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Socioeconomic differences in electoral participation

Insights from the Finnish administrative registers

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Abstract

Those with advantaged socioeconomic positions – that is, individuals with high educational qualifications, professional or managerial occupations and a high level of income – are the most likely to vote in elections. Finland provides researchers with the rare privilege of studying individual-level determinants of voter turnout in an exceptionally reliable manner by utilizing register-based data. This dissertation includes four studies on socioeconomic differences in voter turnout, primarily from the 1999, 2012 and 2015 elections, conducted by exploiting this great resource.

Despite socioeconomic differences in voter turnout being a classical topic in electoral studies, recent decades have seen frequent claims of the political decline, or even death, of social class. This dissertation joins the studies demonstrating that this is not the case regarding electoral participation. On the contrary, a polarization of socioeconomic differences in turnout has occurred during the last few decades. Moreover, linking survey data to registers revealed that, due to social desirability bias and the self-selection of survey respondents, true socioeconomic differences are even larger than those suggested by survey estimates. These results imply that socioeconomic inequality in electoral participation is a more pressing social problem than conventionally acknowledged, even among experts on the subject.

The empirical analyses also assess some of the mechanisms contributing to the socioeconomic gap in turnout. Income explained a substantial part of the occupational social-class differences in electoral participation whereas the health differences contributed only weakly to this gap. However, among those with most serious health problems, no social class gradient in turnout was observed. The role of intergenerational transmission was of particular importance in explaining electoral participation. Among the observed parental factors, parental education social class and income were together roughly as important as parental voting in a single election in explaining this intergenerational association. Mother's and father's contributions were roughly equal, mother's factors perhaps slightly more pronounced. Furthermore, in addition to studying the factors that create differences, it is also important to identify the factors that suppress them. Social mobility during an individual's life-course was identified as one mechanism that constrains turnout inequality between socioeconomic groups.

The dissertation concludes by discussing the implications of the results at a more theoretical level through four themes. The first theme is the importance of accurate descriptive research, which is necessary and also often sufficient to answer many important questions regarding the topic. The second is the significance socioeconomic position as a conceptual tool. It is a multi-dimensional construct, but at the same time constitutes a coherent unit that is a central component in the social structure of modern societies. The third is the

continued relevance of occupational social class, which should be maintained (or re-adopted) in basic analytical repertoire also when explaining electoral participation. The fourth theme is that voting in elections is simultaneously both a poignantly individualistic and social act. These properties, in addition to its concreteness, measurability, and practical social relevance, make electoral participation a particularly thrilling sociological topic.

Tiivistelmä

Hyvä sosioekonominen asema – korkea koulutustaso, ylempi toimihenkilöasema ja suuret tulot – on yhteydessä korkeampaan äänestysaktiivisuuteen vaaleissa. Suomessa on tilaisuus tutkia äänestämistä poikkeuksellisen tarkasti rekisteripohjaisten aineistojen avulla. Tämä väitöstutkimus sisältää neljä osatutkimusta, jotka hyödyntävät rekisteriaineistojen mahdollisuuksia sosioekonomisten äänestysaktiivisuuserojen tutkimuksessa, pääosin 1999 ja 2015 eduskunta- sekä 2012 kuntavaaleissa.

Vaikka sosioekonomiset erot äänestämisessä ovat klassinen tutkimuskohde, viime vuosikymmeninä tutkimuskirjallisuudessa on myös keskusteltu yhteiskuntaluokan poliittisen merkityksen vähenemisestä tai jopa katoamisesta. Väite on epätosi, kun selitetään äänestysaktiivisuutta. Päinvastoin, sosioekonomiset erot ovat 2010-luvun Suomessa jopa hälyttävän korkealla tasolla, ja ne ovat myös kärjistyneet viime vuosikymmenien aikana. Rekisteriaineistoihin yhdistetyn kyselytutkimuksen perusteella tehty analyysi osoitti myös, että aikaisempi tutkimuskirjallisuus on sosiaalisen suotavuuden ja kyselyvastaajien valikoitumisen johdosta tuottanut aliarvioita äänestysaktiivisuuden sosioekonomisten erojen suuruudesta. Tulos viittaa siihen, että äänestysaktiivsuuden eriarvoisuus on polttavampi yhteiskunnallinen ongelma kuin mitä on aiemmin ymmärretty.

Väitöstutkimuksessa arvoitiin myös joitakin sosioekonomisia eroja selittäviä mekanismeja. Tulot selittivät osan äänestämisen ammattiluokkaeroista mutta luokkien välisten terveyserojen kontribuutio oli analyysin mukaan vähäinen. Toisaalta kaikkein vakavimmista terveysongelmista kärsivien keskuudessa ammattiluokittaisia äänestyseroja ei havaita. Lisäksi tutkittiin ylisukupolvisen siirtymän merkitystä äänestysaktiivisuuden selittäjänä, ja kokonaisuudessaan se todettiin suureksi. Vanhemman koulutus, ammattiluokka ja tulot ovat yhdessä yhtä vahva yksilön äänestämistä selittävä tekijä kuin vanhemman äänestäminen yksittäisissä vaaleissa. Isän ja äidin merkitys havaittiin kutakuinkin yhtä suureksi, äidin ehkä aavistuksen korostuneemmaksi. Vaikka tutkimuskirjallisuus usein keskittyy eroja tuottaviin mekanismeihin, myös niitä kaventavien mekanismien relevanssi on hyvä huomioida. Yksilön työuran aikana tapahtuva sosiaalinen liikkuvuus havaittiin yhdeksi tekijäksi, joka tasoittaa äänestysaktiivisuuden ammatti- ja tuloluokittaisia eroja.

Lopuksi tulosten perusteella käsitellään neljää teoreettisemman tason teemaa. Näitä ovat kuvailevien tulosten tärkeys, ja tilastollisten mallien ylivakioinnin välttäminen. Kuvaileva analyysi on paitsi välttämätöntä usein myös itsessään riittävää (mahdollisesti yhdistettynä muiden vasteiden analyysistä saatuihin tietoihin) moneen aihetta koskevan keskeisen kysymyksen selvittämiseksi. Toinen teema on sosioekonomisen aseman käsitteen relevanssi. Se on paitsi moniulotteinen konstruktio, sen komponentit muodostavat myös järkevän yhtenäisen – ja yhteiskunnan rakenteen kannalta keskeisen – kokonaisuuden.

Kolmanneksi ammattiasemaperustainen yhteiskuntaluokka on tekijä, jonka merkitys ei ole vähentymässä, vaan se on syytä säilyttää äänestämisen selittäjien perusvalikoimassa. Neljänneksi pohditaan äänestämisen luonnetta. Se on yhtä aikaa sekä erittäin individualistinen että sosiaalinen teko. Lisäksi se on selkeästi määriteltävissä oleva teko, jolla on myös konkreettinen yhteiskunnallinen vaikutus. Nämä ominaisuudet tekevät siitä sosiologisesti erityisen mielenkiintoisen ilmiön.

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List of original publications

This thesis is based on the following publications:

I Lahtinen, Hannu, Pekka Martikainen, Mikko Mattila, Hanna Wass & Lauri Rapeli (2019). Do surveys overestimate or underestimate socioeconomic differences in voter turnout? Evidence from administrative registers. *Public Opinion Quarterly,* nfz022 (online pre-print version).

II Lahtinen, Hannu, Mikko Mattila, Hanna Wass & Pekka Martikainen (2017). Explaining social class inequality in voter turnout: The contribution of income and health. *Scandinavian Political Studies*, 40(4), 388–410.

III Lahtinen, Hannu, Jani Erola & Hanna Wass (2019). Sibling similarities and the importance of parental socioeconomic position in electoral participation. *Social Forces*, soz010 (online pre-print version).

IV Lahtinen, Hannu, Hanna Wass & Heikki Hiilamo (2017). Gradient constraint in voting: The effect of intra-generational social class and income mobility on turnout. *Electoral Studies*, 45(1), 14–23.

The studies are referred to in the text by their respective Roman numerals. Sub-studies I, II and IV are produced with the kind permission of the copyright holders in the printed version of this thesis. Sub-study III is published under an open access (CC BY-NC) licence.

1 Introduction

According to Lijphart (1997), historical objections to universal suffrage were frequently made on the basis that it would grant the uneducated masses unreasonable power over more civilized but less numerous elites. There were even concerns that the intellectual elites would refrain from voting at all, as their vote would be "doomed to drown among the votes of the great crowd" (Moreay 1896, as cited in Tingsten 1937, 184). Relatively soon it became evident that such assumptions were false, as the opposite was demonstrated by a number of empirical studies conducted in the 1920s and 1930s (Arneson 1925; Gosnell 1926, 1930; for reviews, Lijphart 1997; Tingsten 1937). In the 1930s, Tingsten was already able to conduct a review of the studies of socioeconomic differences in electoral participation and concluded, "as a rule the political interest grows with rising social standard" (Tingsten 1937, 230). In Finland, these gradients were empirically discovered in the mid-fifties (Allardt 1956; Allardt and Bruun 1956). During the forthcoming decades, such a pattern in voting was demonstrated over and over again with various indicators of socioeconomic position (e.g. T. Martikainen and Yrjönen 1991; T. Martikainen and Wass 2002; P. Martikainen, Martikainen, and Wass 2005), as well as in other forms of political activities and engagement (T. Martikainen 1973; Matheson 1979; Valkonen 1969). Although the extent and importance of these differences in political participation have sometimes been called into question[1], Tingsten's generalization has been shown to be one of the most robust patterns and persistent problems in electoral studies.

This dissertation assesses socioeconomic differences – that is to say, those differences related to individuals' educational level, occupational social class position and income – in voter turnout. Finland, the country-context of the study, provides a rare opportunity to study voter turnout in an exceptionally reliable manner by utilizing register-based data. The first set of national individual-level register-based data in Finland – and possibly also in the whole world – was collected from the 1968 municipal elections by Martikainen and Sänkiaho (1969) and including four percent of the electorate. After that, datasets of comparable, or slightly larger, size were also compiled from the 1975 (n: 167 287) and 1979 (n: 153 355) parliamentary elections (T. Martikainen 1978; T. Martikainen and Yrjönen 1991; T. Martikainen and Wass 2002).[2] Datasets containing the full electorate were collected in 1987 and 1999, and from the

[1] There are also some exceptions to the socioeconomic gradient in voting in established democracies, such as no income differences in the 1987 UK elections (Birch, Glenn, and Lodge 2013), and in 2014 only the poor voted less in India, whereas no differences where observed between other income groups (Sridharan 2014).

[2] However, the range of covariates that could be used with the pre 1987-datasets seems to be limited to age, gender and language.

2012 elections onward, information on electoral participation has been available from those electoral wards that employ electronic voting list administration. This dissertation primarily utilizes this great resource from the 1999 elections onwards, where an individual's electoral participation is linked to other information obtained from various administrative registers.

The four sub-studies of this dissertation assess the extent and nature of socioeconomic stratification in electoral participation in contemporary Finland. This inquiry also includes a methodological aspect, as different results between measurement strategies, namely between survey and register-based data, are also evaluated. In contrast to previous studies assessing the topic, this analysis enjoys the rare opportunity to assess simultaneously the contribution of biases related to both the self-selection of respondents and social desirability. Moreover, the interrelationships between different socioeconomic measures are investigated in predicting voting in detail. In addition, health is assessed in a previously unexamined role in turnout studies, namely as a potential resource for accounting for socioeconomic differences in voter turnout. Furthermore, the dissertation assesses the central role of intergenerational transmission in reproducing socioeconomic differences in electoral participation with a novel adaptation of sibling design in the context of turnout studies. Finally, this dissertation also provides apparently the first test of the consequences of changes in an individual's social position over their career for electoral participation patterns.

2 What are socioeconomic position and electoral participation

This section discusses the main concepts of this dissertation. Among the two main concepts, namely socioeconomic position and electoral participation, socioeconomic position is arguably more abstract and less straightforward to define. To demonstrate the relevance of the concept, the question should first be approached by taking one step back to the definition of arguably the most fundamental unit of social scientific inquiry, namely *society*. Here, I follow Allardt (1988: chapter 3) who defined it through five properties. According to this typology, society is a unit characterized by a shared i) area enjoying a certain level of independence, ii) culture, iii) population, iv) institutions, and v) social structure. Social structure, in turn, is defined as including all societally relevant groups of people, such as those based on area of residence, race, language, religion, age or gender. Moreover, Allardt claimed that particularly important elements of social structure were those group divisions stemming from economic production, the division of labour and the stratification that occurred therein. An individual's membership of these groups is roughly what is meant by his/her *socioeconomic position*.

Having defined socioeconomic position in relation to its higher-level concepts, the level of abstraction remains relatively high. Socioeconomic position, as well, can be understood as an umbrella concept which is further dividable into separate components. In the empirical analyses of the dissertation, socioeconomic position is attributed to three components, namely *education*, *social class* and *income*. Although these three are arguably the most commonly used components of socioeconomic position, the list is not exhaustive. Other indicators of socioeconomic position have also been used, such as wealth, including home ownership, labour market participation and status (Chan and Goldthorpe 2007b; Galobardes et al. 2006).

In this dissertation, education refers to the highest level of educational degree completed. Income, in turn, refers to the amount of money received during a specific time interval, such as the year prior to the elections, from various sources, such as wages and salaries, capital and welfare benefits. Income can be measured in terms of either individuals or households; the former is usually preferred in this dissertation (with the exception of sub-study I, see chapters 5 and 7 for more information).

Social class requires a slightly more extensive definition than education or income. It is a factor that aims to capture an individual's position in the economic system via their activity in it. Empirically, it is attributed to an individual's current occupation, or former occupation for the non-employed. Nevertheless, since hundreds of different occupational titles exist, it is usually unfeasible to use them as such in an empirical analysis. Therefore, some theoretical rationale is necessary to *classify* the occupations into meaningful groups for empirical analysis. This theoretical criterion is, in other words, class theory.

The basis on which occupations are classified differs somewhat according to the social class scheme used. In the schemes utilized in this dissertation, the first main division is found between self-employed entrepreneurs and employees. The self-employed are often further divided into those working in agriculture (although in analyses of contemporary high-income societies, this group has become rather small) and others.[3] The sub-studies differ slightly in terms of the rationale for the further disaggregation of employees. Sub-study III uses the Erikson–Goldthorpe–Portocarero scheme (EGP; see Erikson and Goldthorpe 1992; Goldthorpe 2007), and sub-study IV uses its descendant, the European Socio-economic Classification (ESeC; see Rose and Harrison 2007, 2010). In both the EGP and ESeC, the main criteria for classifying employees is two-dimensional, the first consisting of the specific skills and other human assets required in the work and the second the difficulty of directly supervising

[3] Sometimes information on whether subordinates are working for the entrepreneur is also used, although such data cannot be derived from the registers and are therefore not used in this dissertation.

the employee. Sub-studies I and II, in turn, use the Socioeconomic Classification of Statistics Finland (Statistics Finland 1989), which uses the amount of theoretical content present in work tasks and, to a lesser extent, the position of authority as the main criteria.[4] However, despite their differences, these social class schemes tend to produce quite similar results. In practice, often the most important division among employees is between non-manual and manual occupations.

It should be noted that this objective definition is not to be confused with the subjective identification with social class or class-consciousness, sometimes inquired about in surveys. Social class can be related to individuals' behaviour whether or not they are aware of their position. Conceptually, position within economic production and group identity are thus clearly distinct. Nonetheless, economic position can act as a catalyst for identity formation, and hence subjective class can contribute to socioeconomic turnout differences. However, the extent to which this occurs is an empirical question. The ambiguity in the distinction between these two meanings is understandable, particularly in the context of political behaviour, given the similarity in terminology and that the concept of social class has close connections to political rhetoric. Moreover, the erroneous conflation of the two concepts apparently has rather long roots in social commentary, as it was explicitly warned against in the classic work of social class theory, *Economy and Society* (Weber 1968 [1922]: chapter 19), and that of electoral behaviour, *the American Voter* (Campbell et al. 1960: chapter 13). In Weber's words:

> *"[C]lasses" are not communities; they merely represent possible, and frequent, bases for communal action. We may speak of a "class" when (1) a number of people have in common a specific causal component of their life chances, in so far as (2) this component is represented exclusively by economic interests in the possession of goods and opportunities for income, and (3) is represented under the conditions of the commodity or labor markets.* (Weber 1968 [1922], 927)

Indicators of socioeconomic position possess some attractive properties. First, they are theoretically interesting, as they describe an individual's position with respect to many classical theoretical themes in sociology, such as division of labour, employment

[4] The original classification also includes groups that are not employed, such as students, stay-at-home parents and pensioners. In this dissertation, however, these groups were not used, but information on previous occupation was utilized, if possible. This is in line with current international practice in the research of social stratification (e.g. Rose and Harrison 2010), as we were interested precisely in the social stratification aspect of social classes. However, the usefulness of the scheme without the inclusion of non-employed groups would be limited for studying stratification for many populations, such as older individuals.

relations, production forces and economic distribution (Durkheim 1960 [1893]; Marx and Engels 1998 [1848]; Weber 1968 [1922]). Furthermore, as socioeconomic position is closely connected to individuals' activities in their everyday lives, there are plausible processes that transform this rather abstract relationship into differences at the individual level. Following Giddens (1981: chapter 6), these everyday patterns of action may be termed processes of *social structuration*. Social class, in particular, describes how (at least employed) individuals spend their daily lives and form their everyday social networks, at least those related to their economic action, and thus provides an interesting bridge between abstract social structure and concrete individual agents. Due to educational expansion during the last century, education has also possibly increased its relevance in this type of social structuration. Time spent in education constitutes an increasing share of the life of an average individual. Therefore, it is likely to exert stronger and more lasting effects on the structuring of individuals' lives, actions and their social networks in a way analogous to that of social class. Furthermore, the increasing economic inequality experienced by advanced societies in recent decades (Piketty 2016; Riihelä and Tuomala 2019; Roine and Waldenström 2015) may increase the structuring role of income, as large differences in resources can also shape the patterns of individuals' daily lives and limit their social networks to those with resources for similar lifestyles and activities.

