

Educational attainment and political trust

Forthcoming, American Journal of Political Science.

Edmund Kelly* Qinya Feng†

October 26, 2026

Short title: Education and political trust.

Keywords: Education, political trust, political support, twin studies, public opinion, political attitudes.

Financial Support: This research was facilitated through access to Twins Research Australia, a national resource supported by the National Health & Medical Research Council (NHMRC) since 1981, administered by the University of Melbourne. The Swedish Twin Registry is managed by Karolinska Institutet and receives funding through the Swedish Research Council under the grant no 2017-00641. The Minnesotan data were collected with the financial support of the National Science Foundation in the form of SES-0721378, PI: John R. Hibbing; Co-PIs: John R. Alford, Lindon J. Eaves, Carolyn L. Funk, Peter K. Hatemi, and Kevin B. Smith, and with the cooperation of the Minnesota Twin Registry at the University of Minnesota, Robert Krueger and Matthew McGue, Directors. The Adolescent Health data were funded by grant P01 HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Add Health is currently directed by Robert A. Hummer at the University of North Carolina at Chapel Hill. Add Health was designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill. E.K. is supported by the UK Economic and Social Research Council (Grant number: ES/P000649/1). Q.F. is supported by the Swedish Research Council (Grant number: 2019-00244).

Acknowledgements: We would like to thank the anonymous reviewers and the editors at the *American Journal of Political Science* for their very constructive and helpful comments. We would also like to thank Nathan Kettlewell and Agnieszka Tymula for their help in accessing the Australian data. Furthermore, we are very grateful to seminar participants at the University of Oslo and the ECPR Joint Sessions of Workshops for their helpful comments and encouragement. Finally, we would like to thank Rafael Ahlskog, Rachel Bernhard, Marlene Mauk, Spyros Kosmidis, Sven Oskarsson, and James Tilley for their detailed feedback on earlier versions of the paper. Any remaining errors are our own.

*Corresponding author. PhD student, Department of Politics and International Relations, University of Oxford, Manor Road, Oxford, OX1 3UQ, United Kingdom. Email: edmund.kelly@politics.ox.ac.uk

†Researcher, Department of Government, Uppsala University, Östra Ågatan 19, 753 22 Uppsala, Sweden. Email: qinya.feng@statsvet.uu.se

Abstract

Education is crucial for many political attitudes and behaviors, but its relationship with political trust is less clear. We show with a meta-analysis that educational attainment is positively associated with political trust. We then argue that these associations are substantially explained by the common family background of those who are more trusting and who select into further education. Using data from four twin studies, we show that the relationship between educational attainment and political trust is attenuated when accounting for factors shared by twins. We then demonstrate that the relationship is reduced when matching respondents on their early life conditions, but not when adjusting for a genetically informed measure of predispositions toward education. In sum, those predisposed to political trust are also predisposed to remain in education, and so educational attainment is less likely to causally explain political trust.

Word count: 9,999 words (excluding title page, abstract page, and bibliography).

Verification Materials: The materials required to verify the computational reproducibility of the results, procedures, and analyses in this article are available on the American Journal of Political Science Dataverse within the Harvard Dataverse Network, at: <https://doi.org/10.7910/DVN/MBFF92>.

The Cornell Center for Social Sciences verified that the data and replication code submitted to the AJPS Dataverse replicates the numerical results reported in the main text of this article.

Education has long been considered vital for democracy. The more educated are more likely to participate in political life (Willeck and Mendelberg 2022). They also show higher levels of political knowledge (Barabas et al. 2014) and interest (Le and Nguyen 2021). In addition, education is a strong predictor of both social capital (Apfeld et al. 2022) and interpersonal trust (Huang et al. 2009). Educational attainment may therefore promote effective democratic citizenship and underpin the functioning of democracy.

One way in which education may advance democracy is by encouraging political trust. Those with higher diffuse trust in politicians and political institutions are more likely to engage with politics, and to comply with the law (Devine 2024). However, our understanding of whether and how education affects political trust is comparatively thin, despite much evidence that education promotes other pro-democratic attitudes (Mayne and Hakhverdian 2017). This paper seeks to understand how education is related to political trust.

Education, and especially higher education, may cause political trust in advanced democracies for several reasons. First, educational experience might make one more supportive of democratic principles and more trusting of democratic institutions, analogous to its well-known role in promoting social liberalism (Stubager 2008; Surridge 2016). In support of this, the more educated are not only more liberal than the less educated, but they are also more supportive of democratic norms (Anderson and Tverdova 2003; Anderson et al. 2005; Kołczyńska 2020). Second, in advanced democracies, in which corruption is less common and institutions are somewhat responsive, the more educated are expected to have the cognitive resources to appreciate that liberal democratic norms are generally followed (Hakhverdian and Mayne 2012; Mayne and Hakhverdian 2017). Together, this suggests that the more educated will be more politically trusting. They care more about adherence to democratic norms, and while they may be aware of their country’s democratic deficits, they are more capable of identifying that, in general, these norms are followed in advanced democracies.

For these reasons, educational attainment may be considered a cause of political trust in advanced democracies. This might help to explain why existing work often finds a positive relationship, using cross-sectional data (Anderson and LoTempio 2002; Hakhverdian and Mayne 2012; Hetherington 1998; Van der Meer and Hakhverdian 2017), or short-run

panel data (Claes and Hooghe 2017; Hooghe et al. 2015; Devine and Valgarðsson 2024). Nonetheless, an alternative explanation is that political trust has components that are socialized in early life (Jennings et al. 2009; Devine and Valgarðsson 2024; Jennings and Niemi 2015), and that are dispositional (Cawvey et al. 2018; Mondak et al. 2017; Dawes et al. 2014). Educational attainment also has components that are socialized in early life (Klasik 2012), and those that are influenced by heritable dispositions (Engzell and Troup 2019; Krapohl et al. 2014). Therefore, we argue that early life conditions and inherited traits help to explain the associations between educational attainment and political trust.

Using twin data, we show that the relationship between educational attainment and political trust is reduced when controlling for family background. This raises the important question of whether the confounding is primarily due to early life conditions such as childhood socioeconomic status, or heritable dispositions such as cognitive ability. Using multiple datasets covering measures of early life conditions and genetic predispositions towards education, our evidence is clearer for the confounding role of early life conditions, although it is nonetheless still likely that both nature and nurture play a role. In short, our findings suggest that family background helps to explain the association between educational attainment and political trust.

In what follows, we first argue that childhood political socialization and heritable predispositions may help explain the link between education and political trust. We then discuss why the data we use is particularly useful for testing this claim, before presenting the results of several models showing the extent to which family background connects education and political trust. We conclude by discussing the implications of our findings for the study of both education and political trust in advanced democracies.

Education and political trust

Many previous studies find a positive relationship between educational attainment and political trust in advanced democracies (Theiss-Morse and Barton 2017). In particular, graduates tend to be more politically trusting than non-graduates (Hakhverdian and Mayne 2012; Van der Meer and Hakhverdian 2017). This association is often quite strong and we illustrate it in Figure 1, in which we present the results of a meta-analysis combining 189

coefficients from 36 published studies. The vast majority of the coefficients are positive (85 per cent) and most are both positive and statistically significant at the 5 per cent level (62 per cent). The partial correlation is 0.10, and it is significant at the 5 per cent level¹. The overall effect size is moderate and comparable to other meta-analytic effects in political science: it is for example substantially larger than the effect of ethnic diversity on interpersonal trust of -0.024 (Dinesen et al. 2020), and similar to the rally effect of terror attacks on government support of 0.09 (Godefroidt 2023). Educational attainment is therefore positively associated with political trust in advanced democracies.

[Figure 1 about here.]

There are several ways in which educational attainment might directly cause political trust, and we demonstrate these in Figure 2. The first role of educational attainment for political trust is its ‘norm-inducing’ role, which we demonstrate in Panel 1. Education in democracies, especially higher education, is argued to imbue those who attend with democratic values (Kotzian 2011; Hibbing and Theiss-Morse 2002). These democratic values are likely to prompt a more trusting view of democratic institutions, which to some extent embody these norms.

[Figure 2 about here.]

In support of this, the more educated are more supportive of democratic processes (Evans and Rose 2007; Jamal 2006). They also tend to express more respect for human rights, and to condemn corruption more strongly (Anderson et al. 2005; Anderson and Tverdova 2003). Direct experiences with democratic processes during education (for example, through school councils) are also associated with political trust (Claes and Hooghe 2017; Kiess 2022). Similarly, perceived procedural fairness within educational institutions may be generalized into adolescents’ political trust (Abdelzadeh et al. 2015). Nonetheless, these mechanisms are not the only ways in which education may affect political trust. In addition to shaping attitudes, educational experiences also affect how people interpret the world around them.

¹Doucouliaos (2011) suggests that a partial correlation over 0.07 should be interpreted as moderate, and a partial correlation over 0.33 should be interpreted as large.

We demonstrate a different role of education for political trust in Panel 2. This relies on an evaluative model of political trust, in which people are assumed to grant or withhold trust based on their appraisal of the performance of political actors and institutions (Mayne and Hakhverdian 2017; Van der Meer and Hakhverdian 2017; Van Elsas 2015). It is then argued that factors which affect political trust, including educational attainment, must do so by affecting the ‘skills’ which people use to evaluate politics, or by affecting the ‘norms’ against which they judge what they see (Mayne and Hakhverdian 2017). The crux of this is the claim that only the more educated possess both the background knowledge and respect for democratic norms to understand that the political institutions in advanced democracies are, in general, worthy of their trust (Mayne and Hakhverdian 2017). It is suggested that the more educated are more likely to understand the constraints within which their political system operates, and to judge government performance against more realistic expectations, leading to greater political trust (Theiss-Morse and Barton 2017). Rather than the unqualified positive attitude toward democratic institutions that the first mechanism implies, this mechanism relies on the more educated taking a considered judgment that the institutions in their country are worthy of their trust.

In support of this idea, there is reasonable evidence that people benchmark against liberal democratic norms when making political trust judgments. For example, perceived procedural fairness is strongly related to political trust in longstanding democracies (Grimes 2017). There is also reasonable evidence that the more educated make more considered political trust judgments against their normative benchmarks. The more educated are more politically attentive (Willeck and Mendelberg 2022), and knowledgeable (Persson 2015), and, in particular, they are more capable of correctly assessing their country’s human rights record (Anderson et al. 2005). As we would expect, therefore, the positive association between education and political trust is partly mediated by respect for democratic norms (Kołczyńska 2020; Ugur-Cinar et al. 2020). Similarly, in democracies with high rates of corruption, the more educated are more capable of realizing that democratic norms have been broken, and they are consequently less politically trusting in these countries (Hakhverdian and Mayne 2012).

