The Effect of Vocational Education on Political Behaviour in the Case of Germany

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Abstract: Past literature has shown that university graduates are a distinct electoral block who are more likely to vote and support liberal values. However, there is little scholarly work examining how different educational training systems affect voter choice. Specifically, how does vocational as opposed to higher education affect political participation and attitudes? We utilise the 2010 - 2018 rounds of the European Social Survey to examine the effect of vocational education and differing kinds of vocational education in the case of Germany. We find that education type plays a role in determining participation and liberal attitudes. These findings are important because the overall demographic composition of an electorate will shape electoral outcomes. Our contribution therefore brings new light on the effect of vocational training on democracy.

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1 Introduction

Education has been a key topic in understanding the motivations for political behaviour among citizens. The socialisation theory has underlined how a university education can lead to a more liberal outlook and fewer authoritarian opinions among its alumni (Stubager, 2008). Recently, the debates on so-called "cancel culture", referring to withdrawing of support of a public figure due to controversial behaviour, at universities. These emphasise the arguments brought forward by the socialisation theory and also make the case that universities "limit" conservative opinions, like in the recent Policy Exchange report. However, many scholars have asked whether being at university in general strengthens liberal thoughts or whether the length of one's education increases this process. As not all forms of education involve attending university, this research is analysing this question through the perspective of an alternative education form, vocational education. As vocational education is often times not performed at enclosed institutions but through a partnering vocational institute, the socialisation theory would argue that the effect of vocational education on political behaviour is likely to be quite different from the extensively examined university education. This research will look at this question using the case of Germany, due to its established and institutionalised vocational training system.

This research is not only important to understand the political behaviour of those in vocational education but further, it provides additional evidence to the socialisation theory of education, which so far has been mainly explored through the frame of higher education. The research is structured as follows. First, the established theoretical expectations with regard to the effects of vocational education on political participation and behaviour 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 European social survey and end by discussing implications of the findings.

2 Theory

2.1 Socialisation Theory and Political Behaviour

The amount of time an individual spends in education are of central importance in research on political participation (Verba, Schlozman and Brady, 1995; Wolfinger and Rosenstone, 1980). The link between education and political behaviour has been established pretty early in the political science and education literature, for instance that the higher educated have more political knowledge, understanding, engagement and attentiveness (Nie et al., 1996). Further, education has consistently been found to increase political participation, electoral turnout, civic engagement, political knowledge and democratic attitudes and opinions.

There are many different theories explaining the link between education and political behaviour. Some of those directly causally link education and political participation, while others argue for education acts from "the allocative outcomes produced by education" (Stubager, 2008, p.333), meaning through an indirect effect (Berinsky and Lenz, 2011; Burden, 2009; Campbell, 2009; Highton, 2009; Kam and Palmer, 2008; Nie et al., 1996; Sondheimer and Green, 2010; Tenn, 2007). Boiling these two strands of literature down, the two possible explanations for the relationship between political participation and education can either come from education as a cause or due to self-selection that occurs through education. Both views have different theories attached to them. We will be providing a short overview of the allocation and direct effects of education on political behaviour before examining the socialisation effect in more detail (see Stubager (2008) for more detail).

In terms of allocation effects, education is often understood via class, income or cognitive sophistication (Stubager, 2008). This means that education, in itself, is not the reason why citizens behave differently but rather "leads to differences in values by constituting groups with different material interests and capabilities" (Stubager, 2008, p.333). As education may lead to a more stable job prospect and more income (Pallas, 2000), this stability and security may not only impact political participation but also values as such

(Stubager, 2008). This is as both class and impact can change the perceived competition, for instance from immigrants. The political meritocracy hypothesis argues that there exists a spurious relationship between education and democratic behaviour - intelligence produces both (Luskin, 1990). Meaning intelligence, rather than education, is important to political behaviour. Further, education can also be a mediation variable as described by Nunn, Crockett and Williams (1978) that "with increased education comes increased awareness of the varieties of human experience that legitimize wide variation in beliefs, values, and behavior". Nunn, Crockett and Williams (1978) argue that education has an effect through knowledge and also cognitive sophistication. This could be understood as a direct effect that education has on political behaviour, however simultaneously Stubager (2007) finds that knowledge acts more as a complementary explanation than as a mediator of the effect of education on authoritarian-libertarian values.

In terms of direct effects of education on political behaviour, multiple different causal paths exist in the literature. One classic understanding of education and values comes from McClosky and Brill (1983) and the "psychodynamic model" (Stubager, 2008). This model argues that education equips citizens with psychological security, ensuring that those who are higher educated will be better able to tackle difficulties in their lives and thus, may be more tolerant to minorities rather than feeling threatened. The effect of education is not just limited to people choosing to participate in political forms of participation but also to their values in general. For example, there are multiple different direct effect models understanding education as a central element in someone's authoritarian-liberal values. The psychodynamic model is a direct effect model of education on values (McClosky and Brill, 1983), arguing that the feeling of security acts as a mediator between education and values. Similar to this, the "civic education hypothesis" suggests that additional years of education can continue to equip citizens with political information (Rosenstone and Hansen, 1993). Rosenstone and Hansen (1993, p.136) argue that education provides "skills people need to understand the abstract subject of politics, to follow the political campaign, and to research and evaluate the issues and candidates. In addition, because of their schooling, the well educated are better able to handle the

bureaucratic requirements of registration and voting". On top of this, the "social network hypothesis" focuses on social sorting mechanism imposed by education. This comes from the puzzle posed in the literature at the time, asking why political engagement is decreasing while level of education is increasing in the overall population (Brody, 1998). As argued by Nie et al. (1996), the social network hypothesis argues that "those with higher levels of education are substantially more likely to be found closer to the center of politically important social networks, while those with less education are much more likely to be found at the periphery" (Hillygus, 2005, p.28). Though all of these theories and hypotheses have found a decent amount of following in the literature, one model has stood out in more recent literature.

