Scandinavian Political Studies
A journal published for the Nordic Political Science Association

ISSN 0080–6757 Doi: 10.1111/j.1467-9477.2012.00286.x

Does Type of Education Affect Political Participation? Results from a Panel Survey of Swedish Adolescents

Mikael Persson*

In several countries it is apparent that individuals with academic gymnasium (upper-secondary) education show significantly higher levels of political participation than individuals with vocational education. However, previous research on this issue draws exclusively on one-shot cross-sectional data. This article utilizes a Swedish panel survey to gauge whether there is a direct causal link between type of education and political participation. Results demonstrate that differences in political participation are already present when students enter different types of education. The analyses show no significant effects of education; instead results support the education-as-a-proxy view: pre-adult factors predict political participation as well as educational choice.

Introduction

Research from several countries has found differences in political participation related to type of education (Hillygus 2005; Nie & Hillygus 2001; Niemi & Hanmer 2010; Kahne & Sporte 2008; Paterson 2009). However, previous research on this issue draws almost exclusively on one-shot cross-sectional data. This article utilizes a Swedish panel survey to gauge whether there is a direct causal link between the type of education and political participation. More specifically, this article evaluates why individuals with academic (theoretical) gymnasium (upper-secondary) education show significantly higher levels of political participation than adolescents with vocational education in Sweden. Do different educational tracks lead to different levels of participation, or is the correlation between type of education and political participation the result of self-selection?

Results show that differences in political participation related to type of education are already present before students enter different types of education. No evidence is found that type of education directly causes

* Mikael Persson, Department of Political Science, University of Gothenburg, Box 711, SE 40530 Gothenburg, Sweden. E-mail: mikael.persson@pol.gu.se

difference in political participation. Pre-adult factors predict political participation as well as educational choice.

The article is structured as follows. First, the rival theoretical expectations with regard to the effects of education on political participation are explained and previous research on effects of type of education on political participation is reviewed. Subsequently, data and techniques of analyses are presented. Finally, we turn to results from the panel survey and end by discussing implications of the findings.

Education: A Cause or a Proxy for Political Participation?

Years of education are of central importance in research on political participation (e.g., Converse 1972; Oscarsson & Holmberg 2004; Niemi & Junn 1998; Verba et al. 1995; Wolfinger & Rosenstone 1980). Recently, research has increasingly focused on whether years of education is a direct *cause* for political participation or merely works as a *proxy* for other factors (e.g., Berinsky & Lenz 2011; Burden 2009; Campbell 2009; Highton 2009; Kam & Palmer 2008; Sondheimer & Green 2010; Nie et al. 1996; Tenn 2005, 2007).

There are two possible explanations for the relationship between education and political participation. First, education might cause greater participation (the education-as-a-cause view). Or, second, the relationship could occur due to self-selection – that is, if the same kinds of people who seek higher education also would be likely to participate in politics regardless of their level of education (the education-as-a-proxy view).

According to the education-as-a-cause view, education affects individuals' civic skills and cognitive capacity, which in turn increase political participation (e.g., Verba et al. 1995; see Campbell (2006) for a literature review). The education-as-a-proxy view states that education takes credit for other factors related to educational choice, such as the political socialization process early in life (e.g., Sears & Funk 1999; Searing et al. 1976; Alwin & Krosnick 1991; Cassel & Lo 1997; Jennings & Niemi 1974; Langton & Jennings 1968; Sears 1989). Factors such as family socio-economic status, parents' level of political participation, the discussion climate at home, and parents' political orientations are the basis of the early socialization process (Beck & Jennings 1982, 1991; Achen 2002; Andolina et al. 2003; Lauglo 2011; Jennings & Niemi 1968; Alwin & Thornton 1984; McIntosh et al. 2007; Andolina et al. 2003; Westholm 1999).[1] According to the education-as-a-proxy view these factors not only encourage political participation, they also determine the choice of education (cf. Kam & Palmer 2008).

The education-as-a-proxy view was supported in Langton and Jennings's (1968) seminal study, which showed the effects of civic education on political participation to be non-existent. It was then the dominating view during

the subsequent decades (cf. Niemi & Hepburn 1995). However, years of education repeatedly showed a strong impact on participation in cross-sectional studies, which led scholars to regard education as being one of the major factors influencing political participation (Converse 1972; Verba et al. 1995; Wolfinger & Rosenstone 1980).[2]

More recently, a number of studies have shown support for the education-as-a-proxy view. Kam and Palmer (2008) use propensity score matching to evaluate the effects of education. They find that differences in political participation related to education are diminished post-matching. Tenn (2007) uses panel data to isolate the marginal effect of years of education. The results show that there is very little impact of years of education on voter turnout. Berinsky and Lenz (2011) arrive at a similar conclusion by using the natural experiment of the Vietnam-era draft to compare participation levels among males who attended college with those who did not. Highton (2009) uses the four-wave panel of the American Youth–Parent Socialization Study to estimate effects of education on political sophistication. He arrives at the conclusion that differences in political participation related to education were in place already before education was acquired.

