Education and Voluntary Association Participation: Evidence for Selection and Causation

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Abstract

We study the relationship of education and participation in voluntary associations throughout the life course, using retrospective data from the Netherlands (covering the period 1932-2000) and prospective panel data from Wisconsin (1957-2003). In both datasets, we find that those who will eventually achieve a higher level of education are already more likely to participate in voluntary associations before they have completed their educational career. This implies that the relationship between education and participation in voluntary associations is partly due to selection effects. However, both datasets also reveal that increases in education are associated with increases in voluntary associations memberships, suggesting causative effects of education. The Dutch data reveal no causative effect of education on volunteering if selection into membership is taken into account.

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Education and participation in voluntary associations

Almost every study on voluntary association participation finds a positive relationship with the level of education (Babchuk & Edwards 1965; Bekkers 2005; Brady et al 1999; Brady et al 1995; Brown & Ferris 2007; Curtis et al 2001; Egerton 2002; Erlinghagen & Hank 2006; Hauser 2000; Hyman & Wright 1971; Putnam 2000; Reissman 1954; Rotolo 1999; Rotolo & Wilson 2007; Schofer & Fourcade-Gourinchas 2001; Scott 1957; Verba et al 1995; Wilson & Musick 1997a; 1997b; 1998; Wollebaek & Selle 2002; Wright & Hyman 1958). Higher educated persons are more likely to be members of voluntary associations, are more likely to attend meetings, are more likely to volunteer, and are more likely to donate money. In his review of research on volunteering, Wilson (2000, p. 219) stated that ‘level of education is the most consistent predictor of volunteering’.

Unfortunately, it is hard to tell from these studies whether education has a causal effect on participation in voluntary associations. Is it really the case that achieving a higher level of education makes people more likely to participate? One may also argue that people who complete higher levels of education have specific characteristics that make them also more interested in voluntary associations or more able to participate. The former case is a causation process; the latter case is a selection process.

The present paper investigates the timing of events constituting the relationship between level of education and participation. One condition for causality is that causes precede effects. So we ask the question: when does the relationship between education and participation in voluntary associations emerge? If education has a causal effect on participation, the level of participation should increase *after* a higher level of education has been completed. If, however, the relationship between education and participation is due to selection processes, one may expect that persons who will eventually complete higher levels of education will participate at higher levels even before they have completed higher education.

Obviously, cross-sectional data on education and participation in voluntary associations at one point in time clearly cannot show how the relationship between the two emerged over time. Longitudinal data are needed on both the level of education and participation in voluntary associations. In the present paper, we use two types of longitudinal data: prospective and retrospective data. In both datasets we compare the participation level of persons who will eventually complete a certain level of education with those who would not before and after they enter completed their educational career.

In both datasets, we find evidence for both selection and causation in the relationship between education and participation. We find that those who would eventually achieve a higher level of education are more likely to participate in voluntary associations throughout the life course, also before the end of their educational career. The prospective data show that participation in voluntary associations is associated with characteristics that are also associated with advancement in education: higher education of the father, cognitive ability, openness to experience, and academic ambition. These characteristics are selected for in education and in voluntary associations.

In addition, estimates from fixed effects models of memberships reveal that education does increase the level of participation over the life course. To some extent, the influence of education is mediated by occupational status: through education, people get into higher status jobs, which increase memberships. In the Netherlands we also find enhanced participation in voluntary associations among those in lower status jobs and an interactive effect of education and high occupational status. In the model with occupational status and interactions of status with education the main effect of education disappears. In the Wisconsin data, however, we find a negative interaction between education and occupational status. In the Wisconsin data, a positive effect of education remains when controlling for occupational status.

Both datasets lack adequate measures of mechanisms linking education with participation. Higher education may promote participation by enhancing knowledge and skills, psychological resources, and networks. Future research should include measures of these mechanisms.

Theory and hypotheses

We review three groups of theories on social participation: theories on knowledge and skills, on psychological resources, and networks.

Knowledge and Skills

According to the ‘integrated theory of volunteer work’ (Wilson & Musick 1997a) volunteering is a productive activity that requires resources. Education may provide knowledge and skills that could be useful in voluntary associations, which qualify that person for volunteer work and make her ‘more attractive to agencies seeking volunteer labor’ (p.698). Volunteering may be a more attractive pastime for people with more knowledge and skills such that they are more likely to seek volunteer opportunities. The ‘resource explanation’ has been offered earlier as an explanation for the finding that political participation increases with education by Wolfinger and Rosenstone (1980). Wolfinger and Rosenstone argue that education reduces both the cognitive and material costs of participation.

What kind of knowledge and skills may be useful for participation in voluntary associations? In their article on political participation, Brady, Verba, and Schlozman (Brady et al 1995, p. 273) argue that “Citizens who can speak or write well or who are comfortable organizing and taking part in meetings are likely to be more effective when they get involved in politics.”¹

Thus, communications and organizational skills facilitate effective participation. Brady, Verba, and Schlozman assume that education improves these skills, as “communications and organizational skills are acquired in school”. A similar argument is made by Nie, Junn and Stehlik-Barry (1996) on political participation and attitudes. Brady, Verba, and Schlozman show that those with higher levels of education are more likely to have written a letter, gone to a meeting where decisions were made, planned or chaired a meeting, or given a presentation or speech in their jobs, in church or in an organization. In a study of participation in the Netherlands, Van de Werfhorst and De Graaf (2004) show that persons who completed educational programs in which more attention was paid to communication skills are more likely to participate in ‘socially responsible organizations like human rights or refugee work organizations’. Hillygus (2005) shows that communication skills trained in education, especially in social science programs, are most strongly productive for civic engagement.

Personality strength

The higher educated do not only have more skills and knowledge, but also think differently about the effectiveness of participation. This way of thinking has been named personality strength (Scheufele & Shah 2000): “Personality strength is conceived to be a feature of individuals, a reflection of their confidence in leadership roles, their aptitude at shaping others’ opinions, and their self-perceived impact on social and political outcomes.” (p. 109). The higher educated are more likely to think that participation in politics is an effective way

¹ Note that Brady, Verba and Schlozman and Nie, Junn and Stehlik-Barry do not claim that these skills promote participation itself – they promote the *effectiveness* of participation for people who get involved. In their empirical analyses, however, effectiveness is not the dependent variable, but the level of political participation. It is assumed that a higher effectiveness of participation results in more participation.

to change things. In the explanation of political participation, political efficacy has occupied a central role (Finkel 1985; Madsen 1987). But this regularity is not confined to politics. The higher educated are more likely to think that participation is an effective way to change things in general. A higher level of education is related to a higher level of mastery (Pearlin & Schooler 1978), personal control (Gurin et al 1978; Schieman 2001), self-efficacy (Elman & O'Rand 2007; Grabowski et al 2001), and self-esteem (Bandura et al 1996; McPherson 1977; Rosenberg & Pearlin 1978). In addition, higher education is positively associated with confidence in fellow citizens and social institutions. (Bekkers 2006a; Halman & Luijkx 2006; Mirowsky & Ross 1983; Scheufele & Shah 2000; Smith 1997). Personality strength and social trust are associated with a higher level of participation in voluntary associations (Halman & Luijkx 2006; Scheufele & Shah 2000; Welzel et al 2005) and volunteering (Bekkers 2006b; 2007; Bekkers & Bowman 2007; Brown & Ferris 2007; Uslander 2002a; 2002b).

Networks

A higher level of education enables access to larger and more diverse networks. Networks may promote participation in various ways: "Social ties, including friendship networks and organizational memberships, supply information, foster trust, make contacts, provide support, set guidelines, and create obligations" (Wilson & Musick 1997a, p. 695). Through social networks, people encounter participation opportunities and are encouraged to participate. It is possible that education promotes participation by providing opportunities to participate, and by drawing people in social environments where participation is solicited and socially valued (Wilson 2005). The higher educated have more extensive access to resources through their networks (Lin 2001). In their study on political participation in the US, Nie, Junn and Stehlik-Barry (1996) argue that social network centrality is a result of higher education that explains the higher level of participation.