A very common theory linking education directly with political behaviour is the "socialisation model". "The socialization model presents itself as the main explanation for the effect of education on authoritarian-libertarian values" (Stubager, 2008, p.343) and therefore, can help explain the varied political behaviour of those with higher education and those without. The "socialisation model" argues that "through education, individuals are exposed to values which they internalize" (Stubager, 2008, p.330). Surridge (2016) has shown that the link between liberal attitudes and education comes from socialisation values using a UK based birth cohort study. So where does this socialisation effect come from? In some strands of those who advocate in favour of the socialisation model, we find arguments linking the teaching at universities to libertarian values as a primary effect (Gaasholt and Togeby, 1995; Hyman and Wright, 1979; Jenssen and Engesbak, 1994). Others argue more generally that social interactions at educational institutions among students and between teachers and students will cause more liberal values (Jacobsen, 2001; Pascarella and Terenzini, 1991). The model relies on the argument that education occurs during formative years of individuals' lives. As Inglehart (1997, p.34) argues that values form "the basic human personality structure that tends to crystallize by the time an individual reaches adulthood, with relatively little change thereafter". Therefore, socialising influence, either directly through input of education or through exchange between peers at university, will influence individual's values and perception of political

behaviour.

As this is such a crucial part of the model, unsurprisingly this effect may heavily depend on educational fields. In fields which encourage development of social skills, the argument is that those will help individuals become "aware of other people's standpoints and motives, thereby broadening students' horizons and socializing them to value and accept divergent standpoints" (Van de Werfhorst and Kraaykamp, 2001, 313). Hillygus (2005, p.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". This is further underlined by Niemi and Hanmer (2010) research on those students in STEM. More generally, values of those in fields that focus on "the manipulation of either objects or documents, and other people are often conceived of from profit" tend to be less liberal (Stubager, 2008, p.332).

In order to see whether there is a causal link between education and political behaviour, recent studies have employed innovative research designs. For example, 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) use a natural experiment in order to explore the causal link between participation levels of those who went to college during the Vietnam war and those who did not. They, similar to Tenn (2007), do not find substantial results to show a causal link between college attendance and political participation. Yet, the findings are far from conclusive. For example, through the instrumental variable of child labour laws, Dee (2004) concludes that educational attainment has large effects on subsequent voter participation and support for free speech.

The operationalisation of what education means and is has different substantially over the years. More recently, the literature has questioned whether the use of years in education is feasible to grasp the complexity of the effect of education on societal behaviour like political participation. Most theories treat education as an interval level variable and

employ a number-of-years-of-education variable to measure education. The socialisation theory argued that this excludes across field differences from the equation and has thus, started to argue in favour of using categorical variables to capture education. Therefore, this study will look at the differences between different types of education in order to understand how and whether the socialisation theory applies to different kinds of education outside of higher education.

2.2 Vocational Training

Research from several countries has found differences in political participation related to type of education (Hillygus, 2005; Niemi and Hanmer, 2010; Paterson, 2009).Surridge (2016, p.161) has shown that "distinct breaks occur between compulsory and post-compulsory education and between higher education (degree level) and other types of post-compulsory education" exist. Vocational education is a form of education which may differ from higher, university, education that is traditionally explored in the context of education and political behaviour. Research on vocational education has examined its comparative development over the past decades and has come to some interesting conclusions. Vocational education and training may differ in many institutional factors like incorporation into the overall education system (Dobbins and Busemeyer, 2015). For example, Greinert (2005) presented a typology of the three "classical" models of the vocational training systems. Among which, we can find the state-regulated bureaucratic model in France, the dual-corporatist model in Germany and the liberal market economy in the UK. The French system is described as crucially centralised by the state and private interests are not as central to it as the financing comes from the state. Vocational education in France is organised in full-time schools, but companies are still required to pay an apprenticeship tax (Powell et al., 2012). This is similar to Sweden were vocational education is fully integrated with the comprehensive secondary education system (Dobbins and Busemeyer, 2015). This system is in stark contrast to the Danish and German systems which are defined through the direct involvement with employers and workplace apprenticeships (Dobbins and Busemeyer, 2015). In Germany, we find extensive mediation and coordination

between the state employers and labour representatives in an autonomous system of vocational education (Powell et al., 2012). It is often referred to as a "Duales System" (dual system) as students alternate bween school- and firm-based learning. The German system is at its heart education for practical learning and skill application (Deißinger, 2001).

The German education system has not been as affected by restructurnig efforts after the Second World War, and hence we can still find more division between different groups (Brauns, 1998). Following elementary school (when students are around ten years old), pupils attend one of three school tracks. The "Hauptschule" fulfills the requirement to complete compulsory schooling and takes between five and six years. The six year track, "Realschule", aims for the intermediate general qualification while the highest qualification "Abitur" (similar to UK A-Levels) can be achieved when attending a "Gymnasium" for eight or nine years (Brauns, 1998). Due to this nature, the German vocational education system is embedded in the "institutional logic of segregation" according to Powell and Solga (2010). In this divided system, higher education "has as its dominant goal the development of personality, self-control and autonomy, that of VET [vocational education training] is to develop individual vocational competence and agency to carry out specific tasks" (Powell et al., 2012). As only the Abitur allows entry to higher education, school-leavers from the other two system systems can enter further education through the vocational system.