However, there are also a number of recent sophisticated studies that show support for the education-as-a-cause view. The most interesting example is Sondheimer & Green (2010), who employ an experimental approach in which educational attainment is altered exogenously. In this study, strong support is found for the education-as-a-cause view. Likewise, Milligan et al. (2004) use both American and British data with variation over time to show that education has a positive impact on voting in the United States (but not in the United Kingdom). Moreover, Dee (2004) uses geographical distance to college and the adoption of child labour laws as instrumental variables to gauge the causal effects of education. Dee also concludes that education causes higher levels of political participation. In sum, previous research show contradictory results, and there is no agreement on whether education is a direct cause or a proxy for political participation.

Type of Education and Political Participation

The literature on whether education functions as a cause or proxy for political participation has largely focused on the effects of years of education. Indeed, in many countries 'higher education' means completing high school and going on to university. However, in some countries students select different educational tracks. In these places, different educational tracks lead to different patterns of political behaviour (cf. Stubager 2008, 2009).

Repeated studies using Swedish data have demonstrated that a main difference in political participation related to type of education consists in the significantly higher levels of participation among individuals from

theoretical gymnasium programmes (academic upper-secondary tracks aiming to prepare for further studies at universities) compared with students with education from vocational gymnasium programmes. Results drawing on several different data sources such as CivEd (the Civic Education Study) administrated by the International Association for the Evaluation of Educational Achievement, the Swedish National Election Studies, the SOM-surveys, as well as the Citizen Involvement and Democracy project, demonstrate that students in theoretical study programmes show significantly higher levels of intended and reported political participation than students from vocational programmes (Persson & Oscarsson 2010; Ekman 2007). In addition, Westholm et al. (1990) showed that students from vocational programmes had significantly lower levels of political knowledge than students from the theoretical programmes. Previous research has also shown that the differences in participation between students from theoretical and vocational programmes persisted after the reform of the Swedish educational system in 1990s when vocational programmes were extended from two to three years in order to equalize the educational system (Persson & Oscarsson 2010). Hence, the fact that the type of education gap in political participation exists is well established. However, due to the lack of panel studies it is uncertain if this gap is a direct cause of type of education.

A similar pattern is occurring in several other countries. Significant differences in levels of political participation among students from theoretical and vocational educational programmes in upper-secondary schools have also been documented in Norway (Lauglo & Øia 2006). In Italy, Losito and D'Apice (2004) find significant differences in conceptions of good forms of citizenship related to type of education. Drawing on data from Belgium, Quintelier (2008, 145–6) shows that general education students are encouraged to participate in politics more than those in technical and vocational tracks. And in a cross-national study, Van de Werfhorst (2007) uses data from 17 countries to show that students from vocational programmes were less politically active than students with theoretical educations.

Other studies focusing more broadly on type of education also find significant correlations with political participation. Using British longitudinal data, Paterson (2009) finds positive effects on political participation of taking social science courses. In a study on the impact of college education in the United States, Hillygus (2005, 38) finds that 'students who concentrated their studies in biology, chemistry, engineering and the like appear less inclined to participate politically, while those in the social sciences and humanities are more likely to vote and participate in other forms of political activity. Different levels of participation related to type of education are also found in Niemi and Hanmer's (2010, 319) study of voter turnout among American college students: 'Students majoring in math, science, and engineering voted less often.'

The problem is that almost all of the studies on the impact of type of education draw on one-shot cross-sectional data – a problem that has plagued much research on political socialization (cf. Amnå et al. 2009; Campbell 2006).[3] The few exceptions that use longitudinal data do not control for pre-treatment levels of the dependent variable (Hillygus 2005; Paterson 2009). So, although differences in political participation related to type of education are repeatedly confirmed in a number of studies in several contexts, none of them apply a study design appropriate to draw conclusions about causal effects of type of education. None of these studies can exclude reverse causation as an alternative explanation to the fact that type of education correlates with political participation. Despite the well-known risks of drawing conclusions on the basis of one-shot cross-sectional data (Astin & Lee 2003), all evidence on how type of education affects political participation rests on such doubtful foundations.

Data and Study Design

This article reports findings from a one-year panel survey designed to gauge whether there is a direct causal effect of type of education on political participation. The first wave of the survey was conducted after the respondents graduated from comprehensive school, wherein they all shared the same curriculum. Hence, the panel study takes advantage of a crucial moment of educational choice that allows us to compare intended political participation even before different types of education were acquired.

Approximately 500 Swedish students were followed during their first year in the gymnasium. In the data there is a panel component on the individual level (there is a possibility to follow a single individual over time). Three gymnasium schools in three different municipalities in Sweden were recruited for the study, and we aimed to cover all first-year students (the tenth year of school in Sweden).[4] The reason to choose these gymnasiums was that they are public schools that include the majority of all students in each of the municipalities. As the main aim of the study is to capture students' initial levels of intended political participation before different types of education were acquired, the study was limited to individuals in the first year of the gymnasium. The advantage of this research design is that we can trace the possible causal effect of different educational routes as the students make progress through their educational institution.

The sample is not nationally representative; however, the aim is to trace whether levels in different groups change over time. Since the research question aims to evaluate a claim concerning a causal relationship, the panel design is more appropriate than one-shot cross-sectional designs. Still, the best research design would be a representative sample that could be followed over time. In the absence of such a study, the present data is

the best available data source and we have no particular reason to assume that the individuals in this sample are significantly different from the students in a general national sample of students at the same age. The students at the three schools have mean grades fairly close to the national mean. Swedish gymnasium mean grades range from 0 to 20. In 2009, the national mean was 14.1, while the three schools in the study range from 13.7 to 14.7. The mean levels of education among the adult population in the three municipalities are slightly higher than the national mean. While the national mean among adults 26–74 years old were 11.8 years of education in 2006, mean levels in the three municipalities range from 11.9 to 13.2. All three municipalities are located in the suburban areas of one of Sweden's largest cities. The population sizes vary between 35,000 and 75,000. The income levels in the municipalities are about the same as the national average in one municipality and well above the national average in two of the municipalities.

