UNIVERSITY OF CAMBRIDGE
Faculty of Economics

Cambridge Working Paper Economics

THE BIG FIVE PERSONALITY TRAITS AND PARTISANSHIP IN ENGLAND

Toke Aidt   Christopher Rauh

23 October 2017

We propose a new framework for the study of the psychological foundation of party identification. We draw a distinction between the part of an individual's party preference that is stable throughout adult life and the dynamic part responding to lifecycle events and macro shocks. We theorize that the Big Five personality traits exert a causal effect on the stable part of an individual's party preference and provide evidence from a large nationally representative English panel dataset in support of this theory. We find that supporters of the major parties (Labour, the Conservatives and the Liberal Democrats) have substantively different personality traits. Moreover, we show that those not identifying with any party, who are close to holding the majority, are similar to those identifying with the Conservatives. We show that these results are robust to controlling for cognitive skills and parental party preferences, and to estimation on a subsample of siblings. The relationship between personality traits and party identification is stable across birth cohorts. Keywords: Big Five personality traits; Party identification; Partisanship; England.

The Big Five personality traits and partisanship in England

Toke Aidt and Christopher Rauh[*]

October 21, 2017

Abstract

We propose a new framework for the study of the psychological foundation of party identification. We draw a distinction between the part of an individual's party preference that is stable throughout adult life and the dynamic part responding to lifecycle events and macro shocks. We theorize that the Big Five personality traits exert a causal effect on the *stable* part of an individual's party preference and provide evidence from a large nationally representative English panel dataset in support of this theory. We find that supporters of the major parties (Labour, the Conservatives and the Liberal Democrats) have substantively different personality traits. Moreover, we show that those not identifying with any party, who are close to holding the majority, are similar to those identifying with the Conservatives. We show that these results are robust to controlling for cognitive skills and parental party preferences, and to estimation on a subsample of siblings. The relationship between personality traits and party identification is stable across birth cohorts.

Keywords: Big Five personality traits; Party identification; Partisanship; England.

1 Introduction

What determines whether a person identifies with a left-wing, center or conservative party, or not with any party at all? Building on a fast growing literature in political psychology (e.g., Capara et al. 1999; Mondak and Halperin 2008; Mondak 2010), we argue that the answer, in part, is to be found in the five core personality traits of individual voters that psychologists (e.g., Digman 1990) refer to as the Big Five[1] – *Openness*, *Conscientiousness*, *Extraversion*, *Agreeableness* and *Neuroticism*. These personality traits are partly heritable, develop in childhood and through adolescence and are largely stable over adulthood (e.g., McCrae and Costa 1999; Caspi et al. 2005). The Big Five framework is emerging as a very powerful tool to integrate personality in the study of individual political behavior (Mondak and Halperin 2008). Research from across the social sciences has demonstrated that the Big Five personality traits affect political behavior such as social and economic ideological disposition, and political engagement amongst others (e.g., Winter 2003; Denny and Doyle 2008; Gerber et al. 2011; Bakker 2016). Likewise, recent research in economics demonstrates that the Big Five influence earnings, occupation, marriage, smoking and crime (e.g., Heckman et al. 2006; Le Moglie et al. 2015).

It is by now well-established that the Big Five personality traits are systematically related to self-reported party identification and that similar patterns can be observed across countries and political systems.[2] This literature, typically, studies the impact of personality traits on party identification in populations of voters at a given point in time (e.g., Capara et al. 1999; Fatke 2016) or, if longitudinal data are used, then the focus is on a political outcome in a given wave (e.g., Denny and Doyle 2008; Bloeser et al. 2015). This makes it impossible to distinguish effectively between transitory environmental factors, such as life-cycle events, shifts in the issue positions of political parties and party leadership over time, and other macro events and stable person-specific factors, such as personality and cognitive skills. We argue that this distinction is important for two reasons. Firstly, Sears and Funk (1999) show party preferences have a stable core that is established when individuals are in their 20s. Throughout adult life an individual's actual party preference is malleable and dynamic, but

---

[1] See Table 1 for definitions.
[2] See e.g., Capara et al. (1999), Schoen and Schumann (2007), Barbaranelli et al. (2007), Mondak and Halperin (2008), Vecchione et al. (2011), Gerber et al. (2012), Cooper et al. (2013), Bakker et al. (2015), or Fatke (2016).

the fluctuations are around this stable core (e.g., Clarke and Stewart 1998; Clarke and McCutcheon 2009). In short, party preferences have a stable and a dynamic component. Secondly, personality traits are largely stable throughout adult life (e.g., McCrae 2004; John et al. 2008; Mondak 2010, Ch. 2). Conceptually they are, therefore, related to the stable part of an individual's party preference, not to the dynamic part, yet the existing literature confounds the two and fails to make an explicit distinction.

Our main contribution to the literature on the psychological foundation of partisan identification is to propose a framework to decompose party identification into a dynamic (malleable) and a stable (intrinsic) component and to present new correlational and causal evidence that personality traits affect the stable party identification. Our thesis is that differences across people in terms of the stable component are, in part, caused by differences in the core personality traits that remain largely fixed throughout adult life. That is, over the adult life of an individual, person-specific lifecycle events (e.g., career progression, change in marital status, or having children) as well as economic (e.g., economic crisis or wars) and political macro shocks (e.g., scandals, fades in issue salience, or new political leaders) can induce changes in party identification. However, underneath these fluctuations individuals have a stable preference for a particular party that remains fixed over the course of their adult life and this preference is causally linked to their personality traits. This conception of party identification brings together two long-standing traditions in political science and sociology. One tradition rooted in the literature on political socialization views party identification as a stable, long-term force influencing voting behavior throughout life and which may be transmitted across generations (Sears 1975; Converse 1976; Jennings and Niemi 1981; Sears and Funk 1999). The other tradition, rooted in the literature on economic voting, emphasizes rational partisanship choices through which voters update their attachment to parties over time in responses to changes in policy platforms and other transitory factors (Key 1961; Fiorina 1981; Lindbeck and Weibull 1987).

The challenges in operationalizing our conception are twofold: to separate and distinguish personality from other influences, and to separate the dynamic from the stable part of an individual's party identification. We are able to do this by combining two large nationally representative longitudinal

2

studies from England which follow individuals over time.[3] These data enable us to net out all the dynamic influences on self-reported party identification and to relate the Big Five personality traits to the stable component of individual's party identification. In this way, we move the literature forward in two specific ways.

Firstly, we demonstrate that the Big Five personality traits influence the *stable* component of party identification. This has not been demonstrated before in the literature. Specifically, we find that the supporters of the two major parties in England, the Conservative Party and the Labour Party, have substantively different personality traits. While people feeling close to the Conservative Party tend to be antagonistic, conscientious, and even tempered (display low *Agreeableness*, *Openness* and *Neuroticism* and high *Conscientiousness*), the polar opposite holds for those feeling close to the Labour Party. Labour supporters are found to be more likely to have a communal attitude, be open, lack impulse control, and suffer from emotional instability. The only common denominator is that the supporters of both parties tend to be extraverted (display high *Extraversion*). Individuals identifying with the Liberal Democrats resemble Labour supporters with the difference that they display low *Extraversion* and thus tend to be more introverted than the supporters of the other parties. These results are in line with the existing literature where studies, based on cross sections of individuals, have consistently reported that *Agreeableness*, *Openness* and *Neuroticism* tend to be associated with a preference for left-leaning parties while *Conscientiousness* tends to be associated with right-leaning parties in the USA, Italy, Germany, Poland and many other countries.[4] Some studies have associated support for right-wing parties with *Extraversion* (e.g., Capara et al. 1999) while others find the opposite (e.g., Rentfrow et al. 2009). Our finding that high *Extraversion* is positively related to support for both the Labour and the Conservative Party, but negatively related to support for the Liberal Democrats mirror this ambiguity in the literature. The Big Five personality traits capture broad and temporally *stable* traits of a person's psychological predisposition (e.g., Caspi et al. 2005) and we would, therefore, not

---

[3]The datasets are the British Household Panel Survey (BHPS) and the UK Household Longitudinal Study (UKHLS), 1991-2012.

[4]Barbaranelli et al. (2007), Mondak and Halperin (2008), Rentfrow et al. (2009), Gerber et al. (2012) and Cooper et al. (2013) provide evidence from the USA, Capara et al. (1999) from Italy, Schoen and Schumann (2007) and Bakker et al. (2015) from Germany. Vecchione et al. (2011) compare evidence from Italy, Germany, Spain, Greece and Poland, while Fatke (2016) offers a comparative study of 21 countries.

expect these personality traits to cause transitory shifts in political behavior. Our confirmation of the established pattern is, hence, important because it shows that the personality traits do, in fact, exert the (expected) effect on the *stable* component of individuals' party identification.[5]

Secondly, Cunha et al. (2010) and others have shown that early childhood development of cognitive and non-cognitive (including personality traits) skills involves complementarity, i.e., that the two types of skills re-enforce each other, generating a high degree of correlation between personality traits and mathematical and verbal cognitive skills. For this reason, it is essential to control for cognitive skills in order to isolate the effect of personality traits on the stable component of party identification. Previous studies did this by controlling for education attainment, but this is an imperfect proxy for cognitive skills. Our data include direct measures of cognitive skills (as well as standard information on education attainment). This allows us to demonstrate that personality traits affect (stable) party identification *conditional* on an individual's cognitive skills.

In recent years, the majority of people in England feel close to no party at all. This is the culmination of a long-run trend that started in the 1960s (Clarke and Stewart 1998). This group of voters is important because it contains many potential swing voters as well as voters who have opted out of politics altogether; yet little is known about how personality traits influence whether individuals identify with political parties or not. Our data are rich enough to allow us to investigate this and we find that the dominant personality trait of these potential swing voters is *Conscientiousness*, while they score low on the other traits. In other words, they tend to be shortsighted, conscientious, introverted, and enjoy feeling at ease (display low *Neuroticism*). This makes them similar to individuals who feel close to the Conservative Party except for the fact that those who feel close to the Conservative Party tend to be extraverts while individuals who do not feel close to any party tend to be introverts. While these findings confirm some recent results from Germany (Bakker et al. 2015) and the USA (Gerber et al. 2012), they cast doubt on the generality of others.