Germany provides two institutional forms of vocational education: the apprenticeship within the dual system and full-time school within a differentiated system of vocational schools (Brauns, 1998). The dual system is the most common and important form of vocational education though. As Brauns (1998, p.60) reports, in "1995, about 65 percent of all sixteen- to eighteen-year olds were apprentices in the dual system". This number has increased to 80 percent since. Trainees in the dual system are trained at two sites simultaneously - at the employer and at the vocational school. The individuals in the vocational system in Germany have a contract with their employers (the company that trains them) or the civil service and earn money while training. Usually, those in the

dual system attend school once or twice a week to supplement their practical skills with theoretical knowledge in the field that they are training. There is some general education included, though there is no general guideline here. In general, it is important to note that the German vocational is system is in its structure and setup very close to the workplace. This is very different from other countries (Brauns, 1998; Koch, 1994). The qualification an individual receives after attending vocational training, is recognised nationally as they receive a "Gesellenbrief" that entitles them to carry out skilled work in one of the recognised occupations (Brauns, 1998). According to Brauns (1998), "the dual system provides a high degree of homogeneity". Besides the advanced qualifications, similar to getting a Masters after the Bachelors degree, there are no hierarchies in the vocational qualifications. Further, most individuals who take the qualification test after two to three years, pass. According to Tessaring (1993), this number was at 90 percent in the 1990s.

2.3 Vocational Training and Political Behaviour

Political participation is one of the most important ways of keeping democratic institutions accountable and as famously stated by Verba, Schlozman and Brady (1995, p. 1): "Citizen participation is at the heart of democracy. Indeed, democracy is unthinkable without the ability of citizens to participate freely in the government process". Brady et al. (1999, p. 737) concluded that political participation should defined as "action by ordinary citizens directed toward influencing some political outcomes". As why, how and who participates in politics is crucial to understanding the ins and outs of democracy, it is important to understand the different forms of political participation used by citizens.

Institutionalised forms of political participation are most easily identified with electoral process (Marien, Hooghe and Quintelier, 2010). For example, institutionalised forms of political participation include party membership and contacting politicians, but the most common form of political participation around the world is voting. High turnout has been considered as a signal of motivation from the electorate to participate in politics

(Vella, 2018). There are also other ways of expressing one's opinion aside from voting. Typically, these are non-institutionalised forms of political participation such as taking part in a demonstration or a boycott. Classic ideological distinctions can form differences in the types of demonstrations (Norris, Walgrave and Van Aelst, 2005). While we see a general trend towards lower levels of voting turnout across most countries, the opposite is happening for non-institutionalised types of political participation. These non-institutionalised forms such as demonstrating or boycotting certain products have become increasingly important in the last few decades (see e.g. Norris, Walgrave and Van Aelst, 2005). Previous studies, however, have found that even non-institutionalised forms of political participation suffer from an unequal access: especially education has been found to be an important explanatory factor for participation (Marien, Hooghe and Quintelier, 2010).

Research on inequalities in democratic engagement has pointed to experiences of education as a possible cause for such inequalities (Bartels, 2008; Levinson, 2010). For example, students that have come from a vocational background are shown to have lower levels of political knowledge than students from higher education (Westholm, Lindquist and Niemi, 1990). On top of that, Quintelier (2008) shows that students in vocational education are less encouraged to participate in politics than those in more general education forms. This will obviously affect general political behaviour as shown by Van de Werfhorst et al. (2007) in a cross-national study showing that students from vocational training are less politically active than those from higher education. Further, Surridge (2016, p.161) has shown that differences in types of education on political behaviour are "strongly suggestive of a process of socialisation".

Though all these studies point to a socialisation effect of education, meaning that education will affect an individuals' political behaviour if socialised in a liberal university environment, there is no conclusive evidence to date. In a Swedish panel study, Persson (2012) found no causal influence of types of education on political participation. They argued that "results indicate that the vocactional-theoretical gap in levels of political participation is caused by factors outside of school" such as their family's socio-economic background

and political partisanship (Persson, 2012, p.212). The Swedish panel did not show effects of a socialisation model but instead argued that the results provide evidence of a "pre-adult socialisation process in which education might be a proxy" (Persson, 2012, p.214). We have previously examined some of the theories arguing that education may be a proxy effect, hiding the real effect of class or income. However, the Persson (2012) study analyses the Swedish vocational system. As pointed out earlier, vocational systems differ in far more extreme ways that higher education cross-nationally. The reason why this could impact how individuals experience their education is due to the level of institutionalisation and incorporation of the corporate element into the education. While the Swedish vocational education provides a more school-like environment, the German dual education vocational system is more focused on "learning on the job". Therefore, from a socialisation theory perspective, it is unlikely that we would see differences in vocational and higher education if both forms are integrated into the education systems in the same way. However, what about the case of Germany, where those in vocational education are not part of the general education system but trained at a firm and once or twice a week at specialised schools? In this case, we would expect the socialisation theory to show far clearer, as we can examine groups in two very separated education systems. Thus, this research expects the following for general political values, and for political participation:

Hypothesis 1:

The more educated a person is, the more likely they are to engage in forms of political participation and hold more liberal political attitudes

Hypothesis 2:

The type of education received has its own effect on political participation and attitudes

As political attitudes have been studied extensively in the context of education by Stubager (2008), we would like to focus here on the role of specifically immigration as

an attitude. As Stubager (2008) showed in his research, the socialisation theory argues that education can influence individuals towards a liberal value system. Obviously, this can be understood through various different issues however, in this case we argue that immigration is a good individual proxy issue to capture the liberalising effect of education as argued in the socialisation theory.

3 Research design

We examine data from German respondents in waves 5 to 9 of the European Social Survey (ESS) (ESS, 2020). We selected the ESS as it contains a wide range of variables relevant to our research question and in particular several different measures of education. We do not use waves prior to wave 5 solely due to the fact that it does not contain Germany-specific measures of education (see below). The resultant dataset contains 14244 respondents from 2010 to 2018 inclusive, with each wave being collected every second year. Our analysis went through three stages. First, we develop a confirmatory factor analysis model to reduce a set of indicator variables to four latent variables measuring concepts which the literature has suggested education is a determinant of. From here, we discuss the available options for operationalising differing conceptualisations of education available in the ESS. Once our dependent and main independent variables are established, we discuss relevant control variables. We run multilevel models with random effects for years for each of the dependent variables.

