health. This paper contributes to this by focusing on the longitudinal relationships between structural

social capital (as in civic engagement) and depressive symptoms across the life course.

### 1.1. Social capital

Over recent decades, aspects of social relationships, including civic engagement, social networks, trust, and social cohesion, have been conceptualised in terms of social capital (Bourdieu, 1986; Portes, 1998; Putnam, 2000). Social capital is a complex concept with many general definitions as well as a number of forms and dimensions (Ejlskov et al., 2014; Murayama et al., 2012). A commonly used characterisation is that social capital represents

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the degree of connectedness and the quality as well as quantity of social relations (Harpham et al., 2002). Generally, two main approaches coexist: on the one hand, social capital is conceptualised in relation to collective action and integration (social cohesion approach); on the other hand, it is observed as an approach that focuses on issues of social inequality (Murayama et al., 2012). The main advocates of the integrationist approach are Putnam and Coleman, whereas the inequality approach is predominantly represented by the work of Bourdieu (Adkins, 2005).

To date, the integrationist approach has been most commonly used in public health research and primarily the work by Putnam (Murayama et al., 2012). According to Putnam (see e.g., Putnam, 2000), social capital is a combination of patterns of civic engagement and social cohesion. In addition to this 'social cohesion approach' in which social capital is viewed as a collective feature characterising whole communities, an individual-level social-network approach to social capital also exists. This latter approach – on which the present study rests – applies the sociological definition of social capital as the ability of individuals to secure benefits and resources through membership in social networks and other social structures (Portes, 1998).

Social capital can further be divided into structural and cognitive components. The structural component reflects activity, i.e., the extent and quantity of the actual participation in social networks, while the cognitive component represents the individual's appraisal of this activity, e.g., his or her perceptions of support or trust (Harpham et al., 2002; Krishna and Shrader, 2000). The term structural does not refer to levels or distances but, rather, to participatory features, such as: "externally observable aspects of social organisation and is characterized by behavioral manifestations of network connections or civic engagement." (Murayama et al., 2012 p. 180). In other words, civic engagement is a part of structural social capital alongside support networks or density of community organisations (Derose and Varda, 2009).

More recently, distinctions have also been made between bonding, bridging, and linking social capital (Derose and Varda, 2009; Iwase et al., 2012). Bonding social capital refers to strong ties within homogenous groups, whereas (weaker) ties made up of dissimilar people and between groups have been conceptualised as bridging social capital. According to Derose and Varda (2009 p. 282), bridging social capital is often "operationalized through voting participation and more general community participation (e.g., volunteering, membership in community associations, etc.)". Linking social capital, on the other hand, refers to ties between individuals or communities and formal institutions (Derose and Varda, 2009).

In sum, drawing on contemporary conceptualisations of social capital, the current study focuses on structural aspects of individual-level social capital in terms of 'civic engagement', operationalised as participation in associations, which, in turn, represents an aspect of bridging social capital.

## 1.2. Social capital and inequalities in health

Generally, access to individual social capital has been shown to be important for both physical (Hyyppä et al., 2007; Kim et al., 2008) and mental health (Almedom, 2005; Gilbert et al., 2013; Kawachi and Berkman, 2001; Ziersch, 2005). Strong associations have also been found between cognitive social capital and health; especially with regards to self-rated health (SRH) (Eriksson et al., 2010; Kim et al., 2008; Snelgrove et al., 2009) and common mental disorders (CMD, depression and anxiety) (Ehsan and De Silva, 2015).

Research on health and individual-level structural social capital is less prominent although it has been suggested that involvement

in civic engagement can secure important benefits for health: social network involvement may promote health by facilitating access to social support as well as material and psychological resources and through social influence from trusted role models. In addition, social network involvement has been suggested to reduce stress, provide opportunities to learn new skills, and help to develop a sense of belonging, all of which are likely to have positive health effects (Berkman and Glass, 2000).

As shown, various aspects of social capital have been found to be linked to health status. Given that the majority of studies have relied on cross-sectional designs, in which directions of associations cannot be discerned, there is a need for longitudinal research.

