The Perpetuity of the Past: Transmission of Political Inequality across Multiple Generations *

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Abstract

It is a well established fact, from decades of political socialization research, that children of politically active parents are more likely to become politically active themselves. This poses a challenge to democracy, since it means that inequalities in political influence will be reproduced across generations. The present study argues that this problem may be more severe than has hitherto been acknowledged. The reason for this is that previous research on the topic has focused almost exclusively on political transmission between children and their parents, while the role played by more distant ancestors, such as grandparents, has largely been neglected. In this study we use Swedish register data to analyze multi-generational associations in electoral participation. The empirical results clearly indicate that the traditional two-generation approach to the study of political transmission tends to underestimate the intergenerational persistence in voting. One important reason for this is that grandparents appear to have a direct influence on the voting behavior over their grandchildren.

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Political scientists have long emphasized the family as a key agent of political socialization. This view has been further buttressed by decades of empirical research showing that most children tend to grow up to resemble their parents not only socially, and economically, but also politically. Whereas the main focus in this literature has been on parent-offspring congruence in political attitudes and outlooks (e.g., Jennings and Niemi, 1968; Westholm, 1999; Jennings, 2007; Jennings et al., 2009), there is also a smaller number of studies documenting the intergenerational persistence in political participation (Beck and Jennings, 1982; Jennings and Stoker, 2009; Cesarini et al., 2014; Gidengil et al., 2016; Oskarsson et al., 2018).

The main finding in these studies—the fact that children of politically active parents are more likely to take part in politics themselves—is often deemed problematic from a democratic viewpoint. If political (in)activity is transmitted from parents to their offspring this means that children are unequal already at the starting line, and that inequalities in political influence will be reproduced across generations (e.g., Verba et al., 2003).

However, as recently lamented by Brady et al. (2015, 149), despite the importance of the topic we still have a rather limited understanding of the mechanisms underlying the intergenerational persistence in political inequality. The reason for this, the authors argue, is that political science research on these issues have had a too narrow focus on the transmission of political attitudes and culture, and have paid insufficient attention to the role played by within family transmission of economic and human capital (Brady et al., 2015, 152).

We argue here that previous research has also been too limited in another respect. It has been almost entirely dominated by a *two-generation view* of intergenerational influence (Mare, 2011). That is, the sole focus has been on studying the transmission from parents to their children, while the potential effects of grandparents and other ancestors have been neglected.[1] This is understandable from a practical perspective, but the approach is problematic since it is likely to understate the intergenerational persistence of political inequality,

[1]The study of Beck and Jennings (1975), which analyze data on party identification for three consecutive generations constitutes an early and rare exception in this regard. However, the analyses in that article, with its focus on parents as 'middlepersons', is very much in line with the traditional two-generation view of political socialization.

and provide an inaccurate description of the mechanisms through which it is maintained (Mare, 2011, 20).

The present study seeks to fill this gap in the previous literature by using Swedish register data to analyze multi-generational associations in electoral participation. More precisely, we use validated turnout data from six elections covering the period 1970–2010 to study how the propensity to vote in young and middle-ages relate to the past voting behavior of parents as well as grandparents, and in some cases even great grandparents. Ultimately, our analysis aims to answer the question of whether, and if so why and when, grandparents exert an influence on their grandchildren's political activity that is distinct from that of the parents? An affirmative answer to this question would imply that the intergenerational persistence in political inequality is actually stronger than previous research has suggested.

To this end, the study proceeds by addressing three different sub-questions. First, we ask what our standard theories of political transmission has to say about the role of grandparents in the political socialization process. The second question concerns the nature of the intergenerational associations in voting. Is there evidence of higher-order interdependencies in the data, or has previous research been correct in assuming that potential effects of more distant ancestors are always channeled through parents? A third question, finally, concerns the causal status of a potential association in political participation between grandparents and grandchildren. Although very challenging to answer, we will use the detailed data at our disposal to make at least some progress on this vital issue. Towards this end, we will study transmission among adoptees and individuals who lost their grandparents at an early age.

The results from these analyses clearly indicate that the traditional two-generation approach tends to underestimate the intergenerational persistence in voting. For instance, the observed correlation in voting between grandparents and grandchildren is considerably larger than the size of the parent-child correlation would lead us to believe. The more extended analyses show that this excess persistence is at least partly due to grandparents having direct

influence over their grandchildren.

Is there room for multiple generations in theories of political socialization?

The family has for long occupied a central place in the research on political socialization. Although scholars have debated how the influence of the family compare with that of other important agents of socialization, few have questioned that there is substantial transmission of political behavior and outlooks within families (Jennings and Niemi, 1968; Neundorf and Smets, 2017).

Scholars have developed two broad theories to explain how the family environment shape the political character of adolescents (Gidengil et al., 2016; Neundorf and Smets, 2017). The first is the widely embraced *social learning theory*. According to this line of thought children learn political behavior from their parents by instruction as well as observation (Jennings and Niemi, 1974). For instance, children of politically active parents may become political active themselves by hearing their parents preaching the importance of civic engagement or watching them partake in various political activities, such as voting or attending political meetings. Viewed from this perspective, parents pass on their views on politics to their youths by acting as teachers and role models. Although the social learning model is a general theory of how people learn from one another, in the literature on political socialization the theory has almost exclusively been applied to the parent-child relationship. So far, the potential role played by more distant relatives has not been considered.

A second explanation for the intergenerational association in political attitudes and engagement is the *status transmission theory* (Verba et al., 2003; Bengtson et al., 2009). The core argument here is that children tend to inherit the social and economic standing of their parents, which, in turn, will have downstream effects of their political development. Or as Brady et al. (2015, 163) concluded when summing up the findings of their previous research

on the topic:

> [A] striking fact is the degree to which the level of political participation from one generation to the next is determined by the processes by which socioeconomic stratification is reproduced from one generation to the next.

In comparison to this mechanism, the same authors maintain, the learning processes emphasized by the social learning theory is only "of secondary importance" (Schlozman et al., 2012, 186).

According to Brady et al. (2015) there is therefore an imminent need to broaden the research on the intergenerational transmission of political attitudes and move beyond the exceedingly narrow focus on culture and social learning. In doing so, they suggest that political scientists should get inspiration from work on social reproduction within sociology. Above all, students of social reproduction do not exclusively focus on the transmission of cultural capital from one generation to the next, but also studies how economic resources, human capital, and social capital in the forms of social networks influence are passed on from parents to children (Brady et al., 2015, 151).

Although we agree with Brady et al. (2015) on the need to broaden the research on political transmission, we note that their proposal too is somewhat narrow in that they repeatedly refer to transmission as occurring from "one generation to the next" (see for instance the quote above). Just like the scholars advocating the social learning theory they are stuck in what we in the introduction labelled the two-generation paradigm of intergenerational influence.

There is, however, no a priori reason why influence cannot transcend multiple generations. This fact was recently acknowledged by Robert Putnam when speculating about the growing importance of grandparents in explaining the widening opportunity gap among American youths.

> Grandparents today are often more important in their grandchildren's lives than

> their counterparts were a half century ago, because grandparents are healthier and wealthier than they used to be. This trend plays out very differently in upper-tier and lower-tier families, however. Generally speaking, lower-tier grandparents mostly donate time, replacing parental resources, whereas upper-tier grandparents mostly donate money, supplementing parental resources. [...] In short, taking grandparenting into account magnifies the growing youth class gaps (Putnam, 2015, 132-133).

As can be seen, the two mechanisms mentioned by Putnam fits nicely with the two theories of intergenerational influence discussed above. On the one hand, time should be of essence from a social learning perspective. When grandparents devote time to their grandchildren and interact with them on a regular basis, grandparents should be able to take on the roles of teachers and role models much in the same way as parents. Related to this, it has also been suggested that grandparents can serve as a 'cultural window' into the family's history through which grandchildren can learn more about themselves and their ancestors (Bengtson et al., 2009, 328).

For the status transmission theory, on the other hand, the key is the transfer of socio-economic resources and status across generations. Obviously, there is no reason to expect such transfers to be restricted to occur only between adjacent generations. Therefore, to the extent that intergenerational associations in political attitudes and behavior are driven by the transmission of economic and social resources, grandparents could clearly be of importance.

From a theoretical point of view, the difference between parents and grandparents thus appears to be one of degree rather than of kind. Just as parental investments in their children, in terms of time and resources, can be expected to influence children's political development so can grandparental investments in their grandchildren.

Some of the findings of the burgeoning literature discussing how and why grandparents invest in their grandchildren (e.g., Coall et al., 2018) could therefore be of direct relevance for understanding the intergenerational persistence in political attitudes and behavior. For

instance, one frequently reported finding in this literature is that there is a systematic difference in the role played by different types of grandparents. Empirical studies have found that maternal grandmothers have the most contact with their grandchildren, whereas paternal grandfathers to a lesser degree interact with their grandchildren. The contact frequencies of maternal grandfathers and paternal grandmothers fall in between these two extremes, but the ordering of these middle groups differs between studies (Uhlenberg and Hammill, 1998; Coall and Hertwig, 2010).