3.1 Dependent variables

To operationalise our core dependent variables of political participation and political values, the ESS contains several relevant variables. For the former, it contains 8 binary participation indicators. These are voter turnout, whether the respondent contacted a politician, whether the respondent had worked for a political party, whether the respondent had worked for another organisation or association, whether the respondent had worn or displayed a campaign badge or sticker, whether the respondent had signed a petition,

whether the respondent had taken part in a lawful public demonstration, and whether the respondent had boycotted certain products. In all cases except for voter turnout (which corresponds to the last national election), the variables measured individual participation within the last 12 months.

Not all kinds of participation are the same. Broadly, we conceptualise the first four indicators as capturing forms of *institutional* participation; and the latter four as capturing forms of *non-institutional participation*.

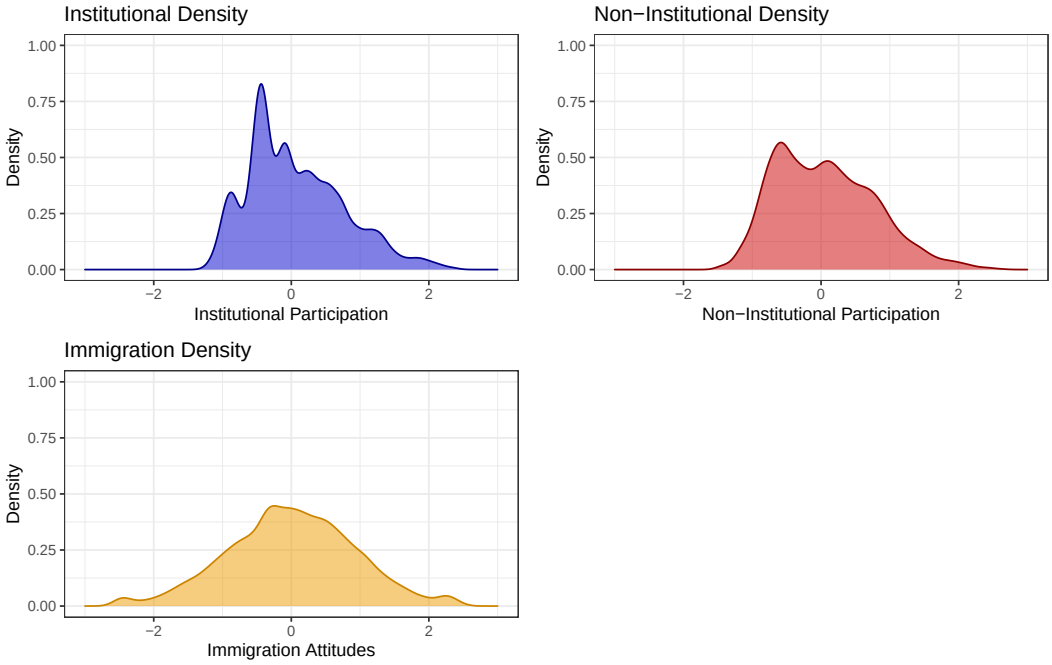
Given much has been made of the liberalising effect of education, we also wish to to obtain a relevant measure of political attitudes. We consider immigration attitudes to be a good proxy for this aspect of the effect of education. While in total the ESS contains six indicators relating to immigration, we choose the three perceptual scales. These measure whether the respondent believes immigration has been good or bad for the economy, whether it has undermined or enriched the cultural life of the country, and whether it has made the country a better or worse place to live. For these scales respondents give a 0 to 10 placement of their position between the two relevant poles.

Given the large number of indicator variables (11) relative to the lower dimensionality (3) in which we are substantively interested, we utilise a confirmatory factor analysis (CFA) model to extract the underlying common variation from these variables. We utilise the lavaan R package (Rosseel, 2012) to extract the common underlying variation in these indicators. We treat our indicators as ordinal and thus use the Weighted Least Squares Mean and Variance adjusted (WLSMV) estimator. WLS is lavaan's default option for categorical data and is useful as it does not assume a normal distribution for the data. Moreover, WLSMV is considered the best option for categorical data in a CFA context (Brown, 2015). The scales of the latent variables are set by constraining the SD to 1 and the means to 0.

We therefore utilise three latent variables in our paper. These are:

1. Institutional Participation

Figure 1: Overview of dependent variables



2. Non-institutional Participation

3. Immigration Attitudes

They can be conceptualised as the *common variation* in the relevant indicator variables. The unique components of these variables are not considered in the main results of the paper. For robustness, regressions on each of the original indicators are included in the appendix. After performing the CFA, the data are reduced to 13632 observations due to case-wise deletion. Factor scores were then calculated on the basis of these results and subsequently used as our dependent variables. The factor loadings and fit statistics from the CFA are reported in the appendix in table A1.

Figure 1 shows the distribution of our three dependent variables. The distributions of both latent tendencies towards participation are right-skewed to some degree, suggesting that it is a smaller number of respondents who fully engage in all forms of political participation. The latent immigration attitudes by contrast are more symmetric, with a small number of respondents with extreme views on either end of the scale.