The first wave of the survey took place at the start of the first year in the gymnasium, which was the end of August 2008. By the end of the first year, we conducted the second wave, which was at the end of May and early June 2009. The survey was conducted in the students' classrooms during regular lessons. The two-wave sample includes 530 respondents;[5] 17 of the classes were from theoretical programmes and 21 were from vocational programmes;[6] and 231 of the students came from vocational programmes and 299 students from theoretical programmes.[7] In the empirical analyses, only students who answered each of the specific questions at both T1 and T2 are included, which reduces the sample further.[8]

One possible objection is that the panel only lasted during the first year of the gymnasium and cannot capture the full effects of education. However, it is important to note that the main aim of the study is to evaluate whether the differences related to type of education are due to self-selection effects or if they emerge when students make progress through the educational institution. For that reason, the most important feature of the study is to measure students' initial attitudes towards participation as they enter different educational programmes.[9] In previous research, panel designs are very rare and few of them lasted considerably longer than this one. For example, John and Morris's (2004) panel was conducted for one year, Westholm et al.'s (1990) for a year and a half, and the study employed by Hooghe and Dassonneville (2012) as well as that by Quintelier and Hooghe (2012) lasted for two years.

In total, 976 student in 44 classes in the three schools participated in the first wave of the survey. Panel mortality was about 46 percent, which is about what could be expected and roughly equivalent to studies with similar designs (cf. John & Morris 2004, 97). A major part of the sample loss was due to the fact that six classes were not able to participate in the second wave.[10]

Additional missing data in the individual analyses is due to the use of the 'don't know' option. The proportion of respondents choosing this option varies between 7.4 percent (spray-painting, T2) and 29.5 percent (demonstration, T1). There are a larger amount of non-responses in the indices covering non-parliamentary and traditional forms of participation than for voting and illegal forms of participation. When analyzing the patterns in the non-responses we also find that the vocational students are overrepresented among respondents providing non-responses. Whether this reflects that vocational students have less knowledge about forms of participation or are less interested in answering survey questions is unfortunately impossible to know. However, it is obvious that vocational students' intentions to participation are harder to capture.

So what does this imply for the validity of the results? One implication is that the results should be interpreted as more uncertain for the dependent variables with more non-responses. At the same time, the higher levels of 'don't know' answers for forms of participation that are less frequently occurring show that respondents have indeed reflected over their response options and not just picked a random alternative. At the end of the day, we need to accept that adolescents' intentions to participation are harder to measure for some forms of participation than others. This fact should be taken into account when interpreting the results.

To maximize comparability with previous research, the questionnaire replicates the items used by the dominating research programme in the field: the Civic Education Study (CivEd) carried out by IEA (International Association for the Evaluation of Educational Achievement). As for the dependent variables, the individual intentions to participate in the different forms of political participation were measured on a four-point scale, ranging from 'I will certainly not do this' to 'I will certainly do this'.

While the use of these items facilitates comparability with previous research drawing on the IEA data, one could question the external validity of the measures – that is, does intended participation transform into actual participation? This issue is depending on when adolescents' attitudes crystallize. On the one hand, if adolescents continue to develop their patterns of political behaviour after the age of 16, the items might capture a snapshot with small relevance for adult political behaviour. On the other hand, if the political socialization process does not continue to develop after the time of the survey, the measures are likely to give a glimpse of the respondents' future political behaviour. One way to assess the external validity of items measuring intentions to participation is to validate the results against another source of data containing comparable measures of performed participation (cf. Hooghe & Wilkenfeld 2008). In the concluding section I will discuss the findings from this study in relation to other studies of Swedish youths relying on measures of reported participation.

Most of the previous research on adolescents' political behaviour and the influence of school-related factors have relied on the CivEd data and the items measuring intentions to participation (e.g., Hooghe & Wilkenfield 2008; Campbell 2007, 2008; Wolbrecht & Campbell 2007; Metz et al. 2003; Torney-Purta et al. 2001; Torney Purta 2002; Torney-Purta & Amadeo 2003). In fact, they have become the standard indicators of youth political participation in the field. However, none of these studies follow individuals over time into adulthood. Unfortunately, only such studies could evaluate whether intentions to participation actually transform into performed participation (cf. Hooghe & Wilkenfield 2008, 156).

Looking more broadly at political behaviour research it is evident that there is a lack of studies comparing intention to participate, reported participation and validated participation. One of the few studies dealing with this issue is a recent paper by Achen and Blais (2010), which shows that intention to vote, reported voting and validated voting correlate strongly. Most importantly, the same independent variables show significant impact on all three measures (although there are some differences in the sizes of the coefficients due to the fact that not all intentions result in actual participation). Achen and Blais (2010, 7) conclude that 'researchers will rarely be misled by using any one of the three sources'. However, while using the items measuring intentions to participate might seem unproblematic drawing on the study of Achen and Blais, more research is called for in this area. Moreover, their data covers only adults and it is unclear whether these findings are generalizable to youths as well. Hence, results presented here should be interpreted only as in indication of students' likely future behaviour rather than a deterministic prediction.