It is well-established in the literature on political socialization that children tend to identify with the same party as their parents (e.g., Crewe 1976; Neundorf and Niemi 2014). For a (small) subset of

---

[5]See Bloeser et al. (2015) for evidence that the temporal stability of the Big Five traits induces equally stable structural relationships between the traits and measures of political behavior.

4

the individuals in our data, we observe pairs of children and parents. This enables us to make a final contribution to the literature by investigating if the personality traits of the children (which may partly be heritable from the parents) have an impact on the children's party identification, conditional on the party identification of the parents. We find strong evidence of intergenerational transmission of party identification. Importantly, however, the personality traits of the children continue to matter for their identification with political parties after controlling for the party preference of their parents. This result is important because it shows that personality traits affect party identification *over and above* any effect that may run through socialization and genetics. Controlling for parental party identification goes a long way in controlling for unobserved confounders and towards causal identification, but our data enable us to go one step further. We can zoom in on the (small) subsample of siblings and estimate the effect of Big Five traits on party identification from within-sibling variation only. In this way, we isolate the effect of the personality traits from genetic and a host of unobserved family level factors. Despite the large drop in sample size, many of the baseline results are confirmed and can be given a causal interpretation.

The rest of the paper is organized as follows. In Section 2, we develop a conceptual framework for studying the influence of personality on the dynamic and stable component of partisanship. In Section 3, we explain our estimation strategy. In Section 4, we introduce the data. In Section 5, we present and discuss the main results. In Section 6, we present additional results related to stability across cohorts and to issue salience. In Section 7, we provide some concluding remarks.

2   Conceptual framework

Individuals' identification with particular political parties – also referred to subsequently as partisanship – is determined by a complex set of factors.[6] Our conceptualization draws a distinction between stable and dynamic factors. On the one hand, over the course of their life, the circumstances of individuals change and the world or individuals' perceptions of it change. Likewise, political parties offer

---

[6]There is a large literature investigating self-reported partisan preference of voters (e.g., Bartels 2000; Dalton and Wattenberg 2002).

Figure 1: A conceptual framework for studying partisanship and personality
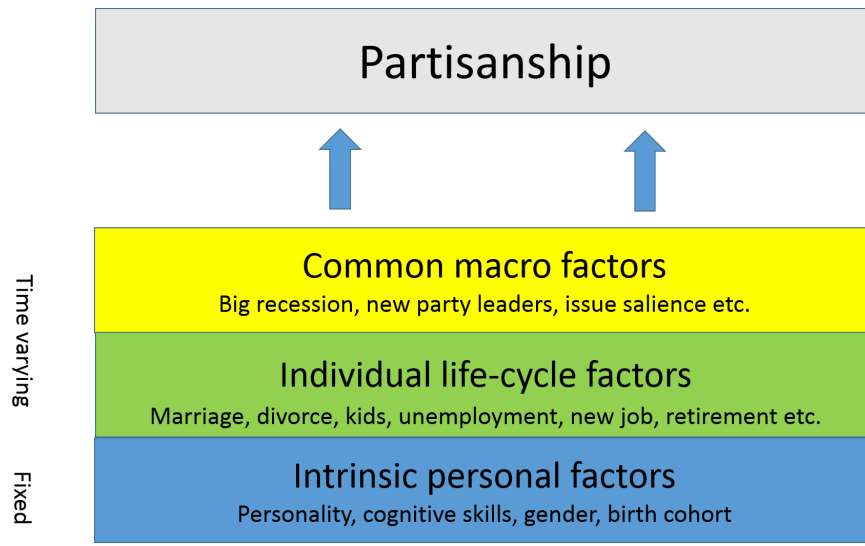
new policy platforms and new leaders assume power, and issues that appeared unimportant to voters in the past suddenly become salient or vice versa. Such *dynamic* factors may induce individuals to reconsider their identification with particular parties and potentially to realign or switch for a while (e.g., Fiorina 1981; Clarke and Stewart 1998). On the other hand, underlying these dynamic factors, there is a *stable* party preference: individuals feel attached to a particular party and that underlying attachment is, once established in early adulthood, stable over their life (e.g., Converse 1969; Crewe 1976; Sears and Funk 1999). This stable component of partisanship is, we argue, determined by stable factors, i.e., factors that do not vary over the adult life of an individual. Prominent amongst these factors are personality traits.

Figure 1 proposes a simple conceptual framework that captures our distinction between dynamic and stable influences on partisanship. We can imagine an individual who goes through his or her adult life starting on the left-hand side and moving gradually across to the right-hand side. As the individual moves through his or her life, many events occur that may influence his or her party identification. Some of these are common to everyone, while others are individual. The top bar captures economic and political macro factors that may influence large sways of individuals and their party identification at a given point in time. Examples of economic macro factors include a large economic crisis, a boom period, a war, or a terror attack. Examples of political macro factors include fluctuations in

6

issue salience, the arrival of new party leaders, or substantive shifts in platform offers. The middle bar captures the countless individual-specific lifecycle events that occur through out the individual's life and which may influence party identification. This includes such things as marriage or divorce, spells of unemployment, job changes, career progression, retirement, having children, etc. As a consequence of such micro and macro events, the appeal of particular parties may change temporarily and the individual may deviate from his or her stable party identification. The stable party identification, in turn, is anchored in an individual's personality traits which are, typically, fixed around the age of 20 and stay relatively constant throughout the rest of the individual's life. Personality along with the individual's cognitive skills, completed education, gender and the individual's birth cohort (which may influence his or her outlook in the formative years) exert a constant influence on an individual's identification with political parties and are the core constituents of the individual's stable party preference, i.e., the part that does not vary over the course of the individual's life. This is illustrated by the bottom bar.

Our main hypothesis, therefore, is that an individual's personality traits are causally related to the *stable* component of an individual's party identification. It is important to be clear that we are not claiming that personality traits and other fixed characteristics of individuals can *only* influence this stable component. However, since the traits themselves are stable, we maintain that changes in party identification cannot be explained with reference to changes in personality. This does not rule out, however, that personality traits can influence how an individual reacts to specific time-varying common or individual-specific events and that this may influence the dynamics of partisanship as argued in recent work by Bakker et al. (2015).[7]

To substantiate our hypothesis empirically, we must operationalize the notion of personality traits and develop theoretically reasons why a given particular trait makes certain parties attractive to in-

---

[7]Bakker et al. (2015) use panel data from two waves of the German Socio-Economic Panel to investigate if the Big Five personality traits can explain *changes* in party identification amongst German voters between 2005 and 2009. Specifically, since the Big Five personality traits do not themselves change between 2005 and 2009, what Bakker et al. (2015) estimate is the differential reaction of German voters in terms of their party identification to common macro shocks that happened between 2005 and 2009. Their results show that some personality traits are correlated with switching in response to shocks while others are not. This approach is, therefore, aimed at understanding the dynamics of partisanship and not the stable component.

dividuals and why they influence the strength of party identification. The following subsections are devoted to this.

2.1 The Big Five personality traits

Psychologists emphasize five core personality traits - the Big Five personality traits - as powerful tools for encapsulating an individual's personality (e.g., John et al. 2008). The Big Five are measured through lexical analysis. Lexical analysis starts with a list of adjectives or phrases that describe enduring individual characteristics.[8] In surveys, individuals are then asked to rate how well each word or phrase fits them. In the final step, factor analysis or arithmetic means are used to identify the trait domains underlying the answers.[9] The typical result is that an individual's enduring personality can be characterized by five stable traits which are labeled *Openness* (associated with intellectual curiosity and aesthetic appreciation), *Conscientiousness* (associated with dutifulness and adherence to social norms), *Extraversion* (associated with self-confidence), *Agreeableness* (associated with harmonious relations with others) and *Neuroticism* (associated with high levels of negative emotions such as anxiety). Table 1 defines each of them and provides contrasting adjectives that describe each trait.

This characterization of personality captured by the Big Five structure is very robust and can be replicated in many different settings. In particular, it is not dependent on language, nor is it sensitive to differences in the characteristics of the surveyed sub-population (John et al. 2008). Most importantly for our purposes, unlike, other aspects of an individual's personality such as self-esteem, identity, values, or interests that change through an individual's life, the Big Five traits are considered to capture broad and relatively *stable* psychological characteristics. Once they have been fixed early on in life by a mix of heritable and environmental factors, they remain constant features of an individual's personality throughout adulthood (e.g., Caspi et al. 2005; McCrae and Costa 1999; McCrae 2004; Cobb-Clark and Schurer 2012; 2013; Bloeser et al. 2015). This is not to claim and an individual's personality can never change later in life;[10] the claim is that once an individual has reached adulthood,

---

[8]Psychologists have developed a number of such lists, ranging from the short Ten Items Personality Measure (Gosling et al. 2003) to the very comprehensive NEO-PI-R measure using dozens of items (Costa and McCrae 1992).

[9]The exact wording of the survey questions used in our analysis are spelled out in the Appendix.

[10]Roberts et al. (2017) offer a meta study of 207 experimental studies that investigated the extent to which personality

Table 1: Big Five Personality Traits: Definitions.

Trait	Definition	Contrasting adjectives
Openness	The breath, depth, originality and complexity of an individual's mental and experiential life.	Perceptive-shortsighted; imaginative-unimaginative; creative-uncreative; curious-disinterested; confident-unsure.
Conscientiousness	Having socially proscribed impulse control that facilitates task- and goal-directed behavior.	Organized-disorganized; responsible-irresponsible; careful-careless; systematic-unsystematic, hard working-lazy
Extraversion	Having an energetic approach toward the social and material world.	Talkative-quiet; bold-timid; outgoing-shy
Neuroticism	Having negative emotionality and being emotionally unstable rather than being even-tempered.	Angry-calm; tense-relaxed; nervous-at easy; moody-steady; discontented-content
Agreeableness	Having a pro-social and communal attitude toward others rather than being antagonistic.	Warm-cold; gentle-harsh; kind-unkind; polite-rude; sympathetic-unsympathetic

Note: Adopted from Mondak and Halperin (2008, Table 1).

the core personality traits settle and remain *relatively* stable throughout life. An implication, then, is that these traits have the potential to exert important influences on how people act and on the outcomes that they achieve. They can be viewed as "exogenous" from the point of view of lifecycle events that otherwise might influence an individual's personality (e.g., self-esteem or identity) and can be considered primary causal factors in the analysis of individuals' political actions and choices, including their identification with political parties (see e.g., Mondak 2010, Ch. 2).