Second, the relationship between the components of socioeconomic position is close – and dare I say – causal. Education opens access to different occupations, which, in turn, usually determine an individual's income level. This also means that a substantial part of the association between socioeconomic indicators and a given outcome, such as voting in elections, is likely to be shared.

Third, despite their partly shared contribution to particular outcomes, such as electoral participation, the different components of socioeconomic position are also genuinely different factors. This is to say, they are not meant to be used together only to enhance their reliability, for example. Therefore, it is plausible that they contain not only partly shared but also partly different mechanisms that influence these outcomes. The potential mechanisms accounting for the specific case of electoral participation will be further discussed in chapter 4 of this dissertation.

Electoral participation, by contrast, is a relatively clear act, defined as whether or not an individual inserts a ballot paper into a ballot box in a given election. This definition includes empty and rejected votes. With the exception of some analyses in sub-study I, electoral participation is measured on the basis of the official voting lists. In the 2012 and 2015 elections, this information came from the electronic voting register pilot. In 1999 (and 1987 for the one analysis included in the results section) they were combined

manually from paper lists. In sub-study I, we compare these results to self-reported information on voting obtained after the elections in a survey interview.

Voter turnout is an aggregate of electoral participation; i.e. it is applied to groups. For example, let us consider the case of a 27-year-old individual who had recently obtained a master's degree in sociology and voted in the 2015 parliamentary elections. Following the terminology of this dissertation, he/she had *participated* in these elections. The turnout of 27-year old higher tertiary degree holders, in turn, was 85.9 per cent according to the 2015 elections data. Although this may sound simple, defining turnout can be surprisingly challenging in some contexts. For example, in a meta-analysis of 83 aggregate-level empirical analyses of turnout, Geys (2006) found five different definitions of voter turnout. Three investigations used the absolute number of votes cast, but this number was usually expressed as a ratio with varying denominators. These were the number of votes divided either by i) voting age population; ii) the number of eligible voters; iii) the number of registered voters; or iv) the size of the electorate. With individual-level data, these definitions do not usually need to be problematized to a large extent. In the present studies, we divided the number of votes by the number of eligible voters, i.e. voters + non-voters, identified in the data. Eligibility in Finnish elections is discussed in chapter 5, "the Finnish context". The voting patterns of those citizens of Finland not residing in Finland, although interesting and relevant as such (see Peltoniemi 2018; Peltoniemi, Lahtinen, and Wass 2019), were outside the scope of this dissertation.

3 Why socioeconomic differences in electoral participation matter

As reviewed in the introduction, differences in electoral participation between socioeconomic groups have attracted the intense interest of social scientists from various disciplinary backgrounds from relatively early on. This can be justified from at least six perspectives.

First, voting is an important ritual and elections an important institution in linking individuals into the democratic system and society. Hence, turnout equality is an important social indicator as such, and the lack of it is worrying in terms of social coherence and social capital (e.g. Lake and Huckfeldt 1998; Putnam 2000). Moreover, political inclusion is recognized as a component of wellbeing and social integration (Allardt 1976, 1993; Burchardt, Le Grand, and Piachaud 1999; Stiglitz et al. 2010). It has even been argued to be an essential condition of a good life arising directly from human nature itself. Among modern thinkers, Arendt (2002 [1958]) deserves mention for advancing such a thesis, but such thinking dates back to antiquity. Indeed, the value of political participation is arguably among the oldest academic debates, discussed

already by philosophers in the 4th century BC (e.g. Aristotle 2001 [c. 350 BC]; McConnell 2010; Pericles, as cited in Thucydides 1874 [c. 400 BC], chapter 4).[5]

The second argument is that voting and other forms participation are mutually enhancing (Allardt et al. 1958; Carter 2006; Lijphart 1997; Peterson 1992). That is, voting also increases other forms of participation and civic engagement. This argument of spillover effects interestingly treats voting or any specific form of participation as having instrumental value, whereas a high amount of political participation as whole is attributed a value of a more absolute nature. It also fits well with the social capital narrative reviewed above.

Third, socioeconomic position is tightly interlinked with the ideals and even the concept of representative democracy in a several ways. The idea of equal impact, one individual – one vote, is one of the cornerstones of universal suffrage and can be considered valuable as such (Dalton 2017: chapter 1; Lijphart 1997; Schlozman, Verba, and Brady 2012). Thus, socioeconomic inequality in voter turnout threatens the legitimacy of representative democracy. Furthermore, following a recent thesis by Bukodi, Paskov, and Nolan (2019), representative democracy and the elections that follow can be argued to be one of the three central macro-level conditions for the stratification of social class in a society[6]. If I were forced to answer the question "when did Finland become a class society?" by identifying just one turning point, it would be the adoption of universal suffrage in the first parliamentary elections of 1906. This was perhaps the most important single event when the old estate-based stratification gave way to a more liberal class-based stratification.[7] In addition, there is a close historical relationship between social classes and voting, as social class division has been one of the central cleavages around which modern political parties have taken their form.

Fourth, inactive socioeconomic groups represent an untapped source of potential supporters for those political agents who manage to mobilize them. It has been argued

[5] As an interesting anecdote related to the discussion of the social desirability of participation is the etymology of the word *idiot*. It originates from the Greek *idiotes*, meaning roughly a person who would score low in the political participation index in the terminology of modern survey language. However, the word did not originally hold such a negative social desirability bias as in its contemporary use (Mulgan 1990). Instead, there were advocates of the idiotic lifestyle, Epicureans being perhaps the most obvious example (McConnell 2010). Aristotle is another prominent figure who pondered the desirability of participation. Overall, his position was quite ambivalent. He is, on one hand, known for the phrase "man is a political animal", whereas on the other hand, in both Nicomachean Ethics and Politics, statesman-type activities were considered clearly of secondary importance relative to philosophical contemplation (Mulgan 1990).

[6] Other two are the capitalist market economy and nuclear family system as stated already by the classical FJH-hypothesis (Featherman, Jones, and Hauser 1975).

[7] Given these conditions that create class societies, we may derive yet another, Churchillian, analogy between democracy and class stratification. Social-class structure is the worst form of stratification, except for all the others that have been tried from time to time.

that the decline of class divisions in electoral choice has been replaced by stronger class division in electoral participation, which indicates that leftist parties have lost touch with their traditional supporters, creating a political vacuum (Gattig 2006; Goldthorpe 2002; G. Evans and Tilley 2017; Heath 2016). Populist parties (and related political actors) have arguably managed to successfully fill part of this void. During their transformation into major political forces in many countries over recent decades, they have gained particular support among the low-educated and members of the working-class (G. Evans and Tilley 2017; Heath 2016; Morgan and Lee 2017a; Oesch 2008b, 2008a; Westinen 2015).

Fifth, overrepresentation of the votes of socioeconomically advantaged individuals implies that their interests, too, are overrepresented in political decision making (Dalton 2017, chapter 10; A. Fowler 2013; Leighley and Nagler 2013; Rosenstone and Hansen 2003; however, for opposing arguments, see Lutz and Marsh 2007; Rubenson et al. 2007). Among other things, this can create policies that increase inequality and further deepen the divisions between the privileged and underprivileged (Franko, Kelly, and Witko 2016).

Sixth, it is possible that the components of socioeconomic position have direct causal effects on voting propensity (for reviews on mixed evidence concerning the effect of education, see Gidengil et al. 2017; Lindgren, Oskarsson, and Persson 2019a; Persson 2015). Discovering causal relationships is always an important academic pursuit. In addition to mere scholarly interest, it also has potential to offer policy implications for interventions aiming to improve the overall level of turnout. These questions of possible causality will be further discussed in the next chapter.

4 Explaining socioeconomic differences in electoral participation

One of the most prominent theoretical schemes for explaining political participation is the civic voluntarism model developed by Verba, Scholzman and Brady (1995). In this model, the propensity to participate is explained by three types of prerequisites: resources, motivation, and mobilization. An advantaged socioeconomic position is associated with each of these prerequisites.

The most straightforward connection exits between socioeconomic position and resources. In the original formulation of the theoretical model, the resources of time, money and civic skills were identified (Brady, Verba, and Schlozman 1995; Verba, Schlozman, and Brady 1995). Both money and civic skills are positively related to an advantaged socioeconomic position (free time may have a bit more complex relationship). By definition, a higher income increases an individual's money, while

civic skills are fostered in both education and professional occupations (Brady, Verba, and Schlozman 1995; Jackson 1995; Tåhlin 2007). Other kinds of potentially relevant resources include the cognitive capacity released by freedom from concern about everyday survival (Denny and Doyle 2008; Ritchie and Tucker-Drob 2018; Wolfinger and Rosenstone 1980) as well as better access to political information, be it in the forms of books (M. D. Evans et al. 2010), newspapers (Chan and Goldthorpe 2007a; G. Evans and Tilley 2017) or internet connections (Gonzales 2016). In sub-study II, we assess whether health could be added to the list of relevant resources in explaining these differences in electoral participation. Although the relationship is arguably less direct than in the case of resources, an advantaged socioeconomic position is associated with many motivational factors that foster participation. These motivational factors include, for example, a sense of civic duty, political efficacy as well as trust in politicians and institutions (Hooghe, Marien, and de Vroome 2012; Inkinen and Saari 2019; Jackson 1995; Kouvo 2010; Lahtinen, Wass, and Hiilamo 2019; Laurison 2015; Verba, Schlozman, and Brady 1995).

Third, mobilization is also related to socioeconomic position. This occurs, for example, through membership of associations (Caínzos and Voces 2010; Lahtinen, Wass, and Hiilamo 2019) or the closure of social networks (Savage 2015); that is, those with advantaged positions are more likely to know others with advantaged positions, and thus, also more likely to vote. This, in turn, can create stronger participation norms. Additionally, those in professional occupations are also more likely to know people who directly work in and influence politics, as, almost by definition, they belong to the professional or managerial classes. Finally, high income and cultural resources also affect the neighbourhoods where individuals live, and more affluent neighbourhoods may experience more active political mobilization attempts (Huckfeldt 1979).

In general, explanations of socioeconomically differing turnout have been approached from two directions. Thus far, such differences have been examined in terms of individual characteristics, which is the main focus of this dissertation. This is what Heath (2016) terms the bottom-up approach. By contrast, top-down characteristics, that is, those emanating from political institutions, arguably also play a role in determining the socioeconomic gap in turnout. Moreover, they are, perhaps, particularly fruitful when assessing trends in these differences.

Returning to the third dimension of the civic voluntarism model, political mobilization, the line between the top-down and bottom-up approaches is not often clear cut. Political mobilization not only occurs within individuals' personal networks; rather, it is also widely practised by institutional players, particularly political parties. Furthermore, there is evidence that mobilization from this direction has become more

professional, with less emphasis on voluntary activism (Skocpol 2003). Campaign professionals, in turn, are more likely to target those with more advantaged positions (Enos, Fowler, and Vavreck 2014; Laurison 2013; Rosenstone and Hansen 2003).

Trade unions have traditionally played an important role in mobilizing the working-classes. During recent decades, their decline in influence, particularly as venues of political activism, may thus have disproportionately affected those in more disadvantaged positions (Allern, Aylott, and Christiansen 2007; Gallego 2015; Julkunen 2008; Kerrissey and Schofer 2013, 2018; Leighley and Nagler 2007). In some contexts, churches are also another relatively egalitarian actor in political mobilization (Verba, Schlozman, and Brady 1995; Schlozman, Verba, and Brady 2012). However, Finland arguably represents a rather secular country-context where the importance of religion in politics is relatively small (Mykkänen 2012).

Arguably, the world of politics has moved closer to the middle-class experience also in other ways than campaign mobilization. For example, in their analysis of the UK context, Evans and Tilley (2017; see also Heath 2016) note that, over time, the Labour Party has actively shifted its focus away from targeting its traditional base of working-class supporters. The reason for this is not a change in objective conditions between classes but more likely a decline in the numbers of working-class individuals and thus fears of a shrinking pool of potential supporters. There has also been a decrease in descriptive representation, namely representatives with working-class backgrounds (Carnes 2012; G. Evans and Tilley 2017). This has created a political vacuum and accentuated abstention among the working classes due to a lack of credible representation.

The political system also plays a role in shaping the pattern of socioeconomic differences in turnout. Most straightforwardly, this is seen in compulsory voting. Mandatory voting unsurprisingly seems to lead to narrower socioeconomic differences (A. Fowler 2013; Gallego 2015; Lijphart 1997), although even such a radical policy does not cause such differences to disappear (Quintelier, Hooghe, and Marien 2011). However, there are also historical examples of voting rights restrictions that almost exclusively affected minorities and disadvantaged socioeconomic groups, such as the poll taxes or reading comprehension tests employed in the US (Highton 2017; Wolfinger and Rosenstone 1980) or, in Finland, disenfranchisement as a result of receiving poor relief (Einiö, Wass, and Heinonen 2018). In the contemporary US context, tightening the standards of the personal identification documents required to vote in some states has been claimed to, even strategically, prevent disadvantaged individuals from voting (Highton 2017).

In addition to individual and institutional approaches, Laurison (2016) introduces relational mechanisms as a third type of explanation of socioeconomic differences in turnout. Relational mechanisms refer to feelings that politicians are "for people like me" (Laurison 2016, 690). Relational mechanisms overlap with some of the mechanisms presented above, namely social networks, poor descriptive representation due to a lack of politicians with working-class backgrounds, and political efficacy arising from feelings of subjective status. A lack of such efficacy, for example evaluations that "that politics is too hard to understand" or "people like me have no power in decision making" or "don't know" responses in political survey questions, was already discussed by Bourdieu four decades ago (1979, 1984: chapter 8). Such a pattern is also seen in contemporary Finland (Wass and Borg 2016) and elsewhere (Brown-Iannuzzi, Lundberg, and McKee 2017; Laurison 2015). Group boundaries (Kraus, Park, and Tan 2017) maintained particularly by the closure of social networks are another relevant relational perspective. In this case, status is namely the mechanism via which socioeconomic position (also sometimes termed socioeconomic *status*) operates. This has been discussed particularly in the context of education (Aars and Christensen 2018; Persson 2014; Tenn 2005; for a review, Persson 2015). In turn, another branch of the literature concerning relational aspects has focused on evidence demonstrating the connection between aggregate-level income inequality and differences in turnout between educational and income groups (Gallego 2015; Solt 2008, 2010).

Thus far, this chapter has discussed socioeconomic position as an aggregated unit. However, it is plausible to assume that different components of socioeconomic position reflect partly shared but also partly differing mechanisms. For example, income is rather straightforwardly associated with material resources. Moreover, from an institutional side, it relates to an individual's position regarding many relevant everyday political struggles, such as the level of benefits and taxes. Furthermore, social class may be related to individuals' social networks during their adulthood, and education to networks in their earlier life. Certain kinds of civic skills, in turn, are learned partly during education and partly through job-related practices. From an institutional side, social class may also structure individuals' political positions, for example, as individuals from different classes are exposed to different types of risks in the labour market (e.g. Goldthorpe 2007; Lahtinen, Sirniö, and Martikainen 2018).

As the propensity to vote is passed from one generation to next, individuals' voting is stratified not only by their own adult socioeconomic position but also by that of their pre-adult families'. Many of the mechanisms related to socioeconomic background function in a similar way to individuals' social standing. Parents may pass resources and characteristics on to their children as either endowments or investments (e.g.

Erola, Jalonen, and Lehti 2016), that is, in a non-intentionally or intentionally transmitted way. Some features of socioeconomic mechanisms are closely related particularly to the intergenerational transmission of voting, such as the schools individuals have attended. The offspring of more affluent individuals often attend better schools (Bernelius and Vaattovaara 2016), where more political mobilization attempts may occur, either from peers or as a result of the official curriculum. Moreover, middle-class parents may themselves have social capital that connects them better to school officials and which helps to make well-informed decisions related to their offspring's schooling (Horvat et al. 2003).

Two types of mechanisms that can explain socioeconomic differences in turnout operate particularly within intergenerational settings. The first is status transmission, which refers to the fact that socioeconomic position tends to pass from one generation to the next. For example, the children of highly educated parents are themselves more likely to be highly educated, which, in turn, is argued to foster voting. The second is related to social learning and political socialization. For example, highly educated parents are more likely to vote, and their children learn this habit of voting (Gidengil, Wass, and Valaste 2016).