In a study on the social networks of participants in voluntary associations in the Netherlands, strong support was found for the hypothesis that the likelihood to hold a membership in voluntary associations of the instrumental type increases with education because the networks of persons with higher levels of education give access to a more extensive network containing more resources (Bekkers et al 2008).² However, an important factor shaping networks that was not considered in this study is the kind of work people do. Higher status jobs are more likely to bring people into the kind of networks that are conducive to voluntary association participation than lower status jobs. Thus, one way in which education affects participation is by getting people in higher status jobs. Opportunities and environments may be located especially in the world of work that those with higher education are more likely to enter. Controlling for job status should therefore reduce the relationship of education with participation in voluntary associations.

In addition, one may argue that it takes human capital to take advantage of social capital (Wilson & Musick 1998). If education continues to affect participation during the occupational career, we should find that upon entering higher status occupations, participation increases more strongly among higher educated persons.

Selection or causation?

The majority of scholars studying participation in voluntary associations assume that the mechanisms we have discussed above have causative effects on participation. However, it is

² Access to resources did not mediate the effects of education on expressive membership because education was not related to expressive membership in the first place. This finding suggests heterogeneity in the relationship of education with different types of voluntary associations. However, in the present article we ignore this heterogeneity.

not clear whether knowledge, skills and personality strength are causes or consequences of a higher level of education.

From the perspective of causation, it may be argued that education promotes personality strength, knowledge and skills that facilitate participation. Students who have completed education will feel more competent, more self-confident, and more in control of their lives than those who dropped out of education. In education, students learn to write essays and letters. Those who have quit education are less likely to learn these skills. Finally, civic education increases knowledge about politics and the policy making process among students that non-students would not have gained. In this view, education is a training facility that improves personality strength, knowledge and skills, and through these participation.

According to the causation hypothesis, it is the achievement of a higher level of education that makes people more likely to participate. From this perspective, the hypothesis follows:

H1: After a higher level of education is achieved, an increase in the likelihood of participation in voluntary associations occurs.

From the perspective of selection, it may be argued that higher levels of personality strength, knowledge and skills increase the likelihood of achieving a higher level of education. Persons with higher cognitive ability are more likely to have the ability to acquire the knowledge and skills that are valued in schools. And persons with higher levels of mastery and personal control are more likely to realize this ability. They will have less trouble completing a higher level of education. In this view, the educational system is simply a sorting machine that produces distinctions between persons with higher and lower cognitive ability and personality strength. Different levels of education are assigned on the basis of pre-existing differences in cognitive ability and personality strength. Precisely these characteristics make citizens more attractive for voluntary associations; based on these characteristics people will be selected by voluntary associations as members, volunteers, or donors.

According to the selection hypothesis, it is not the achievement of a higher level of education that makes people more likely to participate, but the level of cognitive ability and personality strength that was already higher before they completed education. From this perspective, the hypothesis follows:

H2. At every age, persons who will eventually achieve a higher level of education are more likely to participate in voluntary associations.

The selection and causation hypotheses may be true at the same time. It may be that to some extent the relationship between education and participation is due to selection, and that to some extent education has a causative effect on participation. What can we expect in our case? Selection is likely to be an important explanation for the education-participation relationship if the outcome in question is a positional good. Nie et al (1996) argue that this is the case for political engagement. There is only a fixed number of seats in congress and the state houses. Suppose that seats are assigned (among other things, of course) based on networks acquired through education. If average education increases, competition increases and the payoff of a central network position and a university degree declines. In the paid labor market this phenomenon the declining pay-off of additional education among increasing numbers of competitors with similar levels of education is labelled 'credential inflation' (Halaby 1994; Van de Werfhorst & Andersen 2005; Van der Ploeg 1994). However, if the relevant outcome does not have a natural maximum, increasing levels of education are likely to result in further increases of the outcome var. Nie et al (1996) argue that this is the case for tolerance of diversity.

What kind of variables are memberships and volunteer activities? We see little reason to suppose that there is a maximum number of memberships in voluntary associations, and that this number has been reached. Though some organizations are only attractive because they are exclusive, they are only a small fraction of all nonprofit organizations. Most nonprofit organizations have an infinite need for members, donors and volunteers. The success of Tsunami relief fundraising a rare case in which Doctors Without Borders told the public that further donations for Tsunami victims were superfluous – though donations were welcome for other projects like in Darfur. Currently, about forty percent of voluntary associations in the Netherlands report a need for more volunteers (Devilee 2005). Thus one would not expect that the relationship between education and participation in voluntary associations is entirely due to selection.

There are very few studies that provide a useful empirical test of the selection and causation hypotheses. Most studies do not discuss the issue of causal order at all. Some studies do discuss the issue but simply assume that causation is the dominant explanation for the education-participation link (Nie et al 1996). We have located only two studies that provide tests of the selection and causation hypotheses with regard to social participation. A third study (Tenn 2007) focused on political participation.³

The first is a study by Egerton (2002). Using nine years of data from the British Household Panel Study (BHPS, 1991-1999), Egerton analyzed whether adolescents who would later enter tertiary education were already more likely to participate in voluntary associations at age 17. The results reveal that this is indeed the case. This finding supports the selection model. It suggests that persons who will achieve higher levels of education have specific characteristics that promote participation. What these characteristics are is not clear. The study suggested showed that these characteristics may be correlated with the occupational status of the father. At age 17, children of professionals and clerical workers participated more than children of manual workers, self-employed and managers. However, the study did not show whether these children were also more likely to have entered higher education at age 22 than children of the same level of education at age 17.

The study by Egerton also tested whether a higher level of education at age 22 was associated with higher levels of participation at the same age, controlling for previous activity. The test was positive. Unfortunately, however, this finding does not show that an increase in the level of education is associated with an increase of the level of participation because both education and participation were static measures. An appropriate test would be whether progress in education between the age of 17 and 22 is positively associated with progress in the level of participation between the age of 17 and 22.

The second piece of evidence is a study by Hauser (2000). In analyses of both the General Social Survey (GSS) as well as the Wisconsin Longitudinal Study (WLS), Hauser compared three models of participation: one model including only a measure of cognitive ability, another model including only education, and a third model including ability and education. If ability is selected for in education, as suggested by the selection model, one would expect that the relationship of cognitive ability with participation in voluntary associations is much stronger in a model without education than in a model with education included. This is precisely the pattern of results found by Hauser.

Unfortunately, Hauser did not take full advantage of the longitudinal design of the WLS. Like the BHPS, the WLS enables a comparison of participation levels among persons who will eventually achieve different levels of education when they still had same level of education. The selection model predicts (as we do) that at the same age and level of education, those with higher cognitive ability will be more active in voluntary associations. In

³ This study found no significant effect of one additional year of education on voter registration and turnout.

addition, those with higher cognitive ability will also eventually achieve a higher level of education.

Because it remains unclear whether the relation between education and participation in voluntary associations is caused by selection or causation, we ask the question when the relationship between education and participation emerges. Does participation in voluntary associations increase after education has been completed, or do persons who will achieve higher levels of education later on in their lives already participate at higher levels before they have completed education? In the former case, completing education precedes increasing participation. In the latter case, it is likely that specific characteristics of persons contribute to both participation and reaching higher levels of education.

Data and methods

We test our hypotheses using two longitudinal datasets: a retrospective dataset and a prospective panel study. In both datasets, information is available on education and memberships of voluntary associations over the life course of the respondents.

Retrospective data: FSDP2000

The retrospective dataset is the Family Survey of the Dutch Population 2000 (FSDP2000), which contains life course data on education and participation in voluntary associations for a random sample of individuals in households in the Netherlands in the year 2000. The Family Survey of the Dutch Population (De Graaf et al. 2000) is a nationwide study that employed a two-stage stratified sample of individuals in households. In the first stage, the investigators drew a random sample of municipalities in the Netherlands, stratified according to level of urbanization. In the second stage, they drew a sample of persons from the population registers of these municipalities. Because the survey focused on family issues, sampled individuals who were living with a partner in the same household were included in the study only when the partner also agreed to participate. Participants comprised 723 primary respondents as well as their partners. In addition, 141 individuals who did not have a partner agreed to participate. In total, 1,587 respondents were included in the study. The response rate was 40.6 percent, which is about average in the Netherlands.