However, there are limitations with the existing evidence. For one thing, it is generally cross-sectional (Mayne and Hakhverdian 2017; Hakhverdian and Mayne 2012) or based on

short panel studies, typically with data drawn from a single country and from only a few years (Hooghe et al. 2015; Claes and Hooghe 2017). One exception is Devine and Valgarðsson (2024), who argue using panel data from three countries that although educational attainment explains differences in political trust between people, it does not explain differences in political trust within people over time. Nonetheless, it is unclear whether this null result is explained by education having no causal effect on political trust, or there being too little variation within people in their data for a within-person effect to be identified.

Alternative explanations linking education and political trust.

Recent studies emphasize that political trust is stable in long-run panel data and responds little to major life events (such as unemployment) or to major political events (such as changes in government) (Devine and Valgarðsson 2024; Hooghe et al. 2015; Schoon and Cheng 2011). This is at odds with a ‘running tally’ approach to political trust and it is therefore suggested that political trust may be partly socialized in early life, and have a substantial heritable component (Dawes et al. 2014; Kettlewell and Tymula 2024).

These less malleable components to political trust have significant implications for our understanding of how educational attainment might affect political trust. As Mayne and Hakhverdian (2017, p. 118) note, a direct, causal explanation linking education and trust might be weaker ‘if both political trust and its normative and cognitive predictors are developed outside of traditional venues of education’. We therefore argue that the relationship between educational attainment and political trust could be confounded by these determinants of political trust and we illustrate this in Figure 3. Education and political trust have common causes related to the shared family background of those who are more trusting of political institutions and more likely to enter higher education. Therefore, any causal relationship between educational attainment and political trust might be weaker than the observed positive correlation suggests.

[Figure 3 about here.]

What might these confounders look like? The first set of confounders are those related to early life conditions, meaning the socialization within one’s family and local community which people experience while growing up. One important example is early life household

socioeconomic status, which is associated with both educational attainment and political trust in later life. For one thing, family socioeconomic status affects whether people are likely to remain in education for longer, or to enter higher education (Klasik 2012). Those from more comfortable backgrounds are more likely to attend fee-paying schools and to receive the financial support from their family to enable them to enter higher education (Chevalier and Lanot 2002). Household socioeconomic status is also strongly associated with school motivation and classroom attainment (Schoon and Cheng 2011).

Furthermore, political trust is associated with both household socioeconomic status and with (perceived future) personal socioeconomic status, likely because those in higher income brackets feel more comfortable with the political system (and with their lives in general). In addition, given that politicians are disproportionately drawn from higher income brackets (Carnes and Lupu 2023; O’Grady 2019), and perceived cultural distance with politicians is negatively related to political trust (Noordzij et al. 2021), those from similar socioeconomic backgrounds to politicians are likely to be more trusting of those politicians and of the institutions which they occupy. Those in higher income brackets accordingly express higher political trust (Mayne and Hakhverdian 2017), as do those who report greater financial satisfaction (Catterberg and Moreno 2006) and, most relevant for our argument, those who grew up in more financially comfortable households (Schoon et al. 2010; Schoon and Cheng 2011; Hooghe et al. 2015). Early life experiences are therefore likely to affect both educational attainment and political trust.

In addition, the direct causal mechanisms suggested earlier are likely to be associated with people’s early life conditions. First, it is unclear how democratic norms are imparted during education. One possibility is direct experience with democratic procedures, through school councils and other such processes (Claes and Hooghe 2017; Kiess 2022). Yet, it is perhaps more plausible that those who are already more knowledgeable about democratic norms are more likely to participate in these processes, and the family is a strong candidate for where these norms are acquired. Accordingly, when accounting for family background in a co-twin control design, the relationship between educational attainment and political knowledge is reduced (Weinschenk and Dawes 2019; Weinschenk et al. 2021), especially within those households which discuss politics more frequently (Robinson 2020), suggesting that knowledge about politics is also acquired through the family.

The second role of education relies on the more educated possessing the normative benchmarks and contextual knowledge to recognize that their political institutions generally perform quite well, compared to global and historical norms. This view not only faces the aforementioned issues with the norm-inducing role of educational attainment, but also the fact that the accuracy-inducing role of educational attainment is likely to be endogenous to early life conditions. The most plausible mechanism is that those who stay in education longer are more likely to possess the historical, institutional and geopolitical knowledge to contextualize the democratic performance of their country.

This knowledge might come from history and geography lessons in school and college, but there are questions with this logic. Particularly in the United States, historically, students were presented with a stylized and even glorified image of government which, if left unchecked, could instead create unrealistic expectations and reduce political trust (Hibbing and Theiss-Morse 1996). It is perhaps more plausible that this knowledge is acquired through the family. Those who remain in education longer, and especially those who enter higher education, tend to have highly educated parents and social circles (Klasik 2012), in which knowledge and discussion of global affairs is the norm (McIntosh et al. 2007; Fraile 2013), as are international travel and access to the resources required to acquire this knowledge. Those who enter higher education are therefore likely to have been more capable of making accurate political trust judgments before they started university.

Family background is therefore likely associated with both education and political trust. A direct causal explanation may then be less likely to be the main link between education and trust. In support of this, Hooghe et al. (2015) finds that differences in political trust between those who entered higher education and those who did not were already present at age 16, suggesting that the differences are related to pre-adult socialization and dispositional factors. Similarly, Torney-Purta (2004) finds that aggregate levels of political trust among adolescents tend to mirror those in the adult population. Again, this sequencing is hard to explain unless the link between education and trust is at least partly formed in early life. The importance of early life factors was indeed recognized by earlier studies linking education and political trust (e.g., Jennings and Niemi 2015; Jennings et al. 2009), but they tended to focus on understanding the familial transmission of attitudes using

parent-child correlations, which reflect only part of the early life experience (i.e., direct parent-child interactions and inherited traits, but not, for example, wider socialization within communities). We might expect that when accounting for all relevant early life aspects, these factors would play a greater role in explaining the education-trust link.

The second set of confounders between educational attainment and political trust are those related to heritable predispositions. Cognitive ability is a clear candidate that has already been shown to partially explain the effect of educational attainment on political trust (Hooghe et al. 2012; Schoon et al. 2010; Schoon and Cheng 2011; Šerek and Macek 2014). Cognitive ability is partly heritable and tends to be stable across the lifespan (Plomin et al. 1994). Those with higher cognitive ability tend to stay in education for longer, and to be more successful in the education system (Krapohl et al. 2014; Engzell and Troup 2019; Deary et al. 2007; Belley and Lochner 2007; Bartels et al. 2002). In addition, they tend to accrue more socioeconomic resources throughout their life, and this makes them more comfortable with their position in society and as such, more trusting of the political institutions that govern it (Schoon and Cheng 2011). Those with higher cognitive ability are also more likely to obtain the contextual knowledge and critical thinking ability necessary to make informed political trust judgments (Luskin 1990)². They may then select both into higher political trust and into higher levels of education.

Similarly, personality traits are known to be heritable (Dawes et al. 2014) and are another potential confounder. Those who are more emotionally stable and agreeable, and less extroverted, tend to be more politically trusting (Mondak et al. 2017) and they tend to attain higher levels of education (Smith-Woolley et al. 2019). Those with higher cognitive ability and commensurate personality traits are therefore more likely both to remain in education and to be more politically trusting.

Hypotheses

In this paper, we build on recent work on the origins of political trust to test the relationship between educational attainment and political trust. Our baseline, following the

²While education may increase political trust by improving cognitive ability (Hooghe et al. 2012), people may select into education based on prior cognitive ability (Schoon and Cheng 2011; Schoon et al. 2010).

meta-analysis, is that the more educated will be more trusting than the less educated.

H1. Educational attainment is positively associated with political trust.

The more educated, and those who are more politically trusting, are likely to share early life conditions related to family socioeconomic status, and this could help to explain the relationship between educational attainment and political trust.

H2. When accounting for early life conditions, the relationship between educational attainment and political trust is weaker.

In addition, the more educated and the more politically trusting may share heritable dispositions, for example those related to personality, further explaining the relationship between educational attainment and political trust.

H3. When accounting for heritable predispositions, the relationship between educational attainment and political trust is weaker.

Finally, we suggest that accounting for both types of possible confounder simultaneously will explain the relationship between education and political trust.

H4. When accounting for family background (early life conditions and heritable dispositions), educational attainment is no longer associated with political trust.

Data and method

Summary

Our overall goal is to test whether and how early life conditions and inherited traits explain the relationship between education and political trust. Our primary study is our most complete test, examining whether differences in education within pairs of identical twins predict differences in political trust. This approach holds constant all early life con-

ditions and inherited dispositional traits shared by twins which might affect education or political trust. However, it does not tell us whether the relationship between education and trust is explained mostly by early life experiences, or mostly by inherited dispositions, only that it is explained by some combination of these factors. This is because the twin fixed effects are latent variables capturing all of these factors simultaneously.

Our subsequent studies therefore separate out these potential confounders. First, we directly control for measures of the inherited component of educational attainment to test for genetic confounding. Second, we use longitudinal cohort data to directly match people based on their early life conditions. These approaches directly measure possible explanations for the link between education and political trust, but their limitation is that only observable conditions can be measured, whereas the twin approach also (indirectly) controls for unobserved confounders, because we know these are shared by the twins, even if they are not measured. The latter approaches therefore suggest whether early life conditions or inherited traits are more likely to explain the relationship between education and political trust. However, we would not expect either of these models to explain the entire relationship, because they only account for observable factors.

In sum, as we show in Figure 4, Study 1 tells us the extent to which pre-adult socialization and inherited traits jointly explain the education-trust link. Study 2 and Study 3 will then attempt to test pre-adult socialization and inherited traits separately. In what follows, we detail these studies in turn.

[Figure 4 about here.]