To the extent that grandparental influence is due to a direct transfer of values or socioeconomic status such differences in contact frequencies can be important since the opportunities for these transfer depends on the frequency of interaction between grandparents and grandchildren. This also imply that we should expect grandparents to be less important for children whose grandparents live far away or who die early in the their lives (Pfeffer, 2014).

To summarize, this section has shown that there are good theoretical reasons to move beyond the two-generation approach dominating previous research on the intergenerational transmission of political attitudes and behavior. Whereas our discussion has focused on the role of parents and grandparents this line of argument could also be applicable to more distant generations such as great grandparents, although the potential for cross-generational interactions decreases with generational spacing.

Ultimately, it is, however, an empirical question whether the multi-generational approach can contribute to our understanding of the intergenerational persistence of political attitudes and behavior, or if the standard two-generation approach suffice in practice. It is to this question we now turn.

Intergenerational data and modelling

As discussed in the introduction, our empirical analysis will be situated in the Swedish context. Admittedly, this choice is mainly governed by data availability, but Sweden also pro-

vides a very interesting testing ground for theories of intergenerational associations. In particular, with its comparatively high levels of voter turnout and low degree of socio-economic inequality we should expect the intergenerational persistence in political participation to be lower in Sweden than in most other established democracies. Thus if we find evidence for multi-generational associations in voting in Sweden it is likely that a similar pattern apply to other countries as well.

To study the strength of intergenerational linkages in voting, we use data from various administrative registers maintained at Statistics Sweden. Most importantly, the Multi-Generation Registry contains identifiers that can be used to link most individuals born from 1932 and on-wards to their parents. By the repeated use of these indicators we can then create multi-generational family trees connecting up to three or four generations, the key requirement being that the next oldest generation is born no earlier than 1932. In what follows we will refer to the youngest generation in the family tree as children (C) and to earlier generations as parents (P), grandparents (GP), and great grandparents (GPP), respectively.

In a next step we then use unique personal identifiers to match our multi-generational data set to other administrative sources containing detailed information on various demographic and socio-economic characteristics for the individuals of the different generations.

Data on voter turnout is, however, not available from any administrative register, but has been collected by scanning and digitizing the information in publicly available election rolls. Currently, data have been digitized for the general elections held in 1970, 1982[2], 1994, and 2010, as well as the EU referendum in 1994 and the election to the European Parliament in 2009. The coverage of the digitized turnout data is high, ranging from about 75 percent for the 1970 election to above 95 percent for the 2009 and 2010 elections, and has been shown to have very high reliability. When validated against a manually coded subset of these data, there is agreement in 99.7 percent of the cases (Lindgren et al., 2019). Overall voter turnout in these elections varies from 45.5 percent (the EP election in 2009) to 91.4 percent (the

[2]The data for this election were collected, and generously shared with us, by Magnus Carlsson and Dan-Olof Rooth.

general election in 1982).

To reduce the impact of life-cycle differences in political participation we attempt to measure voter turnout in the middle-ages for all generations. Starting with the children generation we record turnout in the EP election in 2009 and the general election in 2010. The average birth year among the children is 1976, which means that turnout is measured around the age of 33–34. Turnout in the parental generation is based on data from the two elections held in 1994, i.e., the general election and the EU referendum. Since the average birth year among the parents in our data is 1948 we typically record turnout for this group at the age of 46. For grandparents, which on average are born in 1918, we use turnout data for the two general elections held in 1970 and 1982, i.e., when they were in their fifties and early sixties. Because we do not have access to any turnout data prior to 1970, turnout for great grandparents are measured in the same years as turnout for grandparents.

We then construct an overall turnout measure for each of the three or four generations in our data by averaging turnout over the elections and individuals belonging to a particular generation, using only non-missing values. That is, whereas turnout is measured at the individual level in the children generation, turnout for the other generations is measured as the average turnout for all observed parents, grandparents, and great grandparents, respectively. By averaging turnout across several individuals and elections we can smooth out transitory shocks that may otherwise bias the intergenerational transmission coefficient downwards. Likewise, by measuring turnout at different points in time for the child generation and their ancestors we reduce the impact of asymmetrical contemporary voting shocks, which can serve to bias the transmission coefficient upwards.

For our main analyses, the child generation represents all individuals born in 1991 or earlier that we can link to at least one parent or grandparent (and for whom we have access to information on all key variables used in the analysis). The reason for excluding those born after 1991 is that all individuals of the child generation must be old enough to have been eligible to vote in both of the elections held in 2009 and 2010.

To complement the main analysis, which is based on data on three generations, we also construct a sample including data on four adjacent generations. In order for us to observe four consecutive generations in the data, the child must be born prior to 1992 and at least one grandparent must be born after 1931, which means that the sample size is considerably reduced when studying four instead of three generations. In addition, the child, parental, and grandparental generations in the sample with four generations will be 10–15 years younger at the time of voting compared to their counterparts in the sample used to study transmission across three generations. These limitations notwithstanding, we believe that the results from the analysis of four generations can provide an important complement to those of the main analysis.

After deleting all observations for which we lack information on one or more of the variables to be used in the analyses we end up with a sample of 2,406,023 individuals in the child generation for which we can study transmission across three generations, and a subset of 410,587 individuals that can be used to study transmission across four generations. Table 1 provides basic descriptive statistics for the two samples used in the analysis (see the Appendix for a more detailed description of the data and codings).

Modelling alternative sources of intergenerational persistence

The intergenerational transmission of political participation has typically been studied by estimating a first-order autogression (AR(1)) model in which an outcome $y_{i,t}$ for an individual i in the children generation, t, is regressed on the corresponding outcome among his or her parents $y_{i,t-1}$:

$$y_{i,t} = \alpha + \beta_{-1} y_{i,t-1} + \epsilon_{i,t}. \tag{1}$$

The coefficient β_{-1} measures the extent to which differences in political activity among parents are transmitted to their children, and ϵ is an i.i.d. error term. An implicit assumption of the AR(1) model is that the persistence in political inequality across generations follows

Table 1: Descriptive statistics

	3 generations sample		**4 generations sample**	
	Mean	SD	Mean	SD
Child Generation				
Turnout	0.66	0.34	0.58	0.36
Gender	0.49	0.50	0.49	0.50
Immigrant background	0.09	0.29	0.07	0.25
Year of birth	1,975.40	9.60	1,985.84	4.33
Parental Generation				
Turnout	0.91	0.21	0.87	0.25
Income	0.51	0.20	0.51	0.17
Education	0.39	0.26	0.30	0.23
Occupational status	0.48	0.12	0.45	0.11
Year of birth	1,947.58	8.91	1,959.48	4.42
Grandparental Generation				
Turnout	0.92	0.18	0.92	0.16
Income	0.47	0.17	0.45	0.15
Education	0.20	0.24	0.28	0.21
Occupational status	0.41	0.10	0.42	0.08
Year of birth	1,918.16	10.23	1,932.97	5.55
Great Grandparental Generation				
Turnout			0.89	0.22
Income			0.45	0.17
Education			0.06	0.14
Occupational status			0.38	0.09
Year of birth			1,908.20	5.60
Observations	2,406,023		410,587	

Notes:

a geometric process, which means that a temporary shock to the political activity of the individuals in one generation can be assumed to disappear rather quickly. For instance, assuming that all variables have been standardized, the AR(1) model implies that the inter-generational correlation coefficient between children and parents will equal β_{-1}, that between children and grandparents β^2_{-1}, and that between children and great grandparents β^3_{-1}, and so on. Consequently, if political transmission follows a first-order Markov process, political mobility can be fairly high in the long-run even if parent-child mobility is low.

However, a common finding in the related, and quickly growing, literature on multi-generational social mobility is that the AR(1) model in equation 1 tends to underestimate

the intergenerational stability in social status. Using information on multiple generations, scholars have found the higher-order associations in the data, e.g., between children and grandparents, to be considerably higher than the simple iteration of the parent-child estimates in equation 1 would suggest (Lindahl et al., 2015; Braun and Stuhler, 2018; Solon, 2018).