The dependent variables in the analyses reported below are the reports in the CAPI about membership and volunteering in ten different types of voluntary associations: (1) union or professional organizations, (2) political party or organization, (3) religious group or organization, (4) societal organization (e.g., Amnesty International), (5) environmental organization, (6) musical organization / choir / dramatic club, (7) youth organization (e.g., boy scouts), (8) school organization, (9) sports club, or (10) any other organization. If the respondents were a member of a specific type of organization, they were asked in which year they had joined that specific type of organization and whether they did or had done any volunteer work for that organization. If, however, they reported not to be a member, they were asked whether they had once been a member of that specific type of organization after the age of 16, and if so, whether they had done any volunteer work for that type of organization. For all memberships, start years and end years (provided that the respondents ended their memberships prior to the year 2000) were recorded. We first counted the number of sectors in which memberships and volunteer work occurred for all years since age 16, and then recoded this number into dichotomous variables (membership dynamic and volunteering dynamic)⁴ measuring whether any memberships and volunteer work occurred in a given year since the age of 16.

⁴ Names of original variables are typeset in `courier new`, names of variables used in the analysis are typeset in Arial.

We would like to point out that questions on volunteering were only asked if respondents reported being a member of a specific type of voluntary association. Thus, respondents could not report volunteering activities if they did not report a membership. This may lead to an underestimation of the proportion of volunteers and introduces a bias against transitory forms of participation among those less committed to the organization. However, volunteering for an organization without being a member is rather uncommon in the Netherlands.

Table 1. Descriptive statistics for variables in FSDP2000 (person-year file)

Variable	# obs	Mean	SE	Min	Max
Father's level of education at age 15	45,913	2.1010	1.3274	1	5
Mother's level of education at age 15	46,459	1.7594	1.1045	1	5
Occupational status father at age 15	46,652	44.1420	16.2730	10	88
# Luxury objects in home at age 15	47,358	5.0395	2.0848	0	7
Vocabulary test score 2000	47,358	7.4830	2.8826	0	12
Extraversion 2000	47,358	-.0101	.9774	-2.2748	2.2665
Agreeableness 2000	47,358	-.0204	.9941	-5.0237	2.0158
Conscientiousness 2000	47,358	.0196	.9773	-3.9716	1.6087
Neuroticism 2000	47,358	-.0016	.9844	-2.2325	3.2880
Openness 2000	47,358	-.0266	.9912	-3.2524	2.2478
Membership dynamic	47,358	.5444	.4980	0	1
Membership previous year dynamic	45,797	.5373	.4986	0	1
Volunteering dynamic	47,324	.2006	.4005	0	1
Volunteering previous year dynamic	45,797	.1964	.3973	0	1
Education dynamic	47,324	2.9596	1.4320	1	5
Education 2000	47,358	3.1670	1.4504	1	5
Advanced in education dynamic	47,324	.1234	.3289	0	1
No paid work dynamic	47,358	.3566	.4790	0	1
Full time higher status job dynamic	47,358	.1646	.3708	0	1
Full time medium status job dynamic	47,358	.1547	.3616	0	1
Full time lower status job dynamic	47,358	.1827	.3864	0	1
Part time higher status job dynamic	47,358	.0362	.1867	0	1
Part time medium status job dynamic	47,358	.0420	.2006	0	1
Part time lower status job dynamic	47,358	.0314	.1745	0	1

FSDP2000 respondents were surveyed in 2000. The oldest respondent was 84 years old (born in 1916). Because memberships and volunteering activities were recalled from age 16, the first year in the dynamic analysis is 1932. The average proportion of the respondents reporting membership in at least one type of voluntary association per year in the period 1932-2000 is 54.4%; the average proportion reporting volunteering for at least one type of voluntary association per year is 20.1%.

Respondents reported about all levels of education they had entered since primary education. From the reports on starting and ending dates (month and year) we constructed a variable (education dynamic) measuring the highest completed educational level at any given year. We also refer to this variable as *concurrent education*: the level of education in the same year as the membership and volunteering variables. In addition to concurrent education, we also constructed a variable representing the level of education at the time of the survey (2000). We refer to this variable as the *current* level of education. Originally, education variables ranged from 0 (did not complete primary education) to 10 (completed postdoctoral education). We recoded these variables in five categories: primary education, lower secondary education, higher secondary education, vocational education, tertiary education. In the Netherlands people leave primary education at the age of 12. Education is obligatory until the age of 16, when most students in types of lower secondary education graduate. Those who continue in education enter higher secondary education at the age of 17. Higher secondary

education is generally completed at the age of 20, 21 or 22. Students may enter tertiary education from the age of 17 and graduate when they are 20 or older.

For employment status, we determined for every year whether people had held a job. For all jobs we combined the information on working hours (between 12 and 35 hours was coded part-time, and over 35 hours was coded full-time) and ISEI classification (Ganzeboom et al 1992). All ISEI scores ranging up to 39 were coded as low status jobs, between 40 and 54 as medium status jobs, and above 54 as high status jobs. The result is a set of six dummy variables (full time high status job dynamic to part time lower status job dynamic). Descriptions of the other variables are included in the appendix.

Prospective data: WLS

The prospective dataset is the Wisconsin Longitudinal Study, which contains measures of education and participation in voluntary associations of one third of all high school seniors graduates in Wisconsin, taken in the years 1957, 1975, 1992/1993 and 2003/2004 (Hauser 2005).

In the WLS, respondents were asked about their 'involvement with organizations' in the following sectors: church-connected groups (but not the church itself); labor unions; veterans' organizations; fraternal organizations or lodges; business or civic groups; parent-teachers associations; community centers; organizations of people with the same nationality; sport teams; country clubs; youth groups, e.g. scout leader etc.; professional groups; political clubs or organizations; neighbourhood improvement organizations; charity or welfare organizations. In the 1992 survey, two new categories were added: 'a church, temple or other place of worship' and 'hobby groups'. Only the latter was considered as a voluntary association. In the 1975 phone interview, the response categories were 0 'none', 1 'some involvement', and 2 'very much involvement'. Respondents in the categories 1, 2, 3 and 4 were considered participants. In the 1992 and 2003 mail surveys, the response categories were 0 'not involved', 1 'very little', 2 'some', 3 'quite a bit', 4 'a great deal'. Respondents in categories 2, 3 and 4 were considered participants. We counted the number of sectors in which the respondents reported participation in 1975, 1992 and 2003. Respondents reporting participation in four or more sectors were collated in one category. Unfortunately, respondents in the 1975 and 1992 surveys were not asked explicitly whether they did volunteer work. This implies that positive responses indicate participation, but not necessarily volunteer work.

In 1975, 14.2% reported no memberships; in 1992 and 2003 these figures were 12.0% and 18.2%. The proportion of respondents reporting five or more memberships was much larger in 1992 (28.7%) and 2003 (20.5%) than in 1975 (12.4%). The increase may be due to the addition of hobby clubs as a new category in 1992 and 2003.

The level of education was recoded in six categories: high school, some college, associate degree, baccalaureate/bachelor degree, master degree, (post)doctoral degree. From the original variables, differences between concurrent and subsequent education were taken to construct variables representing the increase in education between surveys.

Dummy variables for job status were based on prestige indices for the respondent's longest job in 1974 and the respondent's current job in 1992 and 2003. The 1974 measure was based on Duncan's SEI rating; 1992 and 2003 measures were based on the 1989 Nakao-Treas Prestige Rating of occupational status (Nakao & Treas 1994) for the graduate's job in 1992 and 2003. Jobs with ratings below 370 were considered low status jobs; medium status jobs had ratings between 370 and 600 and high status jobs had ratings above 600.

Descriptions of the other variables are included in the appendix.

Respondents with missing values on independent variables were assigned the mean score for these variables. We included dummy variables coded 1 if the respondents had a missing value on these variables to control for potential systematic biases in missing values.