## 1.3. Longitudinal research on social capital and health

According to a review of prospective multi-level studies (Murayama et al., 2012), there is enough evidence to suggest a general association both between 'social-cohesion social capital' and health and between 'individual-level social capital' and health (physical as well as mental). However, differences exist depending on the targeted health outcomes, as well as dimensions and measures of social capital. For example, with regard to physical health, analyses of the British Household Panel Survey have shown that area-level social capital (trust) is linked to self-rated health, whereas civic engagement (active in organisation) is not (Snelgrove et al., 2009). A Swedish study, on the other hand, suggested that an accumulation of poor social capital across the life course in terms of social participation, social influence, and social support was associated with elevated levels of functional somatic symptoms in mid-life (Jonsson et al., 2014). It has also been shown that higher levels of individual and neighbourhood social capital positively affect self-rated health among people with chronic illness (Waverijn et al., 2014). Others report weak evidence of social capital being linked to all-cause mortality, cancer, or cardio-vascular disease (Choi et al., 2014). Moreover, a recent Danish study found that the longitudinal associations between social capital and all-cause mortality depended on gender and dimension of social capital (Ejlskov et al., 2014).

## 1.4. Civic engagement and mental health

Individual-level structural social capital has not been as well researched as other dimensions, especially not longitudinally. However, it has been argued that individual-level social capital (as opposed to the 'social cohesion' societal aspect) is particularly important for mental health (Ziersch, 2005). According to the (primarily cross-sectional) research exploring these associations, low levels of civic engagement predict poor mental health (see, e.g., Almedom, 2005; Berkman, 2000; Berry and Welsh, 2010). There is, however, some conflicting evidence: a cross-sectional Australian study found that community participation was not strongly related to psychological distress (Phongsavan et al., 2006). Likewise, Berry and Welsh (2010) identified that civic engagement and political participation had weaker associations with mental health than informal connectedness and that the associations were present in women only. Similar findings were reported from a Canadian study; while political participation (linking social capital) was associated with depression, no such association was found for social group participation (bridging social capital) (Daoud et al., 2016). Furthermore, a systematic review found weak or no evidence for mental health effects of structural social capital, whereas some studies in low-resource settings identified civic engagement to be associated with an increased risk of common mental disorders (CMD, depression and anxiety) (Ehsan and De Silva, 2015).

According to Finnish data on employees, lower individual-

level social capital predicted self-reported as well as diagnosed depression (Kouvonen et al., 2008). Similarly, clinically focused longitudinal research in England has shown that membership in social groups both protects against future depression and stimulates recovery from existing depression (Cruwys et al., 2013). However, other longitudinal studies have not been able to identify a link between civic engagement and changes in psychological health over time (Giordano and Lindstrom, 2011) or depression (O'Connor et al., 2011). Thus, conclusive evidence on the longitudinal links between individual-level structural social capital and mental health, including depressive symptoms, is still lacking.

It is also of importance to acknowledge the gendered and socioeconomic patterning of civic engagement and its links with (mental) health (Berry and Welsh, 2010; Ejlskov et al., 2014). Studies have shown that higher socioeconomic positions are associated with greater access to all forms of social capital (Eriksson et al., 2010; Ziersch, 2005). According to Swedish data, women seem to be involved in formal associations to a higher extent than men (Eriksson and Ng, 2015). However, while loss of civic engagement was harmful for the self-rated health of both men and women over time, *gaining* access to social participation was harmful for the self-rated health of women only (Eriksson and Ng, 2015). In addition, Iwase et al. (2012) found that participation in heterogeneous groups (bridging social capital) decreased the likelihood for poor SRH for both men and women but that the strongest association was found in women (Iwase et al., 2012). Similarly, Ejlskov et al. (2014) identified that social capital dimensions of social network and civic engagement were associated with all-cause mortality in women but not in men. They further emphasise the importance of stratifying for gender in analyses of social capital in health research.

Murayama et al. (2012) and Ejlskov et al. (2014) have concluded that, in order to fully understand the links between social capital and health, prospective multi-level studies are needed in which several aspects of social capital are acknowledged. In the current study, however, we focus on one dimension, that is, civic engagement as an indicator of individual-level structural bridging social capital. In line with Murayama et al. (2012) we also highlight the need for research focusing on establishing directions of associations. Within public health, two main hypotheses exist in understanding the generation of health inequalities; social causation and social selection (Kröger et al., 2015). With regard to the current study's topic, the most commonly suggested direction has so far been that poor social capital leads to poor health (social causation) (Kröger et al., 2015; Murayama et al., 2012). However, these associations are likely to be bi-directional, i.e., the direction of association may go both ways. For example, a person with poor mental health is also probably less likely to engage in social activities, clubs, or associations in his or her local community (social selection) (Kröger et al., 2015; Murayama et al., 2012). Among the few studies exploring a possible bi-directional relationship, a recent Australian one-year-follow-up study showed that higher levels of mental wellbeing in year one was related to more community participation in year two and vice versa (Ding et al., 2015).