Despite a century of empirical research on socioeconomic differences in electoral participation, much remains to be understood. In addition, much that was once part of an established consensus has recently been questioned. A good example is the ongoing debate on whether the role of education in fostering participation is causal. During the last 15 years, researchers armed with advanced econometric identification techniques have spent considerable effort collecting evidence for and against the causal effect of education on participation (Berinsky and Lenz 2011; Dee 2004; Dinesen et al. 2016; Gidengil et al. 2017; Kam and Palmer 2008; Lindgren, Oskarsson, and Persson 2019a; Pelkonen 2012; Persson and Oscarsson 2010; Persson, Lindgren, and Oskarsson 2016; Persson 2015; Sondheimer and Green 2010; Tenn 2007). Nevertheless, many of the mechanisms discussed in this section may remain valid without the assumption that the effect of education on turnout is causal. For example, a strong sense of civic duty can explain educational differences in voting irrespective of the direction of causality between duty and education. In any case, such a discussion demonstrates that there are many things we do not know and cannot take for granted.

Ansolabehere and Hersh (2012) have presented an even more fundamental form of criticism by claiming that not only the causal relationship but even the association between socioeconomic position and electoral participation is primarily a statistical artefact. Instead, they argue that the observed differences in voting propensity between socioeconomic groups are overstated due to a particular form of measurement error in

political surveys, namely that social desirability bias leading to the overreport of voting affects more strongly those in the more advantaged positions. This claim is further evaluated in sub-study I of this dissertation.

Additionally, the strong intergenerational persistence of socioeconomic differences in electoral participation points to the possibility of a major role for biologically hereditable confounders that may explain both socioeconomic achievement and propensity to vote (Cesarini, Johannesson, and Oskarsson 2014; Dinesen et al. 2016; J. H. Fowler, Baker, and Dawes 2008). Although the understanding of these relationships is still in its infancy, the rapid development of human genetics gives grounds for optimism in this emerging line of inquiry. For example, in the year prior to writing this text (February 2019), polygenetic prediction of education has improved in its precision by an order of magnitude (Lee et al. 2018), and I suspect that such advances may open new avenues of understanding the role of education also in political behaviour. By the end of the next decade, we should be much wiser about the rich dynamics that exist between socioeconomic position and electoral participation.

5 The Finnish context

Finland features an extensive welfare state with widely employed income redistribution and polices such as free-of-charge education at all levels (Kvist 2012). This has resulted in rather small overall socioeconomic differences relative to many other countries in international comparisons. This is seen, for example, in a comparatively moderate level of income inequality (OECD 2016) and a high rate of inter-generational socioeconomic mobility (Erola 2009; Pfeffer 2008; Solon 2002; however, for an average-level estimate, see Bukodi, Paskov, and Nolan 2019). Although narrowing socioeconomic inequality and promoting social mobility have been explicitly pursued aims in Finnish policies, this is not directly seen in electoral participation where substantial gaps persist. For example, comparative studies have found that an individual's education, social class and income predict average-to-high differences in voter turnout in Finland (Caínzos and Voces 2010; Gallego 2010, 2015; Kasara and Suryanarayan 2015). Moreover, strong intergenerational persistence in voting and the major role played by education in this persistence have also been observed in Finland (Gidengil, Wass, and Valaste 2016), although no international comparisons on the topic seem to exist. Finnish party politics has traditionally been characterized by a strong social class cleavage, although one that has weakened over time in line with widespread international trends (Jansen, Evans, and Graaf 2013; Westinen 2015). In addition, Finland has a strong culture of consensual decision making and corporatism, including influential trade unions (Allern, Aylott, and

Christiansen 2007). These factors may provide a foundation for class-based political participation, and especially working-class mobilization may suffer the decline of them.

One relevant contextual characteristic of Finland is related to the discussion on whether social class or income should be measured on the basis of households or individuals (Beller 2009; Goldthorpe 1983; Sørensen 1994). Individual measures are used in almost all the analyses of this dissertation[8], as they arguably fit the Finnish case. This is because a strong dual-earner ideal exists in Finnish households, which is seen in the high labour force participation rate of women and relatively small gender gaps in employment and unemployment (Azmat, Güell, and Manning 2006; Jaumotte 2003; OECD 2012). Therefore, individual measures of occupation and income can arguably capture the position of women accurately (see also Bihagen 2008; G. Evans 1996; Lahtinen, Sirniö, and Martikainen 2018).

In parliamentary and presidential elections, individuals who are at least 18 years old and hold Finnish citizenship are entitled to vote. In municipal elections, citizenship is not required and residency of 51 days in the municipality suffices. In addition, those individuals who do not hold the citizenship of any EU country, Norway or Iceland must have lived continuously in Finland at least two years and 51 days before elections. For EU-citizens, European Parliamentary elections follow roughly similar guidelines to those of municipal elections. However, EU elections are beyond the scope of the analyses of this dissertation. In Finland, no pre-registration is required except in the rarest of cases[9], but every eligible citizen and permanent resident is automatically included in the voting register administered by the Ministry of Justice.

Our data on voting is drawn directly from this register and matched to other variables of interest drawn from other registers, including the annual Census, tax registers and the Hospital Discharge Register. Matching was performed using the personal identity codes uniquely held by every Finnish citizen or permanent resident. The matching of register-based information in the survey in sub-study I was performed with these same methods by officials at Statistics Finland.

During the early 21st century, voter turnout in Finnish parliamentary and presidential elections has fluctuated around the 70 per cent level, while the corresponding figure

[8] The exception is the use of household income in sub-study I, as the data did not include other measures.

[9] This exception to registration-free eligibility is that in municipal elections citizens of countries other than Norway, Iceland or any EU-country who are employed by the European Union or an international organisation based in Finland and live in a municipality where they want to vote while having lived less than two years and 52 days in Finland must register as voters at the local register office at least 52 days prior to election day.

for municipal and European elections has been approximately 60 per cent and 40 per cent, respectively. The level of turnout declined during the last three decades of the 21st century, but contrary to international trend (Hooghe and Kern 2017), this decline has stopped since then, except for presidential elections (Peltoniemi, Lahtinen, and Wass 2019). Parliamentary and municipal elections are held every four years,[10] and the president is chosen for a six-year term. Finland has an open-list proportional electoral system, and after the 2015 elections, the 200-member unicameral parliament has been shared between eight parties. Municipalities enjoy relatively wide autonomy, demonstrated, for example, by the right of taxation. The president has traditionally held a considerable amount of political power, and although presidential prerogatives have been cut during recent decades, the president is still a prominent public figure. Moreover, the average level of political interest is relatively high, and the system enjoys fairly high legitimacy among citizens. Nonetheless, at the same time, many citizens find the Finnish electoral system complicated and hard to understand (Karvonen 2014; Rapeli and Borg 2016).

6 The aims of the study

The objective of this thesis is to empirically investigate socioeconomic differences in electoral participation in Finland. This aim can be further divided into two parts following the programmatic guideline of Goldthorpe (2016), who specified dual tasks of inquiry in population sciences. The first task is to make population regularities visible, while the second task is to make them transparent. In order to perform the first task, the strength, trends and patterns of socioeconomic turnout differences are described. This also includes comparison between different measurement strategies using survey or register based data. In terms of the second task, some of the mechanisms either contributing to or constraining these differences are assessed. These mechanisms are related to an individual's pre-adult background, health, interrelationships between components of socioeconomic position and social mobility during a life course. The specific aims are:

Assess the size of the gap in turnout regarding education (sub-study I), social class (sub studies I, II, and IV) or income (sub-studies I and IV).

Assess the possible sources of measurement error in estimates of socioeconomic differences in turnout in survey data (sub study I)

[10] However, an exception to this was the holding of municipal elections in 2012 and 2017.

Assess the extent to which health differences mediate and moderate the social class gap in turnout (sub study II)

Assess the interrelationships between socioeconomic variables in predicting turnout. This is performed between social class and income (sub-study II) or parental education, social class and income measured from both mother and father (sub-study III)

Assess sibling similarities in turnout and the extent to which shared socioeconomic family background contributes in these differences (sub study III)

Assess the extent to which social class and income mobility during an individual's adulthood can narrow the gaps in turnout (sub study IV)

In the following I will briefly describe the background motivation of each sub-study:

Sub-study I

The overestimation of voter turnout in political surveys has been a concern throughout their entire history (e.g. Clausen, Park, and Tan 1968; Parry and Crossley 1950; Traugott and Katosh 1979). In post-election surveys, this overestimation arises from two sources. The first is misreporting, namely that due to social desirability some non-voters claim to have voted when asked. The second is non-response bias stemming from the fact that those who are less likely to vote are also less likely to respond to surveys (Karp and Brockington 2005; Selb and Munzert 2013). Although the overall patterns of overestimation are well-known, we know much less about whether the estimates of turnout differences between socioeconomic groups are biased. Some previous studies have assessed bias by using validated voting information drawn from actual lists. They have generally found that social desirability bias has a stronger effect on individuals with advantaged socioeconomic positions, leading to overestimation of the differences between socioeconomic groups (Ansolabehere and Hersh 2012; Belli, Traugott, and Beckmann 2001; Bernstein, Chadha, and Montjoy 2001). However, the studies cited above were unable to assess the misreporting bias. In sub study I, we enjoyed the rare opportunity also to assess the consequences of the non-response bias using a register-linked survey that included information on voting both from respondents and non-respondents (however, for a similar design, see Dahlgaard et al. 2019).

Sub-study II

According to the resource model of political participation (Brady, Verba, and Schlozman 1995) discussed in chapter 4, socioeconomic differences in voting can be partly explained by resources that facilitate voting related to an advantaged position.

During recent years, a growing body of literature has documented the benefits of good health for electoral participation (e.g. Mattila et al. 2013; Mattila, Wass, Lahtinen, and Martikainen 2018; Mattila, Wass, Lahtinen, Martikainen, et al. 2018; Sund et al. 2017; Pacheco and Fletcher 2015; Rapeli, Mattila, and Papageorgiou 2018). Additionally, the strong relationship between an advantaged socioeconomic position and good health has been widely documented (e.g. Mackenbach et al. 2008, 2016; Tarkiainen et al. 2012). Thus, it can be hypothesized that health is a resource which can partly explain socioeconomic differences in voting. Although Merriam and Gosnell (1924) already recognized health problems as a potential obstacle to voting in the 1920s, and even analysed them empirically together with multiple socioeconomic factors in a manner resembling the logic of the interaction analysis of the more recent literature, to date no direct test of such a hypothesis has apparently been performed. This gap in the literature is addressed in sub-study II, which examines the interrelationships between social class, health and electoral participation. The sub-study tests the potential of health as a mediator and moderator of the social-class-turnout relationship. In addition, it compares such effects to a more established resource in the resource model, namely money. Furthermore, performing a similar analysis to income allows us to investigate the interrelationships between these two socioeconomic factors in depth. Finally, the study also recognizes that social class has been underused in the literature of political participation and discusses the reasons why it should not be neglected in this research field.

Sub-study III

Sub-study III concentrates on the intergenerational transmission of voting and the role that socioeconomic factors play in this process. The starting point is that although the importance of an individual's pre-adult background in voting propensity has been widely recognized (Beck and Jennings 1982; Bhatti and Hansen 2012; Gidengil, Wass, and Valaste 2016; Jennings and Niemi 1981; Plutzer 2002; Verba, Schlozman, and Burns 2005), its overall impact has not been rigorously assessed. The sub-study III examines this question by using a sibling design. Such a strategy allows us to assess not only the contribution of observed factors of family background but also those factors that remain unobserved but which contribute to the similarity in voting propensity between siblings. Next, we assess the degree to which certain observed factors, namely paternal and maternal education, social class, income and voting, explained this shared propensity to vote among siblings. The analysis contributes to the literature by placing the importance of an individual's family and community background into context and by providing an elaborate description of the multi-

dimensional nature of an individual's socioeconomic background and its relationship to voting.

Sub-study IV

Because of the strong impact of factors stemming from biologically heritable, pre-natal, childhood and adolescence-related experiences and assets of an individual, the connection between an individual's adulthood socioeconomic position and voting might be expected to be rather stable in nature. However, sub-study IV nuances this picture by investigating the effect of intra-generational social mobility on turnout, that is, what occurs if individuals' socioeconomic positions change during their adulthood. More specifically, we adapt a hypothesis termed gradient constraint from the public health literature (Bartley and Plewis 1997, 2007; Blane, Harding, and Rosato 1999). According to this hypothesis, the turnout of socially mobile individuals will be somewhere between that of socially immobile members of their group of origin and destination. To observe such a pattern would be encouraging in terms of political equality, as would imply that intra-generational social mobility acts as an ongoing mechanism that narrows turnout differences.

7 Data and methods

7.1 Data

Besides using voting as the dependent variable and indicators of socioeconomic position as the main independent variables, the third recurrent component of the sub studies in this dissertation is the use of data from administrative registers. Despite this shared source of information, the main analyses of each study nevertheless use different datasets. The elections of primary interest are the 2015 parliamentary elections in sub studies I and III, the 1999 parliamentary elections in sub study II and the 2012 municipal election in sub study IV. The information on whether an individual voted was combined with various other data sources by Statistics Finland using personal identity codes, which allow highly reliable linkage. The actual codes were never accessed by the research team; rather, the anonymized data were used as delivered by Statistics Finland.

In all analyses, socioeconomic variables (education, social class and income) as well as demographic control variables (gender, age, native language and living with a partner) were drawn from the registers of Statistics Finland. In addition, in sub-study I, register-based information was linked to a survey sample in order to allow comparison between these two sources of data. Sub study II also used health-related information drawn from the Finnish hospital discharge register maintained by the National

Institute of Health and Welfare (THL) as well as medicine reimbursement and sickness allowance registers maintained by the Social Insurance Institution (Kela).

Sub-study I included those individuals who lived in wards that utilized electronic voting registers in the 2015 parliamentary elections (24.2 % of the individual-level electorate residing in Finland) and belonged in a baseline sample of a survey (n: 4,754). Sub study II used an 11 per cent random sample of all citizens residing in Finland who were aged 30 or more in the 1999 parliamentary elections (n: 331,964). In turn, sub-study III included those individuals who lived in wards that utilized electronic voting registers in 2015 (24.2 % of the individual-level electorate residing in Finland, as in sub study I), were born between 1980 and 1989 and whose parents were both alive and residing in Finland during the 1999 elections (n: 34,628 individuals). Finally, sub study IV included those individuals who lived in wards that used electronic voting registers in the 2012 municipal elections (13.6 % of the individual-level electorate residing in Finland) and were born between 1952 and 1970 (n: 143,322–150,709 depending on the socioeconomic indicator used). In addition, each of the sub-studies included some additional analyses, such as robustness checks and replications, often utilizing different datasets. However, for the sake of the coherence and focus of this summary, I mostly concentrate on describing the main analyses of the sub studies here. Nevertheless, those readers who are interested in these additional results are encouraged to explore the original four sub studies, which can be found at the end of this (printed) volume. The datasets, variables and main methods are summarized in Table 1.

Register-based data have some obvious advantages over the more widely used survey data in analysing turnout. First, the sample size is large and there are no issues of non-response, sample attrition in longitudinal settings or memory failure, which can be particularly problematic in intergenerational settings. Second, survey analyses are plagued by systematic overestimation of electoral participation. This is caused by two mechanisms. The first is that many non-voters claim to have voted when asked; that is, there is an over-reporting of voting due to social desirability bias (Sciarini and Goldberg 2015, 2016; Selb and Munzert 2013; Karp and Brockington 2005). The second mechanism is self-selection of respondents; that is, those who are more likely to vote are also more likely to respond to surveys (Sciarini and Goldberg 2015, 2016; Selb and Munzert 2013). More than merely avoiding these biases, sub-study I aimed to quantifying them.

Table 1. Datasets, variables and analysis methods in the different sub-studies

	Sub study			
	I	**II**	**III**	**IV**
Elections	2015 parliamentary	1999 parliamentary	2015 parliamentary	2012 municipal
Sample	Baseline survey sample of 25,000 in wards that utilized the electronic registers (24.2% of the electorate)	11 % random sample of the full electorate	Those in voting registers (24.2% of the electorate), with also sibling(s) identified in the data	Those in voting registers (13.6% of the electorate)
Cohort	1990 and earlier	1969 and earlier	1980–1989	1952–1970
N	4,754 in baseline sample; 1,832 respondents with self-reported information; 467 respondents with full information	254,996 30–64-year-olds; 76,968 65+ year-olds	34,628 individuals; 16,353 families.	143,322 in social class analysis; 150,709 in income analysis
Main independent variables	Education, social class, (household) income	Social class	Paternal and maternal education, social class and (individual) income	Social class, (individual) income
Mediators		Days in hospital + 16 other health indicators, income	Paternal and maternal voting in 1999	
Moderators	Survey answer status	Days in hospital, income, age	Parent's gender	Class/income of origin and destination
Control variables	Age	Age, gender, native language, living with a partner and education	Age, gender, native language	Age, gender, native language, education and voting in 1999
Additional data	Full voting-register-sample 2015; Finnish National Elections study 2015; European Social Survey round 8	Voting in 2012 municipal and presidential elections	Full voting-register-sample in 2015 for the 1970–1979 cohort	Full voting-register-sample in 2015
Methods	Logistic regression	Logistic regression, KHB-decomposition method	Multilevel linear probability models, focus on variance decomposition	Logistic regression, diagonal reference models

7.2 Variables

The dependent variable in each of the analysis indicates, whether person voted or not. The main independent variables were education, social class and income. In sub-studies I, II and IV, with the exception of income in sub-study I, which was household income, these variables were based on an individual's personal status. In sub-study III, in turn, these variables were based on information about a prospective voter's biological parents as officially declared, usually at birth. The exception was (rare) cases of adoption; then information on the adoptive parents was used. In the following, the measurement of these variables are briefly described.