Table 2. Descriptive statistics for variables in WLS

Variable	# obs	Mean	SE	Min	Max
Father's years of education	10,317	10.0470	3.1445	7	18
Mother's years of education	10,317	10.3823	2.9670	7	18
Office job father	10,317	.0290	.1678	0	1
Professional job father	10,317	.0391	.1938	0	1
Executive job father	10,317	.0504	.2188	0	1
Factory job father	10,317	.2642	.4409	0	1
Sales job father	10,317	.0476	.2129	0	1
Father business owner	10,317	.0801	.2714	0	1
Farming job father	10,317	.1659	.3720	0	1
Parental income (natural log)	10,317	3.9556	.6357	0	6.91
IQ 1957	10,317	100.4590	14.9159	61	145
Took social science, history or foreign classes	10,317	2.16497	.6549	0	3
Social science semesters missing	10,317	.1256	.3314	0	1
Foreign language semesters missing	10,317	.4307	.4952	0	1
History semesters missing	10,317	.0261	.1594	0	1
Value of college degree	10,317	66.7283	30.4211	0	99
High school grades rank	10,317	50.2604	27.8453	0	99
High school grades missing	10,317	.0672	.2503	0	1
Extraversion 1992	8,493	8.4984	2.6172	2	12
Agreeableness 1992	8,493	9.8854	2.0470	2	12
Conscientiousness 1992	8,493	9.5990	2.2725	2	12
Neuroticism 1992	8,493	6.3486	2.9087	2	12
Openness 1992	8,493	9.2246	2.5069	2	12
WAIS 1992	8,493	100.0000	12.5000	64.81	132.84
WAIS 2003	7,265	100.0000	12.5000	64.41	129.37
No paid work 1974	10,317	28.34	.4507	0	1
lower status job 1974	10,317	23.16	.4219	0	1
medium status job 1974	10,317	20.66	.4049	0	1
higher status job 1974	10,317	27.85	.4483	0	1
No paid work 1992	6,875	.0407	.1977	0	1
lower status job 1992	6,875	.2486	.4322	0	1
medium status job 1992	6,875	.3332	.4714	0	1
higher status job 1992	6,875	.3775	.4848	0	1
No paid work 2003	7,264	.0906	.2870	0	1
lower status job 2003	7,264	.2632	.4404	0	1
medium status job 2003	7,264	.3022	.4592	0	1
higher status job 2003	7,264	.3440	.4751	0	1
Participation 1975	9,093	2.1179	1.3728	0	4
Participation 1992	6,875	2.5785	1.4470	0	4
Participation 2003	6,845	2.2038	1.5048	0	4
Education 1975	9,612	1.9456	1.4561	1	6
Education 1992	8,492	2.0949	1.5334	1	6
Education 2003	7,264	2.1532	1.5632	1	6
Advanced in education 1975-2003	7,264	.0870	.2819	0	1

Results

We first present some descriptive analyses of the relationship between education and voluntary association participation.

Family Survey of the Dutch Population (FSDP2000)

Figure 1 plots the proportion of respondents in the FSDP2000 with different levels of education in 2000 who reported memberships at ages 16 to 30. We first focus on this age range to see if the education gradient emerges after completing education. Memberships show a general increase in this stage of life.⁵

Figure 1. Proportion of respondents reporting memberships at ages 16-30 by the current level of education (source: FSDP2000)

Already at the age of 16, when all respondents except those with primary education were still in education, those who would eventually reach a higher level of education are more likely to report memberships than those with lower levels of education. The relative position of those with different levels of education remains unchanged in this stage of life. At every age, those who had achieved a higher level of education by the time of the survey were more likely to report at least one membership than those with lower levels of education. The differences are already fairly substantial at age 16. Among those with primary education in 2000 24% reports at least one membership, while this is 39% among those with tertiary education. The differences increase until the age of 25 because membership among those with primary education remains low while memberships among those with tertiary education increase. The increase among those who would achieve tertiary education in the ages 16-22 is remarkable because very few have completed tertiary education at that age. Thus, participation rates among respondents who would reach tertiary education were already much higher when they were still in lower secondary education and further increased while they had not even entered tertiary education. Those with primary education had already left education

⁵ Note that these plots do not control for birth year, so the increase might also reflect a general increase in memberships since 1932.

before the of 16, and most of them had already entered the labor market. Still we see no increase in memberships among these respondents until the age of 25. After the age of 25, memberships increase among those with primary and lower secondary education.

Figure 2. Proportion of respondents reporting memberships at ages 31-61 by the current level of education (source: FSDP2000)

Figure 2 continues Figure 1, plotting memberships in the age range 31-61.⁶ Again, cohort differences may partly explain this pattern. Nevertheless, remarkable educational differences can be distinguished. Memberships continue to increase in this stage of life. The education gradient continues to increase and reaches its peak at the age of 38, when 41% of those with primary education in 2000 report at least one membership and 79% of those with tertiary education in 2000 do so – a substantial gap of 38%. After the age of 38, the gap closes to a difference of 29 percentage points at the age of 46 and then stabilizes until the age of 56. After this age, when those who have worked for 40 years are allowed to retire, the difference between those with primary education and those with tertiary education decreases again.

Taken together, Figures 1 and 2 suggest that the education gradient in memberships in the Netherlands has (a) appeared already when people are still in education, (b) becomes stronger during education, (c) continues to expand when people are active on the labor market, but increases are especially likely among those with higher levels of education, and (d) diminishes when people retire from work. The first of these observations is in line with the selection hypothesis. The second observation is potentially in line with both the selection hypothesis and the causation hypothesis. The third and the fourth observation suggest that work experiences are more strongly conducive to participation among those with higher levels of education.

Figure 3 provides another test of the causation hypothesis. We compare memberships at different past levels of education among respondents who will eventually achieve a higher level of education or not. The figure provides clear evidence in favor of the selection

⁶ We did not plot memberships above this age because the number of respondents who had reached this age declined below 250 and some cells had fewer than 30 observations.

hypothesis. Among respondents who had completed only primary education, those who would later achieve a higher level of education more often report memberships (52.7%) than those who would not continue in education (40.1%). This difference is significant (Chi Square 107.12, $df=1$, $p<.000$). Among those who were at some point in their lives in lower secondary education, those who would later on achieve a higher level of education were more likely to hold at least one membership (56.4%) than those who would not continue in education (47.4%). This difference is also significant (Chi Square 15.35, $df=1$, $p<.000$). For higher secondary education, however, the situation is reversed: those who would continue in education less often report memberships when still in higher secondary education (49.9%) than those who would not continue in education (54.4%). This difference is significant (Chi Square 15.39, $df=1$, $p<.000$). Those who would enter tertiary education after vocational education are equally likely to report memberships when still in vocational education than those who would not enter tertiary education (both 61%).

Figure 3. Proportion of respondents reporting memberships by level of education among those who would achieve a higher level of education or not (source: FSDP2000)

What about the education gradient in volunteering? Figures 4 and 5 copy the design of Figures 2 and 3, substituting membership with volunteering. Remember that volunteering activities are only reported by those reporting memberships, which makes it likely that the figures will look alike. And indeed they do look similar. The main similarity is that those with lower levels of education in 2000 volunteered less over the life course than those with higher levels of education. However, there are some exceptions to this general pattern. At ages 28-38 it is not the group of respondents with the highest level of education (a university degree) that volunteers the most, but the group of respondents with the second highest level of education (higher vocational education). This latter group volunteered less often than those with less education (higher secondary education) at ages 16-26. Another exception is that the group of respondents with the lowest level of education (primary education) volunteered more than the group of respondents with somewhat more education (lower secondary education) at ages 16-20.

Figure 4. Proportion of respondents reporting volunteering activities at ages 16-30 by the current level of education (source: FSDP2000)

Figure 5. Proportion of respondents reporting volunteering activities at ages 31-61 by the current level of education (source: FSDP2000)

The pattern in Figure 5 is also somewhat less clear-cut than the pattern in Figure 3: although respondents who at some point during their lives had only completed primary education but would later achieve a higher level of education volunteered more than those who did not achieve a higher level of education, we do not find similar discrepancies among those with lower or higher secondary education. In these groups, respondents who would later achieve a

higher level of education volunteered at the same rate as respondents who would not achieve a higher level of education later on in their lives. Among those with vocational education we do find a higher level of volunteering among respondents who would later achieve tertiary education than among those who did not achieve tertiary education.