The shortage of longitudinal research on mental health and structural bridging social capital guided us to the focus of the current study. To our knowledge, there are few, if any, cohort studies with a long follow-up time that has explored the possible bi-directional relationship between civic engagement and depressive symptoms from adolescence to mid-life. Therefore, the aim of the current study was to analyse the directions of associations between civic engagement and depressive symptoms across the life course from age 16–42 years in Swedish men and women.

## 2. Methods

### 2.1. Population and study context

Data for this study are drawn from the longitudinal Northern Swedish Cohort which consists of young people attending their final year of compulsory school in 1981 (age 16) in the medium-sized industrial town of Luleå, Sweden ( $n = 1083$ ) (Hammarström and Janlert, 2012). Apart from the survey conducted in 1981, the cohort was re-surveyed in 1983 (age 18), 1986 (age 21), 1995 (age 30), and 2007 (age 42). The current study utilises all waves of data collection – except the one from 1983 because of the lack of comparable data (i.e. the question on civic engagement was not included) – and comprises a total of 1001 individuals, representing 94% of the cohort participants who are still alive. The study has received ethical approval from Umeå University.

From an international perspective, the Swedish rate of civic engagement is comparably high. In 2008, 79% of the adult Swedish population (16 < years) reported being a member in at least one civic association (Statistics Sweden, 2011). In addition, almost half of the Swedish population performs some type of voluntary work and rates of civic engagement have been the same in repeated measures from 1992 until 2009 (Von Essen and Svedberg, 2010). This pattern of high and stable civic engagement is reflected in the Northern Swedish Cohort; in 1981, 62% reported being a member of at least one association. The most frequently reported associations were sports clubs, student councils, and music/cultural associations (data available upon request).

### 2.2. Measures

According to a comprehensive review of how social capital has been measured in health surveys (Harpham et al., 2002), structural social capital can be measured in terms of, for example, participation in a local community, associational involvement, and participation in organisations.

The current study operationalised structural social capital in terms of civic engagement, as indicated through the following question: “How often do you participate in associational activities?” The response options were: “Seldom or never” (1), “A few times per month” (2), “Every other week” (3), “A few times per week” (4), and “Several times per week” (5). This variable was included in the analysis as continuous, with higher values reflecting a higher level of civic engagement. This measure is reflecting a general level of engagement in organisations. Unfortunately data did not include any specification of the type of organisation at each time point (only at age 16).

A scale reflecting depressive symptoms was constructed based on the following six symptoms: “Poor appetite”, “General tiredness”, “Concentration difficulties”, “Sleeping problems”, “Felt down and sad”, and “Dejected about future”. For the purpose of harmonisation, the response options were recoded so that they ranged between 0 and 2 for each item. With regard to “Poor appetite” and “General tiredness”, response options were coded into “No” (0), “Yes, mild” (1), and “Yes, severe” (2). The response alternatives for “Sleeping problems”, “Concentration difficulties”, and “Felt down and sad” were coded as “Never” (0), “On and off” (1), and “Rather often/All the time” (2). For “Dejected about the future”, response options were coded as “Never” (0), “Seldom” (1), and “Yes, rather often/Very often” (2). The scale was computed as the mean of these six items with higher values indicating a higher level of depressive symptoms. The scale was developed to capture common depressive symptoms and the six included symptoms correspond with the majority of criteria included in the DSM 5 (American Psychological Association, 2013). Importantly, however, the scale was not

constructed as a screening or diagnostic tool, nor did it aim to cover indicators of more severe depression such as suicidal ideation (Hammarström et al., 2016). This measure has been evaluated and found to present acceptable psychometric properties. For example, factor loadings ranged from 0.44 to 0.74 (T2 in 1986) to 0.62–0.89 (T4 in 2007) and with the corresponding Cronbach's Alpha of 0.61 and 0.76. The fit measures of CFI and RMSEA were 0.99 or above and 0.06 or below respectively, indicating good fit to data. Further analyses have shown that the factor structure is invariant over time (Hammarström et al., 2016).

Parental social class, parental unemployment, parental health, and family type were added to the model as confounders at baseline (age 16). Parental social class was indicated through information on whether the father and the mother, respectively, were upper white-collar workers, including self-employed (0); lower white-collar workers (1); or blue-collar workers (2), according to the Swedish SEI classification (Statistics Sweden, 1984). The variable 'Parental unemployment' was based on the youths' reports and coded as "No unemployed parent" (0) and "At least one unemployed parent" (1). Concerning parental health, information was collected on whether either parent was healthy or suffering from certain illnesses (somatic, psychiatric, or behavioral). For the purposes of the current study, these variables were recoded and combined as to whether none (0), or at least one of the parents were unhealthy (1). Finally, family type was dichotomised as "Parents living together" (0) and "Parents not living together" (1).