2.2   The Big Five and party identification

To establish theoretical reasons why personality is causally related to party identification, we draw on the congruence model of political preferences which holds that voters seek parties that suit their own

---

traits can be changed as a result of clinical interventions and conclude that they often can at least temporarily. We return to the question related to stability of the Big Five traits in Section 5.5.

personality (Caprara and Zimbardo 2004). Within this broad conception, it is possible to theorize about how the specific traits influence an individual's identification with particular parties and the broad ideological positions they represent. Moreover, as emphasized by Gerber et al. (2012), parties provide two other benefits beyond preference representation which make it possible to theorize about the reasons why some individuals do identify with "no party". The two benefits are that parties give individuals a sense of belonging and that they provide cognitive benefits that help individuals interpret the world. Table 2 provides an overview of the theoretical predictions about the relationship between the personality traits and the preference for the three main English parties – the Labour Party, the Liberal Democrats and the Conservative Party – and the "no party". These predictions are based on an extensive literature and adopted to the English context.[11]

Individuals who score highly on the trait of *Agreeableness* exhibit co-operative tendencies. This may encourage them to provide public goods and pull their weight in group activities as they value the sense of belonging that party identification brings. This makes them less likely to state that they feel close to no party. Moreover, as stressed, for example, by Vecchione et al. (2011), it also makes it more likely that they feel close to left-wing parties. In the English context, this means feeling close to the Labour Party, and to the Liberal Democrats which also support the welfare state, and less close to the Conservative Party.

Individuals who score highly on *Openness* tend to be open-minded, curious, and creative. These characteristics may resonate with the offering of political parties that want to "change things" and militate against parties that adopt a more cautious attitude to change. We follow the literature and conjecture a positive relationship between *Openness* and identification with left-wing parties such as the Labour Party and possibly the Liberal Democrats and a negative relationship with right-wing parties, such as the Conservative Party. With regard to not identifying with a party at all, individuals with an open mind may not be attracted to any party because they do not appreciate being boxed-in by the world view offered by political parties in general and so, be more likely to express no party preference at all.

---

[11]See, in particular, Capara et al. (1999); Barbaranelli et al. (2007); Mondak and Halperin (2008); Cooper et al. (2013); Schoen and Schumann (2007); Vecchione et al. (2011); Gerber et al. (2012); Bakker et al. (2015) or Fatke (2016).

Conscientiousness is associated with dutifulness and adherence to social norms. Individuals who score highly on this trait, therefore, tend to be responsible, hard working, careful, and organized with a willingness to conform. Mondak and Halperin (2008), amongst others, point out this may suggest a preference for conservative (right-wing) parties that value preserving the status quo. On the basis of this, we conjecture that the relationship between *Conscientiousness* and support for the Conservative Party is positive and the relationship with the two other parties is negative. Individuals who display a high degree of *Conscientiousness* would be less likely to identify with no party at all because they value the simplified structure for interpreting the world offered by parties (Gerber et al. 2012).

The theoretical linkages between *Extraversion* and *Neuroticism* and party identification are less well-established in the literature. The trait of *Extraversion* is associated with attributes such as being talkative, bold, self-confident, outgoing and willing to participate in social interactions. Individuals who score highly on this trait are, therefore, likely to be more active participants in public and political life. While this does not necessarily attract such individuals to particular political parties, extravert individuals value the sense of belonging that partisanship brings making such individuals less likely to feel unattached to any of the parties. Some scholars have suggested that right-wing parties that champion free enterprise may be more appealing to extravert individuals (Caprara et al. 2006; Bakker et al. 2015). In the English context, the champion of free enterprise is the Conservative Party and we may expect a positive association between *Extraversion* and identification with that party and a negative association with the other two.

Individuals who score highly on *Neuroticism* are emotionally unstable and tend to feel social distress in group settings. Such individuals would find the simplified cognitive structure offered by political parties valuable and thus be more likely to identify with a political party. Moreover, Gerber et al. (2012) conjecture that the Republican Party in the USA is more appealing to emotionally stable individuals because emotional stability tends to be associated with conservatism. In the English context, this would suggest that individuals who display high degrees of *Neuroticism* are more likely to identify with the Labour Party or the Liberal Democrats and less likely to identify with the Conservative party.

Table 2: Big Five Personality Traits: Predictions.

Trait	Conservatives	Labour	Lib Dem	No Party
Agreeableness	-	+	+	-
Openness	-	+	+	+
Conscientiousness	+	-	-	-
Extraversion	+	-	-	-
Neuroticism	-	+	+	-

Note: - means that the trait is predicted to be negatively related to identification with the party; + means that the trait is predicted to be positively related to identification with the party.

3 Empirical strategy

In order to subject our hypothesis about the relationship between personality traits and partisan identification to a statistical test, we need to develop a credible method for decomposing the observed party preference of an individual into the dynamic (malleable) and stable component. To do this, we need to follow individuals many years and record their stated party preference and lifecycle events as time unfolds along with individual-specific factors that do not vary over time. We discuss the data needed for that in Section 4. With such data, we can follow a two-step estimation strategy that first isolates the stable from the dynamic component of partisanship and then relates the stable component to personality traits.

In step 1, we estimate a linear probability (panel) model with individual, region and time fixed effects that relate individual-specific lifecycle and macro events to partisanship.[12] Formally, for each party j including the "no party", we can write the estimation equation of step 1 as

$$\Pr(p_{it}^j = 1) = \alpha + \phi_i + \theta_t + \gamma_{i_t r} + \sum_{k=1}^{K} \beta_k LC_{it}^k + \varepsilon_{it}, \tag{1}$$

where p_{it}^j is an indicator variable that is equal to one if individual i states at time t that he or she feels attached to party j and zero otherwise. The variables LC_{it}^k capture observable lifecycle factors and events. These include age, income, family composition and status, and employment history. The term α is a constant and ε_{it} is an error term.

---

[12]Since we are interested in the individual fixed effects we need to rely on a linear probability model despite the bounded dependent variables. In a logit model with fixed effects all individuals that never switch between parties are dropped from the sample.

The panel model includes three types of fixed effects. They play an important role in our estimation framework. The time fixed effect, θ_t, captures three types of influences on an individual's party identification. Firstly, they pick up aggregate macro shocks such as foreign wars, terror attacks, large economic chocks (booms and recessions) and other one-off events that may influence all voters at a given point in time. Secondly, they capture trends such as the gradual erosion of social anchors and class politics (Clarke and Stewart 1998). Thirdly, the mix of issues that are salient to voters varies over time which can influence their party preferences (Neundorf and Adams 2016), as can the arrival of new political leaders. The time fixed effects control for the general influence of such shifts in issue salience over time and for leadership effects.

The region fixed effects $\gamma_{i_t r}$ capture region-specific geographic factors that may affect the party preference of all individuals living in region r at the time of the survey at time t.[13] Examples of such factors include the effect of urban agglomeration, industrial geography, or regional social norms.

The individual-specific fixed effect, ϕ_i, captures the component of an individual's party preference that remains constant over time and cannot be explained by any of the transitory, time-varying lifecycle factors, geographic factors, or by aggregate macro shocks. This is the *stable* component of the individual's party preference; the part that does not vary across his or her lifecycle and which constitutes the object we are interested in explaining.

In step 2, the estimate of the stable component of each individual's party preference is the outcome variable that we relate to measures of the Big Five personality traits, measures of cognitive skills in math and verbal communication, education attainment and other time-invariant characteristics of the individual. Formally, we can write the estimation equation of the second step as

$$\widehat{\phi_i} = \rho + \sum_{l=1}^{5} \delta_l B_i^l + \sum_{n=1}^{N} \kappa_n Z_i^n + v_i, \tag{2}$$

where $\widehat{\phi_i}$ is the estimate of the stable component of party identification from step 1, ρ is a constant, B_i^l are measures of the Big Five personality traits and Z_i^n are other time-invariant personal characteristics, including measures of cognitive skills. The parameters of interest are δ_l which are informative about

---

[13]The nine regions of England are the South West, the South East, London, East of England, West Midlands, East Midlands, Yorkshire and the Humber, North West and North East. These fixed effects vary across individuals and time because some individuals move from one region to another between the surveys.

the effect of personality traits on the *stable* part of party identification. While the estimated stable component $\widehat{\phi_i}$ is clearly measured with error, this will not bias the estimates of δ_l.[14]

The great advantage of this two-step approach is that it allows us to isolate the connection between the five personality traits and the stable component of party identification – the part that cannot be explained by individual-specific lifecycle factors, geography, and macro events – conditional on cognitive skills and other fixed personal characteristics. Other commonly used estimation strategies do not allow doing that. A Markov chain model with lagged party preferences, as employed, for instance, in Neundorf and Adams (2016), is designed to identify party switchers and the causes of switching, but cannot isolate an individual's underlying stable party preference. Likewise, a first difference model where the outcome variable is the change in party identification between survey waves, as employed, for example, by Bakker et al. (2015), can relate (time-invariant) personality traits to switching or non-switching behavior but not to the stable component of partisanship. The reason is that the stable component is netted out by taking the first difference of individuals' party preference.

Our empirical strategy enables us to isolate the stable component of partisanship from the dynamic. To estimate the causal effect of the personality traits on individuals' stable party identification, we exploit that the Big Five personality traits are hard to change once formed in early adulthood. Given that, we can estimate the causal effect of the traits under the assumption that, conditional on cognitive skills and other fixed personal characteristics (and after having netted out all observable time-varying factors), the observed variation in the Big Five traits is independent of all unobserved time-invariant determinants of party identification. We adopt two approaches to make this assumption more tenable. The most likely sources of problematic unobserved individual-specific heterogeneity are genetic inheritance and parental influence. Our first approach is to restrict the analysis to the sub-sample of parents and their children. This allows us to control for the parents' party identification and in this way to isolate the effect of political socialization from that of the child's personality. The

---

[14]This is because the estimate of the individual fixed effect from step 1 becomes the dependent variable in step 2. Random measurement error in the dependent variable leads to larger standard errors, but not to an estimation bias. For the same reason, we do not use a measurement model as in Prior (2010) in step 1.

second approach is to restrict the analysis to the subsample of siblings. This allows us to estimate the effect of the personality traits from *within sibling variation* and thereby eliminate any unobserved heterogeneity that is common to siblings with the same (genetic) parents and the same family environment. We argue that these approaches allow us to estimate causal coefficients.