As discussed in the theoretical section, one potential explanation for this is that grandparents, and perhaps also great grandparents, have a direct causal influence on the development of their (great) grandchildren. To allow for this possibility we can extend the model in equation 1 to include the impact of p previous generations:

$$y_{i,t} = \alpha + \sum_{j=1}^{p} \beta_{-j} y_{i,t-j} + \epsilon_{i,t}. \tag{2}$$

For instance, in our main analysis we will include turnout for both parents and grandparents on the right-hand side of equation 2 ($p = 2$), whereas the extended analysis also adds great grandparental turnout to the model ($p = 3$). If we assume the model to follow on AR(2) process, so that children's turnout depends on the turnout of their parents and grandparents, but not their great grandparents' turnout, the implied correlation[3] in turnout between children and their grandparents equals $\beta_{-2} + \beta_{-1}^2/(1 - \beta_{-2})$, which is clearly larger than that implied by the AR(1) model whenever the political activity of grandparents positively influence the activity of grandchildren ($\beta_{-2} > 0$). According to this model, the *excess persistence* in intergenerational political inequality, above that obtained from extrapolating the parent-child coefficient, is thus directly related to the magnitude of the grandparental coefficient.

However, as Braun and Stuhler (2018) recently have explained, a positive coefficient for grandparents in equation 2 does not by itself prove the causal importance of grandparents, since it can be shown that any data-generating process that gives rise to excess intergenerational persistence in the outcome of interest will result in a positive grandparent coefficient

[3]This is a direct application of the method for calculating autocorrelation functions for autoregressive processes (see e.g., Ostrom, 1990, 44).

if we fit the AR(2) model to the data.

One much debated alternative explanation for the excess persistence in various intergenerational outcomes is the *latent factor model* proposed by Gregory Clark and co-authors. The model was originally developed to study intergenerational social mobility, but since socio-economic status is commonly acknowledged as a key determinant of individual political participation the model may prove applicable to the latter outcome as well.

The latent factor model is based on the idea that children inherit important traits from their parents, and that observed outcomes, e.g., voting, often are imperfect manifestations of these latent traits (Clark, 2015; Clark and Cummins, 2015). More formally the model can be specified as follows:

$$y_{i,t} = \rho e_{i,t} + \nu_{i,t}, \tag{3}$$

$$e_{i,t} = \lambda e_{i,t-1} + \eta_{i,t}, \tag{4}$$

where $e_{i,t}$ denotes the latent factor inherited from parents to child and ν, and η are two i.i.d. error terms. The parameter λ measures the degree of heritability in the latent trait e, and ρ governs the rate at which this factor translates into the outcome of interest, here voter turnout.

It follows from the latent factor model that the intergenerational correlation in turnout between two individuals born j generations apart equals $\lambda^j \rho^2$, i.e., intergenerational persistence is increasing in both λ and ρ. The two parameters of the Clark model can be identified from multigenerational correlations covering at least three generations. More precisely it can be shown that $\lambda = Corr(y_{i,t}, y_{i,t-2})/Corr(y_{i,t}, y_{i,t-1})$, and $\rho = [Corr(y_{i,t}, y_{i,t-2})^2/Corr(y_{i,t}, y_{i,t-1})]^{1/2}$ (Braun and Stuhler, 2018, 582).

A key difference between the latent factor model, as described by equations 3 and 4, and the autoregressive model pictured in equation 2 is that the former model assigns no causal role to more distant relatives such as grandparents or great grandparents. For instance, if we find a positive grandparent coefficient when regressing child outcomes on the outcomes of

their parents and grandparents, the reason for this is not that grandparents influence their grandchildren, but that grandparent outcomes provide information on the true value of the latent factor among parents (Clark and Cummins, 2015, 64).

This of course raises questions about the nature of the latent factor doing the causal work in this theoretical model, and how it is passed on from parent to child. In his book-length treatment of the subject Clark suggests that the latent factor mainly captures an individual's "general social competence" (Clark, 2015). Although Clark explicitly acknowledges that his model is sufficiently general to subsume both cultural and genetic transmission mechanisms, he clearly favors the latter interpretation. For instance, in a section entitled "Biology versus Culture" Clark forcefully argues that whereas the strong tendency for social status measures to regress to the mean over generations is fully consistent with a genetic transmission mechanism, it squares much less well with a mechanism based on cultural transmission (Clark, 2015, ??). Another indication that Clark prefers a genetic interpretation of his model is that he frequently refers to the latent factor as the status (or social) *genotype* of an individual.

Applied to the case of political participation, the latent factor model could therefore provide an alternative explanation for the intergenerational persistence in political inequality that centers on the impact of biological similarity rather than on the role played by social learning and more direct status transmission across generations. So understood, the latent factor model connects to recent empirical studies showing that not only post-birth, but also pre-birth, factors contribute to the parent-child resemblance in political participation (e.g., Cesarini et al., 2014; Oskarsson et al., 2018).

To sum up, there are thus many different ways to model the intergenerational transmission of political behavior, and different modelling assumptions entail very different assumptions about the underlying causal mechanisms. In the next section, we will take some of these models to data in order to see how well they perform.

Empirical results

Table 2 reports the basic transmission results for the main sample including three generations. All models include controls for the sex, immigrant background, and birth year of the individuals in the child generation as well as the average birth year for each generation of maternal and paternal ancestors.

Table 2: Political Transmission Across Three Generations

	(1)	(2)	(3)	(4)	(5)
Turnout P	0.273***		0.255***	0.208***	0.205***
	(0.001)		(0.001)	(0.001)	(0.001)
Turnout GP		0.155***	0.107***	0.067***	0.068***
		(0.002)	(0.001)	(0.001)	(0.001)
SES controls	No	No	No	Yes	Yes
Municipality FE	No	No	No	No	Yes
Mean	0.66	0.66	0.66	0.66	0.66
N	2,406,023	2,406,023	2,406,023	2,406,023	2,406,023

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
All models include controls for the sex, immigrant background, and birth year (dummies) of the individuals in the child generation. Models 2 to 4 also includes fixed effects for the (rounded) average birth year of parents and grandparents. Standard errors are clustered on mother-father pairs and shown in parentheses.

In the first column of the table we report results from the type of two-generation analysis that have dominated previous research on the topic. As expected, the results show that there is a strong relationship between the (adult) children's turnout and that of their parents. If we compare two (otherwise similar) individuals, one whose parents always vote and one whose parents never vote, the expected turnout is more than 27 percentage points higher for the former individual.

A key purpose of the present study is, however, to try to determine whether two-generation models of this type are sufficient to capture the intergenerational persistence in political participation or if there is a need to take additional generations into account. Towards this end, Model 2 regresses child voting on the turnout of grandparents. As can be seen there is a strong relationship between child and grandparental turnout. On aver-

age child turnout is almost 16 percentage points higher for individuals whose grandparents (paternal as well as maternal) always voted than for those whose grandparents never voted.

However, if the impact of grandparents on their grandchildren is fully transmitted through the parents, so that the transmission dynamics follows a first-order Markov process, the two-generation model nevertheless contains all necessary information. The results in Model 3 suggest that this is not the case. Although the impact of grandparental voting decreases with about a third when controlling for parental voting the second-order transmission coefficient is still large in magnitude and highly statistically significant even when taking parental voting into account. We thus find evidence for higher-order associations in the data.

This, however, raises the question of the mechanisms giving rise to these dependencies. As discussed in the theoretical section, scholars have traditionally focused on the role of social learning when attempting to explain the intergenerational congruence in political attitudes and behavior (Neundorf and Smets, 2017). Children who observe their parents participate in politics are more likely to grow up to become politically active themselves, the argument goes. But as Jennings et al. (2009, 783) point out, children and parents may become similar also because of "other influences they share, including their socioeconomic circumstances and their local political context".

In column 4 of Table 2, we therefore add controls for the socio-economic position of parents and grandparents. To measure parental and grandparental socio-economic status (SES) we rely on three standard measures available in our registers: income, education, and occupational status. To increase the comparability of the measures over time both education and income has been percentile ranked (by cohort and sex). To measure occupational status we rely on the frequently used *International Cambridge Scale* (ICAMS, Prandy and Jones, 2001), which ranks the status of various occupations on a scale from 0 to 1 with higher values indicating more prestigious occupations (see the Appendix for a more detailed description of these measures).

We can see that the intergenerational transmission coefficients decrease once the socio-

economic position of previous generations are accounted for. More precisely, the transmission coefficient of parents decreases by about 20 percent and that of grandparents by about 30 percent as we move from column 3 to 4. This could indicate that the intergenerational correlations in voting is partly explained by within-family transmission of socio-economic status, as suggested by the status transmission theory (Brady et al., 2015). The result is, however, also consistent with the type of latent factor model advocated by Gregory Clark and co-authors (Clark and Cummins, 2015). Viewed from the perspective of the Clark model, the socio-economic controls are imperfect manifestations of the unobserved latent factor (trait) that children inherit from their parents. Therefore, by controlling for these socio-economic indicators, the argument goes, we partly control for the latent factor underlying the intergenerational persistence in voting.