Figures 4, 5 and 6 suggest that the education gradient in volunteering is less strong than the education gradient in memberships. However, as in the figures on memberships we find that the education gradient appeared already when people are still in education, becomes stronger during education, and continues to expand when people are active on the labor market. Because in the FSDP2000 membership is a precondition for volunteering, the education gradient in volunteering may to some extent be the result of the gradient in memberships. An earlier study using the same data (Ruiter 2008) also showed that educational level affects joining voluntary associations whereas it does not affect starting volunteer work among members. Together, however, the results suggest a role for both selection and causation.

Figure 6. Proportion of respondents reporting volunteering activities by level of education among those who would achieve a higher level of education or not (source: FSDP2000)

Wisconsin Longitudinal Study (WLS)

Using data from the WLS, we sought to replicate the basic finding from the Dutch data that differences in participation among those who would eventually achieve different levels of education are already apparent when they still have the same level of education. To do so, we compared the number of memberships in 1975 among WLS respondents who would have a higher level of education in 1992 than in 1975 with respondents who would still have the same level of education.

Figure 7 reveals that indeed WLS respondents who had a higher level of education in 1992 than in 1975 ($n=382$) already participated at higher levels in 1975 were more likely to participate in voluntary associations than those who did not progress in education during that period ($n=4,381$).⁷ The pattern in Figure 7 is even stronger than the pattern in Figures 3 and 6. Additional analyses revealed that among those who had a higher level of education in 1992 than in 1975, 50.5% reported three or more memberships in 1975. Among those who did not progress in education, 39.2% reported three or more memberships. Those who had progressed in education in 1992 were less likely to report no or only one membership (16.0%) than those who did not progress in education (22.8%). The distribution differs significantly from chance (Chi Square 20.42, $df=2$, $p<.000$).⁸

In addition, Figure 7 reveals the familiar education gradient in participation: the level of participation increases with the level of education in 1975.

Figure 7. Proportion of WLS respondents with three or more memberships in 1975 with the same ($n=4,381$) or a higher level of education ($n=382$) in 1992 by level of education in 1975

Education and participation

If the selection hypothesis holds, we should find that relationships with participation of variables measuring ability and ambition measured before the educational career has started are diminished when the concurrent level of education is included.

⁷ Again, the picture is not much different when the difference in education between 1975 and 2003 is considered.

⁸ Similar findings are obtained when the difference in education between 1975 and 2003 is examined, Chi Square 18.83, $df=2$, $p<.000$.

Table 3. Regression of social participation in 1975 (WLS)

	Parents	Courses	Achieved	Big 5	ED75	Future
Education father	0.032** (0.006)	0.027** (0.006)	0.021** (0.006)	0.018** (0.006)	0.011+ (0.006)	0.013+ (0.007)
Education mother	0.019** (0.005)	0.014** (0.005)	0.007 (0.005)	0.004 (0.006)	-0.001 (0.006)	-0.002 (0.006)
Office job father	0.212* (0.088)	0.178* (0.087)	0.158+ (0.086)	0.169+ (0.090)	0.136 (0.089)	0.158 (0.096)
Professional job father	0.212* (0.083)	0.175* (0.084)	0.135 (0.083)	0.146+ (0.086)	0.040 (0.086)	0.005 (0.092)
Executive job father	0.210** (0.073)	0.169* (0.073)	0.146* (0.072)	0.136+ (0.075)	0.102 (0.074)	0.084 (0.079)
Factory job father	-0.019 (0.038)	-0.011 (0.038)	-0.009 (0.037)	0.012 (0.039)	0.025 (0.039)	-0.020 (0.043)
Salesman job father	0.195** (0.072)	0.163* (0.072)	0.132+ (0.071)	0.121 (0.074)	0.099 (0.073)	0.079 (0.078)
Father business owner	0.194** (0.056)	0.171** (0.056)	0.147** (0.055)	0.147* (0.058)	0.119* (0.058)	0.101 (0.062)
Farming job father	0.048 (0.044)	0.078+ (0.044)	0.053 (0.044)	0.077+ (0.046)	0.069 (0.045)	0.017 (0.050)
Parental income (*\$100)	0.119** (0.025)	0.095** (0.025)	0.084** (0.025)	0.075** (0.027)	0.053* (0.026)	0.050+ (0.029)
Took soc.sc., history or language		0.229** (0.034)	0.160** (0.034)	0.125** (0.036)	0.090* (0.036)	0.065+ (0.039)
Value of college degree			0.004** (0.001)	0.003** (0.001)	0.002** (0.001)	0.001* (0.001)
IQ 1957			0.004** (0.001)	0.003* (0.001)	0.001 (0.001)	-0.000 (0.001)
High school grades rank			0.002** (0.001)	0.002** (0.001)	0.001 (0.001)	0.001+ (0.001)
Extraversion				0.076** (0.006)	0.080** (0.006)	0.081** (0.006)
Agreeableness				0.004 (0.008)	0.007 (0.007)	0.009 (0.008)
Conscientiousness				0.009 (0.007)	0.010 (0.007)	0.007 (0.007)
Neuroticism				-0.001 (0.005)	-0.000 (0.005)	0.003 (0.006)
Openness				0.046** (0.006)	0.036** (0.006)	0.031** (0.007)
Education in 1975					0.154** (0.012)	0.151** (0.013)
Increase in education 1975-2003						0.182** (0.056)
Constant	1.077** (0.108)	0.772** (0.129)	0.313* (0.155)	-0.516* (0.204)	-0.134 (0.205)	0.087 (0.226)
Observations	9,093	9,093	9,093	7,989	7,989	6,670
R-squared	0.03	0.04	0.05	0.08	0.10	0.10

Robust standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%
Parameters for variables indicating whether choice of classes, high school rank and personality scores were missing are omitted because all except one (history classes missing) were not significant. Full results are available upon request.

WLS

To test these expectations, we regressed participation in 1975 in the WLS on parental education and father's occupational status (model 1), having taken classes in social science, history or foreign languages (added in model 2), IQ, high school rank and the perceived value of a college degree (added in model 3), personality characteristics (added in model 4) and tested whether the relationship with the level of education (added in model 5) changed these relationships. Table 3 presents the results.

We find that adding the level of education weakens the positive relationships with participation of father's education, occupation of the father in office, professional, and executive jobs, the father being a business owner, parental income, having taken social science, history or foreign language classes in high school, the perceived value of a college degree, IQ, and grades in high school. Also the relationship of openness to experience with participation becomes weaker when the level of education is included, even though openness was measured in 1992 and education in 1975.⁹

Another implication of the selection hypothesis is that the increase in the level of education from 1975 to 2003 should be positively related to participation in 1975 because those graduates who would advance in education already participated more before they had ended their educational career. The results in the final model of Table 3 indeed show that graduates who advanced in education already participated more in 1975. This is consistent with the pattern in Figure 7. Also we see that the relationships of variables that promote participation and advancement in education diminish further.

FSDP2000

In an analysis of the Dutch FSDP2000 data on participation throughout the life course we find patterns that are very similar to those in the data from Wisconsin (see Table 4). We include membership in the previous year as a covariate, which allows for an interpretation of the relationships with other variables in the model in terms of changes.

Model 1 reveals positive relationships of participation with participation in the previous year, year, father's education, and the number of luxury objects in the parental home at age 15. The positive relationship with participation in the previous year indicates a high level of stability in memberships. The positive relationship with year indicates an increase in memberships in the period 1932-2000. The positive relationship with father's education and luxury objects in the home indicate that participation of children is promoted by resources obtained from parents. The father's occupational status, however, is not related to participation.