4 Data

We combine two annual panel datasets, the British Household Panel Survey (BHPS) and the UK Household Longitudinal Study (UKHLS), also referred to as "Understanding Society". In all of our analysis, the sample is restricted to individuals residing in England at the time of the survey. The BHPS spans the years from 1991 to 2008. In 2009, it was partially embedded in the larger UKHLS. The most recent data is from 2015. While the BHPS contains around 7000-8000 adults, the UKHLS includes nearly 50000 adults. In combination, the panels provide a comprehensive picture of changes in attitudes and circumstances in England over nearly a quarter of a century and allow us to track the self-reported party identification of the surveyed individuals over time. Throughout the analysis, survey weights are used to preserve the representativeness of the sample as well as possible.[15]

In each wave, we use three survey questions the respondents are asked about their party identification. First, individuals are asked whether they think of themselves as supporters of any political party. Second, those replying "no" to that question are then asked "Do you think of yourself as a little closer to one political party than to the others?" Those replying with "no" to either of these two questions, we assign to the "no party" category of individuals without any attachment to a party. Those replying "yes" to either of the first two questions are asked a follow-up question about which political party they feel closest to. To answer, they can choose between the three major parties (the Labour Party, the Conservative Party or the Liberal Democrats), a set of other parties that varies over the years, or reply with "none". We create a dummy for each of the three major parties and one for the "no party".[16]

---

[15]Due to missing responses as well as people entering and exiting the panel, we do not have the same number of observations per respondent. On average we have more than 4 observation per respondent with a maximum of 24.

[16]The other parties mentioned consist of a very diverse group spanning from the extreme left to the extreme right. In an average year only 2.7% of respondents feel close to other parties. For these reason, we do not include these as a

Figure 2: Aggregate party preference over time
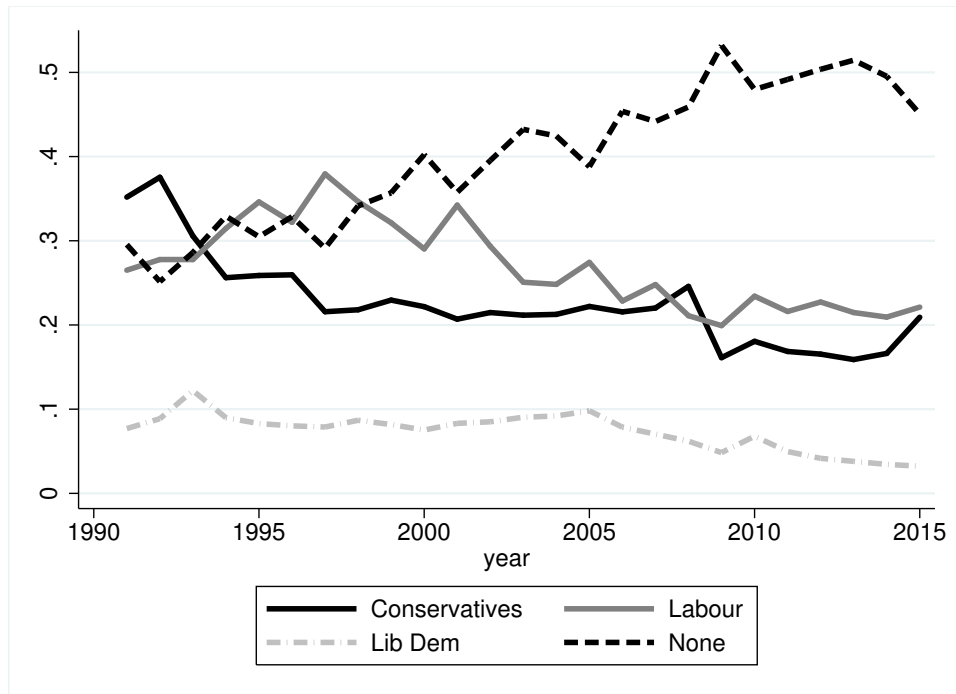
The dependent variables are coded with a value of 100 if the respondent reports feeling closest to that party, and zero otherwise. Therefore, coefficients in the subsequent regression analysis are interpreted as percentage point changes.[17]

Figure 2 graphs average identification with each of the three major parties, and the "no party" over time. We observe that the share of people feeling close to no party has increased substantially. While at the beginning of the 1990's, only 30% did not feel close to any party, this has increased to around half the respondents in recent rounds of the survey. The flip side is that fewer and fewer voters identify with the three major parties today than a few decades ago, continuing a trend that started in the 1960s (Crewe 1976; Clarke and Stewart 1998).

Table 3 presents descriptive statistics of the longitudinal data used in step 1 of our estimation strategy to estimate equation (1). The sample consists of a total of 327793 observations on 77021

separate group in the statistical analysis that follows. Our focus on England as opposed to the United Kingdom avoids the complications that arise from the presence of regional parties.

[17]In the estimation of equation (2) at the second step the dependent variable might not always be bound be 0 and 100 due to the linear probability model.

Table 3: Descriptive statistics of panel sample used in step 1

	Mean	SD
Lifecycle factors		
Married	.73	.44
Children under 16	.18	.38
Divorce	.07	.26
Retired	.22	.42
Unemployed	.05	.21
Student	.07	.25
Age	47.49	18
Positive outlook into future	.26	.44
Negative outlook into future	.15	.35
Party preference		
Conservative	19.9	40.0
Labour	24.7	43.1
Lib Dem	6.0	23.7
None	44.5	49.7
Observations per capita	4.26	4.38
Number of individuals	77033	
Total observations	327935	

Sources: BHPS, UKHLS.

individuals.[18] We observe that less than half of respondents are married, 3% are divorced, and 18% have a child under the age of 16 at home. Concerning labor market characteristics, 22% are retired, 5% unemployed, 7% are students, and the average monthly household income from all sources before taxes and deductions is £1676 (measured in real 2000 Pounds Sterling). Finally, 26% of the sample have a positive outlook on the future, compared to 15% having a negative outlook. The massive recent expansion of the sample from the BHPS to the UKHLS reduces the average number of observations per capita to 4. However, for some individuals that were already part of the BHPS we have up to 16 observations.

In Wave 3 of the UKHLS, a subset of individuals are tested to measure their cognitive skills and are asked questions to elicit their Big Five personality traits. Cognitive skills are measured in terms of mathematical ability, through exercises relating to number sequences and numeric skills, and in terms of verbal ability, through questions evaluating word recall and verbal fluency. The Big Five

---

[18]Figure A1 in the Appendix displays the number of observations by year. We include all individuals age 18 and above residing in England.

Table 4: Descriptive statistics of cross section sample used in step 2

	Mean	SD
Female respondent	.56	.50
Year of birth	1967	16.8
Less than A levels	.38	.49
A levels	.12	.32
Some higher education	.19	.39
University graduate	.31	.46
Stable party preference $\widehat{\phi}_i$		
Conservatives	24.2	32.5
Labour	17.4	35.2
Liberal Democrats	11.5	17.7
None	44.8	39.2
Total observations	32083	

Note: The stable party preference includes the constant $\widehat{\alpha}$.
Sources: BHPS, UKHLS.

personality traits are elicited via three Likert-scale questions per trait based on John and Srivastava (1999).[19] We standardize the measurements of cognitive skills and the Big Five personality traits throughout to have mean zero and a standard deviation of one.

Table 4 reports descriptive statistics of the data used to estimate equation (2) in step 2 of our estimation approach. The sample consists of 32083 individuals of which 56% are female with an average year of birth of 1967.[20] In terms of highest level of education achieved, 38% have less than A levels, 12% have achieved A levels, 19% have some higher education, while 31% have graduated from university.

---

[19]The Likert-scale spans seven response options from "Does not apply to me at all" to "Applies to me perfectly". For *Agreeableness* individuals are asked to classify whether they are rude, of forgiving nature, and kind, for *Openness* whether they are original, artistic, and have an active imagination, for *Conscientousness* whether they do a thorough job, are lazy, and efficient, for *Extraversion* whether they are talkative, sociable, and reserved, and for *Neuroticism* whether they worry a lot, are nervous, and relaxed. Responses to the three questions for each of the Big Five are available as an aggregate measure in the UKHLS dataset. Each personality trait is computed as the mean response (taking reverse coding into account) if no more than one of the three responses is missing.

[20]Since only a subset of individuals take the math and verbal ability test and are asked the questions concerning the Big Five personality traits, the sample reduces from 77021 to 32083 individuals from step 1 to step 2.

5 Results

We present the results in five sub-sections. Sub-section 5.1 summarizes the results from step 1 of the estimation approach. Sub-section 5.2 presents the main results from step 2. The three remaining sub-sections engage in different ways with causal identification of the effect of personality on party identification. Sub-section 5.3 presents evidence on the role of intergenerational transmission of party preferences. Sub-section 5.4 analyzes a sample of siblings. Sub-section 5.5 engages with the possibility that the personality traits may exhibit lifecyle patterns.

5.1 Party identification over the lifecycle

The goal of the first step of our statistical analysis is to isolate the dynamic from the stable part of individuals' party identification. To do this, we estimate the fixed effects panel model in equation (1). Since these estimations are not of primary interest, we report them in Table A1 in the Appendix and briefly summarize them here.

We find that retirement increases the probability of feeling close to the Conservatives by nearly one percentage point, whereas the experience of a divorce or of adopting a more negative outlook on the future reduce this probability significantly. Higher income, a more positive outlook on the future, and having a child under the age of 16 at home all significantly increase the probability of identifying with the Labour Party. Unemployment and a more positive outlook on the future increase the probability of feeling close to the Liberal Democrats. Finally, the probability of not feeling close to any party decreases with income, a more positive outlook on the future, retirement, unemployment, being a student, and with age. The only lifecycle variable that increases the probability of feeling close to no party is divorce.

5.2 Personality traits and the stable component of party identification

The estimated individual-specific fixed effects from the four panel models from step 1 quantify the stable party preference of individuals vis-à-vis each party. These allow us to estimate equation (2)

and evaluate the effect of the Big Five personality traits on individuals' stable party identification. Table 5 reports the results. Inspection of the table makes it clear that personality traits, in general, are significant predictors of stable party identification. More importantly, we observe stark and systematic differences between the personality traits of the core supporters of the three major parties.