### 2.3. Statistical analysis

The associations between civic engagement and depressive symptoms were analysed by means of structural equation modelling (SEM) using a maximum likelihood estimation with missing values. The baseline model (M1) contained auto-regressive paths (reflecting measurement stability) across the four time points for civic engagement and depressive symptoms. This model furthermore included correlations between civic engagement and depressive symptoms at each time point. Based on modification indices for omitted paths in the baseline model, the model fit was improved by allowing the following error terms to be correlated: civic engagement in 1981 and 1986 and in 1995 and 2007, as well as depressive symptoms in 1986 and 1995 and in 1995 and 2007. Measures of parental social class, parental unemployment, parental health, and family type were added to the model as confounders and were indicated by paths to civic engagement and depressive symptoms in 1981; they were also allowed to be inter-correlated. Because several of the parameters, particularly those reflecting the mean of the exogenous variables, were found to be significantly different between men and women, the decision was made to perform gender-separate structural equation modelling analyses. However, findings from multi-group analyses with gender as grouping variable are available as supplementary file.

The next step was to test four competing models (see Fig. 1) separately for men and women; the first test was the baseline model (A). The subsequent models were extensions of the baseline model in the following ways: a social causation model (B) where civic engagement at each time point predicted depressive symptoms at the next time point, a social selection model (C) where depressive symptoms at each time point predicted civic engagement at the next time point, and a bi-directional model (D) where the paths specified for Models B and C were included simultaneously. As recommended in the literature (Usami et al., 2015), the choice of model was based on a combined evaluation of various model fit statistics and information criteria. These included the Standardized Root Mean Square Residual (RMSEA), which should

be below or close to 0.06, as well as the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI), which both should be close to or above 0.95. The Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) were furthermore used to evaluate the relative goodness of fit, where lower values relative to the other models correspond to better fit. Additionally, to compare models that were hierarchically nested, chi-square differences tests were performed.

### 3. Results

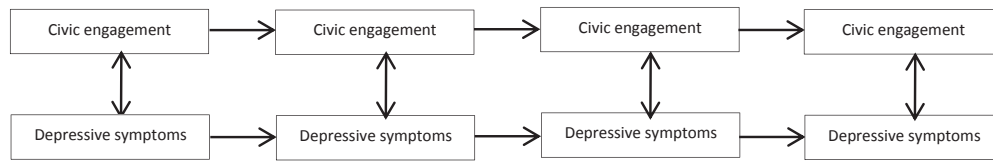
The descriptive statistics presented in Table 1 show tendencies for civic engagement to decrease from T1 (age 16) to T2 (age 21) and then increase slightly at T3 (age 30) and again at T4 (age 42). Men generally report a higher level of civic engagement compared to women, although this difference is only statistically significant at T1. With regard to depressive symptoms, there are no clear changes in the mean levels over time. At all the time points, women reported significantly higher levels of depressive symptoms compared to men.

The model fit statistics (Table 2) suggest that all eight models provide an acceptable fit. For men, Model D has the best fit according to RMSEA, CFI, and TLI. The AIC value (but not the BIC value) is lower for this model in comparison to the other three models. The chi-square difference tests show that Models B–D fit the data significantly better ( $p < 0.001$ ) than Model A, while Model D also provides better fit compared to Model C ( $p = 0.001$ ). The choice thus stands between Models B and D. We decided on Model B because this is the more parsimonious model, and Model D does not fit the data significantly better than Model B ( $p > 0.05$ ). For women, the results are slightly more dispersed, although the differences are small. For example, RMSEA is the lowest and TLI the highest for Model C, whereas Models C and D have the best fit according to CFI. Concerning relative fit, AIC is lowest for Model A in comparison to the other models. According to the chi-square differences tests, none of Models B–D provide a significantly better fit to the data than Model A. Accordingly, the choice is narrowed to Model A or C. Following the same reasoning as for men, Model A is chosen because this is the more parsimonious model, and, moreover, Model C does not fit the data significantly better than Model A ( $p > 0.05$ ).