Model 2 reveals a positive relationship with the respondent's concurrent level of education, indicating that respondents with a higher level of education were more likely to report memberships than those with lower levels of education. Controlling for the respondents level of education, the relationship of participation with father's education becomes weaker, and the relationship with the mother's level of education – which was not significant in model 1 – becomes negative. Model 3 adds the current level of education (that is, the educational level a respondent would eventually have achieved in the year 2000). In this model, the relationship with the dynamic education variable should be interpreted as the relationship between education that is not increased in a later stage of life. The relationship of the current level of education represents the higher level of participation among those who would achieve a higher level of education later in life. The dynamic education variable has a positive relationship with participation, but it is not significant. The relationship with the current level of education, however, is positive and significant. Thus, participation in voluntary

⁹ When participation in 1992 is analyzed, we find stronger initial relationships with personality that become weaker when the level of education is included (results available upon request).

associations is not so much about the level of education that a person has achieved at a given stage in her life, but about the level of education that she will eventually achieve. This finding represents the pattern that emerged from Figure 3.¹⁰

Model 4 shows that relationships of personality characteristics with participation in the FSDP2000 are often different than in the WLS (as presented in Table 3), except for the positive relationship with openness. Model 5 shows a positive relationship of the vocabulary test, and slightly weaker relationships with the number of luxury objects in the home and the current level of education. A comparison of model 6 with model 5 supports the argument that the achieved level of education mediates the effect of cognitive ability (Hauser 2000). Model 6 excludes the education and personality variables and reveals a much stronger relationship of participation with the vocabulary test score than model 5.

Table 4. Conditional random effects logistic regression of social participation throughout the life course (FSDP2000)

	Parents	Dynamic education	Current education	Big 5	Vocabulary test	Vocabulary test only
Membership previous year	6.612** (0.064)	6.606** (0.064)	6.607** (0.064)	6.613** (0.063)	6.614** (0.063)	6.616** (0.064)
Year	0.307** (0.027)	0.282** (0.027)	0.286** (0.027)	0.281** (0.026)	0.283** (0.026)	0.303** (0.027)
Education father	0.105** (0.033)	0.069* (0.033)	0.057+ (0.033)	0.053 (0.032)	0.049 (0.032)	0.083* (0.033)
Education mother	-0.022 (0.036)	-0.065+ (0.035)	-0.073* (0.035)	-0.080* (0.035)	-0.081* (0.035)	-0.039 (0.035)
Occupational status father	0.004 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.001 (0.002)	0.001 (0.002)
Luxury objects	0.047** (0.017)	0.051** (0.017)	0.052** (0.017)	0.048** (0.016)	0.029+ (0.017)	0.012 (0.017)
Dynamic level of education		0.183** (0.024)	0.070 (0.049)	0.070 (0.049)	0.070 (0.049)	
Level of education in 2000			0.132** (0.051)	0.119* (0.051)	0.092+ (0.051)	
Extraversion				0.042 (0.027)	0.041 (0.027)	
Agreeableness				-0.081* (0.035)	-0.072* (0.035)	
Conscientiousness				-0.065* (0.033)	-0.062+ (0.032)	
Neuroticism				-0.072* (0.032)	-0.068* (0.032)	
Openness				0.067* (0.033)	0.055 (0.034)	
Vocabulary test					0.038** (0.013)	0.073** (0.012)
Constant	-3.352** (0.137)	-3.693** (0.144)	-3.731** (0.144)	-3.661** (0.142)	-3.716** (0.143)	-3.547** (0.140)
Observations	43,505	43,505	43,505	43,505	43,505	43,505
Number of respondents	1,482	1,482	1,482	1,482	1,482	1,482

Robust standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

¹⁰ Replacing the current education variable with four dummy variables representing whether respondents with primary, lower secondary, and higher secondary education would later achieve a higher level of education (respondents with vocational education who would later achieve a higher level of education), we find positive relationships of increases from primary and lower secondary education.

Table 5 presents the same analysis for volunteering as a dependent variable. Model 1 reveals a high stability in volunteering and no relationship of parental education, father's occupation and parental wealth with volunteering. The positive year effect reflect the increase in volunteer rates over time from Figures 4 and 5. Model 2 shows a positive education effect on volunteering that is somewhat smaller than on membership. Including the current level of education in model 3 eliminates the dynamic education effect. So also in the case of volunteering the level of education that a person will eventually achieve is a better predictor than her concurrent level of education. Model 4 shows the same positive relationships of openness and the vocabulary test score at the time of survey as in the previous analysis. Controlling for these characteristics reduces the current education effect.¹¹

Table 5. Conditional random effects logistic regression of volunteering throughout the life course (FSDP2000)

	Parents	Dynamic education	Current education	Vocabulary test+Big 5	Dynamic #member	Education +#member
Volunteering previous year	6.869** (0.074)	6.711** (0.074)	6.706** (0.074)	6.694** (0.075)	6.084** (0.083)	6.095** (0.083)
Year	0.193** (0.026)	0.215** (0.029)	0.223** (0.029)	0.224** (0.030)	-0.111** (0.034)	-0.118** (0.034)
Education father	0.025 (0.034)	0.003 (0.037)	-0.009 (0.037)	-0.017 (0.037)	-0.074 (0.055)	-0.053 (0.055)
Education mother	-0.005 (0.036)	-0.029 (0.039)	-0.039 (0.040)	-0.052 (0.040)	-0.019 (0.059)	0.010 (0.058)
Occupational status father	0.001 (0.003)	0.001 (0.003)	0.000 (0.003)	-0.001 (0.003)	0.000 (0.004)	0.002 (0.004)
Luxury objects	0.005 (0.017)	0.013 (0.018)	0.015 (0.019)	-0.006 (0.020)	-0.108** (0.030)	-0.086** (0.027)
Dynamic level of education		0.119** (0.027)	-0.012 (0.057)	-0.006 (0.057)	-0.156* (0.071)	-0.049 (0.040)
Level of education in 2000			0.157** (0.060)	0.106+ (0.061)	0.096 (0.080)	
Extraversion				-0.029 (0.031)	-0.030 (0.033)	
Agreeableness				0.015 (0.041)	0.042 (0.063)	
Conscientiousness				-0.046 (0.039)	-0.015 (0.059)	
Neuroticism				-0.051 (0.038)	0.014 (0.058)	
Openness				0.078+ (0.040)	0.144* (0.060)	
Vocabulary test				0.052** (0.016)	0.058* (0.024)	
Dynamic # memberships					1.633** (0.046)	1.643** (0.046)
Constant	-3.989** (0.142)	-4.377** (0.170)	-4.439** (0.173)	-4.493** (0.178)	-5.552** (0.261)	-5.411** (0.249)
Observations	43,505	43,505	43,505	43,505	43,505	43,505
Number of respondents	1,482	1,482	1,482	1,482	1,482	1,482

Robust standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

¹¹ As in the previous analysis, a model excluding personality characteristics and dynamic and concurrent education reveals a much stronger relationship with the vocabulary test (.074, (.015), $p < .000$).

Finally, model 5 includes the number of memberships reported as an additional predictor. Obviously, this variable has a strong positive relationship with volunteering (remember that volunteering activities were only reported if a membership was held). The more important issue is what happens to the effects of the education variables. Controlling for the number of memberships, the dynamic level of education becomes significantly *negative*. Moreover, the size of the effect is relatively strong. The negative effect indicates that the likelihood of volunteering becomes smaller when education increases when we have taken into account that a higher level of education is associated with a greater number of memberships. This result suggests that the initially positive effect of education (in Model 2) is due to the higher number of memberships among the higher educated. This interpretation is supported by the result in the final model, which excludes the current level of education, the personality measures and the vocabulary test score. In this model, the dynamic effect of education is not statistically different from zero. This finding is consistent with the earlier finding that education increases the likelihood of joining voluntary associations, but not the likelihood of commencing volunteering activity (Ruiter 2008)

Education, labor market experience, and participation

Two conclusions from the evidence presented thus far support the selection hypothesis: (1) characteristics that are associated with advancement in education are also related to participation in voluntary associations; (2) the relationships of these factors – notably father's education, cognitive ability, the value of a college degree, openness to experience – with social participation are diminished when the level of education is included in the analysis. However, these conclusions do not rule out the possibility that education does have an additional causal effect on participation. The plot of changes in social participation over the life course from the Dutch data in Figures 1 and 2 suggest that the education gradient in participation continues to expand in midlife. This suggests that higher education promotes participation during the occupational career. We explore this possibility in analyses of changes in memberships over the life course.