Figure 3: Relationship between personality traits and stable party identification
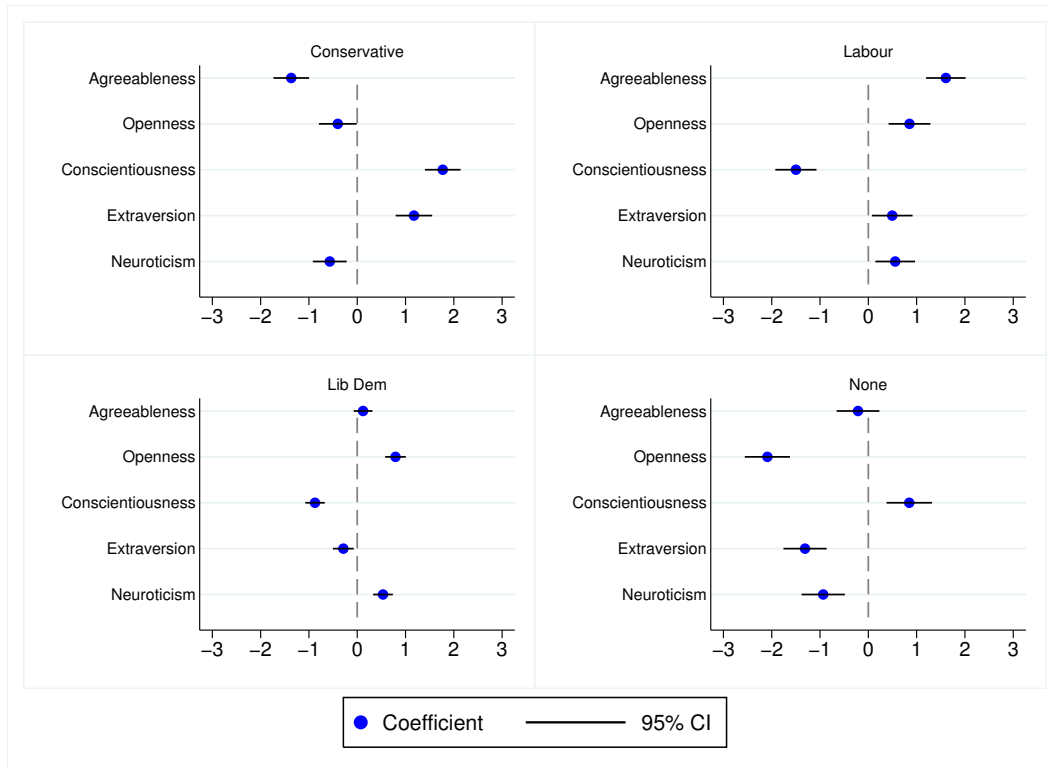
Source: BHPS, UKHLS.
Notes: Dots represent point estimates from Table 5. Black bars represent 95% confidence interval.

Figure 3 illustrates the findings graphically. For each party, it shows by the dot the size of the point estimate from the regressions reported in Table 5 for each of the five personality traits.[21] Conservative core supporters are antagonistic towards others (low *Agreeableness*), they are closed to new experiences (low *Openness*), they are energetic and enthusiastic (high *Extraversion*), they are goal-orientated (high *Conscientiousness*), and they are even-tempered (low *Neuroticism*). In terms of magnitude, a one standard deviation increase in *Conscientiousness*, for instance, is associated with

---

[21]In Appendix Table A2 we present the results when restricting the sample at the first step to only those included in the second step. The associations between the Big Five and party preferences remain unchanged.

Table 5: Personality traits and the stable party identification

Dependent variable: Party identification ($\widehat{\phi}_i$) estimated in step 1				
	Conservatives	Labour	Lib Dem	No Party
Big 5				
Agreeableness	-1.37***	1.61***	0.12	-0.21
	(0.19)	(0.21)	(0.10)	(0.24)
Openness	-0.40**	0.85***	0.79***	-2.09***
	(0.20)	(0.22)	(0.11)	(0.24)
Conscientiousness	1.77***	-1.50***	-0.87***	0.85***
	(0.19)	(0.23)	(0.11)	(0.24)
Extraversion	1.17***	0.49**	-0.29***	-1.31***
	(0.20)	(0.22)	(0.11)	(0.23)
Neuroticism	-0.57***	0.56***	0.53***	-0.93***
	(0.18)	(0.21)	(0.10)	(0.23)
Cognitive skills				
Math score	2.91***	-0.22	0.85***	-4.09***
	(0.21)	(0.24)	(0.11)	(0.26)
Verbal score	1.93***	-1.10***	1.00***	-2.38***
	(0.20)	(0.23)	(0.11)	(0.24)
Education				
A level	3.45***	2.99***	1.75***	-7.68***
	(0.56)	(0.63)	(0.31)	(0.74)
Some higher education	1.77***	1.24**	1.53***	-4.80***
	(0.50)	(0.53)	(0.25)	(0.60)
Degree	0.73	8.80***	4.38***	-13.79***
	(0.46)	(0.52)	(0.25)	(0.54)
Other				
Female	-1.43***	-3.34***	0.54**	5.72***
	(0.38)	(0.43)	(0.21)	(0.45)
Year of birth	-0.37***	0.05***	-0.21***	0.37***
	(0.01)	(0.01)	(0.01)	(0.01)
R^2	0.059	0.018	0.060	0.083
Observations	32083	32083	32083	32083

Sources: BHPS, UKHLS.

Note: * p<0.10, ** p<0.05, *** p<0.01; Bootstrapped robust standard errors are in parenthesis. The estimation technique is Ordinary Least Squares (OLS). All regressions include a constant. The outcome variables, stable party identification vis-à-vis each party, are the individual fixed effects from the linear probability model from step 1 of the estimation approach reported in Table A1. For the personality traits and cognitive skills, the coefficient reflects the change in stable party identification associated with an increase of one standard deviation. For education, "less than A-Level" is the baseline category. The sample is restricted to individuals residing in England at the time of the surveys.

a 1.77 percentage point increase in the stable preference for the Conservative Party. In contrast, the core supporters of the Labour Party have a pro-social and communal attitude (high *Agreeableness*), they are open to new experiences and ideas (high *Openness*), but they are more anxious, tense and discontented (high *Neuroticism*) and less prone to goal-directed behavior (low *Conscientiousness*). The core supporters of the Liberal Democrats have similar traits to the typical Labour supporters with two exceptions. First, they do not show any particular tendency towards pro-social and communal attitudes (insignificant *Agreeableness*). Second, they are more reserved and introverted than the more extraverted supporters of either the Conservatives or Labour (low *Extraversion*). These results are in line with the theoretical predictions (see Table 2) with the one exception that *Extraversion* is positively, rather than negatively, related to identification with the Labour Party.

The results for English voters are also surprisingly consistent with the results from other countries. The personality traits of *Agreeableness*, *Openness* and *Neurotiscism* are reported to be associated with a preference for left-leaning parties while *Conscientiousness* tends to be associated with right-leaning parties in the USA, in Italy, in Germany, in Poland and in many other countries.[22] Some studies have associated support for right-wing parties with *Extraversion* (e.g., Capara et al. 1999) while others find the opposite (e.g., Rentfrow et al. 2009). Our finding that high *Extraversion* is positively related to support for both the Labour Party and the Conservative Party, but negatively related to support for the Liberal Democrats, mirrors this ambiguity in the literature. The Big Five personality traits capture broad and temporally *stable* traits of a person's psychological predisposition (e.g., Caspi et al. 2005) and we would, therefore, not expect these personality traits to cause transitory shifts in political behavior. Our confirmation of the established pattern is, therefore, important because it shows that the personality traits do, in fact, exert the (expected) effect on the *stable* component of individuals' party preferences. Given that the Big Five personality traits are settled early in life, the most plausible interpretation of these results is that the causality runs from personality to party identification, i.e., individuals select into having a stable preference for a particular party based on their personality.

---

[22]Barbaranelli et al. (2007), Mondak and Halperin (2008), Rentfrow et al. (2009), Gerber et al. (2012) and Cooper et al. (2013) provide evidence from the USA, Capara et al. (1999) from Italy, Schoen and Schumann (2007) and Bakker et al. (2015) from Germany. Vecchione et al. (2011) compare evidence from Italy, Germany, Spain, Greece and Poland, while Fatke (2016) offers a comparative study of 21 countries.

The last column of Table 5 summarizes the results for the "no party". About half of the individuals who do not identify with any party regularly vote and thus constitute, at least approximately, the "swing" voters. The distinction between swing and core voters plays an important role in many models of spatial political competition (e.g., Lindbeck and Weibull 1987; Persson and Tabellini 2002). Core voters are committed to a particular political party while swing voters are footloose and willing to shift their allegiance from one party to another in response to platform proposals or may be convinced by electoral campaigning. In these models, parties are interested in winning elections and they tend to pay more attention to the needs and demands of the swing voters, while the core voters tend to be taken for granted and sometimes ignored. We find that the personality traits of the group of individuals without strong identification with any political party are, with one exception, similar to those of the core supporters of the Conservative Party. That is, their dominant personality trait is *Conscientiousness* while a higher score on *Openness* and *Neuroticism* reduce the chance that an individual identifies with no party at all. Unlike the conservative supporters, the "no party supporters", however, tend to be introverted (low score on *Extraversion*).

While the results related to *Extraversion* and *Neuroticism* are in line with the theoretical conjectures, those related to *Conscientiousness* and *Openness* are not as expected (see Table 2). We conjectured based on the cognitive appeal of partisan affiliation that conscientious individuals would be less likely and open individuals would be more likely to identify with no party but find the opposite. The fact that conscientious individuals in England have weaker party identification makes them different from both Americans and Germans, while the fact that individuals high on openness in England have stronger party identification is in line with findings from Germany (Bakker et al. 2015) but not with results from the USA (Gerber et al. 2012). This suggests that the link between personality and not feeling close to any party is complex and more research is needed to establish what it is.

A unique feature of our data is that we can isolate the effect of personality from that of cognitive skills, measured through math and literacy tests. This is important because cognitive and noncognitive (including personality traits) skills develop, during early childhood, through a mutually re-enforcing process (Cunha et al. 2010). The consequence of such complementarity in the develop-

23

ment of skills is a high correlation between measures of cognitive skills and measures of personality traits. Table A3 in the Appendix, which reports the partial correlations between the five personality traits and the test results from the two cognitive tests, shows this for our data. It is apparent that the risk of confounding the effect of personality with the effect of cognitive skills is great as a consequence of this. The fact what we find that the personality traits are significant predictors of individuals' stable party preference *conditional* on cognitive skills is, therefore, important and has not been demonstrated in the literature before (where education attainment has been used as an imperfect proxy for cognitive skills). It is interesting to observe the supporters of the Conservative Party and of the Liberal Democrats tend to have high cognitive skills, while Labour supporters and that those who feel close to no party have low cognitive skills. Any level of education significantly reduces the probability of feeling close to no party. A university degree benefits the Labour Party and the Liberal Democrats at the cost of the Conservative Party. Females are less likely than men to identify with the Labour Party and more likely to identify with no party at all.