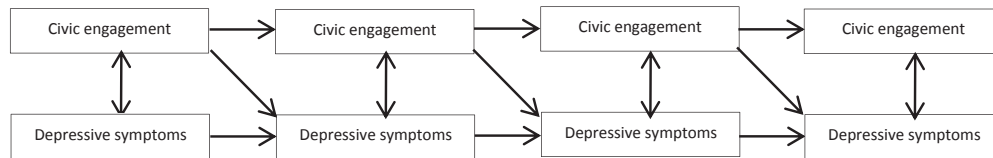
Based on the model fit statistics, it was decided to proceed with the social causation model (Model B) for men and the baseline model (Model A) for women. The results from structural equation modelling are shown in Fig. 2 (for clarity, the confounding variables as well as the error terms have been omitted from the figure). For both men and women, the measurement of civic engagement is rather stable, at least across the last three time points (men: T1- > T2, 0.37\*\*\*; T2- > T3, 0.72\*\*\*; T3- > T4, 0.69\*\*\*, and women: T1- > T2, 0.32\*\*\*; T2- > T3, 0.69\*\*\*; T3- > T4, 0.63\*\*\*); it is even more the case for depressive symptoms (men: T1- > T2, 0.43\*\*\*; T2- > T3, 0.80\*\*\*; T3- > T4, 0.91\*\*\*, and women: T1- > T2, 0.33\*\*\*; T2- > T3, 0.74\*\*\*; T3- > T4, 0.75\*\*\*). Concerning the association between civic engagement and depressive symptoms at each time point, the results show that the correlation is statistically significant for women at T1 (−0.17\*\*\*) and T4 (−0.09\*), suggesting that higher levels of civic engagement are linked to lower levels of depressive symptoms and vice versa. Although the remaining correlations are statistically non-significant, they all show the same direction. With regards to social causation effects, which are part of Model B and therefore applicable only to men, these effects show that civic engagement at T1 predicts lower levels of depressive symptoms at T2 (−0.13\*\*\*,  $p < 0.001$ ). The remaining cross-lagged effects are not statistically significant.



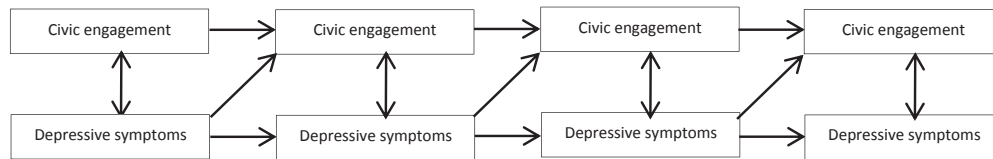
Model A: Baseline model



Model B: Social causation model



Model C: Social selection model



Model D: Bi-directional model

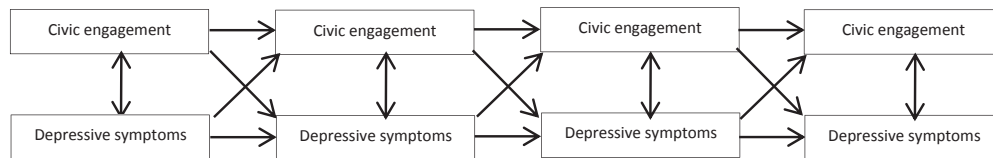


Fig. 1. Illustration of the competing models.

**Table 1**  
Descriptive statistics for the study variables (n = 1001).

	Men (n = 519)				Women (n = 482)				Men-women T-test	
	Mean	Range	Std. dev.	n	Mean	Range	Std. dev.	n	Mean diff.	Sig.
<b>Civic engagement</b>										
T1	2.80	1–5	1.77	515	2.52	1–5	1.68	474	0.28	*
T2	2.03	1–5	1.54	517	1.90	1–5	1.42	478	0.13	—
T3	2.05	1–5	1.48	486	1.96	1–5	1.39	452	0.09	—
T4	2.26	1–5	1.58	512	2.22	1–5	1.49	480	0.04	—
<b>Depressive symptoms</b>										
T1	0.41	0–1.50	0.29	518	0.55	0–1.50	0.29	478	–0.14	***
T2	0.36	0–1.50	0.29	518	0.44	0–1.50	0.27	478	–0.08	***
T3	0.41	0–1.67	0.32	513	0.50	0–1.67	0.31	475	–0.09	***
T4	0.39	0–1.83	0.33	514	0.49	0–1.83	0.38	482	–0.10	***

\*\*\*p &lt; 0.001, \*\*p &lt; 0.01, \*p &lt; 0.05.

#### 4. Discussion

This study aimed to examine the direction of relationships between civic engagement as an indicator of individual-level structural social capital and depressive symptoms across the life course. The main finding was that higher levels of civic engagement predicted a decrease in depressive symptoms among men, whereas no longitudinal effects were found among women. Before discussing

these results, a brief discussion of the descriptive results is in order. Consistent with existing evidence (Patel et al., 2007; Van de Velde et al., 2010), levels of depressive symptoms were higher in women compared to men across all time points. In contrast to some earlier studies (Eriksson and Ng, 2015), levels of civic engagement did not show a distinct gender pattern (although boys had a higher participation rate at age 16 compared to girls). Levels of both depressive symptoms and civic engagement were relatively stable across time.