Voting

In each of the analyses, the dependent variable was a dichotomous measure indicating voting (yes/no) in the 1999 parliamentary (sub-study II), 2012 municipal (sub-study IV), or 2015 parliamentary elections (sub-studies I & III). For the 2012 and 2015 elections, the voting information was obtained directly from electronic voting registers. For sub-study II, voting data for the 1999 elections were hand-collected from paper voting lists from the entire country, with minor exceptions. These were the island of Åland, which constitutes an overseas region that is largely politically autonomous, as well as the small (although socioeconomically advantaged) municipality of Kauniainen with less than 10,000 inhabitants. This information was also used as independent variables in sub-studies III and IV. Furthermore, sub-study I also included self-reported survey measures of turnout. In addition, one descriptive analysis in this summary used similarly collected data from the 1987 elections. Unfortunately, the 1987 data could not be linked to newer datasets.

Education

Education was one of the main independent variables in sub studies I and III, and a control variable in sub-studies II and IV. In sub-studies II and III, it was measured in five groups: 1) basic (currently nine years of education, but for the cohorts born before the 1960s, often less than that), 2) secondary (either academic or vocational track, roughly 12 years of education), 3) lowest tertiary degree (associate degree, 2–3 years after the secondary level), 4) lower tertiary degree (polytechnic degree or a bachelor-level degree from a research university, 3–4 years after secondary level) and 5) higher tertiary level (master-level or higher degree, 5 or more years after secondary level). In sub-study IV, categories 3 and 4 were collapsed together, while in sub-study I, categories 3, 4 and 5 were collapsed.

The data on education was obtained from Statistics Finland's Register of Completed Education and Degrees, which includes information on qualifications from secondary level education or higher. The analyses followed the common research practice when using Finnish register-based data by inferring that those with no information available had only a basic level of education. Nonetheless, this is a source of potential mismeasurement due to missing information especially for the non-native Finnish population. However, according to our diagnostics, the extent of this bias was marginal, and perhaps less salient overall in our case relative to some other outcomes, as voting in national elections requires citizenship. It is also worth noting that the lowest tertiary degree level is now an obsolete category in the Finnish educational system. Thus, while it is useful when analysing earlier cohorts born before the 1980s, it is of no utility for studying younger adults in contemporary elections.

Social class

Social class was one of the main independent variables in each of the sub-studies and was based on an individual's (or his/her parents) current or previous occupation. In sub-studies I and II, we based our social class variable on the socioeconomic classification of Statistics Finland, which includes five classes: 1) manual, 2) lower non-manual, upper non-manual, 4) self-employed (excluding agricultural occupations) and 5) self-employed in agricultural occupations. In the descriptive analysis of sub-study II, the manual class was disaggregated into skilled and unskilled manual, whereas the main analysis used a collapsed four-class version with skilled and unskilled manual as well as agricultural and non-agricultural self-employed classes combined. Sub-study I further collapsed this scheme by combining the lower non-manual class and the self-employed to allow comparison of different socioeconomic factors within a relatively small sample and to produce hierarchal categorization. Even though elaborate social class schemes are not meant to be strictly hierarchal, there is a relatively wide consensus that this three-class breakdown can be considered hierarchal in terms of status or prestige (e.g. Erikson and Goldthorpe 1992).

In sub-study III, fathers' and mothers' social class was operationalized with a seven class version of the Erikson–Goldthorpe–Portocarero scheme (EGP, Erikson and Goldthorpe 1992; Goldthorpe 2007). These classes are (I) higher-grade professionals, administrators and officials, managers in large industrial establishments and large proprietors, (II) lower-grade professionals, administrators, and officials, higher-grade technicians, managers in small industrial establishments and supervisors of non-manual employees, (III_a) routine non-manual employees, higher grade (administration and commerce), (III_b) routine non-manual employees, lower grade (sales and services), (IV_{a+b+c}) the self-employed, (V+VI) lower-grade technicians,

supervisors of manual workers and skilled manual workers, (VII_{a+b}) semi-skilled and unskilled manual workers.

Finally, in sub-study IV, we used a collapsed four-class version of the European Socioeconomic classification (ESeC, Rose and Harrison 2007): 1) "Salariat" (professional, managerial and administrative occupations, i.e. ESeC 1 and 2), 2) "intermediate" (higher grade white-collar, lower supervisory and lower technician occupations, i.e. ESeC 3 and 6), 3) "sales and service" (lower services, sales and clerical occupations, i.e. ESeC 7) and 4) "manual" (lower technical and routine occupations, i.e. ESeC 8 and 9). Again, although the classification is not necessarily hierarchal as such, here classes are ordered according to their voting propensities (class 1 is the most active, whereas class 4 the least active). It should also be noted that our data in sub-study IV lacked information on an individual's employee/self-employment status, but our sensitivity analysis from another dataset indicated that this was unlikely to be a major concern.

Income

Income was defined as the taxable income of an individual in the year before elections in sub-studies II and IV, of an individual's mother and father in sub-study III and of an individual's household in sub-study I. Taxable income includes paid work, capital income as well as most income transfers. In sub-study I, income was divided into tertiles, in sub-study III quintiles and in sub-study IV quartiles. In sub-study II, income was measured both in a continuous form and in deciles, depending on the analysis.

Other independent variables

In addition to being a variable of primary interest in sub-study II, voting in 1999 (yes/no) was used as a control variable in sub-study IV, as was parental voting in 1999 (yes/no/ineligible) in sub-study III. Moreover, education was used as a control variable in sub-studies II and IV. In addition, age was used as a control variable in each study; furthermore, all the analyses of sub-study II were stratified by age. Age was controlled as linear in sub-study IV, linear and squared in sub-study II, as nine year-dummies in sub-study III and as three cubic splines (Durrleman and Simon 1989) in sub-study I. Other control variables were a gender dummy in sub-studies II, III and IV, native language dummies (Finnish/Swedish/other), in sub-studies II and III), and a dummy indicating living with a partner (in sub study II).

7.3 Methods

The main methods of analysis were logistic regression models in sub studies I, II and IV and two-level random intercept linear probability regression models in sub study

III. Study II also utilized the KHB-method (Breen, Karlson, and Holm 2013; Karlson, Holm, and Breen 2012) in decomposing the direct and indirect effects of social class. Furthermore, study IV utilized diagonal reference models (Sobel 1981, 1985) in the additional analysis presented in the appendix. In this summary, I will, however, focus on the main analyses of the sub-studies and not elaborate on this method.

Logistic regression

As the most frequently used method of analysis in this dissertation, the logistic regression models are discussed first. In the analyses used in the sub-studies they take the following form:

$$\ln\left(\frac{\mathrm{p(v_i)}}{1-\mathrm{p(v_i)}}\right) = \beta_1 + \sum_{\mathrm{s=2}}^{\mathrm{S}} \beta_{\mathrm{s}} x_{\mathrm{si}} + \sum_{\mathrm{c=S+1}}^{\mathrm{C}} \beta_{\mathrm{c}} x_{\mathrm{ci}} \quad (1)$$

In each of the logistic regression models, the dependent variable, *v,* is voting, which can occur in the 1999 parliamentary elections (sub study II), the 2012 municipal elections (sub study IV) or the 2015 parliamentary elections (sub studies I and III). The estimated probability, *p,* of voting for an individual, *i,* is denoted as $p(v_i)$. As the observed outcome is binary (an individual either votes in certain elections or does not), a logistic link function is used in the estimation of this probability. The link is presented in the left-hand side of the equation, $ln\left(\frac{p(v_i)}{1-p(v_i)}\right)$, which is the natural logarithm of the odds that an individual will vote. Odds, in turn, are the ratio between the estimated probability to vote and to abstain. On the right-hand side of the equation, $\beta_1$is the intercept, and $\sum_{s=2}^{S} \beta_s x_{si}$ refers to dummies based on the categories of the main independent variable, which is education, social class or income depending on the analysis. *S* usually equals 3 or 4, depending on the sub study. In studies II and IV, the main socioeconomic variable has four categories, and in sub study I three categories are used. In the interaction analyses of sub studies II and IV, even more categories are used, as categorical interactions can be treated as individual dummies for each of the combinations of the interacted variables. Finally, $\sum_{c=S+1}^{C} \beta_c x_{ci}$ are control variables. Age, gender, native language, living with a partner, education and previous voting are used depending on the analysis.

When dealing with binary outcomes, logistic regression is conventionally argued to provide superior estimation relative to the more straightforward linear regression, although this view is far from unanimous (see Breen, Karlson, and Holm 2018; Mood 2010). The main advantage is related to its more plausible functional form. For example, linear probability models are more sensitive to outliers and may have nonsensical properties in the context of binary outcomes; for instance, they can predict

probabilities that are above 1 or below 0, and they assume normal distribution of residual terms. Nonetheless, in addition to linear regression, logistic regression has competitors among other non-linear probability models. The most prominent example is probit regression, which uses the cumulative standard normal distribution as its link function. However, in research designs such as those used in this dissertation, the differences in estimates between logit and probit models are usually negligible. Therefore, logit models were chosen following the conventions of the field, as they are more common and thus likely to be more familiar to the reader.

Despite its advantages in analysing binary outcomes, logistic regression modelling also suffers from some shortcomings. One is that logistic models are complicated enough that usually no analytic solution for estimating the model coefficients exists; rather, they must be fit via numerical methods in an iterative process. From a practical perspective, this is only a minor nuisance considering modern computing power and the software available. Estimation is conducted iteratively by finding those values for the coefficient parameters which fit the observed data best. More technically, the principle behind estimation is to maximize the likelihood function of the model which is done with the Newton-Raphson algorithm (Eliason 1993). In addition to logistic models, maximum likelihood estimation is also used in fitting the multilevel models in sub-study III.

Post-estimation of predicted probabilities

Another shortcoming of the logistic model is related to its interpretation. The native outcome of the model, a natural logarithm of the odds of voting, is often difficult to decipher in substantive terms. Therefore, to facilitate interpretation, post-estimation of the log odds coefficients into the probability scale are used in reporting almost all[11] of the results of the logistic regression analyses. Specifically, we estimated the *average adjusted* predictions (AAP, to follow the terminology of Bornmann and Williams 2013) of the main variables of interest. Average adjusted prediction, which in our case is the expected probability of voting for a socioeconomic group, *s,* is calculated as follows:

$$\mathrm{AAP_s} = \sum_{i=1}^{n} \left(\frac{e^{\beta_1 + \beta_s + \sum_{c=S+1}^{C} \beta_c x_{ci}}}{1 + e^{\beta_1 + \beta_s + \sum_{c=S+1}^{C} \beta_c x_{ci}}} \right) / \mathrm{n} \qquad (2)$$

where β_1, β_s and $\sum_{c=S+1}^{C} \beta_c$ are the regression coefficients obtained from the logistic model presented on the right-hand side of equation (1). s,…,*S* denote the categories of

[11] Exceptions are the KHB-decomposition analysis of sub-study II and some of the additional analyses presented in the online appendices of the studies

our independent variable of interest. For the reference category, $\beta_{si} = 0$. n is the number of the observations in the full analysis sample and e is Napier's constant.

The brackets on the right-hand side of equation (2) contain the inverse function of logistic model (1), which transforms the estimated log odds of voting into the probability scale for an individual, *i*. The estimated voting probability of an individual, *i,* is calculated from the log odds under the – possibly counterfactual – assumption that this individual would belong to a category, s, with other variables getting their observed values from the data. This computation is then repeated for every individual in the analysis sample. Moving outside the brackets, AAP for a category, s, of the independent variable is the expected value of this probability. Finally, the aforementioned computation is repeated for all the categories, s, of the independent variable of interest.

Some alternative approaches exist to post-estimate predicted probabilities from a multiple logistic regression model, such as holding control variables at their means or modes. However, although computationally more demanding, the approach presented in this section arguably has some benefits over these alternatives, especially the fact that it uses realistic combinations of the control variables for each individual. For example, individuals who place in the mean categories in each of the variables in the model are often not the most typical or may not even exist at all. Moreover, for most research questions, estimating an average effect among the members of the population is more central than estimating an effect precisely for an average individual in this population (for more comprehensive argumentation, see Hanmer and Ozan Kalkan 2013; Muller and MacLehose 2014).

Decomposition of indirect and direct effects in nested logistic models

Sub study II assessed the importance of two candidate mechanisms, namely income and days in hospital care, in explaining the association between social-class and turnout. In this analysis, we encountered another limitation of logistic regression. In the case of linear models, an analysist can estimate the extent to which an intervening variable accounts for the association between the independent variable of interest and the outcome by simply fitting a model with and without this intervening variable. Next, the proportion by which the coefficient of the independent variable of interest diminishes between these two models can be calculated. With logistic models, however, the comparison of nested models cannot be performed in such a straightforward manner (Mood 2010). This is because coefficients can be attenuated/inflated due not only to confounding but also to the rescaling between models that usually occurs when the when new variables are added. Because of the

problem of rescaling, the attenuation of the confounding of the added intervening variable cannot be directly assessed.[12]

In order to circumvent this limitation, we employed a method proposed by Karlson, Holm and Breen (the KHB method, Breen, Karlson, and Holm 2013; Karlson, Holm, and Breen 2012). To demonstrate the solution, I shall first consider the full model (without interactions) in the analysis of sub study II:

$$\ln\left(\frac{\mathrm{p(v_i)}}{1-\mathrm{p(v_i)}}\right) = \beta_1 + \sum_{s=2}^{S=4}\beta_s x_{si} + \beta_5 inc_i + \beta_6 hos_i + \sum_{c=7}^{C=16}\beta_c x_{ci} \qquad (3)$$

here x_{si} are the social class categories, *s* (lower non-manual, upper non-manual or self-employed, manual class being the reference category) for an individual, *i*. $\beta_5 inc_i$ is income (first candidate mechanism), $\beta_6 hos_i$ is days in hospital care (second candidate mechanism) and $\sum_{c=7}^{C=16}\beta_c x_{ci}$ are the control variables (age, age squared, gender, two dummies for native language, living with a partner and four dummies for education). As previously mentioned, in the case of linear regression, we would be able to assess the contribution of income and days in hospital care to explaining the difference between the manual class and class, *s,* by fitting a reduced model that lacks the terms $\beta_5 inc_i$ and $\beta_6 hos_i$ and then calculating the proportion by which β_s is smaller in the full model relative to this reduced model. The KHB-method extends the same intuition to nonlinear probability models. This is achieved by first fitting an auxiliary ordinary least squares regression model on both of the candidate mechanisms against all other independent variables of equation (4). The auxiliary model for income is as follows:

$$inc_i = \Theta_1 + \sum_{s=2}^{S=4}\Theta_s x_{si} + \sum_{c=7}^{C=16}\Theta_c x_{ci} + \epsilon_{inc_i} \qquad (4)$$

With some simple algebra, namely by subtracting inc_i and ϵ_{inc_i} from both sides of the equation and then multiplying by -1, we obtain the residual term of income ϵ_{inc_i} for an individual, *i*:

$$\epsilon_{inc_i} = inc_i - \left(\Theta_1 + \sum_{s=2}^{S=4}\Theta_s x_{si} + \sum_{c=7}^{C=16}\Theta_c x_{ci}\right) \qquad (5)$$

[12] However, the debate on whether this rescaling is actually a problem in cases such as electoral participation is not settled. After the publication of sub-study II, Kuha and Mills (2018) have argued that this problem only arises when the actual variable of interest is not the observed "geniuinely" dichotomous variable (such as voting/abstaining) but a continuous latent factor that has been measured as binary.

An analogous operation is performed the days in hospital care variable obtaining the residuals $\epsilon_{\text{hos_i}}$:

$$\epsilon_{\text{hos_i}} = hos_{\text{i}} - (\theta_1 + \sum_{s=2}^{S=4} \theta_s x_{si} + \sum_{c=7}^{C=16} \theta_c x_{ci}) \quad (6)$$

These residual terms are then utilized as independent variables in the "reduced" version of the full model (4):

$$\ln\left(\frac{p(v_i)}{1-p(v_i)}\right) = \beta_1 + \sum_{s=2}^{S=4} \beta_s x_{si} + \beta_5 \epsilon_{\text{inc_i}} + \beta_6 \epsilon_{\text{hos_i}} + \sum_{c=7}^{C=16} \beta_c x_{ci} \quad (7)$$

Now, what differentiates $\beta_5 \epsilon_{inc_i}$ in model (3) from $\beta_5 \epsilon_{inc_i}$ in model (7), as well as $\beta_6 \epsilon_{hos_i}$ in the corresponding models, is only the part that is correlated with the other independent variables including social class categories. This means that, in the sense that the value of its likelihood function and the overall model fit are exactly the same as those of full model (3), "reduced" model (7) is not at all reduced. Consequently, there is no rescaling between the models in equation (7, "reduced") and (3, "full"), and the contribution of these mediators to social class, s, can now be differentiated to the direct, indirect and total components in a straightforward manner:

$$DIRECT_s = \beta_{\text{s_full(eq3)}} \quad (8)$$

$$INDIRECT_s = \beta_{\text{s_reduced(eq7)}} - \beta_{\text{s_full(eq3)}} \quad (9)$$

$$TOTAL_s = DIRECT_s + INDIRECT_s = \beta_{\text{s_reduced(eq7)}} \quad (10)$$

In addition, the indirect contribution attributable to a specific mechanism can be calculated with the standard path analysis technique as the product of the path coefficients:

$$INDIRECT_s^m = \theta_s * \beta_n \quad (11)$$

where m is either income or days in hospital care, θ_s is the social class coefficient from linear model (5) or (6), and β_n is either β_5 or β_6 from model (3). Whether we utilize model (5) or (6) and coefficients β_5 or β_6 depends on the variable of interest, m, i.e. income or days in hospital care.