5.3 Intergenerational transmission of party identification

The literature on political socialization has established that parents tend to transmit their party identification to their children (e.g., Sears 1975; Cutler 1975; Jennings and Niemi 1981; Neundorf and Niemi 2014). Other scholars have argued that the Big Five personality traits got a biological or genetic foundation and may be inherited (e.g., Van Gestel and Van Broeckhoven 2003; Hatemi and Verhulst 2015). The positive correlation between the party identification of parents and their children may, therefore, either be due to socialization or to a biological link running through personality traits.

For 842 of the 32083 of the respondents, we observe pairs of children and parents. For this subsample, we can include the estimated stable component of the parents' party identification as a covariate in the regressions from step 2 that explain the stable component of the party identification of the (adult) children.[23] This allows us to test if the Big Five personality traits of the children can

---

[23]If information on both parents is available, we take the mean. If only information on one parent is available, we use the party identification of that parent in order to maximize sample size. We do not have sufficient data to test directly for the effect of parent personality traits on those of their children.

predict the stable component of their party identification over and above what can be predicted by their parents' party identification. In order to check that we are not conflating substantive changes in results with the big reduction in sample size, Table 6 reports the regressions from step 2 on the reduced sample with and without parental party identification.

In line with previous results in the literature on political socialization, we find that parental party identification with each of the main parties is a strong predictor of the children's identification with that same party. For instance, for the Labour party, nearly half (42%) of the parental party identification is passed on to the child. For the Liberal Democrats, there is also evidence of "rebellion" in the sense that children of supporters of the Labour Party or the Conservative Party are significantly more likely to feel close to the Liberal Democrats. In contrast, there is no evidence of intergenerational transmission for those who do not identify with any party. It is, therefore, not the case that parents who do not identify with any party pass their disengagement on to their children.

The new and more striking finding is that the children's personality traits continue to predict their party identification *conditional* on the party identification of their parents.[24] Table 6, columns (1), (3), (5) and (7) report the results estimated on the reduced sample *without* conditioning on the parents' party affiliation. From this benchmark, we observe that many of the results from the full sample (see Table 5) continue to hold in the much smaller sample: low *Agreeableness* and high *Conscientiousness* are associated with feeling close to the Conservative Party; high *Agreeableness* is associated with the Labour Party; and high *Openness*, low *Conscientiousness*, and low *Extraversion* are associated with feeling close to the Liberal Democrats. It is notable, however, that none of the traits are statistically significant in the regression for the no party (see column (7)). With two exceptions, these results continue to apply after we condition on the parents' party identification (see columns (2), (4), (6) and (8)). The two exceptions are: *Agreeableness* becomes insignificant in the regression for the Conservative Party and *Extraversion* becomes insignificant in the regression for the Liberal Democrats.

---

[24]Mondak et al. (2010) develop a "holistic model of the antecedents of political behavior, one that accounts not only for personality, but also for other factors, including biological and environmental influences" which also suggests that personality matter over and beyond biological and environmental influences.

Table 6: Intergenerational transmission of party identification and personality traits

	Conservatives		Labour		Lib Dem		No Party	
Dependent variable: Stable component of child's party identification ($\widehat{\phi}_i$) estimated in step 1								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Parents								
Conservative (parents)		0.377***		-0.025		0.046*		-0.174*
		(0.056)		(0.065)		(0.025)		(0.093)
Labour (parents)		-0.075		0.424***		0.068***		-0.207**
		(0.050)		(0.071)		(0.026)		(0.093)
Lib Dem (parents)		-0.009		0.021		0.303***		-0.088
		(0.060)		(0.073)		(0.055)		(0.103)
None (parents)		0.010		-0.013		0.054**		0.138
		(0.053)		(0.067)		(0.026)		(0.094)
Big 5								
Agreeableness	-2.425**	-0.951	3.040***	2.074**	0.568	0.438	-1.437	-1.662
	(1.112)	(1.056)	(1.043)	(0.905)	(0.579)	(0.609)	(1.226)	(1.180)
Openness	-0.817	-0.838	-0.370	-0.106	1.949**	1.777**	-1.718	-1.721
	(1.217)	(1.082)	(1.220)	(1.093)	(0.865)	(0.768)	(1.355)	(1.300)
Conscientiousness	2.421**	1.731*	-0.090	0.546	-1.582*	-1.561**	-0.988	-0.851
	(1.090)	(0.982)	(1.034)	(0.980)	(0.817)	(0.765)	(1.211)	(1.239)
Extraversion	0.947	0.430	1.668	0.771	-1.472*	-1.056	-0.823	0.079
	(1.228)	(0.952)	(1.147)	(0.997)	(0.834)	(0.807)	(1.351)	(1.324)
Neuroticism	-0.322	-0.483	-0.113	-0.229	0.491	0.403	-0.285	-0.060
	(1.064)	(0.946)	(1.179)	(0.978)	(0.737)	(0.673)	(1.250)	(1.220)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.072	0.325	0.032	0.290	0.069	0.146	0.120	0.197
Observations	842	842	842	842	842	842	842	842

Datasources: BHPS, UKHLS.

Note: * p<0.10, ** p<0.05, *** p<0.01; Bootstrapped robust standard errors are in parenthesis. The estimation technique is Ordinary Least Squares (OLS). All regressions include a constant and the following controls: math score, verbal score, three education dummies (A-level, some higher education, university degree), gender, and year of birth. The outcome variables, intrinsic party identification, are the individual fixed effects from the linear probability model from step 1 reported in Table A1. For the personality traits the coefficient reflects the change in the stable component of the party preference associated with an increase of one standard deviation. The sample is restricted to 842 individuals residing in England at the time of the surveys and for which information on parent and (adult) children is available. When only one parent is available we his/her stable partisan preference, whereas when both are available we use the average.

5.4 Within sibling variation

The results reported in Table 6 where we control for the parents' party identification isolate the effect of political socialization from that of the child's personality, but it is still possible that the results are confounded by other types of unobserved individual-specific heterogeneity. In this section, we study a small subsample of siblings for whom we observe the Big Five personality traits.[25] This allows us to

---

[25]The sample is composed of all siblings from the same mother. We also exclude individuals for whom we know that the father differs. Due to the small sample and high correlation of other characteristics, we only include the Big Five in addition to the 1,137 sibling fixed effects in the estimations.

Table 7: Personality traits and the stable component of party identification: Evidence from a sample of siblings.

Dependent variable: Party identification ($\widehat{\phi_i}$) estimated in step 1				
	Conservatives	Labour	Lib Dem	No Party
Big 5				
Agreeableness	-0.91*	0.97	0.46	1.24
	(0.52)	(0.70)	(0.35)	(0.90)
Openness	-0.33	0.93	0.81**	-2.02**
	(0.60)	(0.72)	(0.40)	(0.98)
Conscientiousness	1.00	0.38	-0.74**	-1.07
	(0.61)	(0.70)	(0.34)	(0.95)
Extraversion	0.61	-0.85	0.18	0.16
	(0.64)	(0.82)	(0.39)	(1.04)
Neuroticism	-0.06	0.18	-0.02	0.15
	(0.53)	(0.74)	(0.32)	(0.95)
Sibling FE	Yes	Yes	Yes	Yes
R^2	0.668	0.692	0.575	0.643
Observations	2587	2587	2587	2587

Sources: BHPS, UKHLS.
Note: * $p<0.10$, ** $p<0.05$, *** $p<0.01$; Robust standard errors are in parenthesis. The estimation technique is Ordinary Least Squares (OLS). All regressions include a constant and sibling fixed effects. The outcome variables, the stable component of party identification vis-à-vis each party, are the individual fixed effects from the linear probability model from step 1 in reported in Table A1. For the personality traits, the coefficient reflects the change in party identification associated with an increase of one standard deviation. The sample is restricted to individuals residing in England at the time of the surveys.

estimate the effect of the personality traits from *within sibling variation* and in that way to eliminate any unobserved heterogeneity that is common to siblings with the same (genetic) mother and the same family environment. Table 7 reports the results.

We find that some of the relationships between personality traits and party identification remain significant despite the stringency of this test and the much reduced sample. Notably, agreeable individuals are less likely to feel close to the Conservatives. *Openness* increases the probability of feeling close to Liberal Democrats, while *Conscientiousness* reduces it. Similarly, *Openness* makes individuals less likely to feel close to no party at all. Given that these associations are derived after netting out lifecycle components and from comparing variation within siblings, thereby netting out any genetic component, family wealth and other unobserved aspects of the family environment, these associations can be considered causal.

5.5 Lifecycle patterns in the Big Five personality traits

The Big Five framework holds that personality traits are stable throughout adulthood (McCrae and Costa 1999; McCrae 2004; John et al. 2008). This is the assumption that underlies the bulk of research on the influence of personality traits on political behavior (see e.g., Mondak 2010, Ch. 2). There is, however, evidence suggesting that personality traits continue to develop after childhood, that the changes are particularly marked in young adults, and that personality traits exhibit a systematic pattern of change over the life course, albeit around a stable core (Helson et al. 2002; Robins et al. 2001). Roberts et al. (2005, p. 167) summarize the lifecycle pattern as follows: individuals tend to become more agreeable and conscientious and less neurotic with age; the association between age and *Openness* is non-linear, declining at first and then increasing later in life, while the association between age and *Extraversion* is unclear. These patterns could, in principle, reflect a genetic predisposition to change (e.g., McCrae and Costa 1999; McCrae 2004) or environmental factors related to common experiences in social roles, such as developing a career, finding a partner or starting a family (e.g., Roberts et al. 2005).