Study 1: Co-twin control design

We first use data from four twin studies, which we summarize in Table 1. We start by looking at twin data because we know that twins will share to a significant extent their education-linked early life conditions and inherited traits, and so these data are the most comprehensive test of whether these factors explain the education-trust link. We use the Minnesota Twins Political Survey (MTPS) (Hatemi et al. 2016), the Swedish Twin Registry’s Screening Across the Lifespan Twin Young dataset (SALTY) (Magnusson et al. 2013), the Australian Twins Economic Preferences Survey (ATEPS) (Kettlewell and Ty-

mula 2023) and the National Longitudinal Study of Adolescent Health (Add. Health) (Harris and Hummer 2026). We chose these datasets from the list of available twin studies in Hur et al. (2019), by identifying twin data which measured both educational attainment and political trust.

All participants are monozygotic (MZ) or dizygotic (DZ) twins with another member of the dataset³. MZ twins are virtually identical in their genetic makeup, while DZ twins share on average about 50 per cent of the segregating alleles that contribute to individual differences in humans. All twins are furthermore raised in a similar early life environment. Using twin data improves upon existing work by measuring the relationship between educational attainment and political trust while controlling for the heritable predispositions and early life conditions shared by the twins, which cannot be accounted for with standard observational data. In addition, using data collected over four different educational contexts and three different time periods allays concern that our results may be specific to a particular country or time period.

[Table 1 about here.]

We measure political trust using questions asking respondents to rate their trust in different institutions and actors. We summarize these question batteries in Table 2. All the questions refer to generalized political trust in institutions or ‘politicians’ in general (system support), and not trust in specific named political actors or incumbents (Easton 1975). In each case, we scaled the items such that our results can be interpreted in terms of standard deviation changes in political trust. Following the meta-analysis by Devine (2024), we do not expect the different question wordings to meaningfully affect our results. Nonetheless, by scaling several different items we keep any resulting measurement error to a minimum. In the Online Appendix (p.5), we report factor analyses for each scale.

[Table 2 about here.]

We measure educational attainment by asking respondents to rate the highest level of education they have completed. The exact question structures are recorded in Table 3.

³Except in the Add. Health data, in which some participants are also non-twin siblings. Compared to unrelated people, respondents within each family still grew up in a largely similar environment and share a substantial proportion of their genes.

We separate out those with low (did not complete high school), medium (completed high school but did not complete a college degree) and high (completed a college degree) education⁴. We chose this structure to harmonize across the different educational systems and question structures, while retaining a reasonable number of people in each category. As robustness tests, we also use a continuous measure of years of education where available. In addition, in the Swedish data, in which our education data is from state registries rather than self-reports, and in which our MZ twin sample is largest, we run some additional tests using more detailed categorical measures (see page 6 in the Online Appendix).

[Table 3 about here.]

We use discordant twin (also known as co-twin) models to predict political trust using educational attainment (McGue et al. 2010). We first present a ‘naïve’ model in which we predict political trust using educational attainment, with only birth year fixed effects, sex, and interactions between the birth year fixed effects and sex as control variables. This gives a baseline relationship between educational attainment and political trust, to which we compare the results from the discordant twin models. This model predicts political trust using educational attainment, but instead of birth year fixed effects and sex, it includes controls for twin pair fixed effects which effectively absorbs all variation from early life environments and heritable predispositions common to the twin pairs. The substantive meaning of the model is thus that it allows us to see whether differences in education within twin pairs lead to differences in their political trust. In all models, we cluster the standard errors at the twin-pair level, as is standard for discordant twin designs (Oskarsson et al. 2017; Weinschenk et al. 2021).

If the relationship between educational attainment and political trust is confounded, then the effect size will diminish substantially in the twin pair fixed effects models and it will likely lose statistical significance. Because MZ twins are virtually identical in their genes, models with the MZ twins sub-sample more effectively eliminate genetic confounding and we therefore use these as our baseline models (following Weinschenk et al. (2021)).

⁴The Add. Health data includes some people aged 18-22, who are unlikely to have completed a college education. In our primary models, we include both people who have completed a college degree, and those aged 18-22 who are still in college, in the ‘High’ education category. In the Online Appendix (p.19), we also report models excluding those aged 18-22, and only including those with a completed college degree in the ‘High’ category. These results indicate that the decision to include younger respondents in these data does not drive our results.

Results for the DZ twins sub-samples are available in the Online Appendix (pp. 6, 12, 15, 17)⁵. The MZ twin models are our most comprehensive test for confounding, accounting for all heritable predispositions and early life conditions shared by the twin pairs. It is important to note that since these models use within-pair variation, the effective sample size is smaller than in the naïve models, which reduces statistical precision and power⁶. In addition, non-shared confounding factors could still bias the relationship, and so any remaining correlations in the fixed effects models are not necessarily causal. Nonetheless, all things considered, if the effect sizes are consistently much smaller in the fixed effects models than in the naïve models, then it is likely that the naïve association is confounded by family background.

In summary, the co-twin method is a control by design approach which simultaneously controls for all relevant shared early life conditions and heritable dispositions. This allows us to test whether the association between educational attainment and political trust persists when accounting for early life and inherited factors. However, if we observe confounding, this design does not tell us whether it is *primarily* due to shared early life conditions or due to inherited traits. Our subsequent analyses use measures of potential genetic and environmental confounders to test these explanations separately.

Study 2: Polygenic indices

Our next design directly tests whether inherited traits explain the education-trust link. Polygenic indices (PGIs) are newly-developed individual-level variables which partially capture a person’s genetic predisposition toward a certain trait (Becker et al. 2021). Many traits, including educational attainment, are estimated to have modest inherited components (Branigan et al. 2013). This does not normally mean that the trait is only related to one gene. Instead, many genes provide very small contributions (Chabris et al. 2015). A PGI aggregates these small genetic associations to generate a measure summarizing an individual’s genetic propensity toward the outcome of interest. One application is that these indices can then be used to test whether the genetic component of one trait (e.g., education) helps to explain its association with other outcomes (e.g., political trust).

⁵DZ twins are a weaker test for confounding because their genetic makeup and early life experiences will be more different than MZ twins. Given this and the generally smaller DZ twin sample sizes, we report MZ twin results in our main analyses. We generally see modest attenuation of the education effects in the DZ twins samples, consistent with confounding due to family background.

⁶See the Online Appendix (pp. 9-10, 13, 16, 18) for sensitivity power analyses that suggest we have reasonable power to detect small to moderate education effects.

Although PGIs have been used by behavioral geneticists for several years, they have only recently been applied to political science. Recent contributions by Ahlskog et al. (2025) and Ksiazkiewicz et al. (2025) introduce PGIs, including their interpretations and potential applications, and show that PGIs for education, cognitive ability, and several health and psychological traits are associated with political participation and ideology, with explanatory power sometimes comparable to variables such as parental education (Feng 2025; Ahlskog 2025; Dawes et al. 2021). PGIs may also be useful for sensitivity and heterogeneity analyses (Benjamin et al. 2024). We use PGIs for educational attainment to test whether education-linked genetic factors partially explain the link between education and political trust.

The advantage of this approach is to directly measure education-linked genetic dispositions, whereas the twin study bundles these together with early life factors within the twin pair fixed effects. This means we can specifically test whether inherited factors explain the education-trust link, whereas the twin approach tests instead whether some *combination* of inherited and early life factors explains this link, but is agnostic about the precise combination. Furthermore, compared with survey-based measures of dispositions, PGIs reduce concerns about collider bias and reverse causality because genetic variants are fixed at conception (Ahlskog et al. 2025; Benjamin et al. 2024). In addition, PGI analyses do not depend on the strong assumptions required by variance-decomposition approaches in classical twin designs (for example, the Equal Environments Assumption), and they can be integrated more flexibly into standard regression frameworks (Willoughby et al. 2023).

We use PGIs for educational attainment in the Add. Health (Braudt and Harris 2020; Lee et al. 2018) and SALTY datasets (Becker et al. 2021; Magnusson et al. 2013). The PGIs for educational attainment allow us to directly control for education-linked inherited dispositions and test the extent to which this attenuates the effect of educational attainment on political trust. The underlying survey data is the same as that used in our co-twin design, so the measures of political trust are the same.

As with all measures, PGIs are imperfect and it is important to acknowledge their limitations. PGIs aggregate the effects of many genes on their target trait, but they do not

capture all relevant genes. The PGIs we use should therefore be seen as the best available, but ultimately partial measures of education-linked genetic predispositions. In addition, PGIs are estimated with some noise, and in particular they may contain residual influences from environmental factors which correlate with the target trait⁷. See the Online Appendix (pp. 1-3) for further technical information about the PGIs.

Since DZ twin differences in genes are random, DZ twin differences in PGIs are free of shared environmental confounding (Selzam et al. 2019). In the SALTY data, the DZ sample size is sufficient for a within-family analysis. In these data, we therefore use only the DZ twins and include twin-pair fixed effects. In the Add. Health data, the DZ sample is insufficient for a within-family approach. In our baseline model, we instead include birth year fixed effects, sex, and interactions between the birth year fixed effects and sex⁸. In both cases, we then add controls for each PGI and see whether the effect of education on political trust is attenuated. The more strongly education-linked genetic factors also predict political trust, the greater this attenuation.

Study 3: Longitudinal cohort data

In our final study, we instead directly test for confounding by early life conditions. For this purpose, we use the 1970 British Cohort Study (UK70) (University College London et al. 2024). These data track respondents from birth and contain detailed batteries of questions relating to early life conditions (such as family socioeconomic status), which are not typically recorded in standard observational data. Crucially, these are measured in early life, and are not reliant on people recalling them in later life. This permits us to see whether the relationship between educational attainment and political trust is attenuated when accounting for these early life conditions. To our knowledge, this is the only such data with suitable measures of political trust, educational attainment, and detailed, contemporaneously measured early life conditions.

Our analysis sample includes 3,169 respondents with information on political trust recorded at age 42, and information on early life conditions recorded at ages 0, 5, 10, and 16. Political trust is measured with a two-item battery, asking respondents to respond on

⁷For example, due to population stratification and assortative mating.

⁸We also include the first ten principal components of the genetic relatedness matrix to partly control for potential environmental confounders. PGIs in each sample are standardized.

a Likert scale to the statements: ‘Politicians are mainly in politics for their own benefit and not for the benefit of the community’ and ‘None of the political parties would do anything to benefit me’ ($\alpha = 0.65$). For comparability with our previous results and with the other educational systems covered, we adopt the same three-category educational measure.