FSDP2000

The analysis in Table 6 is a conditional fixed effects logistic regression analysis of memberships within FSDP2000 respondents. The fixed effects model enables an assessment of the relationship of advancement in education with changes in memberships within the same persons (Halaby 2004). An obvious limitation of the estimates presented above is that variance within and between respondents are commingled. Thus, effects of omitted variables correlated with predictor variables bias the estimated parameters. By looking at changes within persons, effects of stable characteristics of persons are differenced out of the equation. In most cases, random effects models are inappropriate and overestimate the effects of predictor variables. Hausman tests can be used to test whether the random effects model is appropriate or not (Halaby 2004). We conducted a series of such tests and found significant test statistics, implying that the random effects model is inappropriate.¹² The model includes membership in the previous year to take the stability in memberships into account, enabling interpretation of the parameters in terms of changes.¹³

¹² Hausman tests for models including the membership in the previous year variable yielded negative Chi Squares and failed to meet the asymptotic assumptions of the test. Hausman tests without the previous membership variable were strongly significant (for Model 1: Chi Square=142.85, df=2, p<.000), indicating that the random effects model was inappropriate. In Model 3, estimates for the variables year and full time higher status job are larger in the random effects specification.

¹³ Note that the number of respondents is lower in this analysis because respondents who never held any memberships are excluded. Because the membership variable is a constant (with the value 0) among these respondents, there is no variance to be explained.

Model 1 reveals a strongly positive relationship with the concurrent level of education, indicating that advancement in education is associated with heightened participation. This result supports the causation hypothesis. Model 2 includes dummy variables for the type of job. Not surprisingly, we find that those with higher status jobs are more likely to increase participation in voluntary associations than the unemployed. In addition, we also find that those in a full time lower status job are more likely to participate in voluntary associations than the unemployed. Those in full time medium status jobs are not more likely to participate. Working part time in a lower status job is also associated with a higher likelihood of participation. Model 3 reveals that especially at higher levels of education, a full time higher status job is associated with a higher level of participation. Apparently, higher status jobs in the Netherlands more strongly promote participation among those with higher levels of education.

Table 6. Conditional fixed effects logistic regression of participation throughout the life course (FSDP2000)

	Model 1	Model 2	Model 3
Membership previous year	5.038** (0.062)	5.056** (0.063)	5.058** (0.063)
Year	0.716** (0.029)	0.746** (0.031)	0.739** (0.032)
Dynamic level of education	0.267** (0.076)	0.160* (0.077)	0.129 (0.080)
No paid work		-----	-----
full time higher status job		0.798** (0.109)	0.349 (0.289)
full time medium status job		0.165 (0.107)	-0.058 (0.252)
full time lower status job		0.828** (0.228)	0.358 (0.362)
part time higher status job		0.346+ (0.193)	0.117 (0.308)
part time medium status job		0.205 (0.198)	0.188 (0.282)
part time lower status job		0.767** (0.113)	0.719** (0.228)
Education * high status job			0.125+ (0.074)
Education * medium status job			0.069 (0.075)
Education * low status job			0.004 (0.079)
Observations	31,841	31,841	31,841
Number of respondents	1,024	1,024	1,024

----- reference group.

Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

Table 7 repeats the analysis above for volunteering activity.¹⁴ Note that respondents who reported no volunteering activities since the age of 16 are excluded from this analysis. Thus, the analysis is based on those respondents who reported at least one volunteering activity. By design, these respondents all reported membership in at least one type of voluntary associations; never-members are excluded from the analysis.

Table 7. Conditional fixed effects logistic regression of volunteering throughout the life course (FSDP2000)

	Model 1	Model 2	Model 3
Membership previous year	4.925** (0.066)	4.925** (0.067)	4.926** (0.067)
Year	0.536** (0.033)	0.530** (0.034)	0.532** (0.035)
Dynamic level of education	-0.030 (0.082)	-0.023 (0.083)	-0.000 (0.088)
No paid work		-----	-----
full time higher status job		0.076 (0.118)	0.185 (0.337)
full time medium status job		-0.383** (0.129)	-0.111 (0.310)
full time lower status job		-0.053 (0.143)	0.027 (0.303)
part time higher status job		0.366+ (0.211)	0.483 (0.397)
part time medium status job		-0.286 (0.234)	0.007 (0.383)
part time lower status job		-0.873** (0.270)	-0.799* (0.404)
Education * high status job			-0.031 (0.085)
Education * medium status job			-0.085 (0.088)
Education * low status job			-0.024 (0.099)
Observations	22,184	22,184	22,184
Number of respondents	713	713	713

----- reference group.

Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

The results in model 1 of table 7 reveal no significant effect of education on volunteering. Among respondents who reported at least one volunteering activity during the life course, advancement in education is not related to an increase in volunteering activity. Thus, the effect of education on volunteering that we saw earlier is entirely due to selection processes: the higher educated are more likely to join voluntary associations as members, but once they are members, they are not more likely to engage in volunteering (Ruiter 2008). Model 2 reveals several effects of occupational status, but they do not add up to a systematically positive effect of occupational status. While we do find that part time

¹⁴ Hausman tests without the previous membership variable were strongly significant (for Model 1: Chi Square=214.47, df=2, p<.000), indicating that the random effects model was inappropriate. In Model 3, estimates for the variables year and full time higher status job are larger in the random effects specification.

employment in higher status jobs is associated with a higher likelihood of volunteering, we do not find such a positive effect of full time higher status jobs. Part time employment in lower status jobs is associated with a lower likelihood of volunteering, but full time employment in lower status jobs is not associated with volunteering. Finally, full time employment in medium status jobs is associated with a lower likelihood of volunteering, but we do not find a significant relationship with part time employment in medium status jobs. Model 3 reveals that the effect of occupational status does not systematically increase or decrease with the level of education.

WLS

In Table 8 we present results of fixed effects regression analyses of the number of memberships among WLS respondents.¹⁵

Table 8. Fixed effects regression of participation (WLS 1975-2003)

	Model 1	Model 2	Model 3	Model 4	Model 5
Year 1975	-----	-----	-----	-----	-----
Year 1992	.370** (.020)	.370** (.020)	.370** (.020)	.390** (.019)	.370** (.020)
Year 2003	.018 (.020)	.022 (.021)	.028 (.021)	.040* (.020)	.018 (.020)
Cognitive ability (IQ/WAIS)				.000 (.001)	.000 (.001)
Dynamic level of education	.158** (.033)	.154** (.033)	.164** (.040)		.158** (.033)
No paid work		-----	-----		
higher status job		.032 (.045)	-.034 (.078)		
medium status job		-.047 (.044)	.004 (.071)		
lower status job		-.034 (.046)	.080 (.076)		
Education * high status job			.018 (.028)		
Education * medium status job			-.031 (.030)		
Education * low status job			-.077* (.036)		
Observations	22,344	22,344	22,344	22,344	22,344
Number of respondents	9,488	9,488	9,488	9,488	9,488

----- reference group.

Standard errors in parentheses. + significant at 10%; * significant at 5%; ** significant at 1%

Model 1 reveals a positive relationship between participation and changes in the level of education, supporting the causation hypothesis. Model 2 adds the three occupational status dummy variables. However, none of these variables is related to participation. Apparently, the number of memberships does not change in response to moving into jobs with higher status. Model 3 adds interactions between the level of education and occupational status. Here we find a negative interaction between education and a lower status job, while the main effect of

¹⁵ In this analysis, participation in the previous wave was not included because this would limit the analysis to only two waves (respondents in the first wave would be missing on the variable participation in previous wave).

a lower status job becomes positive (but not significantly so). These results imply that moving into a lower status job decreases the number of memberships when the level of education is higher. Or, stated otherwise, lower educated Wisconsin graduates tend to participate more upon entering a lower or medium status job, but higher educated graduates do not. Thus, to some extent labor market experiences decrease the inequality in participation between graduates with different levels of education.