Decomposition of family variance in random intercept linear probability models

In sub-study II, two-level random intercept linear probability models were used as the main analysis strategy. Level 1 contains individuals; level 2 contains siblings in the same family. This was performed in order to assess, first, how large a share of an

individual's voting propensity can be attributed to the factors that are shared by siblings of an individual, and, second, how large a proportion of parental socioeconomic position and voting explains this shared part. Our research team considered a linear model appropriate for the purposes of that study, for example, as the multilevel logistic model lacks a level-1 residual parameter, which is useful in the decomposition of family variance. In addition, although not the primary focus here, regression coefficients may not be comparable between nested logistic models, as discussed in the previous section. Our multilevel models take the following form:

$$v_{if} = \beta_1 + \sum_{c=2}^{C=12} \beta_c x_{cif} + \sum_{p=13}^{P} \beta_p x_{pif} + \zeta_f + \varepsilon_{if} \quad (12)$$

where v_{if} is voting in the 2015 Finnish parliamentary elections for an individual, i, in a family, f. β_1 is constant, $\sum_{c=2}^{C=12} \beta_c x_{cif}$ are individual-level variables (nine one-year dummies for year of birth, gender and two dummies for native language). $\sum_{p=13}^{P} \beta_p x_{pif}$ denote the parental variables. These depend on the model; in the full model, P equals 116, as the model includes 104 parental variables (four dummies for both mother and father in education, six dummies for social class, four dummies for income and two dummies for voting in 1999 and the interaction between fathers and mothers in each of the corresponding variables). The main analysis focused on residual parameters ζ and ε, and more specifically on their variances ψ (variance of ζ) and θ (variance of ε).

The analysis was undertaken in two phases. First, the proportion that unobserved family variance accounts for total variance between individuals was specified. These statistics are called intra-class correlations (ρ), or in this specific research design, sibling correlations. For *model n*, ρ is calculated as follows:

$$\rho_{model_n} = \frac{\psi_{model_n}}{\psi_{model_n} + \theta_{model_n}} \quad (13)$$

Second, the question of how large a share of unobserved family-level variance (ψ) is reduced by adding parental variables was evaluated. The analysis assessed both the contribution that is shared with other factors as well as the direct contribution of each factor. These statistics are sometimes termed level-2 coefficients of determination, R_2^2 (Rabe-Hesketh and Skrondal 2012, 136; Raudenbush and Bryk 2002, 1:74):

$$R^2_{2,\text{shared_n}} = \frac{\psi_{\text{model_e}} - \psi_{\text{model_n}}}{\psi_{\text{model_e}}} \quad (14)$$

$$R^2_{2,\text{direct_n}} = \frac{\psi_{\text{model_f\textbackslash n}} - \psi_{\text{model_f}}}{\psi_{\text{model_e}}} \quad (15)$$

Here, *model e* is the "empty" model, i.e. the model that includes individual-level characteristics age, gender and native language but excludes parental-level characteristics. *Model n* is the model containing parental factor *n*; *model f* is the (parent's gender specific: father, mother or both) full model, and *model f\n* is the full model excluding factor *n*.

Remarks related to statistical inference

To facilitate statistical inference, standard errors for point estimates were also estimated in most of the analyses. Usually, the corresponding 95 per cent confidence intervals derived from these errors were reported. In analyses including average partial effects from logit models or coefficients from KHB decomposition, standard errors were obtained via the delta method (Karlson, Holm, and Breen 2012; Oehlert 1992), in the case of KHB with the formulation presented by Sobel (1982). In sub-study III standard errors for the direct and shared contributions of observed parental factors were obtained via parametric (normal-approximated) bootstrap simulations on cluster level samples (Mooney and Duval 1993). Similar bootstrapping at individual-level samples was also used in one analysis of sub-study I, since the accuracy of the conventional standard errors have been questioned in assessing proportions when the sample size is small or the estimated probability is close to 0 or 1 (e.g. Newcombe 1998).

The textbook rationale behind the use of confidence intervals and related inferential statistics is to assess the extent of sampling error in evaluating how well the observed estimate in the study sample generalizes to the population of interest – in our case, to the Finnish electorate, given the age limitations of the sub study in question. If many random samples of a given size were drawn from a given population, a 95 per cent confidence interval would contain the parameter value of this full population in 19 times out of 20. This is since, as an application of the central limit theorem (for a proof and an explanation, see Kwak and Kim 2017), random sample parameters such as means or regression coefficients are asymptotically normally distributed around the parameter value in the population from which the sample of random samples of individuals is drawn. The standard error of the observed parameter estimate is the standard deviation of the distribution of the parameters of repeated samples of a given

size. The 95 per cent confidence interval, in turn, includes those values that lie within the distance of approximately two times the standard error, i.e. between the 2.5 and 97.5 percentiles of the cumulative standard normal distribution, from the point estimate.

For the confidence intervals of sub-study II, such an interpretation of generalization to the base population can be rather straightforwardly applied, since the dataset consists of a simple random sample of the total population of interest. However, in other sub-studies, the issue is rather more complicated, as the data do not constitute a random sample; instead, they are a full sample of individuals from those electoral wards that utilized electronic voting registers. However, I argue that confidence intervals can nevertheless be used to assess the robustness of these results, although through a slightly different logic. They show, for instance, whether or not the estimate differs from some threshold – for example from zero or one, as investigated in the case of conventional null hypothesis significance testing – in a way that could not be plausibly obtained from data of corresponding size created through a random number generator. Such results are thus unlikely to be pure statistical noise, but instead, capture at least some kinds of systematic patterns.

Even though the sample of sub studies I, III and IV was essentially area-based, approaches such as clustering standard errors or multilevel modelling by electoral wards could not be utilized, as none of the datasets included information on them. This was due to the protection of individuals' privacy.

Finally, in the studies of this dissertation, direct null hypothesis significance testing was usually avoided. This is because few true null effects arguably exist in the social sciences. Therefore, with such large sample sizes as ours, the null hypothesis will be rejected in most cases. Consequently, this is likely to be a rather trivial exercise at any reasonable level of significance. Confidence intervals are usually more illustrative statistics, for example, because they turn attention from whether there is evidence at all of a detectable association with a given sign to the plausible size of the observed association (for more comprehensive argumentation, see Bernardi, Chakhaia, and Leopold 2017).

8 Results

8.1 The main association

Figure 1 presents the turnout in the 1987, 1999 and 2015 parliamentary elections by age and education. The relationship between age and turnout follows the well-known curvilinear pattern (e.g. Bhatti, Hansen, and Wass 2012; Leighley and Nagler 2013;

Wolfinger and Rosenstone 1980), and the educational gradient in turnout can be seen in all age groups and all elections. However, Figure 1 also shows substantial changes between the 1987 and 1999 parliamentary elections and between the 1999 and 2015 parliamentary elections in the age-specific relation between education and turnout, particularly among the working-age population. Between 1987 and 1999, the overall turnout rate decreased from 76.4 per cent to 68.3 per cent, and educational differences increased strongly. Between 1999 and 2015, in turn, although the overall rate of turnout increased slightly, from 68.3 per cent in 1999 to 70.1 per cent in 2015, the trend of polarization of educational differences continued. Those with low educational levels were considerably less likely to vote, whereas those with high levels of education voted slightly more actively. The overall turnout of those with a basic education dropped between 1999 (63%) and 2015 (58%), whereas it grew among those with an upper tertiary degree (88% in 1999; 90% in 2015). This polarization was particularly strong in younger age groups.

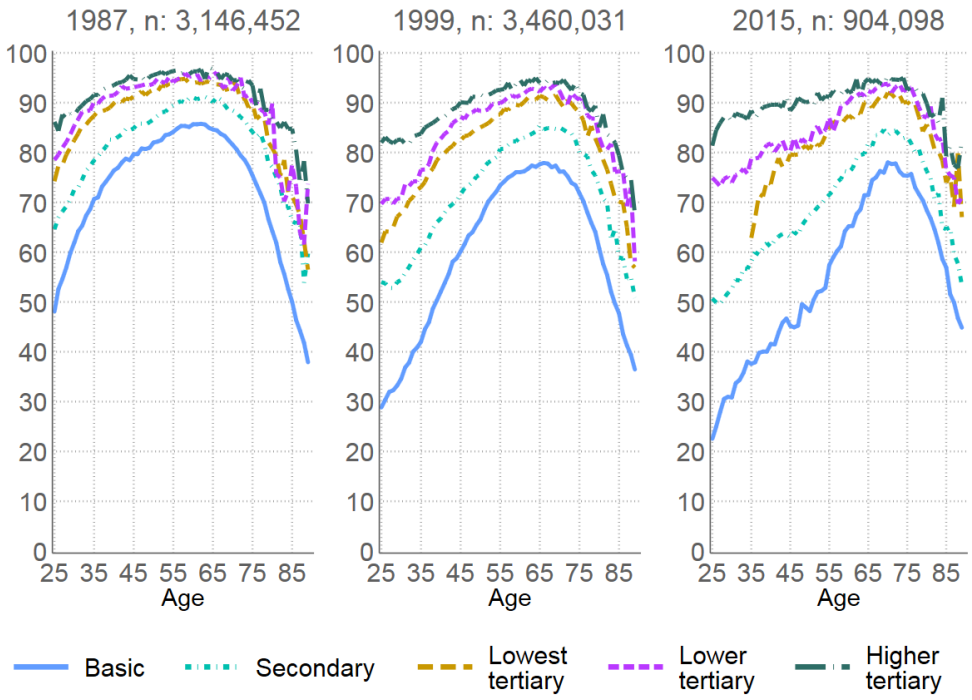


Figure 1. Turnout by age and education in the 1987, 1999 and 2015 parliamentary elections, %

Table 2 Turnout by age and social class in the 1987, 1999 and 2015 parliamentary elections among the employed population, %

Age group	Year	Manual	Lower non-manual	Upper non-manual	Self-employed (other)	Self-employed (agriculture)	Total
25–29	1987	61	72	82	69	89	69
	1999	48	61	73	55	80	56
	2015	48	61	78	54	70	57
30–34	1987	70	80	88	76	91	77
	1999	53	66	78	62	83	64
	2015	52	68	83	63	77	66
35–54	1987	79	86	92	83	93	85
	1999	68	78	87	73	87	76
	2015	61	75	87	72	84	74
55–69	1987	87	91	96	90	93	90
	1999	79	86	93	82	89	85
	2015	75	84	92	82	88	83
Total	1987	72	81	90	81	92	80
	1999	63	75	85	72	86	73
	2015	62	75	88	74	85	74

Note: The turnout from the 1999 and 1987 elections is adapted from Martikainen et al. (2002: table 16).

In table 2, the analysis from the 1987 and 1999 elections presented by Martikainen, Martikainen and Wass (P. Martikainen et al. 2002: Table 16; see also T. Martikainen 1988; P. Martikainen, Martikainen, and Wass 2005; T. Martikainen and Yrjönen 1991) is extended with the 2015 data. Unlike the other analyses in this dissertation, for comparability with older results we present the data for employed individuals only. Table 2 shows that the polarization of social class differences in turnout observed between 1987 and 1999 has continued into the 21th century. Polarization throughout the entire spectrum of the three employee classes has occurred. The overall turnout difference (i.e. the non-age specific difference from the "total" row of Table 2) between upper non-manual and manual classes (25 percentage points in 2015, cf. 22 points in 1999 and 18 points in 1987) and between upper non-manual and lower non-manual classes (13 points in 2015, cf. 10 points in 1999 and 9 points in 1987) has grown over time. Moreover, the gap between the lower non-manual and manual classes has slightly increased (13 points in 2015, cf. 12 points in 1999 and 9 points in 1987). The differences as well as their growth between 1999 and 2015 are largest in the age groups between 30 and 54 years, but polarization can be seen in all age groups. The only exception was

that the difference between lower non manual and manual classes has remained stable among 25–29-year-olds. Again there is polarization at both ends of the social class spectrum between 1999 and 2015. The turnout of employed individuals in the manual class declined slightly, whereas the turnout of those in the upper-non manual class increased during this period.

Table 3. Turnout in the 2015 parliamentary elections among 18–24-year-olds by their higher-educated parent (N: 101 791)

Parental education	%
Basic	28.0
Secondary	38.7
Lowest tertiary	51.0
Lower tertiary	58.6
Higher tertiary	69.3
Total	47.2

Although assessing socioeconomic differences in turnout among age groups younger than 25-year-olds is challenging, it is possible to assess the socioeconomic background of young adults on the basis of their parental socioeconomic positions. Table 3 shows the turnout rates of 18–24-year-old individuals by their parental education in the 2015 elections. Parental education stratifies younger voters clearly, even dramatically. The turnout of those individuals with at least one parent with a higher tertiary degree was two and a half times (or 41 percentage points) higher than that of individuals whose parents had no qualifications beyond basic education.

Figure 2, adapted from sub-study I, presents the estimates of socioeconomic differences, with electoral participation measured via three different strategies: 1) self-reported voting among the survey respondents, 2) register-based voting among survey respondents and 3) register-based voting among the survey-based sample. The results show that due to the combined effect of the social desirability bias and the self-selection of the survey respondents, survey-based estimates understate true socioeconomic differences in turnout. This underestimation is quite remarkable, especially when taking account of the lower register-based estimate of overall turnout. Importantly, one vote counts more in terms of electoral outcomes when turnout is lower. Here, risk ratios may be the most illustrative statistics, as they can be rather straightforwardly read as gap in representation stemming from unequal turnout. The results in figure 2 show that the excess risks of the highest relative to the lowest groups were 1.21 (=95.1/78.9) for education, 1.17 (=95.1/81.2) for social class, and 1.08 (=92.1/85.5) for

income when estimated using conventional survey techniques. By contrast, the excess risks estimated from the register-based analysis were at least twice as high: 1.46 (=86.8/59.6) for education, 1.36 (=87.0/63.8) for social class and 1.28 (=82.7/64.6) for income.

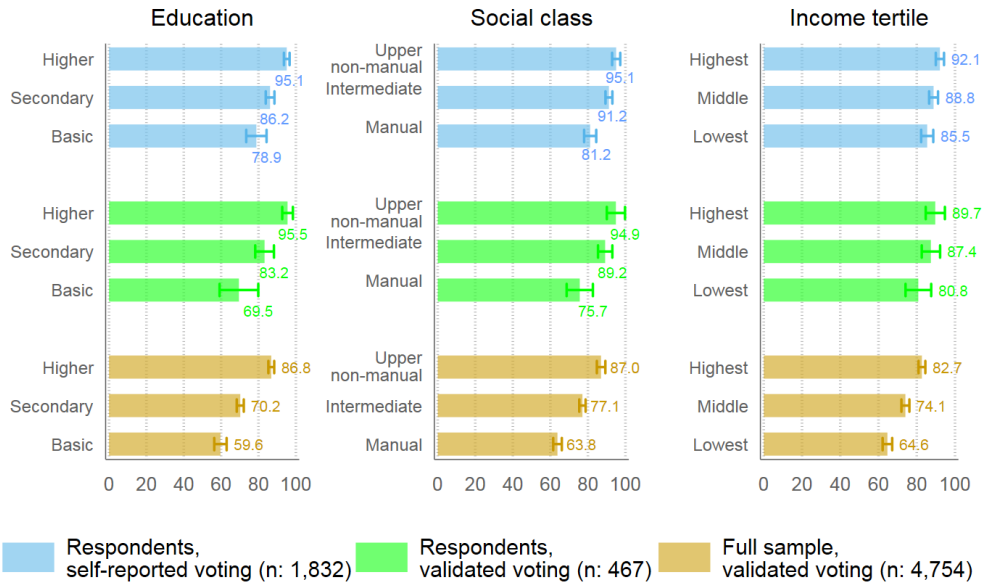


Figure 2. Estimated turnout by education, social class, and income using different measurement strategies and 95% confidence intervals, %. Adapted from sub-study I. Predictions from logit models, adjusted for three cubic splines for age.