We match the treated respondents on several early life conditions relevant to subsequent educational decisions. We then regress educational attainment on political trust in both the matched and unmatched samples and compare the results. If the relationship between educational attainment and political trust is confounded by those early life conditions on which we match respondents, we expect the coefficient on educational attainment to be attenuated after matching. Following Persson (2015) we use as many relevant variables as possible to improve the precision of our matching⁹ (Gelman and Hill 2006; Ho et al. 2007), and we list these variables in Table 4. We also compare the results of several different matching methods in the Online Appendix (p. 22).

[Table 4 about here.]

Analysis

Does educational attainment cause political trust? In Table 5 we report the standardized point estimates and their standard errors for the co-twin control designs predicting political trust with our three-point education scale¹⁰. We separate those with a ‘low’ level of education (did not complete high school) from those with a medium level (completed high school) and a high level (completed a college degree). In all four cases, completing a college degree exerts a positive, statistically significant effect on political trust in the naïve models (without twin pair fixed effects). And the effect size is reasonable. Completing a college degree is associated with a 0.3 to 0.7 standard deviation increase in political trust. This is consistent with prior work which generally finds a positive and reasonably large effect of educational attainment on political trust (Mayne and Hakhverdian 2017).

But in each case, this effect falls substantially in the fixed effects models. In all four cases, the effect is no longer statistically distinguishable from zero at the five per cent level,

⁹We excluded some variables due to substantial missingness.

¹⁰See the Online Appendix for summary statistics (pp. 5-21) and full results (including DZ twins).

and it is generally close to zero. It appears then that when controlling for the family factors shared by the twin pairs, there is no longer a meaningful relationship between holding a college degree and political trust. This is regardless of the educational context, or the time period in which the data was collected.

While there is a positive effect in the naïve ‘medium’ education models, it is usually not statistically distinguishable from zero, and therefore it appears that higher education is driving the positive naïve relationship between educational attainment and political trust. Nonetheless, this positive effect generally decreases in magnitude in the fixed effects models (reversing in sign in the Minnesotan case), and is very close to zero in all three cases. In the Swedish case we see a positive and statistically significant effect of ‘medium’ education on political trust, but again this becomes very close to zero and loses statistical significance in the family fixed effect model. It appears therefore that not only is there no causal effect of college education on political trust, but there is no causal effect of educational attainment on political trust at all.

[Table 5 about here.]

These results are robust in a number of ways and we report robustness tests in the Online Appendix (pp. 5-21). First, the results are broadly similar when re-conceptualizing educational attainment onto a single continuous scale¹¹. Second, we demonstrate that there is still reasonable variation in educational attainment within the MZ twin pairs, and therefore the result is not merely driven by a lack of variation in educational attainment within the twin pairs. In addition, alternate model specifications using bivariate variance decompositions give similar results¹². Regardless of dataset or measurement, the proportion of the correlation between educational attainment and political trust attributable to the non-shared environment (i.e., the component contributing to the quasi-causal relationship between educational attainment and political trust) is near zero and statistically insignificant. Furthermore, although these estimates tend to be noisier, the considerably attenuated education estimates we observe in our DZ twin fixed effects models are also

¹¹We report these results for SALTY and Add. Health, the two datasets in which a continuous ‘years of education’ variable is available.

¹²We run bivariate decomposition models for the Swedish and Minnesotan data, in which the sample size is sufficient for these estimates to be reliable.

consistent with confounding due to family background.

We also address the concern that the sub-population of twins might not be representative, showing that the associations between educational attainment and political trust are similar in nationally representative survey data from Sweden, Australia, and the United States in models which closely replicate the naïve specifications from Table 5. Finally, using the Swedish data, with the largest MZ sample size, we further break down the categorical education measure, first by splitting the ‘High’ category between degrees in the STEM subjects and in the social science and humanities, and secondly by using a finer six-category measure of educational attainment.

One particular concern is that the fall in the effect of educational attainment on political trust between the naïve and fixed effects estimates might be driven by attenuation bias due to measurement error (e.g., Griliches 1979; Frisell et al. 2012). As with any measurement, our measures of education and political trust are not perfect and this will account for some of the drop in the effect of education on trust. But we believe it is unlikely that measurement error accounts for much of the attenuation for two reasons. First, in the Swedish case we expect the least measurement error. The Swedish education data is validated, being taken from state registers rather than self-reported, and the sample size is the largest of the four datasets. Despite this, we see the greatest attenuation in the Swedish case, which appears to be inconsistent with measurement error driving the results. Second, we re-ran the models with an additional correction for random measurement error drawn from previous studies (Isacsson 1999; Oskarsson et al. 2017), and the results are similar.

The Add. Health twins sample is the smallest of the four we use. However, using the Add. Health data, we are able to conduct an additional test using an extended sample of siblings (which includes both twins and non-twin siblings). Non-twin siblings still tend to share their early life environments to a significant extent and they share 50 per cent of their segregating alleles, meaning that these models are still a reasonable test for both genetic and environmental confounding. In addition, they benefit from a seven-fold larger sample, which also alleviates concern about measurement error. We present the results of these models in Table 6. Once again, we observe positive and statistically significant effects on political trust in the naïve models, but these effects are small and statistically

insignificant when accounting for family background in the fixed effects models.

[Table 6 about here.]

In summary, it appears that family background helps to explain the link between educational attainment and political trust. However, we are not yet able to separate the role of shared early life environments and shared heritable dispositions, which are both entirely captured by the family fixed effects. In what follows, we draw on two alternative data sources to address this question.

We first re-use the Add. Health and SALTY datasets to directly test whether controlling for heritable dispositions reduces the relationship between education and political trust. These data include PGIs which measure heritable predispositions related to educational attainment. Figure 5 plots the relationship between educational attainment and political trust against the relationship after controlling for the education PGI.

[Figure 5 about here.]

These results are less clear compared to the co-twin models, but in general, when controlling directly for inherited dispositions, the education effect does not meaningfully change. In each case, we see a positive effect of educational attainment in the naïve model. In the Swedish data, in addition to the genetic confounding accounted for by the DZ-twin-pair fixed effects, controlling for the PGI reduces the association by a further 13%; while in the American data, the effect is unchanged. Thus, we find limited consistent evidence of confounding by heritable dispositional factors using PGIs ¹³. We might therefore expect that much of the confounding is environmental, and we test this next.

We used the cohort data to directly match respondents based on their early life conditions, expecting the association between education levels and political trust to be lower in

¹³While PGIs can capture latent heterogeneity and provide measures of moderating traits that are difficult to observe (Benjamin et al. 2024; Ahlskog et al. 2025), currently available PGIs do not account for all genetic variants linked to the target trait (Zacher and Wedow 2025). Our findings might, therefore, reflect the limited explanatory power of PGIs. Nonetheless, heritable factors are most likely still responsible for some of the confounding in the co-twin models, as is also suggested by our bivariate variance decomposition results. However, due to the strong assumptions these models entail, we report those results in the Online Appendix (pp. 8-9, 12-13).

the matched model than in a naïve model if these confound the relationship. In Figure 6, we show the effect of being in the high (college degree) or medium (at least two A-levels) group on political trust before and after matching for early life conditions. The light color estimates are those of a naïve model predicting political trust with degree status, while the darker color estimate is that matched on their early life conditions¹⁴.

[Figure 6 about here.]

Because the cohort data only accounts for observable early life factors, the results are less decisive compared to the co-twin models. In the unmatched data, education level is associated with higher political trust. This effect is statistically significant, and it is quite large. Those with a degree are around 9 per cent more politically trusting at age 42, as are those with at least two A-levels. However, this initial effect falls to around 5.5 per cent (for the high education model) or 6 per cent (for the medium education model) after matching for early life conditions¹⁵. As such, some (but not all) of the confounding revealed in the twin data is likely attributable to shared early life conditions¹⁶.

Overall, our evidence suggests that the relationship between educational attainment and political trust is substantially explained by background factors, with clearer evidence that early life conditions are responsible. We also found some indirect support for the idea that heritable dispositions are an explanation in the co-twin models, in which we were able to control for both explanations simultaneously, but this evidence was less clear.

Conclusion

Education is associated with many attitudes and behaviors that promote democracy, including social capital, political interest, and interpersonal trust. We confirmed with a meta-analysis that, in advanced democracies, there is also a positive association between

¹⁴See the Online Appendix (pp. 22-23) for demonstrations of balance and alternative matching procedures.

¹⁵We conducted a further test by additionally matching based on estimated cognitive ability. Although partly socialized in early life, this also has a large heritable component (Deary et al. 2007; Plomin and Deary 2015). Again, we do not find evidence for confounding due to heritable predispositions (see page 22 of the Online Appendix).

¹⁶One important caveat is that ‘early life conditions’ also have a modest heritable component, because parents to some extent share heritable predispositions with their children and these affect the environment in which they raise their children. Therefore, while we have clearer evidence for early life conditions, it is likely that heritable predispositions also contribute to the attenuation in the cohort models.

educational attainment and political trust. We then tried to explain this relationship. We argued that one plausible explanation is that those who remain in education for longer, and who are more trusting of political institutions, tend to share early life conditions and inherited traits. In support of our argument, when accounting for early life conditions and inherited traits simultaneously using a co-twin control design, the relationship between educational attainment and political trust was attenuated. While our evidence about the precise source of this attenuation was less definitive, it was clearer for confounding due to shared early life conditions.

There are, as always, caveats to our findings. Although using twin data gave us significant leverage against family-related confounding, as with any type of data, it comes with limitations. One concern is that inferences made in the subpopulation of twins may not always generalize to the broader population. We tried to limit this concern by comparing our naïve models with nationally representative survey data and by including some analyses of sibling data. However, it remains possible that the relationship between education and political trust differs between twin and sibling samples and the general population in ways we cannot test. For example, the variation in educational attainment within twin pairs is generally smaller than that between randomly selected people in the general population, and the reasons that twins vary in education levels may differ from those causing variation among others. Therefore, the local treatment effect for twins may differ from the average treatment effect in the population. In addition, while the ATEPS data considers a broad cross-section of ages, the Add. Health data considers young people, and the MTPS and SALT data consider those in their 50s and 60s. Ultimately, our generalizability tests are suggestive, and our results may be specific to these cohorts. Finally, while our co-twin and co-sibling models can detect relatively small education effects, especially in the Swedish sample and in the Add. Health sibling sample, we cannot rule out very small effects.