This being said, the intergenerational transmission coefficients remain large in magnitude, and highly statistically significant, even when controlling for ancestors' socio-economic status. In Column 5 we examine to what extent the remaining correlation could be due to the fact that individuals from the same family often tend to share local political context (Jennings et al., 2009). We do this by adding 290 municipality fixed effects, for the year 2009, to the model. This means that the we only use the differences between individuals living in the same municipality, and thus sharing the local political context, to identify the transmission coefficients of interest. However, political context does not appear to be very important in explaining the intergenerational congruence in voting. There is only a marginal decrease in the transmission coefficients when adding the municipality fixed effects to the model.[4]

To judge from these results, the standard two-generation model tend to underestimate the intergenerational persistence in voting. We find clear evidence that the voting behavior of individuals in the children generation is related to that of their grandparents even when controlling for parental voting.

[4]In the Appendix (Table A.1), we show that the results look very similar if we define our dependent variable as a count variable and model the relationship by means of a Poisson model.

One interesting question is whether this pattern also extends to even more distant generations. In an attempt to answer this question, Table 3 displays the results for a set of analyses based on the subset of our main sample for which we can observe the voting behavior of four consecutive generations.

Table 3: Political Transmission Across Four Generations

	(1)	(2)	(3)	(4)	(5)
Turnout P	0.253***		0.248***	0.205***	0.202***
	(0.002)		(0.002)	(0.003)	(0.002)
Turnout GP	0.134***		0.120***	0.081***	0.086***
	(0.004)		(0.004)	(0.004)	(0.004)
Turnout GGP		0.066***	0.032***	0.016***	0.016***
		(0.003)	(0.003)	(0.003)	(0.003)
SES controls	No	No	No	Yes	Yes
Municipality FE	No	No	No	No	Yes
Mean	0.58	0.58	0.58	0.58	0.58
N	410,587	410,587	410,587	410,587	410,587

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
All models include controls for the sex, immigrant background, and birth year of the individuals in the children generation. Models 2 to 4 also includes fixed effects for the (rounded) average birth year of parents, grandparents and great grandparents. Standard errors are clustered on mother-father pairs and shown in parentheses.

For reasons of comparison, the first column of the table simply replicates model 3 of Table 2 for this restricted sample. We can see that the transmission coefficients of parents is almost identical in the two samples, whereas the transmission coefficient of grandparents is slightly larger in the sample covering four generations.

The second column of the table reports the bivariate association between the voting behavior of the individuals of the child generation and that of their great grandparents. On average the probability of voting is almost 7 percentage points higher for individuals whose great grandparents always used to vote compared to individuals with never-voting great grandparents.

Turning to the third column we see that the transmission coefficient associated with great grandparents decreases by half once the voting behavior of both parents and grandparents

are accounted for. Moreover, as can be seen from columns 4 and 5, there remains a rather weak, but statistically significant, direct link between voting in the children and the great grandparent generation even when controlling for the socio-economic position of the older generations (model 4) as well as the local political context (model 5).[5]

The results presented in Table 3 corroborates the view that the standard two-generation model of political transmission is likely to severely underestimate the intergenerational persistence in political participation. Although excluding great grandparents from the analysis may be fairly innocuous in many cases, omitting grandparents from the picture is clearly more consequential.

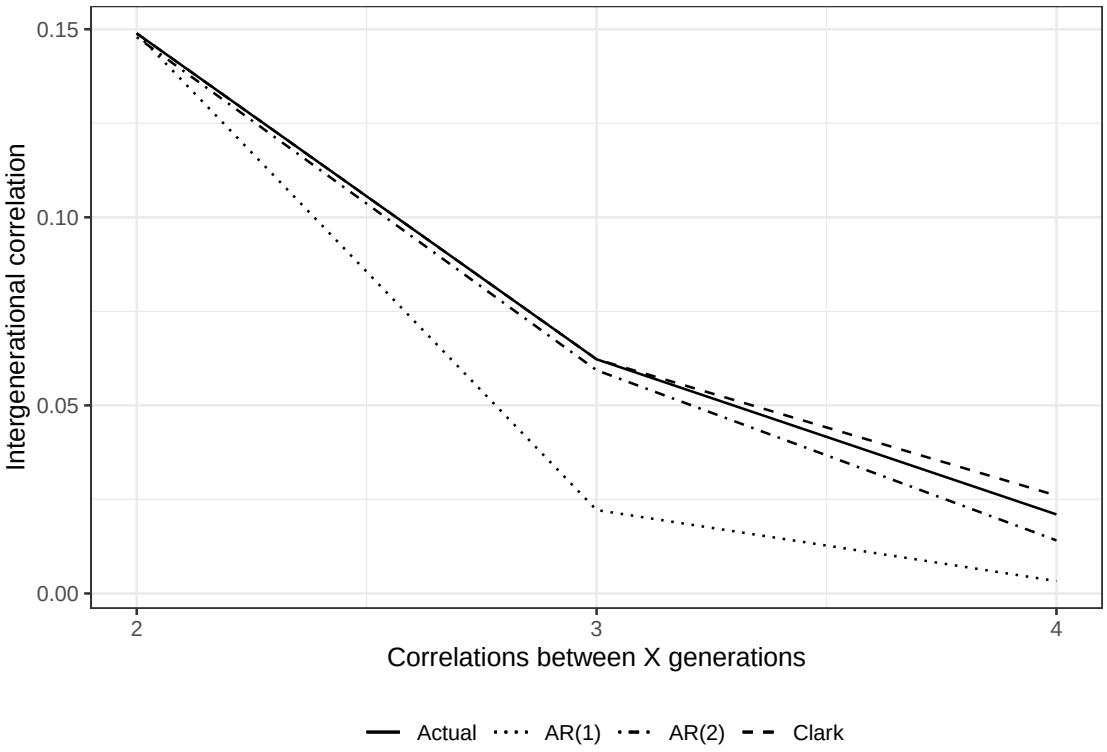

Figure 1: Predicting multigenerational correlations

Figure 1 illustrates this point graphically. The solid line represents the actual (partial) intergenerational correlations coefficients in voting between the children and their parents

[5]In the Appendix (Table A.2), we show that the results look very similar if we define our dependent variable as a count variable and model the relationship by means of a Poisson model.

(2), grandparents (3), and great grandparents (4) in the 4 generations sample. That is, the child-parent correlation is about 0.15, the grandchild-grandparent correlation about 0.06, and the great grandchild-great grandparent correlation about 0.02.

The other three lines in the figure represent the predicted correlations from three alternative dynamic models. The dotted line shows the predictions from the simple AR(1) model where the higher order correlations are obtained by iterating the child-parent correlation the desired number of times (i.e., $r_{1,3} = r_{1,2}^2$). As can be seen, this model severely underestimates the intergenerational persistence in voting. For instance, the AR(1) model implies a correlation between grandchildren and their grandparents that is only one third of the actual observed correlation.

The remaining two lines display predictions from the AR(2) model (the dotted-dashed line), and the Clark model (the dashed line). Both of these models provide a much better fit to the data than the AR(1) model. With this said, the AR(2) model too tend to underestimate the intergenerational persistence in voting, although to a much lesser extent than the AR(1) model. One reason for this could be that it neglects the impact of great grandparents on their great grandchildren (i.e., the true dynamic process follows an AR(3) structure). But it could also be that there are other sources of intergenerational stability apart from the direct transmission of voting behavior across generations assumed by autoregressive models of all orders.

The Clark model, for instance, is able to fit the data very well without assigning any causal role to older generations, although it tends to slightly overestimate the higher-order correlations.[6] Viewed from the perspective of this model the reason why adding grandparents to the analysis improves the fit of the model is not that the voting behavior of grandparents influence that of their grandchildren, but that the voting behavior of grandparents provides additional information on the true value of the underlying latent factor inherited from parents to offspring.

[6]We estimate the persistence of the latent factor (λ) to be 0.42, and the effect of the latent factor on voting (ρ) to be 0.59 (see equations 3 and 4).

To sum up the results presented so far, we have found the standard two-generation model of political transmission to severely underestimate the intergenerational persistence in voting. The analyses has shown that both the estimated degree of persistence and the fit of the models increase substantially when examining transmission across multiple generations.

However, some readers may find it slightly discomforting that both the Clark and the AR(2) models were able to fit data well even though they are based on very different assumptions about the underlying causal processes at work. In particular, we would like to know whether the excess persistence in voting portrayed in Figure 1 is, at least partly, due to grandparents having a causal influence on their grandchildren. This is the question to which we now turn.

Does grandparents directly influence their grandchildren?

In order to distinguish between the dynamic processes posited by Clark's latent factor model and that posited by the autoregressive model we would ideally like to conduct an experiment which randomly assigned voter status (or basic predispositions towards voting) to grandparents to see whether this affects the voting behavior of the grandchildren as they grow up. As this is not possible, both for ethical and practical reasons, we will instead try to gain some leverage on the issue of causality by alternative means. In particular, we will try to disentangle the underlying mechanisms by a closer examination of the more detailed implications of the competing dynamic processes.