3.2 Education

The ESS contains many potentially useful measures of education. All waves of the ESS include the International Standard Classification of Education (ISCED) which offers a categorical representation of one's level of education, ranging from 0 to 8. As measured in the ESS, the first category is collapsed to 0-1 representing those with primary or less than primary education and the final category in the ESS is collapsed to 5-6, representing those with a Bachelor's or equivalent level of education. (there do not appear to be any respondents with 7 or 8 recorded). Of potentially more interest however are the country-specific variables measuring education. For Germany this is in the form of three specific variables, the first asking for the highest level of school education, the second for the highest level of vocational education, and the third for the highest level of higher education. These allow us to record who *has had* a specific type of education, *regardless* of what their highest level of education is. In other words, from this data we can generate a set of two binary variables, each measuring whether a respondent has had a specific *type* of education after school. The first measures whether an respondent has a higher education qualification, the second measures whether a respondent has a vocational qualification. Given the nature of the German educational system, there is substantial overlap between the two. Table 1 shows this overlap in the sample:

Table 1: Education Type

	No HE	Has HE
No Vocational	1443	2053
Has Vocational	4374	2130

Given our emphasis on the role of education *type* alongside the role of the extent or *level* of one's education, it is worth discussing the difficulties involved in disentangling these aspects of education. By definition, those with a higher education qualification belong to the highest category of the ISCED (as measured in the ESS). Some holding a vocational qualification belong to this category, but many do not. Those who did not attain a higher or vocational qualification (but did obtain other pre-tertiary qualifications) belong to the lowest three categories. Table 2 shows the different ISCED levels as measured in the ESS

assigned to respondents holding none, one, or both of the two education types outlined above:

Table 2: Education Type and Levels

	ISCED 0-1	ISCED 2	ISCED 3	ISCED 4	ISCED 5-6
None	150	448	590	0	0
Vocational	0	43	1929	1077	615
HE	0	0	0	0	1720
Both	0	0	0	0	1781

Disentangling the *level* of one's education from the *type* of one's education is then a necessarily difficult task. This necessarily represents a potential threat from collinearity (see discussion below in the results section along with relevant results in the appendix). Even if collinearity is not present, it will necessarily remain difficult to fully disentangle these two aspects of education. However, thanks to the specific nature of the German education system we are able to somewhat disentangle these variables by merit of those individuals who possess both kinds of qualification. Given these individuals like others who possess a higher education qualification are by definition also at the highest level of education as measured in the ESS, these individuals along with those holding an ISCED 5-6 vocational qualification represent a group whereby the only source of variation in educational experience is type, rather than level.

We therefore present two sets of results - one set with the full sample, and one set with only those respondents in the ISCED 5-6 category. The latter set of results serves to corroborate our findings in the former despite the high level of collinearity present. The former regression includes education level captured as ISCED categories as our measure, the latter does not as the sub-sample contains no variation in education level.

A final decision remains to be made in terms of the exact representation of education type. One option is to include both binary variables and their interaction. The combined socialising effect of possessing both vocational and higher education qualifications is thus captured in the sum of both estimated coefficients and the coefficient for their interaction term. The other option is to create a new nominal variable, containing four categories as in table 2 - with the combined effect being captured in its own coefficient. We opt for

the latter for the sake of ease of interpretation, but include results for the former in the appendix and discuss them in our results section.

3.3 Control Variables

By its nature, education has a relationship with many other relevant predictors of our dependent variables. We include the ESS' measure of household income (10 categories capturing income deciles) along with the European Socio-Economic Classification (Harrison and Rose, 2006; Rose and Harrison, 2007) (9 categories) to capture the socio-economic characteristics of respondents. While past research has emphasised direct effects (and in particular socialisation) in terms of education's role, it nonetheless remains true that income and social class are key confounders of education and thus vitally important to include. We control for gender and age as two relevant demographic confounders of education. Age in particular is important, given generational differences both in educational attainment and in the dependent variables presented in this paper. Finally, we further control for trade union membership, as those with greater education may be more likely to join a trade union. Finally, we include random effects for years to account for potential clustering in the responses along temporal lines.

4 Analysis

Table 3 presents the primary regression results from the models described above. Models were estimated using version 1.1-26 of the lme4 R package (Bates et al., 2014) in R version 4.03. The tables (along with regression tables in the appendix) were produced with the texreg R package (Leifeld, 2013). Each of the three models corresponds to one of our latent dependent variables. The educational results along with the intercept are presented, controls and year random effects were included in every case. After casewise deletion for missing data, 6783 individuals remain in the dataset. The table shows coefficients for our education type variable and for our education level variable. The reference category for the education type variable is someone who possess neither a

vocational nor a higher educational qualification (but not necessarily no education). The reference category for education level is ISCED 0-1. In all three models the table shows that vocational education and possessing both kinds of education has a negative effect on all three depend variables and is significant. Furthermore, in all three models higher levels of education has a positive effect on the dependent variables and significant. The coefficients for higher education and ISCED 2 are however not significant.

Table 3: Results

	Institutional	Non-Institutional	Immigration
Intercept	-0.25^{*}	-0.00	-0.02
	(0.10)	(0.10)	(0.14)
Has Vocational	-0.18^{***}	-0.30^{***}	-0.49^{***}
	(0.04)	(0.04)	(0.05)
Has HE	-0.08	-0.07	-0.04
	(0.05)	(0.05)	(0.07)
Has Both	-0.12^{*}	-0.16^{**}	-0.23^{***}
	(0.05)	(0.05)	(0.07)
ISCED 2	0.08	0.09	0.20
	(0.10)	(0.10)	(0.13)
ISCED 3	0.37^{***}	0.41^{***}	0.54^{***}
	(0.10)	(0.10)	(0.13)
ISCED 4	0.56^{***}	0.67^{***}	0.80^{***}
	(0.10)	(0.11)	(0.13)
ISCED 5-6	0.52^{***}	0.57^{***}	0.63^{***}
	(0.10)	(0.11)	(0.14)
Controls	✓	✓	✓
Year Random Effects	✓	✓	✓
AIC	13773.77	14254.68	17432.98
BIC	13978.43	14459.34	17637.65
Log Likelihood	-6856.88	-7097.34	-8686.49
N. Observations	6783	6783	6783
N. Years	5	5	5

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Some caution is required in interpreting these results. As discussed above, no respondents possess ISCED 5-6 without having one or both of vocational or higher education. ISCED 4 only exists for those with vocational education (and thus should not be interpreted on its own but also with the coefficient for possessing vocational education in mind), while the lower categories exist only for those without higher education (but perhaps with vocational education). On this basis we should not in particular be quick to draw

conclusions from the apparent non-significance of possessing higher education. These results in way do suggest a difference for those possessing a higher education, as a respondent with this will be at ISCED 5-6 while other respondents at the same level will also see one of the vocational or both coefficients subtracted.