8.2 The contribution of money and health

After assessing the overall steepness of the socioeconomic gradient in turnout, attention will now be turned to some of the mechanisms contributing in these differences. Sub-study II concentrated on one of the indicators of socioeconomic position, namely social class, and assessed the contribution of two mechanisms, money and health that may (or may not) explain the association between social class and turnout. Table 4 shows that income explains 26–34 per cent of the difference between non-manual and manual employee classes among the working-age population and 33–42 per cent among the older population. This is a relatively large contribution for mediation analyses in the social sciences. However, differing income did not explain the difference between manual and self-employed classes. On the contrary, the differences were larger when the income level was held equal. However, an additional analysis showed that this can be entirely attributed to turnout among those in the

bottom three income deciles. The turnout of the self-employed is less sensitive to low incomes than the turnout of the employees.

By contrast, days in hospital care explained only a marginal proportion of the social class differences in turnout. As an additional analysis (see the appendix of the original article), we included 16 other health-related indicators, and the explanatory power remained small. Thus, in sub-study II we concluded that only very weak evidence was found to support our hypothesis that, at the population-level, social class differences in health are substantial contributor to social class differences in turnout.

Table 4. Proportion of the effect of social class on voting in the 1999 parliamentary elections explained by income and days in hospital care within age group, %. Adapted from sub-study II.

	Social class (ref. manual)					
	Lower non-manual		Upper non-manual		Self-employed	
Age group	30–64	65+	30–64	65+	30–64	65+
Total	26.6	36.0	33.8	43.4	-16.6	-22.8
via income	25.8	33.1	33.4	42.2	-16.9	-22.4
via days in hospital care	0.7	2.8	0.4	1.2	0.3	-0.4

Notes: Models adjusted for education, gender, living with partner, native language, age and age squared. Nested regression models scaled with KHB-decomposition method. N: 254,996 for 30–64-year-olds; N: 76,968 for those aged 65 years and older

Figure 3 shows the interaction analysis for social class and income as well as social class and days in hospital care in predicting turnout. Both have interactions with social class, but they are in the opposite direction. Social class differences in turnout are smaller among those with higher income. On the other hand, the social class gradient in turnout remains quite stable in all hospital-care groups up to the 95th percentile. However, the differences disappear among those with the most hospital days, and thus apparently, the most serious health problems.

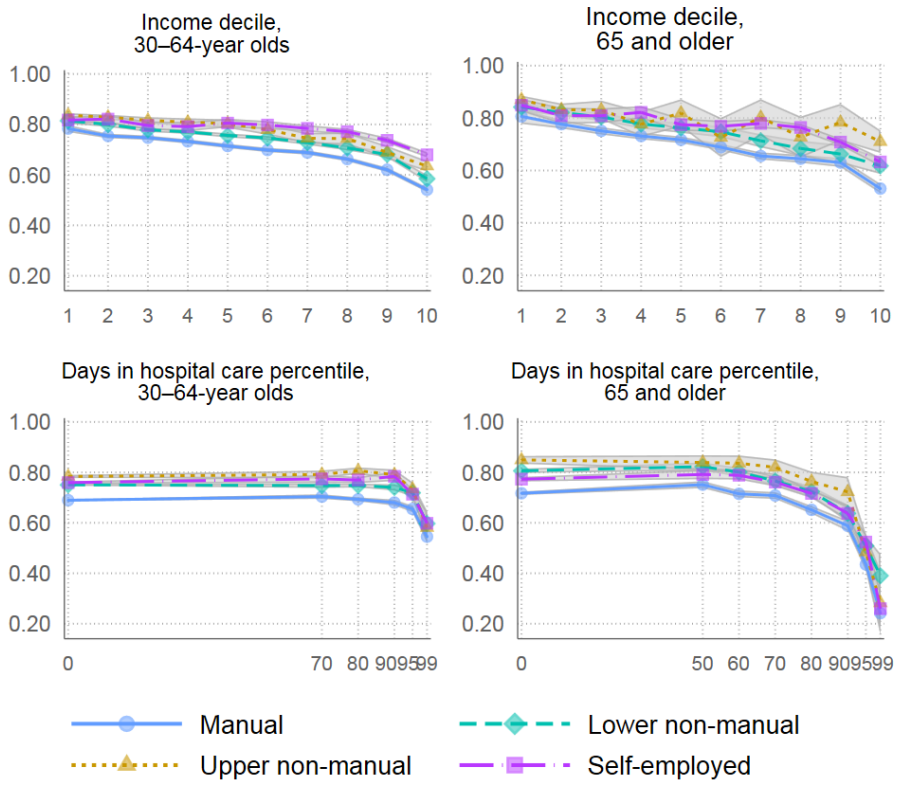


Figure 3. Predicted probabilities of voting by social class and income deciles as well as by social class and days in hospital care percentiles. Adapted from sub-study II. The figure is based on logistic regression adjusted for education, living with a partner, native language, age, age squared and gender. N: 254,996 for 30–64-year-olds; N: 76,968 for those aged 65 years and older. Shaded areas are 95% confidence intervals.

8.3 The importance of pre-adult factors

Table 5, adapted from sub-study III, analyses the importance of intergenerational transmission in turnout. It shows that the variance shared by siblings accounted for 25 per cent of the total variance in voting ($\rho * 100\%$) in the "empty" model, which included only individual-level characteristics: gender, age and native language. Of this shared part, 21 per cent can be explained by the mother's and father's education, social class and income. By adding parental voting in the 1999 elections to the model, 31 per cent ($R_2^2 * 100\%$) of this shared part was explained.

To assess whether this intergenerational persistence was large or small, we compared it to two other outcomes that are better understood: education, which is known for its large intergenerational effects (Erola, Jalonen, and Lehti 2016) and having children, in which siblings are known resemble each other to a moderate degree (Raab et al. 2014). To facilitate comparison, we dichotomized these outcomes as indicators of completing tertiary education and having at least one child. This is since linear prediction of dichotomous outcomes can rarely produce very large overall fit, even when the predictor and outcome are strongly related (Cox and Wermuth 1992). The results showed that voting was almost as strongly transmitted as higher education (25% vs. 27%) and considerably more strongly than reproduction (25% vs 15%). Correspondingly, of this shared variance between siblings in turnout, parental socioeconomic position explained 21%, which again placed it between education (38%) and having children (10%) in terms of its predictive power.

Table 5. Sibling-similarity in voting relative to completing tertiary education and having at least one child. Adapted from sub-study III.

	ρ	R_2^2
Voting in 2015		
"Empty"	0.247	
SEP-adjusted	0.206	0.207
SEP+Parental voting	0.184	0.312
Tertiary degree		
”Empty”	0.266	
SEP-adjusted	0.184	0.380
Reproduction		
”Empty”	0.147	
SEP-adjusted	0.134	0.100

Notes: R_2^2 : Proportion of within family variance reduced relative to the “empty” model. “Empty” models include an individual’s age, gender and native language; SEP-adjusted models include education, social class and income from both parents and their interaction. The analysis includes cohorts born between 1980 and 1989. N: 34,628 individuals; 16,353 families.

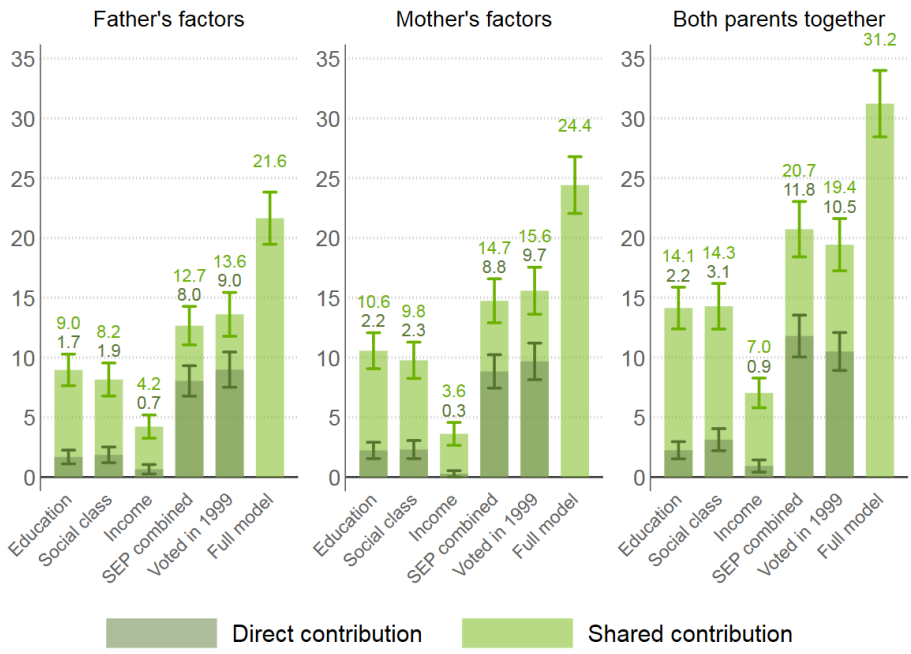


Figure 4. Proportion (%) of unobserved between-family variance of voting in the 2015 Finnish parliamentary elections explained by different parental factors with 95 per cent confidence intervals (R_2^2). Adapted from sub-study III. SEP combined: education, social class and income in the same model. All models adjusted for individual's age, gender and native language. The analysis includes cohorts born between 1980 and 1989. N: 34,628 individuals; 16,353 families.

Figure 4, again originating from sub study III, shows the decomposition of the contribution between different observed parental characteristics in more detail (i.e. the components contributing on R_2^2 from table 5). Among the indicators of parental socioeconomic position, education and social class were roughly of equal importance, whereas the independent contribution of income was small. Together, these indicators of socioeconomic position explained an equal share of variance to that of parental voting in 1999. In addition, the mother's and father's characteristics were roughly of equal importance in explaining this shared variance between siblings in each of these measures. These variables together accounted for 31 per cent of the shared variance, as already presented in Table 5.

8.4 The consequences of intra-generational social mobility

Figure 5, drawn from sub study IV, shows that the turnout of those who experienced intra-generational social mobility between 2000 and 2011 settled between the levels of

their socioeconomic group of origin and destination. However, social class mobility between intermediate and lower sales and service classes was an exception to this pattern. Moreover, the difference was not statistically significant in nine of the 24 possible comparisons between stabile and mobile groups. By contrast, the pattern was somewhat clearer with regards to income.

Overall, this result implies that intra-generational mobility acts as a mechanism that constrains socioeconomic differences in turnout. When estimating socioeconomic differences in turnout, including only those individuals whose position did not change resulted the differences between groups to be from 0 to 26 per cent smaller, depending on the compared groups.

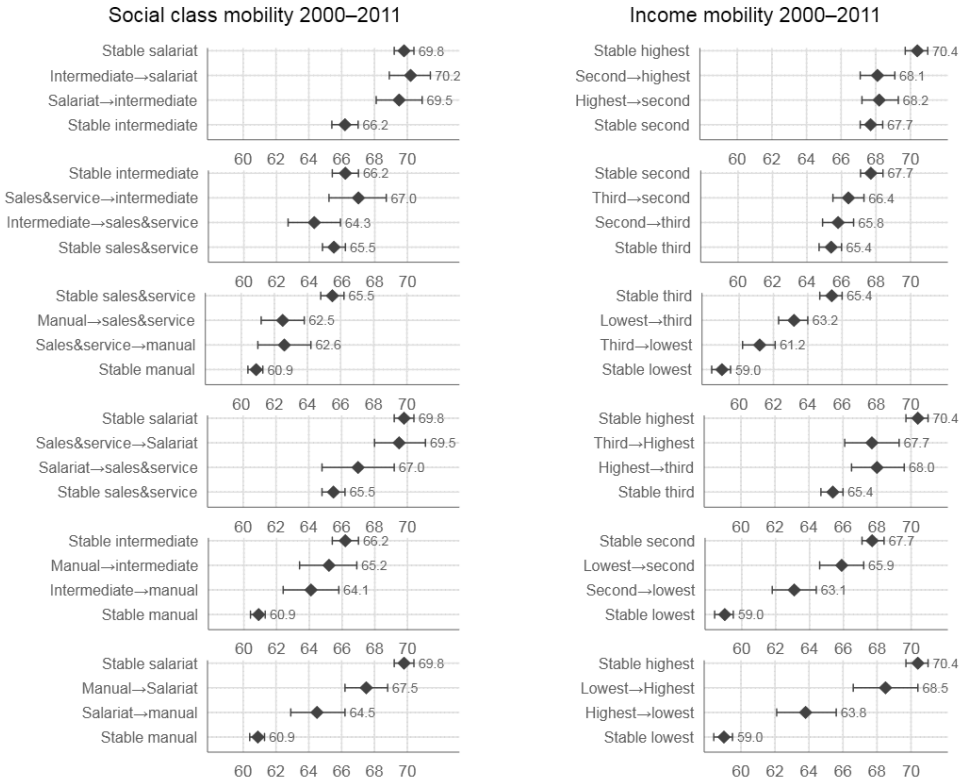


Figure 5. Estimated probability to vote in the Finnish 2012 municipal elections (%) and 95 percent confidence intervals by social class and income quartile pairs and mobility between them. Adapted from sub-study IV. Based on logistic regression adjusted for gender, age, education and own and parental voting in 1999 parliamentary elections. N=143,322 for social class analysis; N=150,709 for income analysis. The analysis includes cohorts born between 1964 and 1982.

9 Discussion

9.1 Main results

This dissertation consists of four sub-studies investigating socioeconomic differences in electoral participation in Finnish elections. The objective was to measure the gaps between and assess the importance of some of the factors contributing to them. Using individual-level register-based data, these analyses were able to overcome some of the limitations of previous studies regarding both of these goals. In this last chapter, I will first briefly summarize the main empirical results. Second, I will address the limitations of the analyses, and finally, formulate some programmatic and theoretical guidelines for the future research.

Socioeconomic differences in electoral participation are at alarming levels in contemporary Finland, particularly regarding educational differences in younger age groups. This was demonstrated at the beginning of the results section using both individual education and parental education as the indicator of socioeconomic position. Moreover, socioeconomic differences in turnout have become polarized during recent decades. Those with only secondary or, especially, basic education were considerably less likely to vote in 2015 than in 1999, whereas those with the highest qualifications voted slightly more. Polarization was also demonstrated using social class as an indicator. This finding is in line with several previous studies, which have observed similar associations regarding the overall pattern of socioeconomic differences (Gallego 2007; P. Martikainen, Martikainen, and Wass 2005) and their particular strength among younger age groups (Rubenson et al. 2004). Moreover, analyses of trends have also found evidence of a polarization in socioeconomic differences in turnout (Armingeon and Schädel 2014; Dassonneville and Hooghe 2017; G. Evans and Tilley 2017; Heath 2016; however, for analyses showing stability, see Leighley and Nagler 2013).

While the average educational level has increased among the Finnish population, those with the lowest educational qualifications have arguably become an increasingly disadvantaged and more negatively selected population group. On the other hand, as achieving a high level of education has become more commonplace, the positive selection of individuals with high qualifications should be less prominent than was previously the case. In this light, the observation that the turnout of those with high educational qualifications has actually increased is particularly interesting. Thus, the polarization of turnout cannot be entirely accounted for by educational inflation, for example.

Despite the observations of a strong and polarizing socioeconomic gap in turnout being expected on the basis of the previous literature, the steepness of the gradient was nevertheless surprising. Sub-study I offered a partial explanation for the unexpected strength of the result. The findings suggested that survey data, the primary source of previous evidence regarding individual-level determinants of voting, tend to underestimate socioeconomic differences in turnout. This is due to the self-selection of respondents – i.e. those who are more interested in voting are also more interested in answering surveys – and social desirability bias, which leads to an over-reporting of voting. This result was unexpected in the sense that previous studies have argued, contrastingly, that social desirability bias is stronger among those with more advantaged positions, leading to an overestimation of the socioeconomic gap in turnout (Ansolabehere and Hersh 2012; Belli, Traugott, and Beckmann 2001; Bernstein, Chadha, and Montjoy 2001). However, these studies were unable to assess the self-selection effect, as they compared only self-reported voting to the actual voting records of survey respondents. In addition, our matching of validated voting data was possibly of higher quality than in previous studies. Validated voting, as well as other register-based measures, was linked using personal identity codes, which offers virtually error-free matching (c.f. e.g. Sund 2012). Moreover, there may also be an opportunity effect, meaning that turnout of the most advantaged socioeconomic groups is too high for over-reporting to have much absolute effect. Furthermore, underestimation of educational differences in surveys due to both self-selection and over-reporting have been recently reported also by another study using register-linked surveys from Denmark (Dahlgaard et al. 2019).

Sub-study II offered insights into the interrelationships between income and social class in explaining turnout. Income explained around one fourth to one third of the social class differences in turnout among employee classes and slightly more among the older population. Interestingly, however, the income-turnout association was much weaker among the self-employed population. In turn, the analysis of sub-study II revealed health differences to be only a weak contributor to the social-class-turnout association at a population level. However, among those most severely affected by health problems, the importance of social class for voter turnout diminishes.