The analyses cover 13 forms of participation. From previous research, we know that different forms of participation have different causes and differ in frequency (e.g., Verba et al., 1995). To sort out relevant categories of participation, factor analyses were conducted that revealed three distinct categories of participation, which were used to construct three indices. First, the *Traditional Participation Index* includes party membership, contacting political representatives, writing letters and candidating for a political party. Second, the *Non-Parliamentary Participation Index* includes boycotting, buycotting, wearing a political badge, signing a petition and demonstrating. Third, the *Illegal Participation Index* includes spray-painting, blocking traffic and occupying buildings. The factor loadings and eigenvalues of the indices are presented in Appendix Table 1, and descriptive statistics are presented in Appendix Table 2.[11] The indices are additive and are constructed by simply adding the respective variables together. To facilitate interpretation, the indices are rescaled to vary between 0 and 10. Following previous research, voting is treated as a separate category (cf. Verba et al. 1995; Campbell 2009).

The students in the survey are not statistically independent, since they belong to specific classes in three specific schools. Due to the nested structure of the data, this dependency between observations needs to be taken into account in the computation of standard errors. For that reason, multilevel modeling is employed. More specifically, two-level multilevel models (students within classes) that explicitly take into account the clustered structure of the data are applied. Performing nonhierarchical regression that ignores the dependency would likely produce biased estimates (cf. Goldstein 1995; Hox 2002; Snijders & Bosker 1999).[12] However, when analyzing whether there is a significant change in the theoretical–vocational gap between T1 and T2, I apply a 'difference-in-differences' approach, testing the interaction between gymnasium programme and time. To accomplish this test, the datasets containing T1 and T2 were stacked so that the unit of analyses is time of observation (within individuals). This reshaping of the dataset adds another level to the structure of the data. Hence, the models testing the interaction term (programme X time) are three-level models (observation within individuals within classes) while the models focusing on T1 or T2 separately are two-level models (individuals in classes).

The empirical analyses will proceed in four steps. First, we investigate whether there is a significant difference in levels of political participation already when students enter the gymnasium (at T1) and we repeat the test of this difference after one year (at T2). We use a dummy variable for educational programme (0 = vocational, 1 = theoretical) in the multilevel models to measure the difference between students at respective point of time.

Second, we estimate if there is a significant change in the vocational–theoretical gap during the first year of study in the gymnasium. Even if significant differences occur already at T1, the difference can significantly increase or decrease between T1 and T2. We model the change of the vocational–theoretical gap as the interaction between educational programme and time. A significant interaction term signals a significant change in the vocational–theoretical gap between T1 and T2.

Third, we investigate which other non-educational factors that might have caused the vocational–theoretical gap. If education is a proxy for other factors, which are the factors that have caused the gap in the first place? These analyses make use of the T1 sample only (with individuals not participating in the second round excluded). Only a small set of variables measuring background factors are used in order to minimize multicollinearity. The SES of the family environment is, of course, of central importance for the intention to participate in political activities (cf. Ekman & Zetterberg 2010). However, previous studies show that this information is hard to acquire from youth respondents. In international comparative studies such as CIVED and TIMSS, the number of books at home is frequently used as a proxy to measure the SES of the family (cf. Lopes et al. 2009; Wolbrecht & Campbell

2007; Campbell 2008). This item correlates strongly with parents' education (Evans et al. 2010). However, number of books has an advantage in that it yields considerably lower levels of non-response than questions about the parents' education (Beaton et al. 1996; Torney-Purta et al. 2001). Two questions are also included that measure the amount of political discussions with teachers and within the family. Discussion of politics within the family has repeatedly been shown to increase civic development among youths (McIntosh et al. 2007). Since attitudes towards participation might also be affected by different previous experiences of social science education in comprehensive school, political discussion with teachers is included to control for the impact of different earlier educational experiences related to social science education. Finally, we also include a control for gender.

And fourth, to further corroborate the education-as-a-proxy view, we investigate whether the same factors as predict political participation also predict educational choice? From previous research we know that parental resources and social status affect educational choices (cf. Tieben 2011). If education is a proxy for non-educational factors, the same non-educational factors that predict political participation should also drive the choice of education.

Results

Is there a Significant Vocational–Theoretical Gap in Political Participation?

First we compare the levels of intended participation among students from vocational and theoretical programmes at T1 (when they enter the gymnasium) and repeat this comparison at T2 (the end of the year). Since the dependent variables are continuous, linear mixed models are applied throughout the analyses. We use a dummy for whether each student takes part in a theoretical or a vocational programme to estimate the size of the vocational–theoretical gap. Obviously, a statistically significant difference between students from theoretical and vocational programmes at T1 cannot be a cause of type of education since students have just entered their educational programmes. In that case, type of education must consequently be a proxy for other factors.[13]

Table 1 presents results from multilevel regression models for each of the four dependent variables at T1 and T2.[14] Model 1 show that there are significant differences between students from theoretical and vocational programmes as regards intention to vote already at T1. This significant difference remains at T2. At both points, students from theoretical programmes show considerably higher levels of intention to vote than vocational students. For the Traditional Participation Index we find no significant differences between the students, neither at T1 nor at T2. As for the