With these considerations for interpretation in mind, we are nonetheless able to conclude in favour of our hypotheses on the basis of these results. The least ambiguous conclusion is in favour of our first hypothesis, whether higher levels of education correspond to increasingly large coefficients (especially once one recalls that ISCED 4 exists only for respondents with vocational education). Vocational education has a negative effect on all three dependent variables, while possessing both forms of education similarly has a negative - albeit smaller - effect (though CIs overlap to a degree for some of the models).

4.1 Subsample Results

Given the difficulties in fully interpreting the results due to the overlap between education level and type, we present here some further results from the subsample of those belonging to the ISCED 5-6 category. Since there is no variation in education level for this group, it follows that there can only be variation in education type. As the only education level with three different kinds of education type (if we consider those with both as their own specific type), it is perhaps the most interesting category to examine. Table 4 shows the results from these regressions. Note that the reference category for education type is those with vocational education but not higher education.

The results from this table corroborate our results in table 3. While we cannot discuss hypothesis 1 in light of this table, it offers further confirmation that education type does in fact play a role in determining participation and liberal attitudes. It is however clear from the standard errors alone that we cannot necessarily differentiate those with both forms of education and those with only higher education despite the difference in point estimates. We therefore recommend further research aimed at better disentangling these

Table 4: Subsample Results

	Institutional	Non-Institutional	Immigration
Intercept	0.09	0.28^{**}	0.26^{*}
	(0.09)	(0.09)	(0.11)
Has HE	0.11^{**}	0.23^{***}	0.42^{***}
	(0.04)	(0.04)	(0.05)
Has Both	0.08^{*}	0.14^{***}	0.25^{***}
	(0.04)	(0.04)	(0.05)
Controls	✓	✓	✓
Year Random Effects	✓	✓	✓
AIC	7421.43	7536.50	8873.39
BIC	7575.53	7690.59	9027.49
Log Likelihood	−3685.71	−3743.25	−4411.70
N. Observations	3512	3512	3512
N. Years	5	5	5

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

two aspects of education so as to discover whether there is in fact evidence to differentiate these two groups.

4.2 Robustness

To demonstrate that our results are robust to the methodological decisions made in this paper, we include several further results in the appendix, along with some more detailed results for the general interest of the reader. First, in table A5 we report results operationalising our key concept of interest as two binary variables and their interaction instead of as a single nominal variable. The results from this table broadly converge with our results above. Some caution in interpreting the alternate coefficients is required, as those with both kinds require all three coefficients (and their CIs) to be added to allow interpretation. The positive effect of the interaction is then not a divergence, but a consequence of this fact.

To ensure that our results from table 4 are not solely a product of excluding too many respondents with only vocational education, in table A6 we present results where respondents from both the ISCED 4 and ISCED 5-6 categories are included. These results broadly converge, but with the notable exception that the 'Has Both' category changes in its behaviour and interpretation. For institutional participation it cannot be distinguished

from either the baseline or the 'Has HE' category, while for immigration attitudes it becomes distinguishable from both. This check serves to reinforce the need for further research in attempting to disentangle these aspects of education.

To verify that our decision to operationalise the extent of one's education in terms of education level rather than years of educational attainment, table A7 presents results using educational years in place of education level. Three models are presented using educational years alone, alongside a further three using educational years and educational years squared to protect against any issues of functional form. Results for vocational education converge for non-institutional participation and immigration attitudes, but not for participation. Results for the 'both' category converge only for immigration attitudes. The education years broadly converge in terms of our interpretation of results for hypothesis 1. Taken together these results suggest that there is some potential sensitivity to how the extent of one's education is conceptualised, but despite this there remains some convergence in the results overall. This results necessitates a degree of caution in interpreting the results of this paper.

To examine whether our decision to reduce the dimensionality and focus on the common variation in our results has obscured any potentially interesting differences between indicators, we run 11 regressions on the original indicators (but only from the 13632 observations, rather than allowing respondents who were not in the data used in the CFA to enter the models). For the binary indicators, a logit model is run, while the three immigration indicators are presented as continuous. The results are in tables A8 through to and including A10. For the institutional participation indicators in table A8, results for the most part do not converge. The turnout binary is related only to education level which in turn is not related to the other three. Results from table A9 for non-institutional participation are more consistent - for all but the act of Boycotting products vocational education has a negative relationship. Both HE and the 'both' category have a negative relationship with displaying a badge but not with any of the others. Education level appears to mainly have a relationship with signing petitions and joining demonstrations. By contrast, results from table A10 for the immigration indicators are fully consistent

with the main set of results of the paper. Where results do differ here, it may be in part because binary indicators by their nature compresses the latent variation (0 vs 1 instead of a continuous variable) and in part because the unique components of these acts have differing relationships with education (or that there may simply be too much noise in the unique components). These differences are thus reported more for the purposes of transparency and reader's interest rather than due to any greater concerns they may give rise to.