**Table 2**

Goodness-of fit statistics for the tested models (n = 1001).

	Goodness-of-fit statistics			
	Model A: baseline <sup>a</sup>	Model B: forward causation <sup>b</sup>	Model C: reversed causation <sup>c</sup>	Model D: reciprocal <sup>d</sup>
<b>Men</b>				
RMSEA	0.027	0.008	0.023	0.000
CFI	0.976	0.998	0.984	1.00
TLI	0.968	0.997	0.977	1.01
AIC	10963.735	10953.409	10961.767	10952.096
BIC	11184.834	11187.264	11195.622	11198.706
$\chi^2$	52.405	36.079	44.437	28.765
Df	38	35	35	32
P	<0.001	<0.001	<0.001	<0.001
Chi-square difference test				
Comparison with:	—	Model A	Model A	Model A/B/C
Change in $\chi^2$	—	16.326	7.968	23.640
Change in df	—	3	3	6
p	—	0.001	0.001	0.000/.063/.001
<b>Women</b>				
RMSEA	0.024	0.026	0.023	0.024
CFI	0.975	0.973	0.979	0.979
TLI	0.966	0.961	0.969	0.967
AIC	10066.763	10070.365	10068.006	10070.819
BIC	10284.016	10300.151	10297.793	10313.140
$\chi^2$	48.863	46.465	44.107	40.920
df	38	35	35	32
P	<0.001	<0.001	<0.001	<0.001
Chi-square difference test				
Comparison with:	—	Model A	Model A	Model A/B/C
Change in $\chi^2$	—	2.398	4.756	7.943
Change in df	—	3	3	6
p	—	0.494	0.191	0.242/.136/.364

Note: All models include confounding variables at T1 as well as correlated error terms.

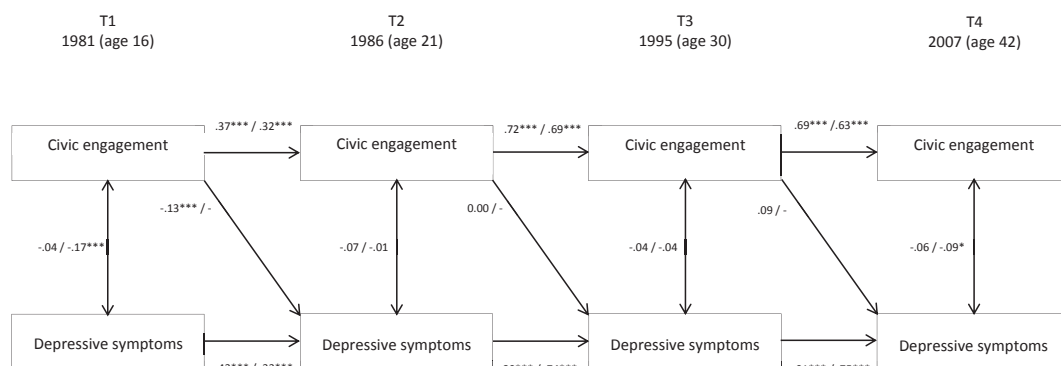
<sup>a</sup> Only auto-regressive effects and cross-sectional correlations.<sup>b</sup> Civic engagement at one time point predicts depressive symptoms at the next time point.<sup>c</sup> Depressive symptoms at one time points predict civic engagement at the next time point.<sup>d</sup> Civic engagement and depressive symptoms have reciprocal effects.

The lack of statistically significant cross-lagged relationships among women does not mean that civic engagement and depressive symptoms are unrelated. On the contrary, there were significant cross-sectional correlations between civic engagement and depressive symptoms, particularly at ages 16 and 42, showing that higher levels of civic engagement correspond to lower levels of depressive symptoms. Combined with the measurement stability in both civic engagement and depressive symptoms, however, these correlations seemed to leave little room for predicting any changes over time. Thus, among women, civic engagement and depressive symptoms may best be observed as a co-occurring phenomenon that perhaps is primarily driven by other factors. For men, youth civic engagement (age 16) had a protective, although weak, effect against depressive symptoms in early adulthood (age 21). The absence of

any cross-lagged associations beyond early adulthood is interesting and merits further discussion. Considering the lack of cross-sectional associations among men, civic engagement and depressive symptoms seem fairly unrelated across the measurements in adulthood. It is also possible that the effect of civic engagement at age 16 on depressive symptoms at age 21, together with the strong auto-regressive paths of both indicators, 'cancels out' any subsequent cross-lagged associations.