Furthermore, there are limitations with our measures of educational attainment. We used a trichotomous measure to harmonize across different measurement schema and educational systems. While we present some models using finer-grained (continuous and categorical) education measures in the Online Appendix (pp. 6, 17), our measures are ultimately somewhat blunt and limited by the available measures in the family data we

use. For example, field of study may be a source of heterogeneity in the education effect¹⁷. In addition, to the best of our knowledge, no twin data includes the repeated measures of political trust necessary to model the impact of education as a lifelong process. Recent studies using panel data have differentiated between dispositional political trust (la Roi et al. 2025) and changes in levels of trust in later life (Devine and Valgarðsson 2024). We hope that future advances in data collection for twin studies will ultimately permit similar analyses along with adequate sample sizes while retaining the causal advantages of family data.

In addition, our study could not precisely differentiate between the different mechanisms by which education might affect political trust, beyond attempting to separate out influences from genetic and early life experiences. One example is that education influences people’s networks. Those who attend college in particular are likely to develop a more highly educated peer group, and the effect of education may be both enhanced by and spill over into one’s peer group. While our co-twin design controls away the extent to which networks are developed in early life, we could not model spillover effects within networks and may therefore have underestimated the total effect of education.

Finally, we cannot isolate the exact early life conditions that are responsible for the confounding between educational attainment and political trust. While the discordant twin models suggest that the relationship is confounded, and our cohort models suggest that early life conditions are important, we cannot specify the precise conditions responsible (which are entirely captured by family fixed effects). In all likelihood, the confounding is attributed to many aspects of one’s family background and no one attribute is particularly responsible. In addition, early environmental factors may affect people differently based on their genetic predispositions (Pettersson 2025; Houmark et al. 2024; McAdams et al. 2023). Future research with comprehensive measures of political trust and pre-adulthood environments could investigate precisely how political trust develops in adolescence, before entering its period of relative stability (Devine and Valgarðsson 2024). Our data lack the pre-education measures of political trust that would permit this analysis.

These caveats aside, our findings have implications for our understanding of both educa-

¹⁷On page 6 in the Online Appendix, we use the Swedish data to split the ‘High’ education category into different fields of study. We did not find evidence of heterogeneity, but we cannot rule this out in other contexts.

tion and political trust in advanced democracies. Our findings suggest that the association between educational attainment and political trust might be explained more by common early life experiences and inherited traits, and less by direct, cognitive mechanisms. This aligns with similar evidence about the relationships between education, political participation, and interpersonal trust (Oskarsson et al. [2017](#); Dinesen et al. [2016](#); Persson [2015](#); Kam and Palmer [2008](#)). Future research could consider the role of family background in linking education to other important outcomes, for example, support for democracy.

In addition, there may be policy implications. Our results imply that interventions aimed at increasing young people’s time in formal education may be less likely to affect their outlook toward the political system. Instead, interventions to improve conditions earlier in life may improve both educational attainment and political trust in the long run.

Finally, our findings add to the growing body of work suggesting that political trust has roots in early life (la Roi et al. [2025](#); Devine and Valgarðsson [2024](#); Kettlewell and Tymula [2024](#); Dawes et al. [2014](#)), and that accounting for the early life origins of political trust affects our understanding of its causes and consequences (Kelly et al. [2026](#)).

References

- Abdelzadeh, Ali, Pär Zetterberg, and Joakim Ekman. 2015. “Procedural Fairness and Political Trust among Young People: Evidence from a Panel Study on Swedish High School Students”. *Acta Politica*, 50(3): 253–278.
- Ahlskog, Rafael. 2025. “Class, Genes, and Rationality: A Gene–Environment Interaction Approach to Ideology”. *Political Psychology*, 46(3): 568–585.
- Ahlskog, Rafael, Christopher Dawes, Sven Oskarsson, and Aaron Weinschenk. 2025. “The Genetics of Political Participation: Leveraging Polygenic Indices to Advance Political Behavior Research”. *Political Behavior*, 48(1): 1–23.
- Aloe, Ariel M. 2014. “An Empirical Investigation of Partial Effect Sizes in Meta-Analysis of Correlational Data”. *The Journal of General Psychology*, 141(1): 47–64.
- Anderson, Christopher J., André Blais, Shaun Bowler, Todd Donovan, and Ola Listhaug. 2005. *Losers’ Consent: Elections and Democratic Legitimacy*. Oxford: Oxford University Press.
- Anderson, Christopher J. and Andrew J. LoTempio. 2002. “Winning, Losing and Political Trust in America”. *British Journal of Political Science*, 32(2): 335–351.
- Anderson, Christopher J. and Yuliya V. Tverdova. 2003. “Corruption, Political Allegiances, and Attitudes Toward Government in Contemporary Democracies”. *American Journal of Political Science*, 47(1): 91–109.
- Apfeld, Brendan, Emanuel Coman, John Gerring, and Stephen Jessee. 2022. “Education and Social Capital”. *Journal of Experimental Political Science*, 9(2): 162–188.
- Barabas, Jason, Jennifer Jerit, William Pollock, and Carlisle Rainey. 2014. “The Question (s) of Political Knowledge”. *American Political Science Review*, 108(4): 840–855.
- Bartels, Meike, Marjolein J. H. Rietveld, G. Caroline M. Van Baal, and Dorret I. Boomsma. 2002. “Heritability of Educational Achievement in 12-Year-Olds and the Overlap with Cognitive Ability”. *Twin Research and Human Genetics*, 5(6): 544–553.
- Becker, Joel, Casper A. P. Burik, Grant Goldman, Nancy Wang, Hariharan Jayashankar, Michael Bennett, Daniel W. Belsky, Richard Karlsson Linnér, Rafael Ahlskog, Aaron Kleinman, et al. 2021. “Resource Profile and User Guide of the Polygenic Index Repository”. *Nature Human Behaviour*, 5(12): 1744–1758.
- Belley, Philippe and Lance Lochner. 2007. “The Changing Role of Family Income and Ability in Determining Educational Achievement”. *Journal of Human Capital*, 1(1): 37–89.
- Benjamin, Daniel J., David Cesarini, Patrick Turley, and Alexander Strudwick Young. 2024. *Social-Science Genomics: Progress, Challenges, and Future Directions*. Working Paper 32404. National Bureau of Economic Research. URL: <http://www.nber.org/papers/w32404>.
- Branigan, Amelia R., Kenneth J. McCallum, and Jeremy Freese. 2013. “Variation in the Heritability of Educational Attainment: An International Meta-Analysis”. *Social Forces*, 92(1): 109–140.
- Braudt, David and Kathleen Mullan Harris. 2020. *Polygenic Scores In the National Longitudinal Study of Adolescent to Adult Health – Release 2*. Chapel Hill, NC: Carolina Population Center: University of North Carolina at Chapel Hill. URL: https://cdr.lib.unc.edu/concern/scholarly_works/p8418t756 (visited on 10/06/2025).

- Carnes, Nicholas and Noam Lupu. 2023. "The Economic Backgrounds of Politicians". *Annual Review of Political Science*, 26(1): 253–270.
- Catterberg, Gabriela and Alejandro Moreno. 2006. "The Individual Bases of Political Trust: Trends in New and Established Democracies". *International Journal of Public Opinion Research*, 18(1): 31–48.
- Cawvey, Matthew, Matthew Hayes, Damarys Canache, and Jeffery J. Mondak. 2018. "Biological and Psychological Influences on Interpersonal and Political Trust". In *The Oxford Handbook of Social and Political Trust*, edited by Eric M. Uslaner. Oxford: Oxford University Press, 119–148.
- Chabris, Christopher F., James J. Lee, David Cesarini, Daniel J. Benjamin, and David I. Laibson. 2015. "The Fourth Law of Behavior Genetics". *Current Directions in Psychological Science*, 24(4): 304–312.
- Chevalier, Arnaud and Gauthier Lanot. 2002. "The Relative Effect of Family Characteristics and Financial Situation on Educational Achievement". *Education Economics*, 10(2): 165–181.
- Claes, Ellen and Marc Hooghe. 2017. "The Effect of Political Science Education on Political Trust and Interest: Results from a 5-year Panel Study". *Journal of Political Science Education*, 13(1): 33–45.
- Dawes, Christopher, David Cesarini, James H. Fowler, Magnus Johannesson, Patrik K. E. Magnusson, and Sven Oskarsson. 2014. "The Relationship between Genes, Psychological Traits, and Political Participation". *American Journal of Political Science*, 58(4): 888–903.
- Dawes, Christopher T., Aysu Okbay, Sven Oskarsson, and Aldo Rustichini. 2021. "A Polygenic Score for Educational Attainment Partially Predicts Voter Turnout". *Proceedings of the National Academy of Sciences*, 118(50): e2022715118.
- Deary, Ian J., Steve Strand, Pauline Smith, and Cres Fernandes. 2007. "Intelligence and Educational Achievement". *Intelligence*, 35(1): 13–21.
- Devine, Daniel. 2024. "Does Political Trust Matter? A Meta-Analysis on the Consequences of Trust". *Political Behavior*, 46(4): 2241–2262.
- Devine, Daniel and Viktor Orri Valgarðsson. 2024. "Stability and Change in Political Trust: Evidence and Implications from Six Panel Studies". *European Journal of Political Research*, 63(2): 478–497.
- Dinesen, Peter Thisted, Christopher T. Dawes, Magnus Johannesson, Robert Klemmensen, Patrik K. E. Magnusson, Asbjørn Sonne Nørgaard, Inge Petersen, and Sven Oskarsson. 2016. "Estimating the Impact of Education on Political Participation: Evidence from Monozygotic Twins in the United States, Denmark and Sweden". *Political Behavior*, 38(3): 579–601.
- Dinesen, Peter Thisted, Merlin Schaeffer, and Kim Mannemar Sønderskov. 2020. "Ethnic Diversity and Social Trust: A Narrative and Meta-Analytical Review". *Annual Review of Political Science*, 23(1): 441–465.
- Doucouliaos, Chris. 2011. "How Large is Large? Preliminary and Relative Guidelines for Interpreting Partial Correlations in Economics". *Economics Series Working Papers, SWP 2011/5*. URL: <https://core.ac.uk/download/pdf/6290432.pdf> (visited on 10/06/2025).
- Easton, David. 1975. "A Re-Assessment of the Concept of Political Support". *British Journal of Political Science*, 5(4): 435–457.
- Engzell, Per and Felix C. Tropf. 2019. "Heritability of Education Rises with Intergenerational Mobility". *Proceedings of the National Academy of Sciences*, 116(51): 25386–25388.
- Evans, Geoffrey and Pauline Rose. 2007. "Support for Democracy in Malawi: Does Schooling Matter?" *World Development*, 35(5): 904–919.