5 Conclusion

This research takes an in-depth look into the effect of vocational education has on political behaviour, more specifically political participation choices and immigration attitudes. As extensive research has been conducted on the effect of education in general on values and participation, studying the differences in types is crucial to understanding the reason why education is affecting political behaviour. In this research, we argue that following the socialisation theory, vocational education should differ in its effect on political behaviour from higher education. Through not only looking at voter turnout but a more detailed analysis of institutional and non-institutional participation, this research is paying attention, and drawing a difference in behaviours, from these forms of political participation. This is done as a lot of the literature has argued that political mobilization may differ dependent on the form of political participation examined. Further, as political behaviour can also be understood through attitudes and not just participation in democracy, this paper examines the well know connection between liberal attitudes and education through examining attitudes towards immigration.

In order to do this, we make use of the ESS waves 5 to 9 of all German respondents. We focus on Germany in this paper for theoretical reasons as the German vocational system is highly institutionalised and takes place in a very different environment to the higher education system. As it is uniquely tied to the corporate sector and training takes place at the respective firm, the socialisation theory argues that this environment will

affect the individual in a very different way to the liberalising effect exposed to at the university environment. We find substantial evidence in favour of our hypotheses. Our first hypotheses states that the more educated a person is, the more likely they are to engage in forms of political participation and hold more liberal political attitudes. This is a general observation that we find evidence to support. Our main hypothesis, Hypothesis 2, stated that the effect of education on political participation and attitudes depends on the type of education an individual has received. This means that although education in general can affect political attitudes and participation, the type of education (higher, vocational, none or both) will show differences to what extent H1 holds. We find that vocational education has a negative effect on immigration attitudes, institutional and non-institutional political participation. When an individual possess both, vocational and higher education, this effect points in a similar direction but is smaller. From the subsample results, we can provide some understanding that individuals with higher education are positively and significantly more likely to participate in institutional and non-institutional forms of political participation and also have more liberal views on immigration in comparison to individuals who have a vocational education background.

This research is important as our overall understanding of education and its wider effects needs to include all types of education. Further, this paper adds to a rich literature, as vocational education has been observed mainly in Scandinavian countries where the vocational education system differs from the German execution. Moreover, this research is important as it shows the socialisation theory from a new perspective while providing further evidence in its favour. Though understanding what impacts our political choices, especially at formative years, is a very complex issue to disentangle, this paper is contributes to the literature through providing a new perspective on how socialisation theory may work outside of the university environment. On top of that, this research not only examines how vocational education may work on different forms of political education but also examines attitudes to fully understand the relationship between political behaviour and vocational education. Future research should disentangle types and levels of education in order to give an even clearer picture.

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A Appendix

Table A.1: CFA Results

	Estimate	Standard Error	Z	P-value
		Factor Loadings		
Institutional Participation				
Turnout	0.41***	0.02	24.61	.000
Contacted Politician	0.72***	0.01	51.38	.000
Worked for Party	0.80***	0.02	45.74	.000
Worked for Org.	0.67***	0.01	49.48	.000
Non-Institutional Participation				
Displayed Badge	0.73***	0.02	42.82	.000
Signed Petition	0.68***	0.01	54.43	.000
Joined Demo	0.67***	0.01	45.08	.000
Boycotted Products	0.57***	0.01	43.85	.000
Immigration				
Immigration Econ	0.73***	0.00	174.58	.000
Immigration Culture	0.84***	0.00	238.32	.000
Immigration Country	0.88***	0.00	267.52	.000
		Fit Indices		
NPAR	52.00			
χ^2(df)	587.62			
DF	41.00			
PVALUE	0.00			
CFI	0.99			
RMSEA	0.03			
Scaled χ^2(df)	705.56(41)***			.000

$^{+}$Fixed parameter

* p<0.05, ** p<0.01, ***p<0.001

Table A.2: Results

	Institutional	Non-Institutional	Immigration
Intercept	-0.25^{*}	-0.00	-0.02
	(0.10)	(0.10)	(0.14)
Has Vocational	-0.18^{***}	-0.30^{***}	-0.49^{***}
	(0.04)	(0.04)	(0.05)
Has HE	-0.08	-0.07	-0.04
	(0.05)	(0.05)	(0.07)
Has HE × Has Vocational	0.15^{**}	0.20^{***}	0.30^{***}
	(0.05)	(0.05)	(0.06)
ISCED 2	0.08	0.09	0.20
	(0.10)	(0.10)	(0.13)
ISCED 3	0.37^{***}	0.41^{***}	0.54^{***}
	(0.10)	(0.10)	(0.13)
ISCED 4	0.56^{***}	0.67^{***}	0.80^{***}
	(0.10)	(0.11)	(0.13)
ISCED 5-6	0.52^{***}	0.57^{***}	0.63^{***}
	(0.10)	(0.11)	(0.14)
Controls	✓	✓	✓
Year Random Effects	✓	✓	✓
AIC	13773.77	14254.68	17432.98
BIC	13978.43	14459.34	17637.65
Log Likelihood	−6856.88	−7097.34	−8686.49
N. Observations	6783	6783	6783
N. Years	5	5	5

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table A.3: Subsample Results

	Institutional	Non-Institutional	Immigration
Intercept	0.09	0.31^{***}	0.31^{**}
	(0.07)	(0.07)	(0.10)
Has HE	0.09^{**}	0.18^{***}	0.34^{***}
	(0.03)	(0.03)	(0.04)
Has Both	0.05	0.08^{**}	0.17^{***}
	(0.03)	(0.03)	(0.03)
Controls	✓	✓	✓
Year Random Effects	✓	✓	✓
AIC	9305.20	9520.57	11154.29
BIC	9465.14	9680.51	11314.22
Log Likelihood	−4627.60	−4735.28	−5552.14
N. Observations	4436	4436	4436
N. Years	5	5	5