Models 4 and 5 include cognitive ability measures. The cognitive ability measure for the 1975 data is the 1957 IQ measure; the cognitive ability measures for the 1992 and 2003 data are standardized cognitive similarities scores with a mean of 100.¹⁶ The results in Model 4 reveal that changes in cognitive ability are not related to changes in participation.¹⁷ The null-finding is exactly what one would predict from the selection model, assuming that cognitive ability is stable. Those with higher cognitive ability may select themselves or may be selected by others into voluntary associations through education; but changes in cognitive ability that are not channeled through achieving higher education are not related to changes in social participation.¹⁸ As a result, the education estimate in Model 5 is virtually the same as in Model 1.

Conclusion and Discussion

We sought to disentangle selection and causation processes in the relationship between education and participation in voluntary associations. Using retrospective data from the Netherlands (1932-2000) and prospective panel data from Wisconsin (1957-2003), we have found evidence for both processes. Evidence for selection comes from the observation in both datasets that persons who will achieve higher levels of education at some point of their lives are more likely to hold memberships in voluntary associations at earlier points of their lives. The WLS data show that this is due to a higher level of participation among those with higher educated fathers, higher cognitive ability, among those who place a higher value on a college degree, and among those with higher levels of openness to experience and extraversion. These characteristics are predictive of a higher final level of education and participation in voluntary associations, even before the educational career has been completed. The FSDP2000 data show that the higher level of volunteering among the higher educated is due to selection of the higher educated into membership: among members, there is no positive effect of education on the likelihood of volunteering.

Evidence for causation comes from analyses of memberships over the life course. In both datasets, memberships increase after a higher level of education has been completed. In both datasets, controlling for occupational status reduces the relationship of education with participation somewhat, but not much.

Unfortunately, the FSDP2000 and WLS datasets do not allow for adequate tests of the mechanisms mediating the education-participation link. The WLS has a few measures of

¹⁶ To obtain a measure with an IQ-like distribution (mean 100, range: 65-135), the original cognition similarities score was first z-standardized and saved as a new variable (CGz). Then the following formula was used to derive the score: $CG = 100 + (12.5 * CGz)$.

¹⁷ The Hausman test for model 3 is strongly significant (Chi Square=99.75, df=9, p<.000), implying that the random effects model is inappropriate. Coefficients for education and medium and higher status jobs in a random effects model are larger than in the fixed effects specification.

¹⁸ Indeed we find high correlations between cognitive ability measures in 1957, 1992 and 2003. The 1957 IQ variable correlates .454 and .438 with the 1992 and 2003 cognitive similarities scores, respectively. The correlation between the 1992 and 2003 cognitive similarities scores is .501. Note that these correlations are not corrected for measurement error. In random effects specifications of models 4 and 5, parameters for cognitive ability are positive (in model 4: .0088; SE: .0007) and strongly significant (p<.000). Obviously, Hausman tests for model 4 and 5 are strongly significant (Chi Squares 191.89, df=3, p<.000 and 53.35, df=4, p<.000), implying that the random effects model is inappropriate.

networks and personality strength available, but they are not good enough to conduct stringent tests of the role of networks and personality strength as alternative mediating variables in the education-participation relationship. Measures of other mechanisms were not available in either dataset. Future research should use other datasets to test these mechanisms.

Another possibility that we have not examined is reverse causation: participation in voluntary associations may have a positive effect on the level of education (Astin et al 1988; Otto & Featherman 1975). Previous research has also shown that past participation in voluntary associations is linked to higher occupational status (Ruiter & De Graaf 2008; Wilson & Musick 2003). One longitudinal study among 10 to 12 graders showed that participation in extracurricular activities was related to higher academic performance in a variety of tests, controlling for previous performance (Broh 2002). However, these results were not based on fixed effects models, and may merely reflect selection of more able students in extracurricular activities. If participation has a positive causal effect on occupational status and income, the question is why. The mechanisms that have been argued as linking participation to achievement are the same as the mechanisms linking education to participation: increasing skills, involvement in networks that promote participation, and increases in personality strength (Ruiter & De Graaf 2008; Wilson & Musick 2003). Again, future research should test these mechanisms.

Appendix

Variables in the FSDP2000

Father's and mother's level of education were measured in five categories, ranging from lower education to a university degree. Father's occupational status was measured with the ISEI-procedure (Ganzeboom et al 1992). Parental wealth was measured with a list of seven luxury articles (car, garage, freezer, dishwasher, VCR, central heating, antique furniture, piano, modern art, classic art), of which the respondents recalled whether they were present in the parental home when they were fifteen years of age. The sum of the number of articles present in the parental home proved to be a sufficiently reliable scale (Cronbach's $\alpha=0.76$) and served as an indicator of parental wealth.

The FSDP2000 questionnaire contained a 'Big 5'- adjective checklist, with thirty adjectives describing personality characteristics. The items were a selection from a Dutch translation of the 100 Big Five markers developed by Goldberg (1992). Respondents were asked to what degree these adjectives applied to themselves on a scale of 1 ('Does not fit me at all') to 7 ('Fits me completely'). Factor analysis clearly showed the hypothesized five-factor structure. For all dimensions, mean scores were computed: extraversion ($\alpha=.82$, four items), neuroticism ($\alpha=.77$, four items), agreeableness ($\alpha=.83$, six items), conscientiousness ($\alpha=.87$, four items), and openness ($\alpha=.80$, six items).

The number of correct words in a vocabulary test (modelled after the GSS 'WORDSUM' variable; see Gesthuizen & Kraaykamp (2002) for details) serves as an indicator of cognitive ability.

Variables in the WLS

In the 1957 survey, WLS respondents reported the highest level of education of their father and mother. These responses were recoded to the number of years of education completed.

WLS respondents also reported whether their father was engaged in "Office work (cashier, clerk, secretary, bookkeeper, etc.), Professional (doctor, lawyer, minister, teacher, etc.), Executive (manages large business, industry, firm), Factory worker (laborer, janitor,

farm hand, etc.), Salesman (insurance, real estate, auto, store, etc.), Owns, rents, manages small business (store, station, newspaper, café, etc.), Owns, rents manages farm, Other occupation”.

WLS respondents reported the number of semesters in which they studied in algebra, geometry, trigonometry, biology, chemistry, physics (all 0, 1, 2, 3 or 4), English, history, social studies, and foreign language (0, 2, 4, 6, 8). From these responses, a dummy variable was constructed coded 1 if the graduate reported having taken at least one of the following classes: English, history, social studies, and foreign language. A set of dummy variables was created coded 1 if the respondent failed to report the number of semesters in English, history, social studies, and foreign language.

Data on parental income (`pi5760`) was collected in 1966 from the 1957 tax return, unless none were available for that year. In that case, the next earliest return since 1957 (e.g., 1958, 1959, etc.) was used.

The IQ1957 variable is the preferred measure of the IQ score mapped from the raw Henmon-Nelson (1954) test score (variable `gwiiq_bm`). The WAIS92 and WAIS03 variables are based on answers to nine of the fourteen items from the Wechsler Adult Intelligence Scale-Revised (WAIS-R; Wechsler 1981). The simplest items from the WAIS were eliminated due to the fact that the general ability of the WLS sample is high enough to cause little variation in response to simple items.

The value of college degree variable is the factor-weighted value of college as perceived by the graduate (variable `valuc1`). This variable combines data on the number of high school seniors (from the graduate's high school) planning to go to college and the graduate's opinion on the value of going to college.

High school grades rank refers to the `hsrankq` variable.

The Big Five personality scores for agreeableness, conscientiousness, extraversion, neuroticism and openness are based on twenty-nine "five factor model of personality" items (5 items for neuroticism; 6 per factor otherwise) based on John (1990; 1991) included in the mail questionnaire. Response categories originally ranged from 1 = agree strongly to 6 = disagree strongly.

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