#### 4.1. Civic engagement and depressive symptoms across the life course

In line with previous research on structural social capital and mental health (Almedom, 2005; Berkman, 2000; Berry and Welsh,



**Fig. 2.** The associations between civic engagement and depressive symptoms (n = 1001). Results from structural equation modelling. Estimates (standardized) are displayed as men/women. \*\*\*p < 0.001, \*\*p < 0.01, \*p < 0.05.

2010), our findings concerning men (at least in youth/young adulthood) support the hypothesis that involvement in social networks promotes health, which according to previous research most likely operates through social and psychological support, perceived influence, and sense of belonging (Berkman and Glass, 2000; Eriksson, 2011; Portes, 1998). However, and consistent with earlier research (Ehsan and De Silva, 2015; Phongsavan et al., 2006), the results are somewhat inconclusive; the longitudinal relationship was valid for men only and was not particularly strong. Several longitudinal studies have failed to identify a link between civic engagement and changes in mental health over time (Berry and Welsh, 2010; Ehsan and De Silva, 2015; Giordano and Lindstrom, 2011; O'Connor et al., 2011). Perhaps one cannot expect to find a strong association between the frequency of attending organised activities and depressive symptoms nine or twelve years later. On the other hand, the fact that we identified longitudinal effects among men and a strong stability model among women, despite the relatively long span between data points, suggests that civic engagement is important across the life course.

With regard to assessing possible bi-directional relationships, our results contradict those of Ding et al. (2015); we cannot present any support of a reciprocal model in which aspects of structural social capital impact later levels of mental health and vice versa. The comparability with Ding et al. (2015) is limited, however, because their study is based on a one-year follow-up (only two waves), and we use data from four waves from youth to mid-life. More research is required to discern to what degree a causal direction of the relationship between civic engagement and depressive symptoms (or other mental health outcomes) can be established.

There are many forms of civic engagement, such as political participation (Berry and Welsh, 2010; Ehsan and De Silva, 2015), and this variety may need to be taken into account to understand our results. Unfortunately, apart from the baseline collection of data (age 16), we did not have specified information about the type of club or organisation of which the participants were members. At age 16, the participants were primarily members of sport clubs (this primarily applied to the boys). However, it is likely that a number of participants were involved in civic engagement that have been found to be negative for mental health (for example, political participation) (Daoud et al., 2016; Ding et al., 2015). At baseline, political civic engagement was reported by 13 percent of girls and 7 percent of boys (data not shown, available upon request). Given the lack of information on later political participation, it is difficult to draw any conclusions from this fact. Nevertheless, it is possible that such engagement may have reduced the strength of how increased levels of civic engagement predict a reduction in depressive symptoms.

#### 4.2. Gender dynamics, social capital and mental health

The main finding in this study is that the direction of associations between civic engagement and depressive symptoms differs for men and women. Apart from statistical or methodological explanations, gender dynamics need to be taken into account. Is it possible that civic engagement is more protective with regard to depressive symptoms for men across time than it is for women? For example, there are gendered patterns in the type and level of community engagement as well as in the roles and tasks that men and women take on within an organisation (Lowndes, 2000). It has been found that women are active to a higher degree than men in organisations dealing with charity, health care, or social support (Lowndes, 2000; Son and Lin, 2008). Swedish data show a similar pattern: men are primarily active in associations related to motor and sports, while women are over-represented in humanitarian

organisations supporting disadvantaged groups in society (Statistics Sweden, 2003, 2011). Participation in such organisations is possibly more emotionally draining compared to activities in sports clubs and is therefore less likely to result in only positive effects on health. Kawachi and Berkman (2001) highlight gender differences in the 'costs and gains of social network involvement by referring to studies that have found that the stress-related negative consequences of social networks are more strongly related to women's mental health than the supportive components of social networks.

It is also possible that the level of civic engagement in women is underestimated, as many of the typically women-dominated social networks and (informal) associations are traditionally not considered civic organisations or clubs for which a formal membership is required. Examples of such networks are childcare groups, study circles, choirs, and school-parent organisations (Lowndes, 2000; Statistics Sweden, 2012). At the same time, Swedish studies show that more women than men are involved in formal associations (Eriksson et al., 2010; Eriksson and Ng, 2015). Again, given the lack of specific information regarding types of associations, we can only hypothesise that the female participants may have been more active than the data showed and that this could have influenced the results.