We will begin by focusing on the latent factor assumed to drive the intergenerational correlations in the Clark model. As previously discussed, the conventional interpretation of this model, and the one preferred by Clark himself, is that the latent trait underlying the intergenerational persistence is primarily genetically transmitted. One way to probe whether the higher-order correlations that we find in the data are merely a methodological artefact, as suggested by the latent factor model, could therefore be to attempt to block the genetic pathway, and see if this makes the higher-order terms vanish.

Towards this end, we will follow Cesarini et al. (2014) and examine the intergenerational correlations among adoptees. The idea behind this approach is simple. Because adoptive children are not genetically related to their parents and grandparents, any remaining intergenerational correlations in the adoptive sample cannot be explained by pre-birth mechanisms, such as genetic inheritance, but must be due to post-birth factors, e.g., social learning. However, our analysis differs from that of Cesarini et al. (2014) in two respects. First, we examine transmission across three rather than two generations. Second, to increase the sample size and reduce the risk for selective placement of adoptive children, we do not only study domestic adoptions, but also international ones. In Table 4 we replicate the results of Table 2 for a sample of 28,115 adopted children born between 1932–1991.

Table 4: Political Transmission Across Three Generations Among Adoptees

	(1)	(2)	(3)	(4)	(5)
Turnout P	0.153***		0.145***	0.125***	0.117***
	(0.015)		(0.015)	(0.015)	(0.015)
Turnout GP		0.073***	0.062***	0.045***	0.041***
		(0.014)	(0.015)	(0.015)	(0.014)
SES controls	No	No	No	Yes	Yes
Municipality FE	No	No	No	No	Yes
Mean	0.61	0.61	0.61	0.61	0.61
N	28,115	28,115	28,115	28,115	28,115

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
All models include controls for the sex and birth year (dummies) of the individuals in the child generation. Models 2 to 4 also includes fixed effects for the (rounded) average birth year of parents and grandparents.

A first thing to note is that the overall pattern of results obtained in the adoptive sample is very similar to that found in our main sample. There is a clearly discernible relationship between the voting of grandparents and their (adopted) grandchildren even when adjusting for parental turnout (model 3), and the strength of this relationship is reduced by about a third once controlling for parents and grandparents socio-economic status (model 4) and municipality fixed effects (model 5). The magnitude of the transmission coefficients is, however, 40–50 percent smaller among the adoptees than among the biological children.

This suggests that part of the intergenerational persistence in voting may be due to genetic inheritance of the type posited by the latent factor model. With this said, we find strong evidence of higher-order interdependencies even when blocking the genetic pathway, which indicates that grandparents may, indeed, assert direct influence over their grandchildren as assumed by the autoregressive model.

However, although Clark himself favors a genetic interpretation of the latent factor model, the mathematical formulation of the model is in principle also consistent with non-genetic (cultural) transmission mechanisms. Although it admittedly seems a bit far-fetched, we can imagine a situation in which the latent factor denotes an individual's sense of civic duty, and that this sense of duty is partly instilled in children by their parents—but not at all by their grandparents—and partly depends on other idiosyncratic factors. If we were to fit an AR(2) model to this data-generating process this would result in a positive coefficient for grandparental turnout even though grandparents have no direct influence over their grandchildren. As previously explained, the reason for this is that voting among grandparents convey information about the (unobserved) sense of civic duty among the parents.

Consequently, even if it seems rather unlikely, it is theoretically possible that a first-order Markov process of the Clarkian type is sufficient to account for the results presented in Table 4, provided that the latent factor is subject to both genetic and cultural transmission. So what more can be done to try separate between these alternative dynamic processes? One potential route forward is to take advantage of the fact that the two models under consideration attach very different importance to grandparent-grandchild interaction.

Viewed from the perspective of the latent factor model, the higher-order correlations should be the same regardless of how frequently grandparents interact with their grandchildren. However, to the extent that grandparent-grandchildren similarity is due to grandparents' influencing their grandchildren, we should instead expect the correlation to strengthen with the frequency of interactions.

As mentioned in the theoretical section, there are empirical studies of how much time

different types of grandparents spend with their grandchildren. A common finding in these studies is that maternal grandmothers are the ones having the most contact with their grandchildren, whereas paternal grandfathers have the least contact. Maternal grandfathers and paternal grandmothers tend to place themselves in between of these two extremes (Uhlenberg and Hammill, 1998; Pollet et al., 2006; Coall and Hertwig, 2010). One means to examine whether grandparents actually influence their grandchildren could therefore be to analyze how the strength of the transmission varies by grandparental type. Towards this end, Figure 2 displays the results from an analysis in which we have estimated separate transmission coefficients for each grandparent. In estimating these coefficients we control for maternal and paternal turnout, a full set of birth year fixed effects for each member of the three generations, the socio-economic status of parents and grandparents (aggregated over generations to increase sample size), and municipality fixed effects (see Column 1 of Table A.3 in the Appendix for the complete results).

As can be seen from the figure, we find the largest transmission coefficient for maternal grandmothers and the smallest for paternal grandparents, whereas the coefficients for maternal grandparents and paternal grandmothers fall in between (the error bars indicate 95% confidence intervals). The differences in coefficient estimates between maternal grandparents and each of the other three grandparental types are also statistically significant at the 0.05 level, while the remaining differences do not reach this level of statistical significance (the difference between maternal and paternal grandfathers come closest with a p-value of 0.065).

A key thing to note is that the overall pattern of coefficients in Figure 2 mimics the pattern of interaction frequency found in previous research on grandparent-grandchildren relationships. That is, we find the strongest transmission for the maternal grandmothers who tend to spend most time with their grandchildren, and the weakest for paternal grandparents who are known to interact the least with their grand-offspring. Whereas these observed differences are well in line with the assumption that grandparents assert direct influence over their grandchildren, they are more difficult to reconcile with the dynamic structure

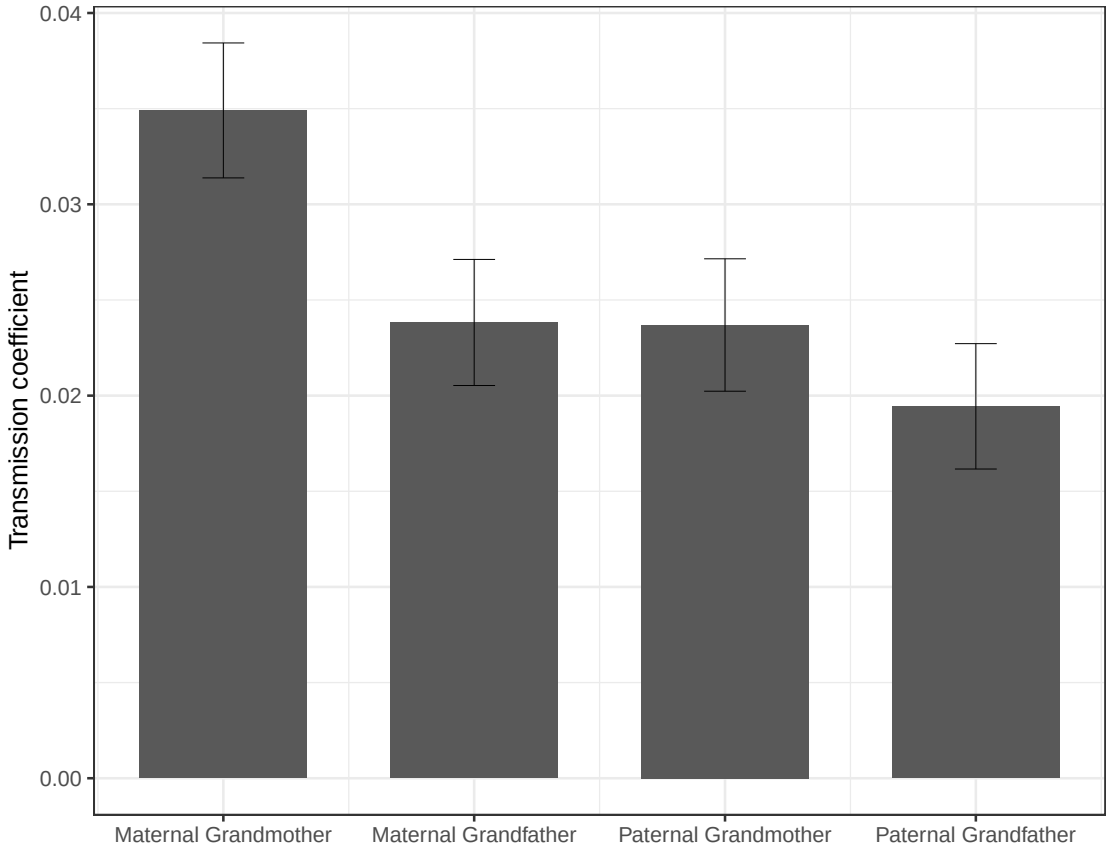

Figure 2: Transmission by grandparental type

underlying the latent factor model.