Table 1. The Impact of Educational Programme (Theoretical or Vocational) on Indicators of Political Participation at the Beginning and the End of the First Year of Gymnasium (Multilevel Models, Maximum Likelihood Estimation)

	(1) Voting T1	(2) Voting T2	(3) Traditional Participation Index T1	(4) Traditional Participation Index T2	(5) Non-parliamentary Participation Index T1	(6) Non-parliamentary Participation Index T2	(7) Illegal Participation Index T1	(8) Illegal Participation Index T2
Fixed part:								
Educational programme (0 = vocational; 1 = theoretical)	0.893*** (0.204)	0.688*** (0.254)	–0.023 (0.269)	0.282 (0.227)	0.950** (0.426)	1.397*** (0.409)	–0.450* (0.264)	–0.847*** (0.291)
Intercept	7.521*** (0.158)	7.651*** (0.190)	2.770*** (0.205)	2.807*** (0.177)	4.479*** (0.327)	4.102*** (0.318)	1.991*** (0.201)	2.403*** (0.220)
Random part:								
Class level: Standard deviation of u_j	0.179 (0.249)	0.491*** (0.135)	0.473** (0.163)	0.132 (0.391)	0.700 (0.279)	0.416 (0.390)	0.368* (0.199)	0.462* (0.191)
Individual level: Standard deviation of e_{ij}	1.966*** (0.070)	1.895*** (0.067)	1.699*** (0.076)	1.812*** (0.081)	2.107*** (0.129)	2.371*** (0.142)	2.185*** (0.083)	2.286*** (0.087)
Number of groups	37	37	37	37	36	36	36	36
Number of individuals	433	433	283	283	168	168	379	379
BIC (Bayesian information criterion)	1841.938	1827.391	1142.017	1163.713	761.790	791.988	1701.014	1738.454

Notes: Standard errors in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Non-Parliamentary Participation Index, in models 5 and 6 we once again find a significantly higher level of intended participation among the theoretical students than the vocational students, both at T1 and T2. Here it should be noted that the results for traditional and non-parliamentary participation are more uncertain, due to the low response rates. Concerning the results from the Illegal Participation Index, we also find a significant gap between students from vocational and theoretical programmes, but here it is the vocational students that show considerably higher levels than the theoretical students.

In sum, we find mixed support for the hypothesis that there are significant differences between vocational and theoretical students: statistically significant differences in intention to participate are found on three of four dependent variables under study. However, these differences appear as students *enter* different educational programmes, and type of education cannot reasonably have had any effect at this time. How can these mixed findings be explained? As for voting and non-parliamentary participation, the findings confirm what is expected from previous research: statistically significant differences of substantial size (from about 0.7 to 1.4 on the 0–10 scale). Regarding the traditional participation index, the levels are low for both vocational and theoretical students. The findings show us that both vocational and theoretical students have low intention to participate in activities related to political parties. The expected vocational–theoretical gap is thus most evident in forms of participation that students intend to perform more frequently.

The perhaps most unexpected results is that intention to perform illegal acts of participation are higher among vocational students. Students on theoretical programmes are less likely to choose illegal forms of participation. Their intended participative repertoire consists primarily of legal forms of participation which reflects their higher degree of commitment to the established norms in society.

In sum, results do not show a general gap in participation between students with different types of education. For forms of participation that students intend to perform more frequently, students from theoretical programmes score higher. For traditional participation, we observe low levels among both vocational and theoretical students. And only for forms of participation that are illegal and concur with the norms of the established society do we observe higher intention among the vocational students.

Is there a Significant Change in the Vocational–Theoretical Gap in Participation during the First Year at the Gymnasium?

The second step takes a 'difference-in-differences' approach (cf. Donald & Lang 2007; Bertrand et al. 2004), which is employed to measure whether the vocational–theoretical gap significantly increases during the first year of

the gymnasium. Even if a significant gap exists as students enter the gymnasium, it might significantly increase or decrease as students make progress through different types of education. The difference-in-differences approach allows us to examine whether education has caused a significant change in the size of the differences. It is operationalized as the interaction effect of educational programme and time. If the education-as-a-cause view is to be proven valid, we should observe a significant increase in the vocational–theoretical gap during the first year in the gymnasium – that is, a significant interaction term. This design could be compared to an experimental design in which the difference between a treatment group and control group is measured at two points of time, and a significance test is made on the difference-in-differences.

To accomplish this test, the datasets containing T1 and T2 were stacked so that the unit of analyses is time of observation (within individuals). Then models are estimated that includes time, the vocational–theoretical dummy and the interaction between these two terms. For this reason, models 9–12 are three-level models that take into account that observations are clustered within individuals within classes and estimates standard errors at each of these three levels. Results reveal that there is no significant change in the magnitude of the vocational–theoretical gap during this year since the interaction terms in models 1–4 in Table 2 are not significant. The size of the gap in intention to participate in political activities between students from theoretical and vocational programmes does not change significantly during the first year of study in the gymnasium.[15]

Which Non-educational Factors Influence the Vocational–Theoretical Gap?