In line with the existing literature on personality and partisanship, we consider the direction of causality to be from personality traits to individuals' party preferences. This interpretation, however, is challenged if personality traits respond to environmental factors throughout adulthood. In dealing with this possibility, we are constrained by the absence of longitudinal data on personality traits. The best we can do is to "clean" the personality traits for any age-related environmental or genetic effects before we relate them to the stable component of the individual's party preference.[26] Specifically, we regress a polynomial of degree two in age on the personality traits and then use the *residual* between the observed and the predicted trait as the independent explanatory variable in step 2 of our estimation approach (equation 2). We follow the same procedure for verbal and mathematical skills. Table 8 reports the estimation results from step 2 when we replace the observed traits and cognitive skills with the residual traits and skills. We observe that the coefficients are similar to our benchmark

---

[26]A similar approach is commonly used to deal with potential lifecycle effects in the context of other types of cross sectional data (Brown and Taylor 2014; Nyhus and Pons 2005).

results (Table 3) in terms of sign and significance. This suggests that feedback from environmental factors to personality traits is not a serious issue in our setting.

6 Cohorts and issue salience

6.1 Cohort effects

Many established democracies have experienced a secular decline in party identification and party membership over the past decades (e.g., Clarke and Stewart 1998; Dalton and Wattenberg 2002). Some scholars have suggested that the trend is caused by cohort effects (e.g., Walczak et al. 2012; Grasso 2014). Since our longitudinal data track individuals over time, we can distinguish between different birth cohorts or generations and in that way investigate heterogeneity in the relationship between personality traits and the stable component of individuals' party identification across birth cohorts. In order to do this, we estimate equation (2) cohort by cohort for individuals born in each decade since 1930. Figures A2 to A6 in the Appendix suggest that the relationship between personality traits and party identification to a large extent have remained stable across cohorts. This is consistent with other research that also finds stable relationships between the Big Five personality traits and political outcomes across different sub-populations (Bloeser et al. 2015). However, we do identify some notable exceptions to this pattern of intergenerational stability. First, amongst more recent cohorts, the relationship between *Conscientiousness* and support for the Labour Party is less pronounced than previously (see Figure A2). While for earlier cohorts, the relationship is strongly negative, it is not significant for later cohorts. Second, while the relationship between *Neuroticism* and identification with the Conservative Party is negative for older cohorts, it has become weakly positive for recent cohorts (see Figure A5). Finally, the negative relationship between *Openness* and identification with the "no party" has become stronger (more negative) with each successive cohort (see Figure A6).

Table 8: Personality traits and the stable component of party identification: The role of lifecycle effects in personality traits

Dependent variable: Party identification ($\widehat{\phi}_i$) estimated in step 1				
	Conservatives	Labour	Lib Dem	No Party
Residual Big 5				
Agreeableness	-1.34***	1.64***	0.11	-0.23
	(0.19)	(0.20)	(0.10)	(0.23)
Openness	-0.47**	0.89***	0.77***	-2.04***
	(0.20)	(0.23)	(0.11)	(0.24)
Conscientiousness	2.08***	-1.71***	-0.77***	0.76***
	(0.19)	(0.22)	(0.10)	(0.23)
Extraversion	1.10***	0.56**	-0.31***	-1.30***
	(0.20)	(0.22)	(0.10)	(0.24)
Neuroticism	-0.46**	0.49**	0.56***	-0.96***
	(0.19)	(0.21)	(0.10)	(0.22)
Residual cognitive skills				
Math	3.09***	-0.40*	0.91***	-4.07***
	(0.21)	(0.23)	(0.11)	(0.25)
Verbal	2.04***	-1.22***	1.04***	-2.35***
	(0.19)	(0.22)	(0.11)	(0.23)
R^2	0.061	0.019	0.061	0.083
Observations	32083	32083	32083	32083

Sources: BHPS, UKHLS.

Note: * p<0.10, ** p<0.05, *** p<0.01; Bootstrapped robust standard errors are in parenthesis. The estimation technique is Ordinary Least Squares (OLS). Controls include a constant, education dummies, gender, and year of birth. The outcome variables, the stable component of party identification vis-à-vis each party, are the individual fixed effects from the linear probability model from step 1 in reported in Table A1. The "residual" personality traits are calculated as the difference between the actual value and the predicted value from a regression of the trait on age and aged squared. Similarly for "residual" skills. For the personality traits and cognitive skills, the coefficient reflects the change in party identification associated with an increase of one standard deviation. The sample is restricted to individuals residing in England at the time of the surveys.

6.2 Issue salience

Neundorf and Adams (2016) argue that issue salience, related to which policy areas voters want political parties to prioritize, influences individuals' party preferences which may, in turn, feedback to individuals' issue priorities. As discussed in Section 3, the time fixed effects included in step 1 (equation (1)) of our two step estimation approach capture common over-time variation in issue salience, but they do not account for idiosyncrasies amongst voters. To account for this, we explore, as in Neundorf and Adams (2016), that the early waves of the BHPS (1992-1996) include questions about how concerned respondents are about two particular issues: unemployment and the ozone layer. Specifically, we reestimate equation (1) controlling for whether individuals were very concerned about the ozone layer or about unemployment. This nets out individual-specific idiosyncrasies in issue salience from the individual fixed effects (used in step 2), but at the cost of a large reduction in sample size (from 32083 to 2983 observations). We, then, use the "cleaned" individual fixed effects as dependent variables in step 2 (equation (2)). Table 9 reports the results.[27] Since the sample is drastically reduced, we report for the purpose of comparison results with the individual fixed effects from our benchmark model but estimated on the reduced sample. We observe that controlling for issue salience in step 1 does not make a difference to any of the significant results. This make it unlikely that our baseline results from Table 5 are contaminated by the absence of individuals-specific measures of issue salience in step 1.

7   Conclusion

The novel contribution of this research is to propose a method for distinguishing between the effect of transitory lifecycle events and macro shocks, on the one hand, and permanent individual characteristics, on the other hand, on party identification. Our approach, which can be adopted to other contexts with longitudinal data on political preferences and cross sectional data on personality traits, decomposes party identification into a stable and a dynamic component. Since personality traits remain

---

[27]The results of step 1 are available upon request.

Table 9: Personality traits and the stable component of party identification: The role of issue salience

	Conservatives		Labour		Lib Dem		No Party	
Dependent variable: The stable component of party identification net of issue salience								
Big 5								
Agreeableness	-1.92**	-1.92**	3.12***	3.10***	-0.07	-0.09	-1.15	-1.10
	(0.83)	(0.83)	(0.84)	(0.87)	(0.50)	(0.51)	(0.78)	(0.78)
Openness	0.39	0.40	-0.53	-0.54	1.49***	1.48***	-1.80**	-1.76**
	(0.82)	(0.83)	(0.84)	(0.85)	(0.54)	(0.52)	(0.78)	(0.77)
Conscientious.	2.45***	2.46***	-2.88***	-2.88***	-0.61	-0.60	1.29	1.29
	(0.86)	(0.82)	(0.87)	(0.86)	(0.52)	(0.53)	(0.80)	(0.80)
Extraversion	-0.16	-0.17	1.76**	1.76**	-0.58	-0.58	-1.01	-1.01
	(0.80)	(0.80)	(0.80)	(0.83)	(0.55)	(0.55)	(0.73)	(0.74)
Neuroticism	-1.66**	-1.66**	1.69**	1.68**	0.74	0.74	-0.79	-0.77
	(0.82)	(0.83)	(0.86)	(0.83)	(0.53)	(0.56)	(0.77)	(0.78)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.108	0.106	0.047	0.046	0.062	0.062	0.076	0.077
Observations	2983	2983	2983	2983	2983	2983	2983	2983

Sources: BHPS, UKHLS.

Note: * $p<0.10$, ** $p<0.05$, *** $p<0.01$; Bootstrapped robust standard errors are in parenthesis. The estimation technique is Ordinary Least Squares (OLS). Controls include a constant, education dummies, gender, year of birth, and math and verbal skills. The outcome variables, the stable component of party identification vis-à-vis each party net of issue salience, are the individual fixed effects from the linear probability model from step 1 when we condition for issue salience (related to unemployment and the ozone layer). For each party, the dependent variable in the first column is the individual fixed effects from the benchmark model, whereas the dependent variable in the second column is the individual fixed effects when we control for expressed concerns about the ozone layer and unemployment. For the personality traits and cognitive skills, the coefficient reflects the change in party identification associated with an increase of one standard deviation. The sample is restricted to individuals residing in England at the time of the surveys and the survey waves between 1992 and 1996.

relatively stable over the course of adult life, we argue that their influence is on the stable component of party identification. We provide new evidence that the Big Five personality traits are significant predictors of the stable component of party identification amongst English voters. The supporters of the three major parties have substantively different personality traits and different combinations of personality traits make some parties more appealing than others. In line with previous research from the USA, Italy, Germany, Spain, Greece, Poland and many other countries (e.g., Capara et al. 1999; Barbaranelli et al. 2007; Schoen and Schumann 2007; Mondak and Halperin 2008; Vecchione et al. 2011; Gerber et al. 2012; Cooper et al. 2013; Fatke 2016), we find that *Agreeableness* and *Openness* tend to be associated with a preference for left-leaning parties (the Labour Party and the Liberal Democrats) while *Conscientiousness* tends to be associated with right-leaning parties (The Conservative Party). These results are important because they, for the first time, demonstrate that personality traits influence the stable component of party preferences and that the influence is not confounded by mis-measurement of cognitive skills, by the political socialization or by genetic or environmental factors common to siblings. We also demonstrate that personality influences whether individuals feel close to a party at all. This is important because the majority of individuals in England are without strong party identification and because the association between the strength of party identification and personality is, generally, under-research.

In line with most of the literature on personality and political behavior, we postulate a casual relationship between the Big Five personality traits and party identification. This postulate has recently been challenged in a series of papers by Verhulst et al. (2012) and Hatemi and Verhulst (2015). They argue that personality and political values are jointly determined by underlying genetic factors and that the correlations found in the numerous studies of cross-sections of individuals are confounded by this. To substantiate this argument, they marshal data from longitudinal studies of twins and siblings (with similar genetic factors) and show that *overtime* variation in the Big Five personality traits are not related to *overtime* variation in partisanship.[28] This approach differentiates out all individual-specific

---

[28]We are aware that there is a debate about an error in the coding of one of the traits (Verhulst and Hatemi 2016; Ludeke and Rasmussen 2016) but, we agree with the view that this error does not affect the argument about causality made in this research. A more serious issue is that the researchers estimate a first-difference model. This is problematic because both the personality traits and party identification are measured with substantial error. In a first-difference model such errors

factors (including genetics) and demonstrates that changes in personality cannot explain changes in party identification or, to use our terminology, that changes in personality cannot explain the dynamic component of an individual's party identification. We, in contrast, argue and demonstrate empirically that personality traits are related to the stable (individual-specific) component of party identification and that we, as a consequence, should expect to find no correlation between overtime changes in the two. We are also doubtful, based on our analysis of the sub-sample of siblings which explore within-sibling variation in personality, that genetic factors simultaneously determine personality and party identification.