Another way to examine how the strength of transmission varies with the frequency of social interactions is to utilize the fact that some grandparents unfortunately die before their grandchildren are born (cf., Adermon, 2013; Braun and Stuhler, 2018). In these cases we can be sure that there has been no interaction between grandparents and their grandchildren, and therefore any remaining intergenerational correlation in this group must have other explanations than grandparents directly influencing their grandchildren. Based on this reasoning, we have re-estimated the model used to produce Figure 2, but with the addition that we now interact grandparent turnout with a variable indicating whether a particular grandparent was alive at the time when the grandchild was born. The results from this exercise are displayed in Figure 3 (see Column 2 of Table A.3 in the Appendix for the com-

plete results). The dark (light) bars denote transmission coefficients for grandparents who were alive (dead) when the grandchild was born (the error bars represent 95% confidence intervals).

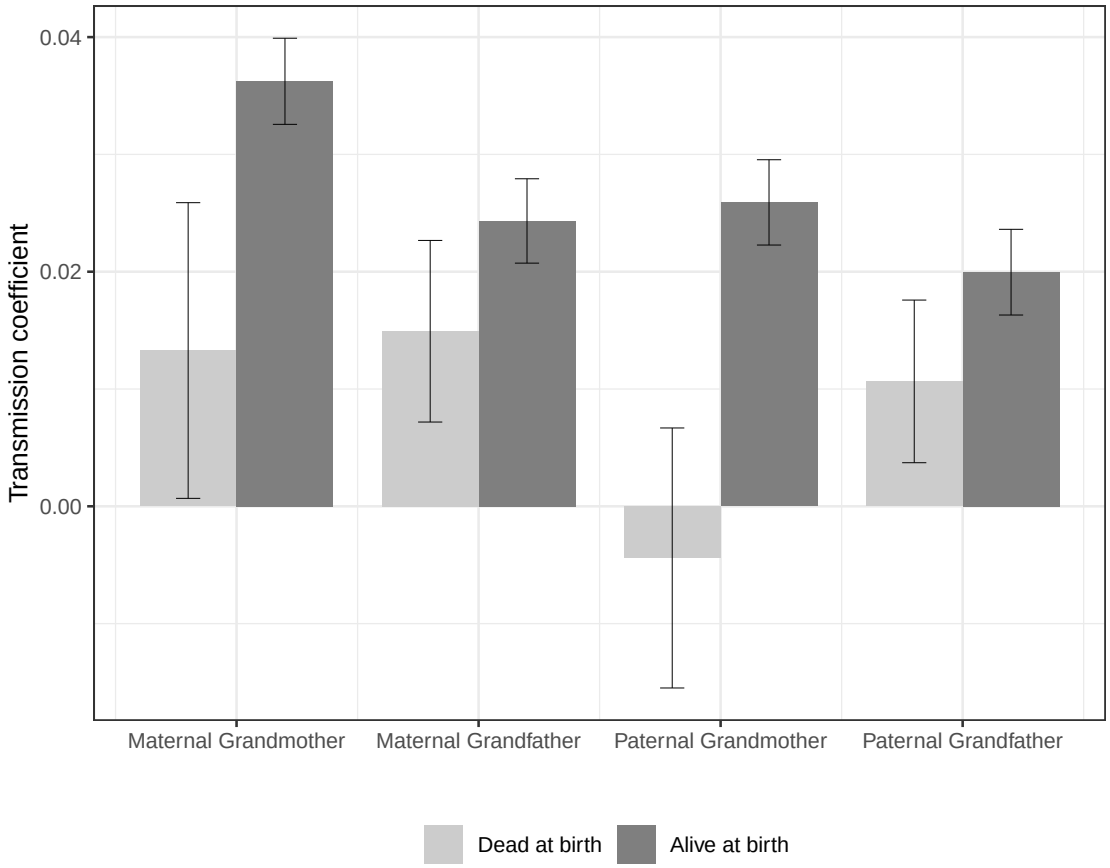

Figure 3: Transmission by type and exposure

A first thing to note, is that we find statistically significant transmission coefficients for all grandparents, except for paternal grandmothers, even if they died before their grandchild was born. This suggests that direct grandparental influence cannot be the sole explanation of grandparent-grandchild similarity in voting. Having said that, we also find clear evidence that that the transmission coefficients are considerably stronger for grandparents who are alive when their grandchildren are born, as indicated by the height differences between the light and dark bars in the figure. Moreover, all of these differences are statistically significant at the 0.05 level.

Thus, although direct grandparental influence is not the sole driver of the grandparent-grandchildren association in voting, this mechanism does appear to be an important part of the story. One problem with the analysis in Figure 3, however, is that the transmission coefficients for deceased grandparents are rather imprecisely estimated, since most grandparents (fortunately) live to see and meet their grandchildren. Because of this we should be somewhat cautious when interpreting individual point estimates, but the overall pattern of results definitely corroborates our previous findings.

It should also be noted that the results of Figure 3 square well with those found for the adoption sample. Both of these analysis seems to suggests that the underlying dynamic process is best captured by a mixture of the latent factor and the autoregressive models. Put boldly, the results presented in this section indicate that a little less than one half of the grandparent-grandchild correlation in voting can be attributed to indirect transmission mechanisms, above all genetic inheritance, whereas the remaining part is due to grandchildren being directly influenced by their grandparents.

In sum, our empirical analyses have provided clear evidence that the dominating two-generation model of political transmission underestimates the intergenerational persistence in voting. If some individuals within a generation are subject to a, negative or positive, shock to their voter turnout behavior this will affect the voting behavior of generations to come, and these shocks die out at a much slower rate than the standard parent-child correlation in voting would lead us to believe. Moreover, our results suggest that we need to take both direct and more indirect transmission mechanisms into account in order to explain this excess persistence.

We believe that these findings provide an important contribution to the previous literature on this topic, because they highlight the need to move beyond the two-generation paradigm that has dominated previous research on intergenerational political mobility. At the same time, we are the first to admit that the previous analyses are far from perfect in all regards. A first limitation concerns the fact that that our data is drawn from a single

country, and it is thus difficult to tell to what extent the findings generalize outside the studied context. However, given that we find evidence of multigenerational influence in a relatively egalitarian and high turnout country such as Sweden, it speaks to reason that we should be able to observe similar relationships in other countries as well. We also provide some tentative support for this conjecture in the Appendix, by using data for the US from the *Youth Parent Socialization Panel Study* (Elliot, 2007; Jennings et al., 2005). Using this data it is possible to connect information on self-reported voting for about 600 individuals to similar information for their parents and grandparents. The small sample size is challenging both in terms of precision and robustness, but the general pattern of the US data is well in line with the results obtained in our Swedish sample. We find a positive association between the voting of grandparents and their grandchildren even when controlling for voting among the parents, and the magnitude of the transmission coefficients are similar to those observed in Sweden (see Column 1 of Table A.4 in the Appendix).

Another issue regards the outcome variable. Voting is only one of the many forms of political participation that citizens can use to influence politics in contemporary democracies. The question is therefore if the multigenerational perspective is equally relevant for these other forms of participation. Unfortunately, we lack the necessary data to answer this question, but previous research has shown that although highly stratified, voting is typically the least inegalitarian form of political participation (Schlozman et al., 2012, 595). It could therefore be hypothesized that the multigenerational associations are even stronger, in relative terms, for more demanding participatory acts. We find some tentative support for this hypothesis in the US data discussed above, although the poor statistical precision precludes any firm conclusions (see Table A.4).

Related to this, it is also conceivable that the strength of the intergenerational transmission could vary across different types of elections, not least between high and low turnout elections. In our main analysis we have combined information from a first-order (the national election in 2010) and a second-order (the EP election in 2009) election with rather

different levels of turnout. In the Appendix we provide separate results for each of these two elections (see Table A.5 in the Appendix). This analysis shows that the absolute size of the transmission coefficients are very similar across the two elections, but because turnout is much lower in the EP election the relative impact of parents and grandparents is larger in this election.

Finally, it could be argued that the type of average transmission coefficients that we have reported here often conceals as much as they reveal, since the intergenerational associations may not be the same for all groups of individuals. We have therefore performed a number of heterogeneity analyses. For reasons of space, the full results from these analyses are reported in the Appendix, but we briefly summarize our main findings here. First, we find very similar patterns of transmission for men and women, which indicates that the multigenerational perspective should be equally applicable to both sexes (see Table A.7 in the Appendix). Second, when splitting the analyses by age we observe the expected pattern that the magnitude of the transmission coefficients decrease with age (see Tables A.7 in the Appendix). Third, we have studied whether the strength of grandparental influence depends on the voting habits of parents. These results suggest that politically active grandparents may help to compensate for inactivity among the parents. The lower the parental turnout, the stronger is the impact of grandparental voting (see Table A.8).