Models 1–4 in Table 3 present estimates from models analyzing factors that might affect intention to participate in political activities before individuals enter different types of education in the gymnasium.[16] These models include measures of the amount of discussion about politics at home and with teachers, respectively; the number of books at home; and gender. The vocational–theoretical dummy is also included in these models to see how this coefficient performs under control for other factors. Results show that in these models the vocational–theoretical dummy is only significant at the 95 percent level on voting. However, since it is unlikely that type of education should have had any effect as students enter the educational institution, this variable probably account for some unobserved pre-adult factors. For the non-parliamentary participation index we found a strong and significant effect of educational programme in the bivariate analysis presented in Table 1. However, when adding controls for books at home and the amount of discussion at home, the coefficient for type of education turn insignificant, which indicates that the relationship can be explained with reference to self-selection effects.

Table 2. Interaction Effects of Theoretical–Vocational and Time (Multilevel Models, Maximum Likelihood Estimation)

	(1) Voting (T1 + T2)	(2) Traditional Participation Index (T1 + T2)	(3) Non-parliamentary Participation Index (T1 + T2)	(4) Illegal Participation Index (T1 + T2)
Fixed part:				
Educational programme (0 = vocational, 1 = theoretical)	0.138 (0.167)	0.071 (0.165)	–0.349 (0.264)	0.440** (0.194)
Time (0 = T1, 1 = T2)	1.041*** (0.377)	–0.279 (0.385)	0.546 (0.638)	–0.067 (0.449)
Educational programme × Time	–0.176 (0.214)	0.267 (0.210)	0.394 (0.337)	–0.396 (0.251)
Intercept	7.388*** (0.292)	2.684*** (0.300)	4.840*** (0.496)	1.547*** (0.344)
Random part:				
Class level: Standard deviation of v_k	0.336*** (0.118)	0.314** (0.166)	0.616 (0.259)	0.396** (0.161)
Individual level: Standard deviation of u_{jk}	1.181** (0.084)	1.274*** (0.087)	1.649*** (0.147)	1.461*** (0.100)
Observation level: Standard deviation of e_{ijk}	1.535*** (0.052)	1.217*** (0.051)	1.504*** (0.082)	1.699*** (0.062)
Number of classes	37	37	36	36
Number of individuals	433	283	168	370
Number of observations	866	566	336	758
BIC (Bayesian information criterion)	3600.291	2211.477	1487.279	3358.082

Notes: Unstandardized regression coefficients. Standard errors in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table 3. Effects on Political Participation at the Beginning of the Gymnasium (Multilevel Models, Maximum Likelihood Estimation)

	(1) Voting T1	(2) Traditional Participation Index T1	(3) Non-parliamentary Participation Index T1	(4) Illegal Participation Index T1
Fixed part:				
Discussing politics in the family	0.920** (0.387)	1.517*** (0.393)	1.679*** (0.542)	0.276 (0.444)
Discussing politics with teachers	–0.776** (0.367)	–0.239 (0.384)	–0.616 (0.543)	–0.243 (0.433)
Watch television news	0.328 (0.370)	0.121 (0.390)	–0.372 (0.540)	–0.024 (0.455)
Books at home	0.660 (0.446)	0.821* (0.455)	2.537*** (0.636)	0.878* (0.519)
Gender (male)	0.090 (0.218)	0.060 (0.224)	–0.727** (0.320)	1.263*** (0.259)
Educational programme (0 = vocational, 1 = theoretical)	0.789*** (0.224)	–0.070 (0.261)	0.365 (0.413)	–0.524* (0.311)
Intercept	6.655*** (0.456)	1.391*** (0.458)	2.895*** (0.668)	0.808 (0.534)
Random part:				
Class level: Standard deviation of u_j	0.172 (0.319)	0.326* (0.200)	0.681 (0.262)	0.515 (0.219)
Individual level: Standard deviation of e_{ij}	1.923*** (0.078)	1.658*** (0.082)	1.776*** (0.120)	2.060*** (0.091)
Number of groups	37	36	33	34
Number of individuals	347	242	147	298
BIC (Bayesian information criterion)	1492.151	986.289	638.945	1337.435

Notes: Unstandardized regression coefficients. Standard errors in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Regarding the other independent variables, the amount of discussion within the family about politics has a positive and significant effect on all indices except for the illegal forms of political participation. Moreover, the number of books at home has a strong and large effect on non-parliamentary participation, while the effect of books at home on traditional and illegal participation only reaches the 90 percent significance level. Looking at the effects on illegal participation, we also find that men have higher intention to participate in such acts than women.

To conclude, the results in Table 3 show that the effect of type of education is reduced under control for other factors. Instead of factors related to education, the amount of political discussion at home and/or the number of books at home positively affects all four forms of participation.

Do the Same Factors that Predict Political Participation also Predict Educational Choice?

In the fourth and final step of the analysis, we analyze whether the variables that correlate with participation predict educational choice as well. Model 1 in Table 4 uses the dummy for vocational–theoretical programme as the dependent variable and estimates the impact of number of books at home, gender and the amount of discussion of politics at home. As expected, we find a strong effect of the number of books at home (while gender and amount of discussion in the family are insignificant). Translating the effect of books at home into predicted probabilities shows that there is a probability of 0.28 for adolescents with zero books at home to attend a theoretical programme while the probability for adolescents with more than 200 books at home is 0.67. Hence, the socio-economic status of the family affects both intention to participate in politics and educational choice. However, while the previous model showed that political discussion correlate with political participation, it does not seem to influence educational choice. Hence, politi-

Table 4. Effects on Choice of Educational Gymnasium Programme (0 = Vocational, 1 = Theoretical): Results from Logistic Regression

	(1) Choice of educational programme
Discussing politics in the family	0.281 (0.319)
Books at home	1.642*** (0.393)
Gender (male)	–0.123 (0.189)
Intercept	–1.002*** (0.339)
Number of individuals	498
Pseudo R^2	0.030

Notes: Unstandardized logistic regression coefficients. Standard errors in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

cal discussion affects political participation independently. At the same time, books at home seem to be more important for educational choice than it is for some forms of political participation, such as voting.