- Feng, Qinya. 2025. “Triangulating the Relationship Between Education and Attitudes Toward Immigration”. *Journal of Experimental Political Science*, 12(2): 135–150.
- Fraile, Marta. 2013. “Do Information-Rich Contexts Reduce Knowledge Inequalities? The Contextual Determinants of Political Knowledge in Europe”. *Acta Politica*, 48(2): 119–143.
- Frisell, Thomas, Sara Öberg, Ralf Kuja-Halkola, and Arvid Sjölander. 2012. “Sibling Comparison Designs: Bias from Non-Shared Confounders and Measurement Error”. *Epidemiology*, 23(5): 713–720.
- Gelman, Andrew and Jennifer Hill. 2006. *Data Analysis Using Regression and Multilevel/Hierarchical Models*. New York: Cambridge University Press.
- Godefroidt, Amélie. 2023. “How Terrorism Does (and Does Not) Affect Citizens’ Political Attitudes: A Meta-Analysis”. *American Journal of Political Science*, 67(1): 22–38.
- Griliches, Zvi. 1979. “Sibling Models and Data in Economics: Beginnings of a Survey”. *Journal of Political Economy*, 87(5, Part 2): S37–S64.
- Grimes, Marcia. 2017. “Procedural Fairness and Political Trust”. In *Handbook on Political Trust*, edited by Tom W. G. Van der Meer and Sonja Zmerli. Cheltenham: Edward Elgar Publishing, 256–270.
- Hakhverdian, Armen and Quinton Mayne. 2012. “Institutional Trust, Education, and Corruption: A Micro-Macro Interactive Approach”. *The Journal of Politics*, 74(3): 739–750.
- Harris, Kathleen Mullan and Robert A. Hummer. 2026. *The National Longitudinal Study of Adolescent to Adult Health (Add Health), Waves I–II, 1994–1996; Wave III, 2001–2002; Wave IV, 2007–2009; Wave V, 2016–2018; Wave VI, 2022–2025*. Carolina Population Center, University of North Carolina at Chapel Hill.
- Hatemi, Peter, Kevin Smith, John Hibbing, and John Alford. 2016. *Minnesota Twins Political Survey Data*. Harvard Dataverse.
- Hetherington, Marc J. 1998. “The Political Relevance of Political Trust”. *American Political Science Review*, 92(4): 791–808.
- Hibbing, John R. and Elizabeth Theiss-Morse. 1996. “Civics is Not Enough: Teaching Barbarics in K-12”. *PS: Political Science & Politics*, 29(1): 57–62.
- Hibbing, John R. and Elizabeth Theiss-Morse. 2002. *Stealth Democracy: Americans’ Beliefs about how Government Should Work*. New York: Cambridge University Press.
- Ho, Daniel E., Kosuke Imai, Gary King, and Elizabeth A. Stuart. 2007. “Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference”. *Political Analysis*, 15(3): 199–236.
- Hooghe, Marc, Ruth Dassonneville, and Sofie Marien. 2015. “The Impact of Education on the Development of Political Trust: Results from a Five-Year Panel Study among Late Adolescents and Young Adults in Belgium”. *Political Studies*, 63(1): 123–141.
- Hooghe, Marc, Sofie Marien, and Thomas De Vroome. 2012. “The Cognitive Basis of Trust. The Relation between Education, Cognitive Ability, and Generalized and Political Trust”. *Intelligence*, 40(6): 604–613.
- Houmark, Mikkel Aagaard, Victor Ronda, and Michael Rosholm. 2024. “The Nurture of Nature and the Nature of Nurture: How Genes and Investments Interact in the Formation of Skills”. *American Economic Review*, 114(2): 385–425.

- Huang, Jian, Henriette Maassen Van den Brink, and Wim Groot. 2009. "A Meta-Analysis of the Effect of Education on Social Capital". *Economics of Education Review*, 28(4): 454–464.
- Hur, Yoon-Mi, Leonie H. Bogl, Juan R. Ordonana, Jeanette Taylor, Sara A. Hart, Catherine Tuvblad, Eivind Ystrom, Christine Dalgård, Axel Skytthe, and Gonneke Willemsen. 2019. "Twin Family Registries Worldwide: An Important Resource for Scientific Research". *Twin Research and Human Genetics*, 22(6): 427–437.
- Isacsson, Gunnar. 1999. "Estimates of the Return to Schooling in Sweden from a Large Sample of Twins". *Labour Economics*, 6(4): 471–489.
- Jamal, Amaney A. 2006. "Reassessing Support for Islam and Democracy in the Arab World?: Evidence from Egypt and Jordan". *World Affairs*, 169: 51–64.
- Jennings, M. Kent and Richard G. Niemi. 2015. *Political Character of Adolescence: The Influence of Families and Schools*. Princeton, NJ: Princeton University Press.
- Jennings, M. Kent, Laura Stoker, and Jake Bowers. 2009. "Politics across Generations: Family Transmission Reexamined". *The Journal of Politics*, 71(3): 782–799.
- Kam, Cindy D. and Carl L. Palmer. 2008. "Reconsidering the Effects of Education on Political Participation". *The Journal of Politics*, 70(3): 612–631.
- Kelly, Edmund, James Tilley, and Sven Oskarsson. 2026. "Revisiting the Link between Political Trust and Political Participation". *The Journal of Politics*, 88(3).
- Kettlewell, Nathan and Agnieszka Tymula. 2023. *Australian Twins Economic Preferences Survey (ATEPS)*. Version V1. ADA Dataverse.
- Kettlewell, Nathan and Agnieszka Tymula. 2024. "Heritability across Different Domains of Trust". *Journal of Economic Behavior & Organization*, 219: 549–563.
- Kiess, Johannes. 2022. "Learning by Doing: The Impact of Experiencing Democracy in Education on Political Trust and Participation". *Politics*, 42(1): 75–94.
- Klasik, Daniel. 2012. "The College Application Gauntlet: A Systematic Analysis of the Steps to Four-Year College Enrollment". *Research in Higher Education*, 53(5): 506–549.
- Kotzian, Peter. 2011. "Public Support for Liberal Democracy". *International Political Science Review*, 32(1): 23–41.
- Kołczyńska, Marta. 2020. "Democratic Values, Education, and Political Trust". *International Journal of Comparative Sociology*, 61(1): 3–26.
- Krapohl, Eva, Kaili Rimfeld, Nicholas G. Shakeshaft, Maciej Trzaskowski, Andrew McMillan, Jean-Baptiste Pingault, Kathryn Asbury, Nicole Harlaar, Yulia Kovas, Philip S. Dale, et al. 2014. "The High Heritability of Educational Achievement Reflects Many Genetically Influenced Traits, Not Just Intelligence". *Proceedings of the National Academy of Sciences*, 111(42): 15273–15278.
- Ksiazkiewicz, Aleksander, Amanda Friesen, Aaron Weinschenk, and Christopher T. Dawes. 2025. "Genetics and Politics: Trait Foundations, Technological Advances, Health, and Privacy". In *Handbook of Innovations in Political Psychology*, edited by Christopher F. Karpowitz Ethan C. Busby and Cara J. Wong. Cheltenham: Edward Elgar Publishing, 397–414.
- La Roi, Chaïm, Carmen Van Alebeek, and Tom Van der Meer. 2025. "Socialized to (Dis) trust? A Panel Study into the Origins of Dispositional Institutional Trust". *Social Indicators Research*, 178: 371–391.