Conclusions

Decades of political socialization research has provided ample evidence that children of politically active parents are more likely to grow up to become politically active themselves (see Neundorf and Smets, 2017, for an overview). This process of intergenerational transmission of political activity poses a challenge to the fundamental democratic principle of equal political voice, since, as Schlozman et al. explain, "if the propensity to participate is handed down across generations, the political advantage that accrues at any moment to

well-educated and affluent activists will be perpetuated" (2012, 178).

In the present study, we have argued that this problem may actually be more severe than than has hitherto been acknowledged. The reason for this is that previous research on the topic has focused almost exclusively on political transmission between children and their parents, while the role played by more distant ancestors, such as grandparents, has largely been neglected. Recent research on social and economic mobility in neighbouring disciplines has shown that the two-generation approach to intergenerational transmission is likely to overestimate long-run mobility (Lindahl et al., 2015; Hällsten and Pfeffer, 2017; Braun and Stuhler, 2018).

The results of this study point in a similar direction. For instance, when we attempt to predict the grandparent-grandchild correlation by iterating the parent-child correlation, the resulting estimate is less than one third of the actual observed correlation in our data. One difficulty in interpreting these results, however, is that widely different dynamic processes can be invoked to explain this type of excess persistence. In this study we have focused on two chief candidates, one positing that the behavior of grandparents (and perhaps even great grandparents) directly influence their grandchildren, and the other focusing on genetic or cultural inheritance from parent to child.

Because both of these models provided a good fit to our multigenerational data, we performed additional analyses in an effort to try to distinguish between them. This is no easy challenge, and we do not claim to have provided the final answer on the question of what mechanisms underlie the intergenerational stability in voting. More research is clearly needed to settle this important issue. Yet, we believe that our results indicate that a fuller understanding of intergenerational political mobility requires that we take both genetic and cultural transmission between parents and their children as well as higher order cross-generational social learning into account.

This study has important implications for both research and policy. Academically, our findings illustrate that in order to study how political inequality is reproduced across gen-

erations, political scientists need to move beyond the two-generation paradigm that has dominated previous research in the field, and adopt a more multigenerational perspective on political inequality. To better understand the mechanisms underlying the intergenerational persistence in political outlooks and behavior future research should thus pay more attention to the role played by non-parental relatives in the process of political socialization. There are, however, some signs that this is already about to happen.

One example of this is the quickly growing literature on political dynasties, which studies the importance of extended family ties to obtain elected office (Dal Bó et al., 2009). Another more closely related example is the recent study of Aggeborn and Nyman (2020) that examine multigenerational correlations in party affiliation among Swedish politicians. Finally, a different yet connected approach is adopted by (Lahtinen et al., 2019) who use sibling-correlations to study the impact of family and community background on voter turnout. We hope to see more work of this type in the future.

In our view, the present study could also be of significant practical value. Most importantly, the study underscores that if we want to understand, and ultimately alleviate, the perpetuation of political inequality across generations it does not suffice to focus only on the relationship between children and their parents. During childhood and adolescence many children maintain close social connections to relatives other than their parents, such as grandparents, aunts, uncles, and in some cases even great grandparents, and all these actors may influence the child's political development. Viewed from this perspective, we could therefore expect that policies aimed at raising political participation and mitigating the reproduction of political inequality across generations are more likely to succeed if they target broad groups of the population, rather than being narrowly targeted to parents and their children. That is, we are in a better position to combat persisting political inequalities if we adopt a multigenerational perspective on the issue of political mobility.

Supplementary Appendix

[**STILL UNDER CONSTRUCTION!!!!!**]

Details on data and measures

This section provides a description of the data availability, data sources and the main variables used in this study.

Data availability and replication

We use individual level data from Swedish registers. The data material is located on an encrypted server to which we have to log in through a remote desktop application in order to perform all of our data analyses. Due to the extreme sensitivity of the data, we are under contractual and ethical obligation not to distribute these data to others.

For those researchers who want to replicate our results there are two ways to get access to the administrative data. The first way is to order the data directly from Statistics Sweden (SCB). Statistics Sweden presently requires that researchers obtain a permission from a Swedish Ethical Review Board before data can be ordered (a description, in Swedish, of how to order data from Statistics Sweden is available at: `https://www.scb.se/en/services/guidance-for-researchers-and-universities/`). We will also make available a complete list all of the variables that we ordered from Statistics Sweden for this project, together with our computer scripts.

The second way to replicate our analyses is to come to Sweden and reanalyze these data through the same remote server system that we used. Researchers interested in using this option should reach out to us prior to coming to Sweden so that we can apply for approval from the Ethical Review Board for the researcher to temporarily be added to our research team, which is mandatory in order to get access to the remote server system.

Variables and data sources

Voter turnout

The Swedish registers do not contain population-wide turnout information. Although Statistics Sweden (SCB) has collected information on individual turnout for each election since 1991, their samples only cover about 1 percent of the electorate. However, the electoral rolls are still maintained in paper form, and each roll lists all eligible voters living a particular voting district. The electoral rolls contain preprinted information on the full name and a unique personal identification number (*personnummer*) for all eligible voters, and hand-written information, filled in by the election officials, on whether particular individuals chose to vote in each of the three different elections at the municipal, county and national levels. To date we have scanned and digitized the election rolls for five different elections: the general elections in 1970, 1994, and 2010, the EU referendum in 1994, and the election to the European Parliament in 2009. In addition we have also access to data for the general election held in 1982, which was scanned and digitized by Magnus Carlsson and Dan-Olof Rooth.

The reliability of the digitized data is very high. Analyses of the data for 2010 shows that the digitized data conforms with the data collected by Statistics Sweden in 99.7 percent of the cases. See Lindgren et al. (2019) for a more complete description of the procedures with regards to to scanning and digitizing these election rolls.

Data from administrative registers

In the main analysis we make use of data from various administrative registers. In this subsection we describe the main variables in somewhat more detail.

`Voting, children` – The average turnout in the EP election in 2009 and the national election in 2010 among individuals in the children generation. Only non-missing values are used when calculating average turnout.

`Municipality of residence, children` – Code for the municipality of residence to be used as municipality fixed effects. The information originates from the 2009 wave of the Longitudinal integration database for health insurance and labour market studies (LISA).

`Sex, children` – Equal to 1 if female and 0 for male. The information originates from the Swedish Population Register.

`Immigrant background, children` – Equal to 1 if the individual or at least one of the parents are foreign born. The information comes from the Swedish Population Register.

`Voting, parents` – The average turnout of fathers and mothers in the general elections and the EU referendum that were both held in 1994. Only non-missing values are used when calculating average turnout.

`Voting, grandparents` – The average turnout of all paternal and maternal grandparents in the general elections held in 1970 and 1982. Only non-missing values are used when calculating average turnout.

`Voting, great grandparents` – The average turnout of all paternal and maternal great grandparents in the general elections held in 1970 and 1982. Only non-missing values are used when calculating average turnout.

`Education, parents` – The average of the percentile ranked education of the father and the mother. The variable was constructed in three steps. First, the highest attained education of all fathers and mothers were transformed into years of education. Then years of education was percentile ranked by birth year and sex. Finally, we took the average of the percentile ranked education of the mother and the father, using only non-missing values. The original data were obtained from the LISA database and the Census of 1970.

`Education, grandparents` – The average of the percentile ranked education of all paternal and maternal grandparents. The original data were obtained from the LISA database and the Census of 1970.

`Education, great grandparents` – The average of the percentile ranked education of all paternal and maternal grandparents. The original data were obtained from the LISA database and the Census of 1970..

`Income, parents` – The average of the percentile ranked total income of the mother and the father. The data on income were obtained from the censuses in 1985 and 1990. In a first step income was percentile ranked by census year, birth year, and sex. In the next step we then calculated the average income of the mother and the father across the two years, including only non-missing observations.

`Income, grandparents` – The average of the percentile ranked total income of all paternal and maternal grandparents. The data on income were obtained from the censuses in 1970 and 1975.

`Income, great grandparents` – The average of the percentile ranked total income of all paternal and maternal great grandparents. The data on income were obtained from the censuses in 1970 and 1975.