Conclusion

Results from the analyses reveal that differences in levels of political participation related to type of education is not likely to be caused by type of education. When differences occur, they can be observed before different types of education might possibly have had any effects. Taken together, results do not support the idea that type of education causes differences between students with vocational and theoretical educations. Instead, results indicate that the vocational–theoretical gap in levels of political participation is caused by factors outside of school. Family socio-economic status and the amount of political discussion within the family are more robust predictors of political participation.

The main theoretical implication of the results is that previous studies might exaggerate the impact of education as a consequence of the limitations of the conventional cross-sectional correlational approach. Hence, further research would concentrate on disentangling the different factors in the pre-adult socialization process for which education might be a proxy. In particular, it is important to focus on pre-adult factors that are not considered in this study such as personality type, genetic factors or social networks.

However, no studies are without shortcomings and it should be acknowledged that this study has several limitations. First of all, the sample size is quite small and it could be the case that a larger study could detect patterns that are not visible in this data. Second, this study follows the respondents during one year only. It might be the case that effects of education on political participation begin to show after several years of secondary schooling, or after enrollment in further education. Hence, although education does not seem to have any effect on political participation drawing on these data, we cannot rule out the possibility that education causes political behaviour in the long run. Taking into account that research has shown that social network position can function as the causal mechanism linking education and participation (cf. Campbell 2009; Nie et al. 1996; Persson 2011) it might not be possible to detect effects of education until later in life. Third, the respondents do not represent a random sample drawn from the total population of individuals attending gymnasium in Sweden. Hence, in a statistical sense we cannot generalize the results to the entire population. However, it is important to note that the differences between theoretical and vocational students observed in this study closely resemble observed patterns in national representative surveys (cf. Persson & Oscarsson 2010; Ekman 2007). This study adds that these differences seem to be in place

before different types of education are acquired and that they do not change over time. However, further replications drawing on national representative samples following individuals over longer time periods would be needed in order to completely rule out the contention that type of education has any effect on political participation. Fourth, the items in this study measure intention to political participation and not reported participation. This is another reason for not drawing too far-reaching conclusions from this study. Although previous research shows that intention to participate and performed participation correlate strongly, we do not know for sure to what extent the intention to participate among the adolescents in this study will translate into political participation.

Taking these caveats into account, results do indicate that we ought to reconsider the view that type of education has a causal effect on political participation. Rather than support for a causal effect of education, results indicate that we might need to return to the conclusions made already in the seminal study by Langton and Jennings (1968) over forty years ago: the effects of civic education on political socialization are marginal at best and can be explained with reference to factors operating even before individuals gain education.

ACKNOWLEDGEMENTS

Previous versions of this article were presented at MPSA in Chicago 2011 and PSA in London 2011. I am grateful for helpful comments from David E. Campbell, Mikael Gilljam, Jenny de Fine Licht, Peter Esaiasson, Craig Frizzell, Sofie Marien, Henrik Oscarsson, Daniel Stockemer, four anonymous reviewers and the editors of *Scandinavian Political Studies*. Thanks to Jenny de Fine Licht for research assistance.

NOTES

1. Other researchers adhere to the education-as-a-proxy view for other reasons than pre-adult socialization. For example, Luskin (1990) argues that education takes credit for factors such as intelligence (cf. Deary et al. 2008). Moreover, a recently emerging literature recognizes that genetic factors influence political participation (Alford et al. 2005; Fowler et al. 2008). Yet others focus on how personality types affect political participation (Mondak & Halperin 2008; Mondak et al. 2010). Furthermore, according to the relative education model, there is no direct causal link between education and political participation; education affects participation via social network centrality (e.g., Nie et al. 1996; Tenn 2005; Campbell 2009).
2. In order to gauge causal effects from a cross-sectional design it needs to be complemented with instrumental variable techniques or an experimental set up.
3. There are a number of studies using panel designs to estimate effects of education on related dependent variables. However, none of these studies estimate effects of type of education on political participation. Prominent examples of panel studies in this field are John and Morris (2004), who estimate effects of education on social capital; Westholm et al. (1990), who estimate the impact of type of education on political knowledge; and Oscarsson and Holmberg (2004), who use the panel structure of the Swedish National Election Surveys to evaluate if increased education between elections increases electoral participation.
4. In Sweden, students start the gymnasium in August at age 16.