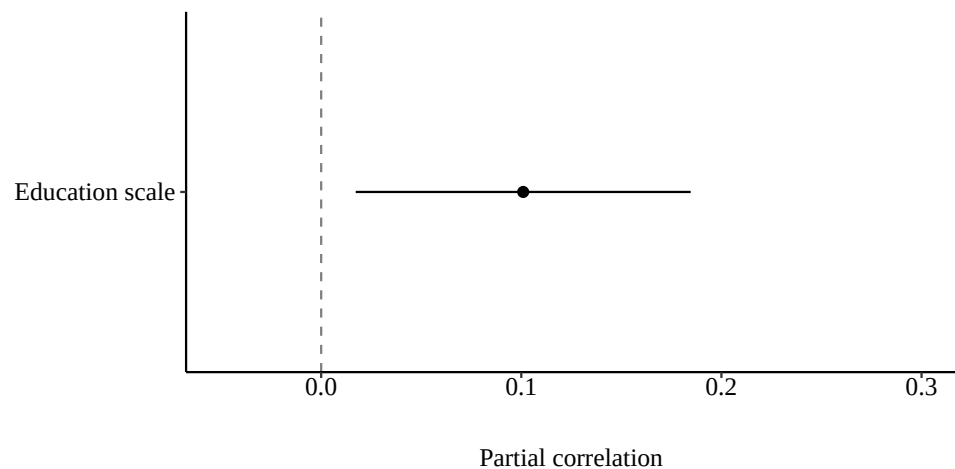
- Le, Kien and My Nguyen. 2021. "Education and Political Engagement". *International Journal of Educational Development*, 85: 102441.
- Lee, James J, Robbee Wedow, Aysu Okbay, Edward Kong, Omeed Maghzian, Meghan Zacher, Tuan Anh Nguyen-Viet, Peter Bowers, Julia Sidorenko, Richard Karlsson Linnér, et al. 2018. "Gene Discovery and Polygenic Prediction from a Genome-Wide Association Study of Educational Attainment in 1.1 Million Individuals". *Nature Genetics*, 50(8): 1112–1121.
- Luskin, Robert C. 1990. "Explaining Political Sophistication". *Political Behavior*, 12(4): 331–361.
- Magnusson, Patrik K. E., Catarina Almqvist, Iffat Rahman, Andrea Ganna, Alexander Viktorin, Hasse Walum, Linda Halldner, Sebastian Lundström, Fredrik Ullén, Niklas Långström, et al. 2013. "The Swedish Twin Registry: Establishment of a Biobank and Other Recent Developments". *Twin Research and Human Genetics*, 16(1): 317–329.
- Mayne, Quinton and Armen Hakhverdian. 2017. "Education, Socialization, and Political Trust". In *Handbook on Political Trust*, edited by Tom W. G. Van der Meer and Sonja Zmerli. Cheltenham: Edward Elgar Publishing, 176–196.
- McAdams, Tom A., Rosa Cheesman, and Yasmin I. Ahmadzadeh. 2023. "Annual Research Review: Towards a Deeper Understanding of Nature and Nurture: Combining Family-Based Quasi-Experimental Methods with Genomic Data". *Journal of Child Psychology and Psychiatry*, 64(4): 693–707.
- McGue, Matt, Merete Osler, and Kaare Christensen. 2010. "Causal Inference and Observational Research: The Utility of Twins". *Perspectives on Psychological Science*, 5(5): 546–556.
- McIntosh, Hugh, Daniel Hart, and James Youniss. 2007. "The Influence of Family Political Discussion on Youth Civic Development: Which Parent Qualities Matter?" *PS: Political Science & Politics*, 40(3): 495–499.
- Mondak, Jeffery J., Matthew Hayes, and Damarys Canache. 2017. "Biological and Psychological Influences on Political Trust". In *Handbook on Political Trust*, edited by Tom W. G. Van der Meer and Sonja Zmerli. Cheltenham: Edward Elgar Publishing, 143–159.
- Noordzij, Kjell, Willem de Koster, and Jeroen Van der Waal. 2021. "“They Don’t Know What it’s Like to be at the Bottom”: Exploring the Role of Perceived Cultural Distance in Less-Educated Citizens’ Discontent with Politicians". *The British Journal of Sociology*, 72(3): 566–579.
- Oskarsson, Sven, Peter Thisted Dinesen, Christopher T. Dawes, Magnus Johannesson, and Patrik K. E. Magnusson. 2017. "Education and Social Trust: Testing a Causal Hypothesis Using the Discordant Twin Design". *Political Psychology*, 38(3): 515–531.
- O’Grady, Tom. 2019. "Careerists Versus Coal-Miners: Welfare Reforms and the Substantive Representation of Social Groups in the British Labour Party". *Comparative Political Studies*, 52(4): 544–578.
- Persson, Mikael. 2015. "Education and Political Participation". *British Journal of Political Science*, 45(3): 689–703.
- Pettersson, Oskar. 2025. "Overriding Nature: Favourable Environments in Early Life Reduces Genetic Inequality in Political Participation". *Political Behavior*, Online First.
- Plomin, Robert and Ian J. Deary. 2015. "Genetics and Intelligence Differences: Five Special Findings". *Molecular Psychiatry*, 20(1): 98–108.
- Plomin, Robert, Nancy L. Pedersen, P. Lichtenstein, and G. E. McClearn. 1994. "Variability and Stability in Cognitive Abilities are Largely Genetic Later in Life". *Behavior Genetics*, 24: 207–215.

- Robinson, Darrel. 2020. "Education, Family Background, and Political Knowledge: A Test of the Compensation Hypothesis with Identical Twins". *Political Studies*, 68(2): 350–369.
- Schoon, Ingrid and Helen Cheng. 2011. "Determinants of Political Trust: A Lifetime Learning Model." *Developmental Psychology*, 47(3): 619–631.
- Schoon, Ingrid, Helen Cheng, Catharine R. Gale, G. David Batty, and Ian J. Deary. 2010. "Social Status, Cognitive Ability, and Educational Attainment as Predictors of Liberal Social Attitudes and Political Trust". *Intelligence*, 38(1): 144–150.
- Selzam, Saskia, Stuart J. Ritchie, Jean-Baptiste Pingault, Chandra A. Reynolds, Paul F. O'Reilly, and Robert Plomin. 2019. "Comparing Within- and Between-Family Polygenic Score Prediction". *American Journal of Human Genetics*, 105(2): 351–363.
- Šerek, Jan and Petr Macek. 2014. "Antecedents of Political Trust in Adolescence: Cognitive Abilities and Perceptions of Parents". *Journal of Applied Developmental Psychology*, 35(4): 284–293.
- Smith-Woolley, Emily, Saskia Selzam, and Robert Plomin. 2019. "Polygenic Score for Educational Attainment Captures DNA Variants Shared Between Personality Traits and Educational Achievement". *Journal of Personality and Social Psychology*, 117(6): 1145–1163.
- Stubager, Rune. 2008. "Education Effects on Authoritarian-Libertarian Values: A Question of Socialization". *The British Journal of Sociology*, 59(2): 327–350.
- Surridge, Paula. 2016. "Education and Liberalism: Pursuing the Link". *Oxford Review of Education*, 42(2): 146–164.
- Theiss-Morse, Elizabeth and Dona-Gene Barton. 2017. "Emotion, Cognition, and Political Trust". In *Handbook on Political Trust*, edited by Tom W. G. Van der Meer and Sonja Zmerli. Cheltenham: Edward Elgar Publishing, 160–175.
- Torney-Purta, Judith. 2004. "Adolescents' Political Socialization in Changing Contexts: An International Study in the Spirit of Nevitt Sanford". *Political Psychology*, 25(3): 465–478.
- Ugur-Cinar, Meral, Kursat Cinar, and Tekin Kose. 2020. "How Does Education Affect Political Trust?: An Analysis of Moderating Factors". *Social Indicators Research*, 152(2): 779–808.
- University College London, UCL Social Research Institute, and Centre for Longitudinal Studies. 2024. *1970 British Cohort Study*. UK Data Service. URL: <https://doi.org/10.5255/UKDA-Series-200001>.
- Van der Meer, Tom and Armen Hakhverdian. 2017. "Political Trust as the Evaluation of Process and Performance: A Cross-National Study of 42 European Countries". *Political Studies*, 65(1): 81–102.
- Van Elsas, Erika. 2015. "Political Trust as a Rational Attitude: A Comparison of the Nature of Political Trust across Different Levels of Education". *Political Studies*, 63(5): 1158–1178.
- Weinschenk, Aaron C. and Christopher T. Dawes. 2019. "The Effect of Education on Political Knowledge: Evidence From Monozygotic Twins". *American Politics Research*, 47(3): 530–548.
- Weinschenk, Aaron C., Christopher T. Dawes, Stig Hebbelstrup Rye Rasmussen, and Robert Klemmensen. 2021. "The Relationship between Education and Political Knowledge: Evidence from Discordant Danish Twins". *Journal of Elections, Public Opinion and Parties*, 33(1): 105–117.
- Willeck, Claire and Tali Mendelberg. 2022. "Education and Political Participation". *Annual Review of Political Science*, 25(1): 89–110.
- Willoughby, Emily A., Tinca J. C. Polderman, and Brian B. Boutwell. 2023. "Behavioural Genetics Methods". *Nature Reviews Methods Primers*, 3(1): 10.

Zacher, Meghan and Robbee Wedow. 2025. "Lessons in Adjusting for Genetic Confounding in Population Research on Education and Health". *SSM-Population Health*, 31: 101834.

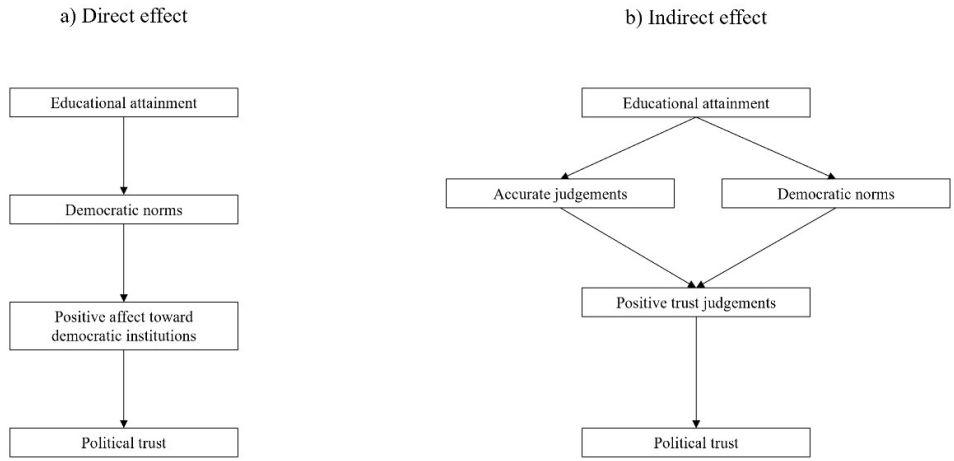
Tables and figures

Figure 1: Meta-analytic effect of education on political trust in advanced democracies



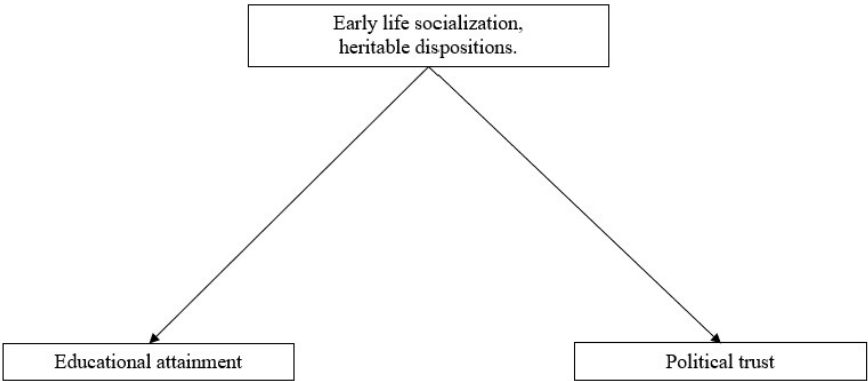
Note. Partial correlation and 95 per cent confidence interval, drawn from a hierarchical model with random effects for each study and data source. N = 189 coefficients from 36 studies, with 18 data sources. All coefficients have been standardized into partial correlation coefficients, see Aloe (2014) for details. See pages 3-4 in the Online Appendix for full details and a list of included studies.

Figure 2: Possible causal mechanisms between education and political trust in advanced democracies.