Sub-study III investigated the role of intergenerational transmission in participation in the 2015 parliamentary elections. The results provided support for the notion that it exerts a major impact. For instance, sibling correlations in voting were only slightly lower than in education when education was dichotomized. Education, in turn, has one of the largest known sibling correlations among variables usually found in social scientific datasets, even approaching that of sibling similarity in height (Björklund and

Jäntti 2012; Björklund and Salvanes 2011; Mazumder 2008; Silventoinen 2003). For the observed parental factors, the individual's mother and father explained a roughly equal amount of this shared part, with the mother's factors being perhaps slightly more pronounced. The three socioeconomic factors of both parents and their participation in the 1999 elections explained together roughly one third of the variation shared by siblings. Socioeconomic position and voting had roughly equal contributions. Among the components of socioeconomic position, income captured the least amount of variance, but education and social class were again equal in their contribution. The finding on the relative strength of the social class variable contributes to the status transmission theory of political participation, as this theory has conventionally considered education the driver of intergenerational reproduction of participation (Beck and Jennings 1982; Gidengil, Wass, and Valaste 2016; Plutzer 2002; Verba, Burns, and Schlozman 2003; Verba, Schlozman, and Burns 2005).

In sub-study IV, we tested the effect of intra-generational social class and income mobility on voting in the 2012 municipal elections. Our hypothesis was that the turnout of socially mobile individuals would settle between stable members of their group of origin and destination. Such a pattern had been previously found when using mortality, health measures and offspring's education as an outcome (Bartley and Plewis 1997, 2007; Blane, Harding, and Rosato 1999; Plewis and Bartley 2014). In our analysis of electoral participation, this hypothesis was clearly successful when unadjusted. Moreover, even when adjusted for age, gender, education as well as an individual's own and parental voting in 1999, the turnout patterns followed the hypothesis in most cases. Such a result implies that intra-generational social mobility has the tendency to reduce differences between socioeconomic groups in voting. Thus, increasing intra-generational mobility should narrow the socioeconomic gradient in turnout.

Table 6 summarizes some of the main contributions of these empirical findings into the established knowledge in the literature.

Table 6. The contribution of empirical findings in relation to previous knowledge

What was previously known	What did this study add	Implications
An advantaged socioeconomic position predicts higher propensity to vote. In Finland, socioeconomic differences in turnout grew between 1987 and 1999. International evidence has indicated polarizing during the 21st century as well.	Socioeconomic polarization of voting has continued in Finland in the 21st century. Disadvantaged individuals vote less likely than before; advantaged vote more likely. Educational differences in younger-age groups are particularly alarming (Summary).	Problems in the legitimacy of representative democracy. Possible biased decision-making. Also a worrying social indicator, potential problems in the social integration of the disadvantaged groups.
Surveys overestimate the levels of turnout due to self-selection of the respondents and social desirability in self-reports of voting.	Social desirability and non-response biases lead to an underestimation of socioeconomic differences in voting (Sub-study I).	Socioeconomic inequality in electoral participation is a more pressing social problem than indicated by previous evidence.
An individual's pre-adult background is an important determinant of his/her voter turnout.	Parental education discriminates the turnout of young adults very strongly (Summary). The sibling similarity in turnout is almost comparable to education when dichotomized. Both parents play roughly equal role in accounting for these differences (Sub-study III).	Triangulation of old evidence with a broader analytical strategy. Highlighting the problematic inequality of opportunity: individuals' voting propensities are strongly affected by factors that are beyond their own control. Points toward potential for early-life interventions.
Socioeconomic differences in turnout can be captured with several indicators, such as education, social class and income.	Nuanced description of the social class-income relationship in explaining voting (Sub-study II). The same observation applies to parental socioeconomic indicators (Sub-study III). Education, social class and income contribute via partly shared but also partly distinct pathways (Sub-studies I–IV).	Applying multiple indicators of socioeconomic position helps both to build more comprehensive picture of the overall importance of socio-economic position and to specify the distinct pathways via which it operates.
Mortality rate / health outcomes among those who have experienced intra-generational social mobility are between the stable members of their position of origin and destination.	The same pattern can be seen in the electoral participation. Change in socioeconomic position during an individual's adulthood predicts change in voting propensity (Sub study IV).	Achieving a high level of intra-generational social mobility is likely to narrow turnout differences between socioeconomic groups

9.2 Methodological considerations

Despite the strengths of the empirical design of this dissertation, such as (with the exception of sub-study I) the large sample size and lack of self-selection or self-reporting bias and high-quality matching based on personal identity codes, there are also important limitations that must be addressed. First, with the exception of sub study II, the data drawn from the electronic voting registers did not constitute a random sample of the Finnish electorate. This is because municipalities themselves could decide whether to participate in the electronic register pilot and in which wards these registers were used. The 2015 register over-represents rural areas, particularly in Northern Finland, while under-representing the capital, Helsinki. However, an advantage is that individuals could not choose, and generally do not know, whether they are included in the registers. Therefore, no individual-level self-selection occurred in this regard. Moreover, our diagnostics revealed no substantial bias in our background variables, except perhaps some overrepresentation of those with secondary-level educational qualifications.

However, sub-study III is perhaps more vulnerable to the limitation of including data only from certain wards than the other sub-studies, as the research design required individuals to have at least one sibling identified in the data. As there is evidence indicating that siblings with less advantaged socioeconomic positions tend to live closer to their parents (Chan and Ermisch 2015; Michielin and Mulder 2007), and thus also closer to each other, it is possible that they were overrepresented in the sub-study. However, the size of Finnish electoral wards is usually small, as they contain only one polling station, which is likely to attenuate this bias. In addition, as Finland has a low median age of children moving away from their parents (Billari, Philipov, and Baizán 2001), the case of multiple siblings living with their parents over the age of 25 is uncommon.

The second possible limitation of sub-study III was related to the essential aim of the analysis being to explain variance in voting. Variance, however, is a difficult concept when dealing with binary outcomes, as in the case of electoral participation. In such instances, the efficiency of regression modelling is likely to be limited, and it usually provides low model fits even if an important relation is present (Cox and Wermuth 1992). Furthermore, as demonstrated in sub study III via Monte Carlo simulations, this is also likely to underestimate siblings' share of this variance. Therefore, the true importance of pre-adulthood factors is likely to be larger than the one quarter that was estimated. In the future, when more data will hopefully be available, this analysis could be complemented, for example, with outcome variables constructed from voting information from multiple elections.

Third, the information on voting in 1999 was not obtained directly from electronic registers; rather the data had to be collected by hand from paper lists. Although exact matching to other registers based on personal identity codes was again possible, there is nevertheless always a possibility of human error in manual typing.

Fourth, with register-based data, a researcher can naturally study only those variables that can be found in the registers. For the dependent variables usually investigated in electoral studies, voting is almost the only variable that can be acquired at an individual-level (however, political candidacy constitutes an exception, see Lindgren, Oskarsson, and Persson 2019b). Furthermore, most of the independent variables that can be included in the analysis are related to the socio-demographic factors of an individual, although others also exist, as demonstrated by the analysis of health in sub-study II. For example, psychological factors are excluded from register-based data. Register-linked surveys, as utilized in sub-study I, can help in this regard, but they too have their limits. The purpose of register-based research is not to *replace* traditional surveys but to *complement* them.

Fifth, this dissertation itself is sufficient to satisfy only two of the six motivations for studying socioeconomic differences in turnout presented in the chapter 3. The first motivation requires evidence of the inclusive effect, or other comparable beneficial external effect, of voting participation. The second motivation, namely the spillover effect to other forms of participation, would also require further evidence demonstrating that such an effect actually exists. In turn, if we attribute absolute value to equal participation as the cornerstone of representative democracy, as is implicitly the case in the third motivation, then socioeconomic inequality in voting is worrying as such. However, this motivation requires the assumption that voting is inherently valuable, which may be the most controversial of the assumptions underpinning the motivations. For the fourth motivation, relating to the untapped source of potential support for candidates and parties, the analysis presented in this dissertation is sufficient. However, to provide a fuller picture of the issue, the approach pursued here could be complemented by an analysis of social class and party choice (for a good example on such an approach, see G. Evans and Tilley 2017). The fifth motivation, relating to inequality in representation and thus to the outcomes of political decision-making, requires more components than simply voting equality. These include factors such as electoral mathematics, differences in preferences between groups and the responsiveness of the representative institution in question.

Finally, and perhaps most importantly, limitations also exist in the analysis the sixth motivation, causal inference. As no manipulative intervention or other type of exogenous shock was involved in determining the socioeconomic factors in the

analyses of this dissertation, the question of whether education, social class position or income actually *cause* voting remains inconclusive. This is a particularly relevant issue regarding the mediation analysis of sub study II, as the relevance of the analysis was largely based on the assumption of causality.

It could be argued, nevertheless, that sub-studies III and IV still contribute to the identification of causality, even if their findings are inconclusive. For example, the sibling correlation in sub study III can be argued to include the causal effect of everything that siblings share, which is admittedly still a big black box. Furthermore, sub-study IV employed baseline controls of social class / income and voting at the beginning of the follow-up. Thus, the results offer a somewhat stronger suggestion of an effect than do cross-sectional observational designs.

Finally, as is always the case in single country studies, the generalizability of the results to other countries remains an open question. As the main associations between most of the independent variables are fairly robust across at least those countries with a functioning democracy and advanced economy, the main results should be applicable to other countries as well. However, there may also be interesting context-specific details that future studies could elaborate more closely.

9.3 Conclusion: what have we learned?

Besides the specific empirical contributions discussed in section 9.1, also more persistent theoretical themes have been present throughout the sub-studies of this dissertation. In this concluding section, I aim to synthetize these separate contributions at a more general level in order to complement contemporary understanding of who votes and, second, to provide guidelines for future studies. I shall discuss four themes, formulated in the form of theses.

9.3.1 Description is virtuous – over-adjusting is not!

Documenting the substantial size of the socioeconomic gap that exists in electoral participation in contemporary Finland has been one of the central contributions of this dissertation. Now, I wish to take a step back and ask why such an observation is a contribution. Sub-study I suggested a partial answer, pointing towards the data limitations of previous studies. That is, previous survey-based estimates may have been downwardly biased.

Unfortunately, this may only be a partial rather than exhaustive answer. One concern is that political participation studies might undervalue descriptive results. It is often argued that one of the most important reasons for studying the determinants of voter

turnout is the normative problems that arise from the unequal democratic representation caused by unequal voting propensity. Thus, measuring the actual differences between groups should be of central interest. Moreover, it should be emphasised that in performing this task the possible existence of a third variable that can explain such differences is usually irrelevant. For example, if the probability of voting for those with above-median income were A and those with below-median income B, this would imply that the higher-income group had A/B times larger influence in the nomination of representatives, which, in turn, may create policies that favour the higher-income group. This discrepancy – which is the risk ratio, to be precise – would remain even if the income-voting correlation were completely spurious. Of course, the question of whether differences in the propensity to participate in elections lead to actual differences in decision-making is more complicated. It also depends on non-turnout related factors, as discussed in the methodological considerations section (9.2) more thoroughly. However, assessing the actual gap is the contribution of turnout-studies here; assessing the other aforementioned factors is the task of research on other topics.

It should be noted that the description is particularly germane when studying the effect of the socioeconomic determinants of voter turnout, or other comparable socio-demographic factors such as gender or race/ethnicity. These groups are roughly what Allardt (1988) considered "social structure", or what Smets and van Ham (2013), more mundanely, place under the title "resource model" in their meta-analysis. The issues of unequal representation are much less straightforwardly a concern when studying the impact of many other types of determinants of turnout, such as – to pick some of the variables from the long list offered by Smets and van Ham – media exposure, political discussion, a sense of civic duty, political interest, trust in institutions or concurrent elections.

Also in analyses of a more explanatory nature, the over-controlling of models is a potential concern. If the main independent variable of interest is socioeconomic (or demographic), a researcher should consider carefully before adding, for example, factors directly related to the motivation to participate in elections, such as political interest, political knowledge or trust in political institutions. These factors can plausibly act as mechanisms that explain part of the association between socioeconomic position and voting. However, treating these factors as confounders is, at least to me, usually rather implausible. I am certainly not the first to make this point (e.g. Blais, Gidengil, and Nevitte 2004; Denny and Doyle 2008), but I feel that this is a piece of advice that should be taken more seriously in the field. A review of the empirical studies published in top journals of political science estimated that between

40 and 67 per cent of the studies controlled for intermediate (i.e. post-treatment) variables (Acharya, Blackwell, and Sen 2016). Even experimental studies, where there are arguably less need for control variables overall, do not fare much better than observational analysis. Unnecessary post-treatment variable adjustments were found in almost half of the experimental studies published in the top political science journals (Montgomery, Nyhan, and Torres 2018). In addition to post-treatment adjustments that may lead to the controlling of an actual effect, there has been greater recognition of the need to avoid unnecessary controls from the perspective that they can introduce bias into regression models even when they are uncorrelated to the main variables of interest. This has been discussed particularly in the context of rapidly-developed counterfactual graphical causal frameworks (Elwert 2013), but also elsewhere (Achen 2005).

The argument can be summarized by contrasting it to the aims of the study specified in chapter 6 of this dissertation. Following the research programme of Goldthorpe (2016), the study set out to perform the dual task of making population regularities visible and, second, transparent. Making regularities visible is what can be achieved with a solid descriptive analysis, whereas over-controlling reduces this visibility without providing much transparency in return.

Although this section has thus far mostly discussed the importance of measuring the actual gap in turnout from the perspective of equal representation, similar arguments could be used in five of the six motivations for studying turnout presented in the chapter 3. Only the sixth motivation, discovering causal relations, cannot be achieved this way in non-experimental settings. However, although revealing policy implications was one of the central motivations behind discovering causal relations, my sixth empirical thesis, essentially a policy implication arising from sub study IV, does not require causality between social class/income and voting. Increasing intra-generational social mobility could narrow differences between socioeconomic groups, even if the association between social class/income and voting was not causal.[13]

In this specific case, the question of whether such a straightforward description is a scientific contribution can also be approached from another perspective. Although documenting the large gap between socioeconomic groups in voting is a central contribution of this dissertation, such a task should perhaps not be considered a

[13] This being said, I must admit that we may have been guilty of over-controlling in sub-study IV. Using such heavy controls very possibly understated the effect size regarding the main theoretical argument there (thesis 8 of section 9.1). Although the strategy also has its advantages, perhaps offering a stronger (yet still suggestive) indication of causality and more clarity on which analysis answers which questions could have been beneficial. In addition, including native language in models of sub-study II may have controlled a potential pathway to differences in voting propensity that is generally shared by the siblings.

scientific contribution in the future. Instead of a small-number of individual academic scholars, documenting gaps in turnout could be performed in a more institutionalized form undertaken by statistics officials. This is a topical issue, as we live in an age of rapidly expanding coverage of electronic voting registers, at least in Finland. Therefore, to close this section, I offer two straightforward policy recommendations. First, I encourage the Ministry of Justice to facilitate the expansion of electronic voting registers. Second, I encourage Statistics Finland to publish a report or similar after elections, exploring the basic statistics of turnout in different population groups.

Contrary to what can sometimes be thought when presenting policy proposals, I am optimistic of the success of these recommendations, as it seems that they are already being implemented. To my understanding, the voting register pilot is being expanded, with plans for eventual full coverage. In addition, Statistics Finland, for their part, have taken promising steps by publishing an excellent report on the demographics of voting after the 2017 municipal elections (Official Statistics of Finland 2017) and 2019 parliamentary elections (Official Statistics of Finland 2019). These important actions should be continued to improve the state of democracy – or, at least, to make its deficiencies more visible. The benefits of electronic voting registers as an administrative innovation are not limited to providing administrative information.

9.3.2 Socioeconomic position is multi-dimensional – yet still an entity!

The second theme that has persisted throughout each of the sub-studies is the use of multiple indicators of socioeconomic position. In these sub-studies, education, social class and income were used. In addition, other indicators are also likely to be relevant, such as wealth, including home ownership, and status. In sub-studies II and III, in particular, we observed, that although a substantial part of the effect of different socioeconomic factors was shared, important unique pathways also existed through which each operated (see also Table 6 in section 9.1.). This also suggest that different indicators of socioeconomic position have partly differing sets of mechanisms that create the socioeconomic differences in participation. These specific mechanisms associated with each factor, as well as the question of which mechanisms are shared, could be assessed in a more detail in the future studies.

Overall, I encourage the simultaneous use of multiple measures of socioeconomic position. Moreover, it should be underlined that the benefits of such a multi-indicator strategy are not limited to its more comprehensive coverage or increasing the reliability of the measure of socioeconomic position, although these are relevant motivations for using multivariate scales as such (Bielby, Hauser, and Featherman 1977; Bollen 2002). In addition, different components of socioeconomic position map concretely and genuinely different things.

Although the components of socioeconomic position follow partly separate pathways, the corollary is that the pathways they travel are also partly shared. This is neither a trivial notion. The concept of socioeconomic position itself can be an important analytical tool in structuring our understanding of the determinants of voting. Interestingly, different components of socioeconomic position are typically used as explanatory variables for different research purposes. Education has been most commonly addressed when studying questions of causality. By contrast, social class is often used when the focus of analysis includes voter choice in addition to voting propensity. Income, in turn, is frequently the variable of choice for those who wish to assess the representational inequality arising from different voting propensities between groups of people. Although each of these indicator choices are justified[14], wider adoption of such an umbrella-type conceptualization could provide a more coherent framework for understanding the commonalities of these indicators. More than that, socioeconomic position constitutes an entity that occupies a central place in the structure of society in the Allardtian typology discussed in chapter 2 of this dissertation.