Adkins (2005) has argued that the very concept of social capital is based on the idea of the (white, heterosexual) male citizen and that research on social capital has neglected issues of power relations. One way to elucidate gendered power relations in civic engagement (and possible mental health consequences) is to explore what men and women do practically in their civic engagement as well as what roles or positions they occupy. For example, according to British and Swedish statistics, men are more likely to be present in committee posts and other influential positions, while women outnumber men in activities involving social responsibilities and organising (Johansson and Bergold, 2013; Lowndes, 2000). While it is not feasible to say that all associations mirror the power relations found in the rest of society as a whole, it is plausible that unequal distributions of influence, status, responsibility, and workload between men and women in associations may have consequences for mental health. As mentioned above, we regret that presently we have almost no information on what type of associations women and men of the Northern Swedish Cohort are active in and what positions and tasks they occupy.

Furthermore, burdensome effects of social network involvement seem to be more evident among women than men (Kawachi and Berkman, 2001; Silvey and Elmhirst, 2003). For example, a recently published longitudinal study found that *gaining* access to social participation (in terms of participation in organised activities, clubs and organisations) over time was harmful for self-reported health among women, while no such association was found for men (Eriksson and Ng, 2015). In addition, previous research has found that the protective effects of social ties for mental health differ for men and women. Proposed reasons underlying this disparity are, for example, contemporary discourses of femininity that may put pressure on women to provide support to others (Kawachi and Berkman, 2001). Such expectations and actual practice may make civic engagement burdensome for women.

However, to obtain a comprehensive picture of social capital in relation to mental health, other forms of social connections and involvement need to be considered. For example, it has been found that women have more extensive social relationships, especially friendships, than men (Fuhrer and Stansfeld, 2002; Hall, 1999). It is possible that men compensate for the lack of close friendships by civic engagement and that this could contribute to the more beneficial health effects of civic engagement in men compared to women.

#### 4.3. Methodological considerations

As one of few cohort studies covering almost three decades of participants' lives, the Northern Swedish Cohort study rendered it possible to examine the prospective associations between civic engagement and depressive symptoms across four time points. The response rates were exceptionally high, primarily due to the Swedish system of personal identification numbers as well as the immense effort to contact and invite all participants in each wave and the effort to provide summaries of the results to each participant after each survey (Hammarström and Janlert, 2012). Because of these efforts, the underrepresentation of marginalised groups is small. There are nevertheless some limitations that need to be addressed. Although the measure of civic engagement corresponds well with previous conceptualisations as the "extent and intensity of associational links or activity" (Harpham et al., 2002 p. 106), it has not been used to capture structural social capital before. It would have been preferable to contrast it against other measures reflecting aspects of social capital to assess its validity. Using only one question to reflect something as complex as individual-level structural social capital is another limitation. However, we argue that despite this limitation, modelling a general level of civic engagement from youth to mid-life is valuable to describe structural social capital across the life course. Moreover, structural social capital is not isolated from other forms of social capital (Ejlskov et al., 2014; Murayama et al., 2012). While we acknowledge this, we did not have access to repeated indicators of other forms of social capital or detailed information on type of organisations participants were active in.

Furthermore, the measure of depressive symptoms is slightly different from the most commonly used scales, and although it has been shown to have satisfactory psychometric properties, it was not developed as a screening or diagnostic tool for depression.

All study variables were based on self-reports, which may potentially reflect some problems with negative affectivity. This could have caused an overestimation of the high level of association between civic engagement and depressive symptoms. Finally, the models assessed in the current study were kept relatively simple in terms of only adjusting for baseline characteristics while omitting possible mediating factors. This approach was chosen because the aim was to explore the longitudinal associations rather than explain them. We therefore included possible confounders available at baseline, that is, parental social class, parental unemployment, parental health, and family type. A task for future studies is to investigate the pathways through which civic engagement may affect mental health. Such pathways could include adult level of education, employment status, and health behaviours.

#### 4.4. Concluding remarks and implications

Based on the results of the current study, we conclude that no longitudinal direction of associations between civic engagement and depressive symptoms exists in women, whereas a low level of civic engagement predicts later depressive symptoms in men. While further research is required to gain a deeper understanding of how structural social capital and health are related across the life course, we tentatively argue that interventions to promote civic engagement in young men could be a way to prevent poor mental health for men later in life. The gender differences found in our study might be explained by gendered experiences in civic engagement: by applying a critical feminist perspective, we suggest that civic engagement may have different meanings and consequences for men and women. For example, civic engagement may not be as positive for mental health in women as it is in men. Interventions aiming to facilitate civic engagement for health-

promoting purposes should acknowledge that the supporting effects of social connections might not be equally shared but might be influenced by gendered expectations on women to be the primary supporters of others.

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#### Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.socscimed.2016.07.005>.

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