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table A.4: Results

	Years of Education			Years of Ed + Years of Ed^2		
	Institutional	Non-Institutional	Immigration	Institutional	Non-Institutional	Immigration
Intercept	-0.42^{***}	-0.29^{***}	-0.15	-0.77^{***}	-0.48^{***}	0.20
	(0.07)	(0.07)	(0.10)	(0.13)	(0.14)	(0.18)
Has Vocational	-0.00	-0.09^{**}	-0.27^{***}	-0.02	-0.10^{**}	-0.25^{***}
	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.04)
Has HE	0.03	0.02	-0.00	0.02	0.01	0.01
	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.05)
Has Both	0.01	-0.06	-0.16^{**}	-0.00	-0.06	-0.14^{**}
	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.05)
Years of Education	0.03^{***}	0.04^{***}	0.04^{***}	0.08^{***}	0.07^{***}	-0.01
	(0.00)	(0.00)	(0.00)	(0.01)	(0.02)	(0.02)
Years of Education^2				-0.00^{**}	-0.00	0.00^{*}
				(0.00)	(0.00)	(0.00)
Controls	✓	✓	✓	✓	✓	✓
Year Random Effects	✓	✓	✓	✓	✓	✓
AIC	13769.89	14204.93	17420.73	13775.76	14217.82	17430.06
BIC	13954.12	14389.16	17604.96	13966.82	14408.87	17621.11
Log Likelihood	-6857.94	-7075.47	-8683.37	-6859.88	-7080.91	-8687.03
N. Observations	6791	6791	6791	6791	6791	6791
N. Years	5	5	5	5	5	5

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table A.5: Results

	Turnout	Contacted Politician	Worked for Party	Worked for Organisation
Intercept	-1.80^{***}	-2.37^{***}	-4.23^{***}	-1.39^{***}
	(0.38)	(0.51)	(1.07)	(0.42)
Has Vocational	-0.12	-0.00	-1.10^{***}	-0.18
	(0.15)	(0.19)	(0.30)	(0.14)
Has HE	-0.12	-0.15	-1.07^{**}	-0.01
	(0.21)	(0.23)	(0.35)	(0.17)
Has Both	0.09	-0.07	-1.10^{**}	-0.08
	(0.22)	(0.23)	(0.35)	(0.17)
ISCED 2	0.47	-0.31	0.17	0.27
	(0.35)	(0.52)	(1.09)	(0.42)
ISCED 3	1.73^{***}	-0.07	0.89	0.59
	(0.35)	(0.50)	(1.04)	(0.41)
ISCED 4	2.08^{***}	0.40	1.51	0.76
	(0.38)	(0.52)	(1.07)	(0.42)
ISCED 5-6	1.99^{***}	0.42	1.67	0.68
	(0.38)	(0.52)	(1.07)	(0.42)
Controls	✓	✓	✓	✓
Year Random Effects	✓	✓	✓	✓
AIC	5391.70	6560.50	2889.00	8500.72
BIC	5589.54	6758.34	3086.84	8698.56
Log Likelihood	-2666.85	-3251.25	-1415.50	-4221.36
N. Observations	6783	6783	6783	6783
N. Years	5	5	5	5

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table A.6: Results

	Displayed Badge	Signed Petition	Joined Demonstration	Boycotted Products
Intercept	-1.26^{**}	-1.23^{**}	-1.49^{**}	-0.64
	(0.48)	(0.41)	(0.56)	(0.35)
Has Vocational	-1.26^{***}	-0.41^{**}	-0.98^{***}	-0.08
	(0.24)	(0.13)	(0.19)	(0.14)
Has HE	-0.82^{**}	-0.09	-0.14	0.11
	(0.31)	(0.17)	(0.25)	(0.17)
Has Both	-1.16^{***}	-0.25	-0.34	-0.00
	(0.32)	(0.17)	(0.25)	(0.17)
ISCED 2	-0.90	0.75	0.29	-0.07
	(0.50)	(0.41)	(0.57)	(0.35)
ISCED 3	-0.26	1.21^{**}	1.04	0.22
	(0.45)	(0.40)	(0.54)	(0.34)
ISCED 4	0.54	1.69^{***}	1.65^{**}	0.73^{*}
	(0.50)	(0.41)	(0.57)	(0.35)
ISCED 5-6	0.37	1.54^{***}	1.29^{*}	0.60
	(0.51)	(0.42)	(0.58)	(0.36)
Controls	✓	✓	✓	✓
Year Random Effects	✓	✓	✓	✓
AIC	3296.42	8920.73	4842.82	8883.00
BIC	3494.26	9118.57	5040.66	9080.85
Log Likelihood	-1619.21	-4431.37	-2392.41	-4412.50
N. Observations	6783	6783	6783	6783
N. Years	5	5	5	5

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table A.7: Results

	Immigration Economy	Immigration Culture	Immigration Country
Intercept	5.72^{***}	5.72^{***}	5.26^{***}
	(0.34)	(0.36)	(0.33)
Has Vocational	-0.85^{***}	-1.33^{***}	-1.02^{***}
	(0.14)	(0.15)	(0.13)
Has HE	0.08	-0.11	-0.21
	(0.17)	(0.18)	(0.17)
Has Both	-0.36^{*}	-0.53^{**}	-0.59^{***}
	(0.17)	(0.18)	(0.17)
ISCED 2	0.40	0.49	0.46
	(0.32)	(0.34)	(0.32)
ISCED 3	1.00^{**}	1.48^{***}	1.08^{***}
	(0.32)	(0.34)	(0.31)
ISCED 4	1.42^{***}	2.21^{***}	1.64^{***}
	(0.33)	(0.36)	(0.33)
ISCED 5-6	1.12^{***}	1.63^{***}	1.37^{***}
	(0.34)	(0.36)	(0.33)
Controls	✓	✓	✓
Year Random Effects	✓	✓	✓
AIC	29695.25	30632.11	29581.98
BIC	29899.91	30836.77	29786.64
Log Likelihood	-14817.62	-15286.05	-14760.99
N. Observations	6783	6783	6783
N. Years	5	5	5

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$