As an interesting detail, sub study II also provided some evidence that while different indicators of socioeconomic position involve partly different mechanisms for influencing turnout, they also interact with each other. An advantaged employee or especially the self-employed social class position protected against the negative effect of low income on turnout. This suggests that socioeconomic position is not only the sum of its parts minus their shared contribution; rather, the different components of socioeconomic position are also interrelated in other, more interactive, ways.

In addition to individual-level factors, these observations apply also to indicators of parental socioeconomic position, as shown in sub-study III. A possible exception was parental income, which accounted for only a small direct contribution in the full model. On the other hand, when interpreting the regression coefficients of the full model, the magnitude of both parents' independent contribution was several percentage points.

In terms of concepts, both *socioeconomic* status and socioeconomic position have been used interchangeably in the previous literature. I find socioeconomic position slightly

[14] For example, studying education and causality is appealing, since it is relatively easy to imagine education-related mechanisms that foster turnout, such as civic skills learned in schools and because education offers a potential venue for policy intervention. Social class and vote choice is an interesting subject because of the historical (and Weberian!) connection between class and party, as well as the connection between class-stratification and universal suffrage discussed in the chapter 3. Studying income and policy representation is warranted, since income structures individuals' positions in many important everyday political struggles, such as whether the government should raise taxes or cut services.

more precise, and recommend its use.[15] This is because status is sometimes used as a specific component of socioeconomic position (Chan and Goldthorpe 2007b; for further discussion, see next section of this dissertation). Therefore, combining it under the concept of socioeconomic status can sound tautological. Relatedly, the concept of socioeconomic status may also create the impression that status is the key mechanism behind the socioeconomic gap in turnout, which would be a bold assumption indeed (for a corresponding argument in epidemiology, see Marmot 2017). Admittedly, there is also a disadvantage to using the term socioeconomic position in favour of socioeconomic status. As an abbreviation, SEP is perhaps more difficult to say than SES. However, as neither solution is perfect, analytical clarity should be privileged over phonetical convenience.

9.3.3 Social class still counts – and increasingly so!

Among the different components of socioeconomic position, social class has received particular attention in this dissertation. Social class was among the main variables of interest in each of the sub-studies, and Sub-study II concentrated specifically on it. This special emphasis was because, at the beginning of my project, the variable had been underused in voter turnout research relative to the much more widely employed education and income.[16] Smets and van Ham's (2013) meta-analysis of the individual-level determinants of turnout studies in the first decade of the 21st century identified education as the most commonly used item. It was employed in 67 of the 90 studies included, even outnumbering factors such as age (65 studies) and gender (61 studies). Income was also frequently used (40 studies), whereas only nine studies used social class (i.e. "white collar occupations") as a variable.

In sub study II, my co-authors and I argued for the benefits of including social class on four bases. The first point, as discussed in the previous theme, was the empirical observation that different socioeconomic factors follow partly different pathways; thus, the importance of an individual's social position can be captured more comprehensively when using multiple indicators simultaneously. Second, social class is a useful indicator for capturing intergenerational and life-course related effects in turnout. It is the dominant measure when studying these effects in the long sociological tradition of social stratification and mobility studies (Erikson and Goldthorpe 2002). Sub-study III provided empirical support for the intergenerational aspect of social

[15] I must admit that Sub-study IV was not entirely coherent in following this guideline, as both forms were used there.

[16] In fact, the original research plan of this dissertation was entitled *Social class and electoral participation in Finland 1999–2015*. However, I decided to shift the focus relatively soon in a more holistic direction to cover three socioeconomic indicators, as I felt it had the potential to make more fruitful theoretical contribution.

class, as parents' social class was an equally important predictive factor in their offspring's turnout as education. Sub-study IV, in turn, provided empirical evidence of the usefulness of social class in the life-course approach. As the achieved level of education is usually stable after early adulthood, studying changes in education is nonsensical in many contexts. By contrast, income might fluctuate too strongly for many research purposes, for example, when comparing individuals of widely differing ages (e.g. between the working-aged and pensioned population). Social class, conversely, is more stable and can be specifically defined, and it serves relatively well as a proxy for permanent income and the prospects of income development (Goldthorpe and McKnight 2006).

The third point argued in sub-study II was that knowledge of the class-turnout association is required to form a comprehensive understanding of class voting. As the foundative mobilization of political parties often occurred in the context of social classes, the social class cleavage has understandably received much attention in the literature. Although, the association between social class and party choice has arguably weakened during recent decades (Jansen, Evans, and Graaf 2013), such an observation alone is insufficient to conclude that the significance of social class itself has declined. Instead, the association between class and party choice has arguably been replaced by an increased class-turnout polarization (G. Evans and Tilley 2017; Gattig 2006). Fourth, as it is closely connected to an individual's resources, the resource model of turnout, which is the most commonly used framework in turnout studies according to the meta-analysis by Smets and van Ham (2013), could benefit from the wider inclusion of social class. To demonstrate this point with a prominent example, the resource model was originally introduced in an influential article by Brady et al. (1995), who argued that socioeconomic differences in political participation could be explained by the differing amount of participation-fostering resources possessed by individuals in different socioeconomic groups. In this seminal work, these resources were time, money and civic skills. In the latter category, skills learned on the job transpired to be particularly important in explaining socioeconomic differences. Although Brady et al. (1995) followed the conventions of the field by explaining educational differences in terms of these resources, both money and job skills are mostly connected to education through occupations. Thus, social class may offer a more straightforward linkage between these resources to social structure.

Membership of a social class means sharing certain employment relations, indicating an individual's place in the system of economic production, i.e. the conditions under which individuals earn their living. Therefore, individuals occupying the same social class position also share certain structural constraints and risks. In addition, despite

the prominence of the resource model in explaining political participation, the utility of social class is unlikely to be reducible simply to resources (c.f. e.g. Brady, Verba, and Schlozman 1995; Smets and van Ham 2013). As it is intimately connected to an individual's activity, social class is also potentially closely related to factors such as an individual's social networks (Savage 2015).[17]

As an example of how adopting occupational measures could improve our understanding, let us consider the ongoing discussion on the role of education in fostering political participation. Persson (2015) presented three main views found in the literature that aim to explain the strong association between education and participation. The possible explanations were 1) the direct effect of civic skills acquired in education, 2) education as a proxy for pre-adult factors and 3) education as a relative measure, with social status as the crucial mediator. Social status, in turn, was defined as "having a central social network position in society" (Persson 2015, 692). Furthermore, in his empirical analysis of educational differences in party membership, Persson (2014) operationalized social networks on the basis of the occupations of an individual's acquaintances. To call this status is well-grounded indeed, as it comes peculiarly close to both the empirical and theoretical rationale behind the validity of Chan and Goldthorpe's (2004, 2007b) occupation-based social status scale.

The Chan–Goldthorpe status scale, in turn, has later been criticized for being too close to social class schemes to allow the two to be empirically disentangled (Bihagen and Lambert 2018). Regardless of the possible need for a separate status measure or, conversely, the sufficiency of social class alone, the discussion of the intermediate mechanisms in explaining education-participation association nevertheless indicates the usefulness of adopting occupational measures in the field. It also is an example of how wider adoption of socioeconomic position as an analytical umbrella could be beneficial in specifying the actual contribution of its separate components by articulating those components clearly. In this example, the effects of education on turnout may be understood better by studying social class/status effects as its mediator (c.f. Persson 2014).

As to the reasons for the previous underuse of social class, Leighley and Nagler (2013, 23) attributed this, in particular, to an influential study of the 1972 US elections by Wolfinger and Rosenstone (1980), who failed to observe a strong independent effect of social class after education had been taken into account. Expanding on this explanation, I would claim, more generally, that social class had been underused perhaps because of the rather US-centred nature of the field of electoral studies. In

[17] Understanding social networks as resources is also possible, but it perhaps sometimes requires stretching the theoretical model. They may be better handled under some other title.

turn, stratification research concerning the concept of social class has been more predominantly European school of thought. In the US, inequality is also discussed widely, but more in terms of income than social class. At a deeper level, this may demonstrate the individualistic idea of (wo)man and society rooted in the American worldview, as Sombart noted already 113 years ago in his classic *essay Warum gibt es in den Vereinigten Staaten keinen Sozialismus*? (Sombart 1906). Income inequality is essentially an individualistic conceptualization, whereas social class implies a more collective perspective on stratification. Nevertheless, the strength of a collective approach, as Goldthorpe (2010) suggests, is that it can provide better access to the structural processes that drive people to unequal outcomes than can the individualist view of inequality. A collective perspective could be particularly well suited to studying the act of voting, where the effect arises not from an individual vote but from a large number of votes collectively. This issue will be discussed more within the last theme in this concluding section.

In addition, researchers may have been dissuaded from using social class, or some other occupation-based measure of stratification, because it is relatively hard to operationalize (e.g. Leighley and Nagler 1992, 2013). In survey data, the hand-coding of the open-ended question of occupation into an elaborate ISCO-code (or corresponding code) is often required, which, in turn, must be further transformed into specific social class schemes. This demands more expertise and effort from both the survey collector[18] and analyst than utilizing many other socio-demographic measures (for practical overviews, see Connelly, Gayle, and Lambert 2016; Ganzeboom and Treiman 1996; Lambert and Bihagen 2014).[19] However, as a word of reassurance, I discourage overambition in this respect. In my experience, the rather coarse socioeconomic classification of Statistics Finland performs surprisingly well in the Finnish context relative to more elaborate international schemes.

This thesis can be supported by an example from the 2015 elections data used in this dissertation. According to the socioeconomic classification of Statistics Finland, the unadjusted turnout of those individuals aged 30 years and over in manual and upper non-manual classes was 66.7 per cent and 88.2 per cent (spread 21.5%), respectively. In turn, the corresponding turnout rates in EGP-classes VII_a and I were 66.4 per cent and 88.1 per cent (spread 21.7%) respectively, and for ESeC classes 9 and 1, 66.4 per

[18] For survey designers and interviewers, the most important single guideline is arguably that occupation needs to be inquired about retrospectively. That is to say, when interviewees are not currently employed, they should be asked to specify their previous occupation. Otherwise, a substantial portion of the population will be missed in the analysis.

[19] The adoption of the ESeC scheme (Rose and Harrison 2007) about 10 years ago promised to bring coherence to a field with varied practices, as it was intended to become the official scheme of Eurostat. Unfortunately, this project failed after numerous interesting turns (Penissat and Rowell 2015).

cent and 87.9 per cent (spread 21.9%), respectively. Thus, the power to discriminate between extreme groups is roughly equal between these three social class schemes. This is a remarkable achievement for Statistics Finland's classification, as it is far more parsimonious, containing only three employee-classes (manual, lower non-manual and upper non-manual), whereas the EGP contains eight employee-classes and the ESeC seven. One possible explanation for this is that the classification of Statistics Finland is also institutionalized in Finnish society, especially in the organization of the trade unions. More systematic comparison of different occupational schemes in explaining turnout should be performed in future studies.

When discussing the underuse of the classical measure of social class in the previous paragraphs, my use of the pluperfect form was not due to sloppiness. Sub-study II was the first article I began in my dissertation project at the end of 2014, when social class seemed almost to have been fallen into oblivion in turnout studies. However, much water has flowed under the bridge of Pitkäsilta[20] since then. The last four years have seen renewed interest in social class in turnout studies, with many pieces written by the frontline authors of sociology and political science (e.g. Brady, Schlozman, and Verba 2015; G. Evans and Tilley 2017; Heath 2016; Morgan and Lee 2017b). In addition, the rise of populist groups in many countries and political events such as Brexit have created demand for a nuanced analysis of both socioeconomic position overall and also the specific differences between its components. This has even been seen in analyses presented in popular media.[21] Finally, part of the renewed interest in social class may be attributable merely to the circulation of academic fashion. Social class experienced analogous unfashionableness in the late 1990s and early 2000s even in sociology, a field which has traditionally had great sympathy for the concept, followed by a vivid renaissance during the forthcoming years (for reviews, Caínzos and Voces 2010; Erola 2010; Goldthorpe 2002). Nevertheless, this circulation of fashion reflects real-life trends. The growing social and economic inequality seen in recent decades in many advanced societies has attracted attention across the social sciences – and this dissertation shall add its voice to this choir. Social class stratified turnout more strongly in 2015 than in 1999 and 1987, and although directly comparable data does not exist for other parliamentary elections, it is possible that in predicting who votes, social class is currently more relevant than ever.

[20] This is a bridge in Helsinki that almost can be seen from the window of my current office. Historically, it has been the dividing line between bourgeoisie and working-class neighbourhoods in the city (Waris 1932). In English, "Pitkäsilta" means "The Long Bridge", known as well for its social as spatial length.

[21] For an example of an excellent piece of popular analysis, see Williams J (2016) What So Many People Don't Get About the U.S. Working Class. *Harvard Business Review*. https://hbr.org/2016/11/what-so-many-people-dont-get-about-the-u-s-working-class. Accessed 7 November 2018.

9.3.4 Voting is a distinctively individualistic – and simultaneously a most social – act!

As the fourth and the final theme, I would like to contemplate the nature of voting. If anything, the act of voting is an excellent example of the classical sociological dilemma of the complex interplay between structure and agent. On one hand, voting is a very individualist act and is even performed in an isolated booth. This is an appealing property for a researcher, as compared to almost anything else that can be studied with register-based data, voting is exceptional in that it is a clearly definable and distinguishable act which is conducted at a specific point in time. This allows many strong research designs that are seldom possible with research utilizing register-based data.[22]

One the other hand, despite being an isolated act, voting is simultaneously a poignantly social act. The political engagement of an individual is closely connected to social integration (Blais 2000, 54), exclusion (Burchardt, Le Grand, and Piachaud 1999; G. Evans and Tilley 2017), well-being (Allardt 1976; Stiglitz et al. 2010) and health, although the latter pathway turned out to be narrow in sub study II. More importantly still, the impact of any individual vote is usually negligible, but when collectively united to other votes, they can change the composition of representative institutions. This underlines another essential element connecting voting and socioeconomic position. As one's political voice (see Verba, Schlozman, and Brady 1995) is essentially the power to influence society by affecting the composition of legislative assemblies or the choice of head of state, the fact that it is distributed unequally among socioeconomic groups becomes even less surprising. The inequality aspect and associated power relations embedded in the concept of socioeconomic position are, indeed, among the central factors that make socioeconomic position an interesting subject of study.

Inequality in individuals' political voice is, among other things, seen in parliamentary representation, which partly stems simply from the turnout of those in lower socioeconomic positions being lower (Leighley and Nagler 2013). Moreover, social inequalities are not only reflected in political decision-making; rather, social inequality is also maintained and affected by those decisions. Political representatives tend, and perhaps even have a moral obligation, to pursue the interests of their voters. If the disadvantaged do not vote, political decision-making will follow the interests of the advantaged. This can result in policies that even further increase the social distance between winners and losers (Franko, Kelly, and Witko 2016). In turn, policies that

[22] However, this dissertation has adopted an analytical focus that is quite conventionally used in social stratification, demographical and epidemiological research using administrative data. For those readers particularly interested in examples of creatively exploiting the discrete nature of voting, I would recommend the work of my colleagues from Denmark (Bhatti et al. 2017; Bhatti, Fieldhouse, and Hansen 2018; Bhatti et al. 2018; Dahlgaard 2018; just to name a few examples).

accentuate inequality may lead to an increasing lack of trust in representative democracy among the disadvantaged and thus to an even smaller willingness to participate in it.

As a result, a feedback cycle arises. The structural conditions stemming from individuals' socioeconomic positions shape their actions, which then shape the actions of political institutions, which in turn, influence the structural conditions.[23] Moreover, as an additional twist in this cycle, demonstrated particularly in sub-study III, the unwillingness to participate is further transmitted from one generation to the next. This is concerning with regards to both the ideals of inclusive democracy and civil society. Pervasive political exclusion that even extends over generations may threaten the stability of society. Individuals and groups excluded from collective decision-making constitute a potential breeding ground for various forms of extremism.

However, despite the pessimistic tone of this vision, sub-study IV demonstrated that also a partial answer may come from the same direction, namely the fluctuation of social position of individuals. The cycle of political alienation may also be broken, as socioeconomic resources obtained later in life can compensate for uneven pre-adult prerequisites for political participation. In a wider sense, given that voting is a thoroughly social act, adopting the habit may also create a channel for wider social inclusion and belonging for those at risk of becoming marginalized.

To conclude, this dissertation project has revealed large socioeconomic differences in electoral participation in Finland which also have grown during recent decades. In addition, socioeconomic differences in turnout have often been understated in the previous literature as a result of the measurement errors of previous datasets. The different components of socioeconomic position – education, social class and income – account for voting propensity through partly shared but also partly independent pathways. The roots of these differences trace back over generations, but, despite this, individuals' voting propensities interact dynamically with the changes of position experienced during their own life-courses.

[23] An additional remark: cultural factors are important mediators of how structural conditions shape the action in this case. Moreover, representational institutions such as parliaments are intrinsically connected to the state, which is arguably the main unit of spatial sovereignty in the modern world. Thus, this feedback cycle touches every dimension of the fivefold definition of society presented at the beginning of the second chapter of this dissertation.

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