5. However, due to the fact that some students marked a 'don't know' option on some questions, the number of individuals is not equal in all of the analyses.
6. I use the following classification: theoretical programmes in the sample are the Natural Science Programme, the Social Science Programme and the International Baccalaureate Programme; vocational programmes in the sample are the Athletics Programme, the Child and Recreation Programme, the Construction Programme, the Arts Programme, the Entrepreneurship Programme, the Health Care Programme, the Technology Programme, the Information Technology Programme, the Vehicle Programme, and the Business and Administration Programme.
7. The fact that there are more students from theoretical programmes in the survey, even though there are fewer theoretical classes, is due to two factors: larger class sizes among the theoretical programmes and higher response rates among the students from theoretical programmes. A potential problem is that the lower response rate among vocational students biases the results. One could object that the effect of type of education might be underestimated due to the fact that those who did not answer are more likely to be politically inactive.
8. It is important to evaluate whether students included in both waves are significantly different from those who were only included in the first wave. A comparison of the characteristics of all the students in the first wave with students included in both waves shows that they do not significantly differ from each other. This test included gender; immigrant status; number of books at home; the amount of political discussion with friends, teachers and family; and watching television news. Individuals included in both waves do not have any of these characteristics to a larger or smaller extent than students who only participated in the first wave.
9. Although we surveyed the students as early as possible after they entered the gymnasium, it is of course a theoretical possibility that differences between the two types of programmes might have arisen during the very first days of school. However, I find it quite counterintuitive that type of education should have had this rapid effect after only a couple of days, and then no significant change is found for an entire year.
10. An important question is of course whether panel mortality biases the results. When comparing the levels of participation at T1 for the 530 individuals included in both waves with the 446 panel dropouts we find that the panel dropouts do not show significantly different levels of political participation. Hence, the estimates presented in this article are not likely to be biased as a consequence of panel mortality.
11. Using the factor loadings as dependent variables instead of the additive indices provides substantively identical results.
12. An alternative approach to handle the nested data structure is to estimate OLS models with clustered standard errors at the class level. Coefficients and standard errors from such models are substantially identical to those presented from the multilevel models (available upon request from the author.)
13. It is important to note that the strategy in the first step is to make two separate analyses at T1 and T2 to evaluate, first, whether there is a significant difference between theoretical and vocational students, and second, whether this gap is maintained after one year of study. Hence, it is not the change scores between T1 and T2 that are used; instead there are two separate analyses as to whether there are gaps related to type of education at T1 and T2, respectively.
14. In models 1–4, linear multilevel regression models are applied to the four dependent variables (voting and the three indices), although the participation measures are originally all four-point ordinal scales. However, ordinal logit models (with clustered standard errors taking the dependency within classes into account) produce substantially similar results.
15. In models 9–12, the main effect of type of education (theoretical/vocational) is not statistically significant due to collinearity with the interaction term. In models 9, 10 and 12, the significant coefficients for type of education are restored when removing the interaction terms in each of these models.
16. All independent variables are recoded so that they vary between 0 and 1 to facilitate interpretation.

Appendix Table 1. Classification of the Forms of Political Participation

	Questions in questionnaire (When you are an adult, what do you expect that you will do?)	Factor loading (principal components)
Traditional Participation Index		
Party membership	Join a political party	T1: 0.7279 T2: 0.7731
Contact political representatives	Contact a political representative to express your opinion	T1: 0.7888 T2: 0.8369
Write letters	Write letters to a newspaper about social or political concerns	T1: 0.7943 T2: 0.8137
Candidate for a political party	Be a candidate for a political party	T1: 0.7188 T2: 0.7043
Eigenvalue		T1: 2.2997 T2: 2.4563
Non-parliamentary Participation Index		
Boycotting	Buy some products for political, moral or environmental reasons	T1: 0.8045 T2: 0.8120
Boycotting	Boycott some products	T1: 0.8222 T2: 0.7810
Wear a political badge	Wear a political badge	T1: 0.6984 T2: 0.7849
Sign a petition	Sign a petition	T1: 0.7251 T2: 0.8156
Demonstrating	Participate in a peaceful demonstration	T1: 0.6997 T2: 0.7503
Eigenvalue		T1: 2.8264 T2: 3.1135
Illegal Participation Index		
Spray-paint	Spray-paint protest slogans on walls	T1: 0.7537 T2: 0.8220
Block traffic	Block traffic as a form of protest	T1: 0.8797 T2: 0.9107
Occupy buildings	Occupy public buildings as a form of protest	T1: 0.8727 T2: 0.9224
Eigenvalue		T1: 2.8264 T2: 2.3560
Voting	Vote in national elections	

Notes: All item scales originally range 1–4: 1 = Certainly not do this; 2 = Probably not do this; 3 = Probably do this; 4 = Certainly do this.

Appendix Table 2. Descriptive Statistics

	Mean	Standard deviation	N	Minimum	Maximum
Discussing politics in the family	0.604	0.294	507	0	1
Discussing politics with teachers	0.385	0.385	428	0	1
Watch television news	0.631	0.296	517	0	1
Books at home	0.725	0.723	519	0	1
Gender (male)	0.402	0.491	520	0	1
Voting T1	8.068	2.025	433	0	10
Voting T2	8.099	1.991	433	0	10
Traditional Participation Index T1	2.744	1.764	283	0	10
Traditional Participation Index T2	2.980	1.826	283	0	10
Non-parliamentary Participation Index T1	5.056	2.281	168	0	10
Non-parliamentary Participation Index T2	4.948	2.515	168	0	10
Illegal Participation Index T1	1.706	2.227	379	0	10
Illegal Participation Index T2	1.911	2.366	379	0	10

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