`Occupational status, parents` – The average occupational status of the mother and the father as measured by the International Cambridge Scale (ICAMS). The ICAMS score uses detailed information on inter-occupational marriage patterns to statistically estimate the "social distance" between different types of occupations (Prandy and Jones, 2001). The indicator thus measures occupational stratification. For reasons of international comparison, we here use the international CAMSIS scale developed by Meraviglia et al. (2016) based on information available in surveys of the International Social Survey Programme (ISSP) for the years 2001 to 2007. The measure was constructed in three steps. First,

the occupational codes available in the censuses from 1985 and 1990 were converted into ISCO-88 format by using conversion keys developed by Statistics Sweden and Erik Bihagen (2007). In the next step, the ISCO codes were mapped into ICAMS scores using a key provided by Harry Ganzeboom `http://www.harryganzeboom.nl/isco88/index.htm`. In the final step, we calculated the average ICAMS score for the mother and the father across all census years, using only non-missing observations.

`Occupational status, grandparents` – The average occupational status of all maternal and paternal grandparents as measured by the International Cambridge Scale (ICAMS). The original data were obtained from the censuses in 1960 and 1970.

`Occupational status, great grandparents` – The average occupational status of all maternal and paternal great grandparents as measured by the International Cambridge Scale (ICAMS). The original data were obtained from the censuses in 1960 and 1970.

Supplementary Analyses

Table A.1: Political Transmission Across Three Generations, Poisson Model

	(1)	(2)	(3)	(4)	(5)
Turnout P	1.616***		1.572***	1.459***	1.455***
	(0.005)		(0.005)	(0.005)	(0.005)
Turnout GP			1.188***	1.117***	1.119***
			(0.004)	(0.004)	(0.004)
Mean	1.31	1.31	1.31	1.31	1.31
N	2,256,361	2,256,361	2,256,361	2,256,361	2,256,361

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
All models include controls for the sex, immigrant background, and birth year of the individuals in the children generation. Models 2 to 4 also includes fixed effects for the (rounded) average birth year of parents and grandparents. All entries refers to incidence rate ratios. Standard errors are clustered on mother-father pairs and shown in parentheses.

Table A.2: Political Transmission Across Four Generations, Poisson Model

	(1)	(2)	(3)	(4)	(5)
Turnout P	1.649***		1.641***	1.524***	1.520***
	(0.012)		(0.012)	(0.011)	(0.011)
Turnout GP	1.286***		1.266***	1.178***	1.191***
	(0.014)		(0.014)	(0.013)	(0.013)
Turnout GGP		1.104***	1.057***	1.028***	1.029***
		(0.008)	(0.008)	(0.007)	(0.007)
Mean	1.16	1.16	1.16	1.16	1.16
N	384,507	384,507	384,507	384,507	384,507

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
All models include controls for the sex, immigrant background, and birth year of the individuals in the children generation. Models 2 to 4 also includes fixed effects for the (rounded) average birth year of parents, grandparents and great grandparents. All entries refers to incidence rate ratios. Standard errors are clustered on mother-father pairs and shown in parentheses.

Table A.3: Transmission by Grandparental Type

	(1)	(2)
Turnout Mother (TM)	0.131***	0.131***
	(0.002)	(0.002)
Turnout Father (TF)	0.094***	0.094***
	(0.002)	(0.002)
Turnout Maternal Grandmother (TMGM)	0.035***	0.013**
	(0.002)	(0.006)
Turnout Maternal Grandfather (TMGF)	0.024***	0.015***
	(0.002)	(0.004)
Turnout Paternal Grandmother (TPGM)	0.024***	−0.004
	(0.002)	(0.006)
Turnout Paternal Grandfather (TPGF)	0.019***	0.011***
	(0.002)	(0.004)
TMGM x Alive		0.023***
		(0.007)
TMGF x Alive		0.009**
		(0.004)
TPGM x Alive		0.030***
		(0.006)
TPGF x Alive		0.009**
		(0.004)
Mean	0.65	0.65
N	1,131,765	1,131,765

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
All models include controls for the sex, immigrant background, and birth year of the individuals in the children generation as well as fixed effects for the (rounded) average birth year of parents and grandparents. Standard errors are clustered on mother-father pairs and shown in parentheses.

Table A.4: Political Transmission Across Three Generations, Youth Parent Socialization Panel Study

	Vote	Talk	Rally	Other	Button	Money	Index
Participation P	0.294***	0.016	0.162***	0.098***	0.082**	−0.002	0.16***
	(0.085)	(0.043)	(0.036)	(0.033)	(0.036)	(0.022)	(0.031)
Participation GP	0.110	0.094**	0.050	0.065*	0.035	0.045*	0.031
	(0.074)	(0.046)	(0.041)	(0.039)	(0.037)	(0.027)	(0.036)
Mean	0.65	0.45	0.18	0.10	0.16	0.06	0.19
N	545	685	668	685	685	684	687

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.
All models include controls for the sex, and birth year (dummies) of the individuals in the children generation and the (rounded) average birth year of parents and grandparents.

Table A.5: Political Transmission Across Three Generations by Election

	(1)	(2)	(3)	(4)	(5)
Panel A. General Election 2010					
Turnout P	0.243***		0.230***	0.207***	0.205***
	(0.002)		(0.002)	(0.002)	(0.002)
Turnout GP		0.127***	0.084***	0.065***	0.065***
		(0.002)	(0.002)	(0.002)	(0.002)
Panel B. EP Election 2009					
Turnout P	0.301***		0.279***	0.206***	0.205***
	(0.002)		(0.002)	(0.002)	(0.002)
Turnout GP		0.181***	0.128***	0.066***	0.069***
		(0.002)	(0.002)	(0.002)	(0.002)

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
All models include controls for the sex, immigrant background, and birth year (dummies) of the individuals in the children generation. Models 2 to 4 also includes fixed effects for the (rounded) average birth year of parents and grandparents. Standard errors are clustered on mother-father pairs and shown in parentheses.

Table A.6: Political Transmission Across Three Generations by Sex

	(1)	(2)	(3)	(4)	(5)
Panel A. Men					
Turnout P	0.280***		0.262***	0.211***	0.209***
	(0.002)		(0.002)	(0.002)	(0.002)
Turnout GP		0.160***	0.110***	0.069***	0.068***
		(0.002)	(0.002)	(0.002)	(0.002)
Panel B. Women					
Turnout P	0.266***		0.249***	0.203***	0.200***
	(0.002)		(0.002)	(0.002)	(0.002)
Turnout GP		0.150***	0.103***	0.066***	0.067***
		(0.002)	(0.002)	(0.002)	(0.002)

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
All models include controls for the sex, immigrant background, and birth year (dummies) of the individuals in the children generation. Models 2 to 4 also includes fixed effects for the (rounded) average birth year of parents and grandparents. Standard errors are clustered on mother-father pairs and shown in parentheses.

Table A.7: Political Transmission Across Three Generations by Age

	(1)	(2)	(3)	(4)	(5)
Panel A. Age: 18–25					
Turnout P	0.301***		0.277***	0.221***	0.218***
	(0.002)		(0.002)	(0.002)	(0.002)
Turnout GP		0.228***	0.144***	0.087***	0.090***
		(0.003)	(0.003)	(0.003)	(0.003)
Panel B. Age: 26–35					
Turnout P	0.291***		0.269***	0.217***	0.213***
	(0.002)		(0.002)	(0.002)	(0.002)
Turnout GP		0.193***	0.128***	0.081***	0.083***
		(0.003)	(0.003)	(0.003)	(0.003)
Panel C. Age: 36–45					
Turnout P	0.247***		0.232***	0.189***	0.186***
	(0.002)		(0.002)	(0.002)	(0.002)
Turnout GP		0.128***	0.093***	0.058***	0.056***
		(0.002)	(0.002)	(0.002)	(0.002)
Panel D. Age: > 45					
Turnout P	0.206***		0.197***	0.167***	0.165***
	(0.003)		(0.003)	(0.003)	(0.003)
Turnout GP		0.085***	0.064***	0.046***	0.046***
		(0.003)	(0.003)	(0.003)	(0.003)

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
All models include controls for the sex, immigrant background, and birth year (dummies) of the individuals in the children generation. Models 2 to 4 also includes fixed effects for the (rounded) average birth year of parents and grandparents. Standard errors are clustered on mother-father pairs and shown in parentheses.

Table A.8: Political Transmission Across Three Generations by Parental Voting

	(1)	(2)	(3)
Panel A. Turnout P < 1			
Turnout GP	0.146^{***}	0.105^{***}	0.106^{***}
	(0.003)	(0.003)	(0.003)
Panel B. Turnout P = 1			
Turnout GP	0.106^{***}	0.062^{***}	0.062^{***}
	(0.002)	(0.002)	(0.002)

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.
All models include controls for the sex, immigrant background, and birth year (dummies) of the individuals in the children generation. Models 2 and 3 also includes fixed effects for the (rounded) average birth year of parents and grandparents. Standard errors are clustered on mother-father pairs and shown in parentheses.

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