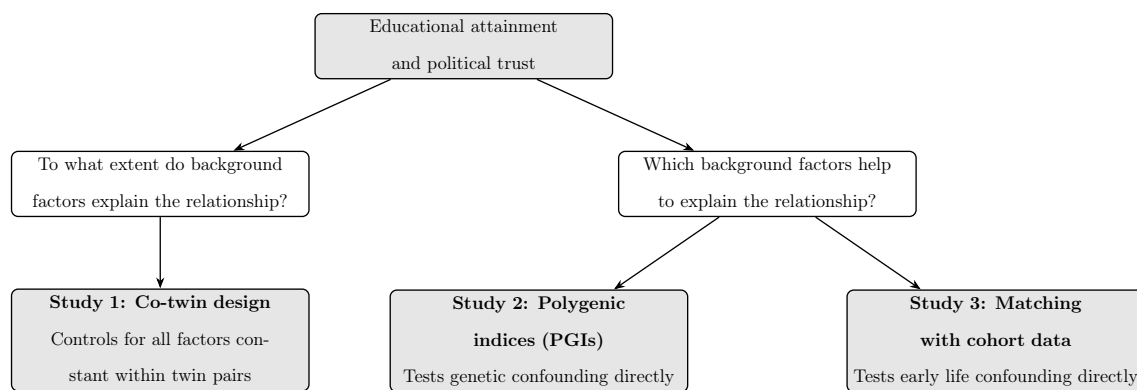
Note. Panel A illustrates the direct mechanism, while Panel B illustrates indirect mechanisms.

Figure 3: An alternative model for the relationship between education and political trust.



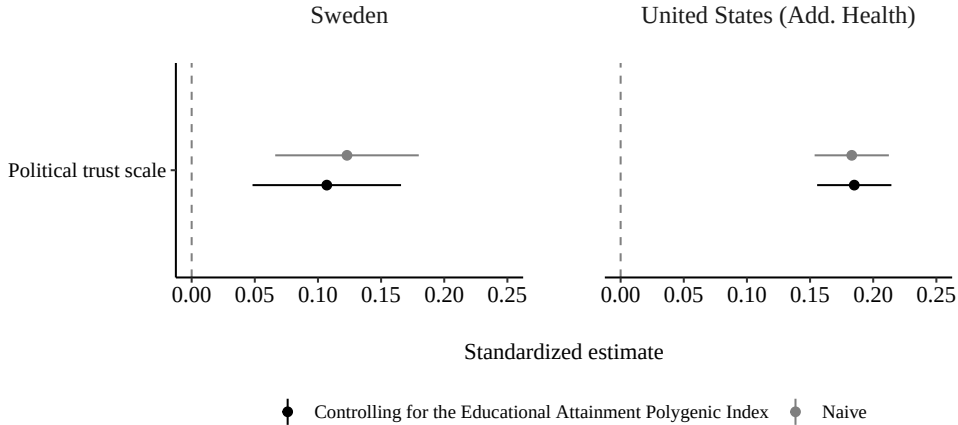
Note. A potentially confounded relationship between education and political trust.

Figure 4: Overview of research design



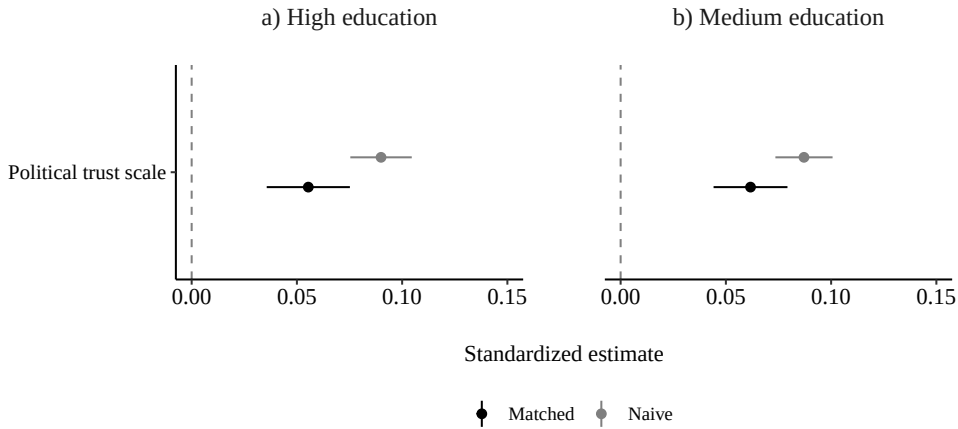
Note. Summary of our research questions and the resulting empirical approaches.

Figure 5: The effect of years of education on political trust, before and after controlling for educational attainment polygenic indices



Note. The American data is from the National Longitudinal Study of Adolescent Health (NLSAH), and the Swedish data is from the Swedish Twin Registry’s Screening Across the Lifespan (Young) survey. The dependent variables are trust indices, and the independent variables are years of education. The SALT models use DZ twin data and include twin fixed effects. The models based on the NLSAH include the first ten principal components of the genetic relatedness matrix. Standard errors are clustered within families.

Figure 6: The effect of education level on political trust, before and after matching for early life conditions.



Note. The data is from the UK 1970 Cohort Study. In the baseline models (light gray estimates), the dependent variables are trust indices, and the independent variables are indicators of college completion (high) and high school completion (medium). The dark gray estimates are the same models after matching for early life conditions.

Table 1: Summary of twin data

Name	Country	Survey fieldwork	N	MZ pairs	DZ pairs	Age range
Minnesota Twins Political Survey (MTPS)	USA	2008-2009	1349	356	240	53-62
Screening Across the Lifespan Twin (Young) (SALTY)	Sweden	2009-2010	9793	1015	1726	51-66
Australian Twins Economic Preferences Survey (ATEPS)	Australia	2020-2021	1098	393	156	22-66
National Longitudinal Study of Adolescent Health (Add. Health)	USA	2001-2002	4368	212	312	18-28

Note. Summary statistics for the four twin datasets used in our main analysis, in which N = total number of observations, MZ = monozygotic twins, and DZ = dizygotic twins.

Table 2: Measures of political trust in the twin data

Dataset	Political trust
MTPS	Four-item battery for trust in politicians and government. $\alpha = 0.70$. 1. How much of the time do you think you can trust the government in Washington to do what is right? (Options: “just about always”, “most of the time”, “only some of the time”). 2. Would you say the government is pretty much run by a few big interests looking out for themselves, or that it is run for the benefit of all the people? (Binary response). 3. Do you think that people in government waste a lot of the money we pay in taxes, waste some of it, or don’t waste very much of it? (Options: “waste a lot”, “waste some”, “don’t waste very much”). 4. Do you think that quite a few of the people running the government are crooked, not very many are, or do you think that hardly any of them are crooked? (Options: “Quite a few are crooked”, “Not very many are crooked”, “Hardly any are crooked”).
SALTY	Single item that asks about trust in politicians. 1. How much trust do you have in Swedish politicians? (Likert scale).
ATEPS	Four-item battery for trust in politicians. $\alpha = 0.78$. How do you feel about the following statements? (Options: “true”, “somewhat true”, “false”). 1. Politicians care more about staying in power than about the interests of the people. 2. Most politicians make a lot of money by misusing public office. 3. Most politicians do not care what happens to people like me. 4. Most politicians do their job well most of the time.
NLSAH	Three-item battery for trust in local, state and federal government. $\alpha = 0.94$. How much do you agree or disagree with each of the following statements? (Likert scale). 1. I trust the federal government. 2. I trust my state government. 3. I trust my local government.

Note. Summary of the measures of political trust in the four twin datasets used in our main analysis; the Minnesota Twins Political Survey (MTPS), the Swedish Twin Registry’s Screening Across the Lifespan (Young) survey (SALTY), the Australian Twins Economic Preferences Survey (ATEPS), and the National Longitudinal Study of Adolescent Health (NLSAH).

Table 3: Measures of educational attainment in the twin data

Dataset	Education measure
Minnesota Twins Political Survey	What is the highest level of education you have completed? (five-point scale)
Screening Across the Lifespan (Young)	The highest degree recorded by the state registry. (13-point scale after conversion)
Australian Twins Economic Preferences Survey	What is the highest level of education you have achieved? (five-point scale)
National Longitudinal Study of Adolescent Health	What is the highest level of regular school you have completed? (17-point scale)

Note. The measures of educational attainment in the four twin datasets.

Table 4: Measures of early life conditions in the cohort data

Dataset	Matching variables
UK 1970 Cohort Study	Household income (age 10)
	Household social class (age 0, age 5)
	Parents' education level (age 0, age 10)
	Parental health (age 5)
	Cultural activities (age 10)
	Family activities (age 10)
	Number of children in household (age 10)
	Cognitive ability (age 5)

Note. These variables are used to match respondents in the cohort models.

Table 5: Co-twin models predicting political trust with education level.

Dataset	SALTY		MTPS		ATEPS		NLSAH	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High education	0.651*	0.038	0.316*	−0.072	0.269*	0.079	0.533*	−0.051
	(0.058)	(0.119)	(0.129)	(0.306)	(0.114)	(0.251)	(0.241)	(0.531)
Medium education	0.238*	−0.022	0.143	−0.066	−0.093	−0.180	0.324	0.057
	(0.057)	(0.093)	(0.121)	(0.246)	(0.121)	(0.232)	(0.236)	(0.455)
Twin pair fixed effects	N	Y	N	Y	N	Y	N	Y
Num. obs.	2030	2030	698	698	786	786	424	424

Note. * $p < 0.05$. The data is from monozygotic twins only, from the Swedish Twin Registry’s Screening Across the Lifespan (Young) survey (SALTY), the Minnesota Twins Political Survey (MTPS), the Australian Twins Economic Preferences Survey (ATEPS), and the National Longitudinal Study of Adolescent Health (NLSAH). The dependent variables are political trust indices. ‘Medium’ education indicates high school completion, and ‘high’ education indicates a college degree (except in NLSAH, see Footnote 5). All models control for sex, birth year fixed effects, and interactions between sex and the birth year fixed effects. Standard errors are clustered at the twin pair level. See pp. 6, 12, 15, 17 in the Online Appendix for full models.

Table 6: Co-sibling models predicting political trust with different measures of education.

Dataset	NLSAH	
	(1)	(2)
High education	0.335*	0.099
	(0.074)	(0.152)
Medium education	0.174*	0.045
	(0.073)	(0.130)
Family fixed effects	N	Y
Num. obs.	2848	2848

Note. * $p < 0.05$. The models include data on siblings from the National Longitudinal Study of Adolescent Health (NLSAH). The dependent variables are political trust indices. All models control for sex, birth year fixed effects, and interactions between sex and the birth year fixed effects. Standard errors are clustered at the family level. See page 17 in the Online Appendix for full models.