Obviously, the Big Five personality traits do not fully explain party identification. There is a sizable dynamic as well as an unexplained component. However, at the margin the relationship between personality traits and partisanship could be decisive for close elections. Recent media coverage of the role of a company named Cambridge Analytica in the campaigns of both Donald Trump's election and the Leave camp of the Brexit referendum indicate the importance of personality traits and close elections in the era of big data. The company supposedly used information from social media websites to classify individuals according to the Big Five, which helped customize ads and target potential voters with a predisposition to vote for the respective cause.[29]

---

can account for very large fraction of the observed overtime variation, making it hard to draw reliable inferences.

[29]See `https://www.nytimes.com/2016/11/20/opinion/the-secret-agenda-of-a-facebook-quiz.html` for an example of media coverage.

Appendix

Details on measurement of Big Five

In the Understanding Society Data the score for each Big Five personality trait combines the responses to three questions, which are listed below. The component score is calculated as the average item response if no more than one of the three responses is missing. When appropriate, a response is reverse coded so that a higher value responds to a higher score in the respective personality trait. The questions are preceded by the following information: *The following questions are about how you see yourself as a person. Please choose the number which best describes how you see yourself, using a scale from 1 to 7 where 1 means 'does not apply to me at all' and 7 means 'applies to me perfectly'.*

The questions for each trait are:

- *Openness*

    1. *I see myself as someone who is original, comes up with new ideas.*

    2. *I see myself as someone who values artistic, aesthetic experiences.*

    3. *I see myself as someone who has an active imagination.*

- *Conscientiousness*

    1. *I see myself as someone who does a thorough job.*

    2. *I see myself as someone who tends to be lazy.*

    3. *I see myself as someone who does things efficiently.*

- *Agreeableness*

    1. *I see myself as someone who is sometimes rude to others.*

    2. *I see myself as someone who has a forgiving nature.*

    3. *I see myself as someone who is considerate and kind to almost everyone.*

- *Extraversion*

  1. *I see myself as someone who is talkative.*

  2. *I see myself as someone who is outgoing, sociable.*

 3. *I see myself as someone who is reserved.*

- *Neuroticism*

  1. *I see myself as someone who worries a lot.*

  2. *I see myself as someone who gets nervous easily.*

  3. *I see myself as someone who is relaxed, handles stress well.*

The original version is described in John and Srivastava (1999) and additional information is available at `http://www.ocf.berkeley.edu/~johnlab/bfi.htm`.

Tables and figures

Figure A1: Number of observations by year
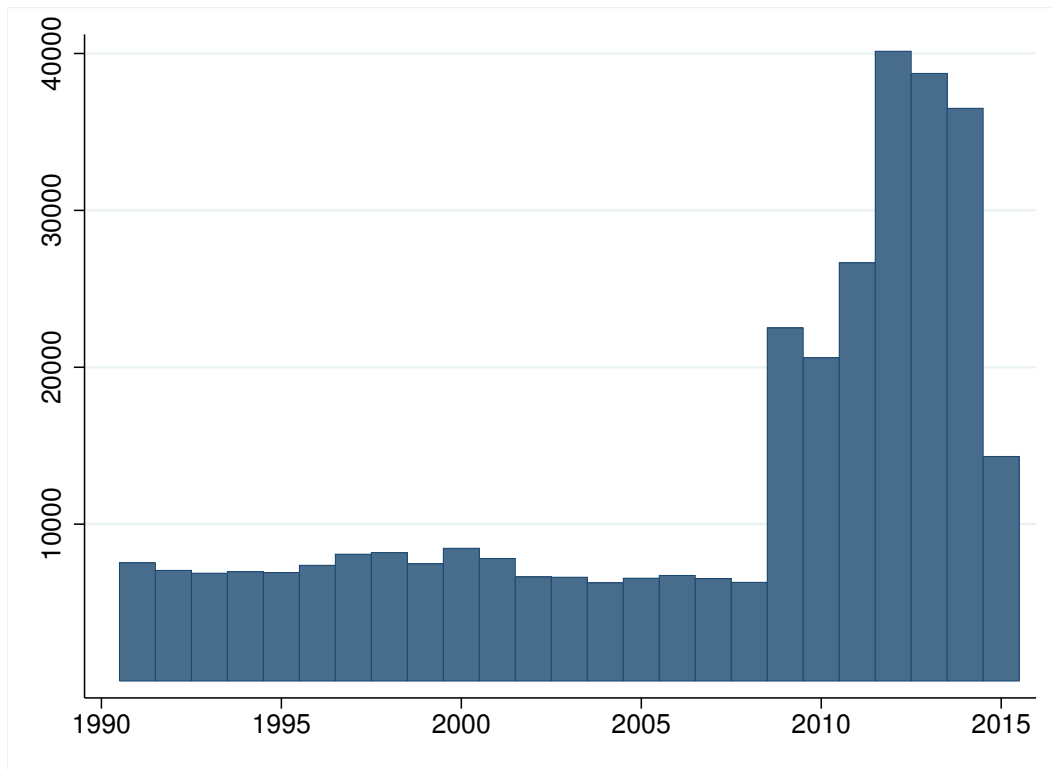
Source: BHPS, UKHLS.

Note: The histogram shows the number of observations in the sample used to estimate the panel model in step 1.

Table A1: Step 1 results: Panel regressions with individual fixed effect

Dependent variable: The probability that an individual feels closest to each party				
	Conservatives	Labour	Lib Dem	No Party
Log HH income	0.51*	0.52*	-0.05	-0.82**
	(0.28)	(0.28)	(0.20)	(0.36)
Positive future	0.12	0.46***	0.19*	-0.86***
	(0.14)	(0.16)	(0.10)	(0.21)
Negative future	-0.32**	-0.02	0.14	0.16
	(0.16)	(0.18)	(0.12)	(0.24)
Married	0.37	0.51	-0.33	-0.59
	(0.36)	(0.41)	(0.28)	(0.50)
Children under 16	-0.21	1.07**	-0.07	-0.50
	(0.39)	(0.46)	(0.29)	(0.55)
Divorce	-0.36	-0.31	-0.33	1.23*
	(0.52)	(0.59)	(0.41)	(0.71)
Retired	0.77**	0.16	-0.16	-1.34***
	(0.36)	(0.37)	(0.27)	(0.48)
Unemployed	-0.09	0.33	0.41*	-0.96**
	(0.26)	(0.38)	(0.21)	(0.46)
Student	0.19	0.47	0.31	-1.81***
	(0.32)	(0.38)	(0.24)	(0.48)
Age	-0.04	0.15	-0.12	-0.11
	(0.16)	(0.20)	(0.10)	(0.23)
Age squared x 1000	1.10	0.41	-0.15	-2.82***
	(0.69)	(0.72)	(0.51)	(0.85)
Individual fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
overall R^2	0.030	0.016	0.001	0.068
within R^2	0.014	0.012	0.008	0.009
between R^2	0.050	0.016	0.000	0.081
Observations	327935	327935	327935	327935

Datasources: BHPS, UKHLS.
Note: * p<0.10, ** p<0.05, *** p<0.01. Linear probability model. Standard errors are in parenthesis and are clustered at the individual level. The outcome variables is whether the individual feels close to that party. The coefficients reflect the change in percentage points. All regressions include a constant. "Positive" and "negative future" reflect the perception the individual has from his/her future financial situation with "neutral" forming the baseline category. The sample is restricted to individuals residing in England at the time of the surveys.

Table A2: Personality traits and the stable party identification using small sample in step 1

Dependent variable: Party identification ($\widehat{\phi}_i$) estimated in step 1				
	Conservatives	Labour	Lib Dem	No Party
Big 5				
Agreeableness	-1.37***	1.61***	0.11	-0.21
	(0.19)	(0.22)	(0.10)	(0.24)
Openness	-0.39**	0.86***	0.80***	-2.11***
	(0.19)	(0.22)	(0.10)	(0.24)
Conscientiousness	1.80***	-1.56***	-0.90***	0.88***
	(0.19)	(0.22)	(0.11)	(0.23)
Extraversion	1.16***	0.52**	-0.29**	-1.32***
	(0.19)	(0.22)	(0.11)	(0.23)
Neuroticism	-0.59***	0.53***	0.52***	-0.89***
	(0.19)	(0.21)	(0.11)	(0.23)
Cognitive skills				
Math score	2.90***	-0.24	0.83***	-4.05***
	(0.21)	(0.23)	(0.11)	(0.25)
Verbal score	1.88***	-1.17***	1.00***	-2.30***
	(0.20)	(0.22)	(0.11)	(0.23)
Education				
A level	3.44***	3.05***	1.79***	-7.74***
	(0.59)	(0.65)	(0.30)	(0.73)
Some higher education	1.81***	1.25**	1.53***	-4.86***
	(0.51)	(0.54)	(0.25)	(0.58)
Degree	0.90**	8.79***	4.35***	-13.94***
	(0.46)	(0.51)	(0.26)	(0.54)
Other				
Sex	-1.43***	-3.33***	0.55**	5.68***
	(0.38)	(0.44)	(0.22)	(0.46)
Year of birth	-0.02	-0.01	-0.33***	0.09***
	(0.01)	(0.01)	(0.01)	(0.01)
R^2	0.023	0.017	0.107	0.065
Observations	32083	32083	32083	32083

Sources: BHPS, UKHLS.

Note: * p<0.10, ** p<0.05, *** p<0.01; Bootstrapped robust standard errors are in parenthesis. The estimation technique is Ordinary Least Squares (OLS). All regressions include a constant. The outcome variables, stable party identification vis-à-vis each party, are the individual fixed effects from the linear probability model from step 1 of the estimation approach reported in Table A1. For the personality traits and cognitive skills, the coefficient reflects the change in stable party identification associated with an increase of one standard deviation. For education, "less than A-Level" is the baseline category. The sample is restricted to individuals residing in England at the time of the surveys.
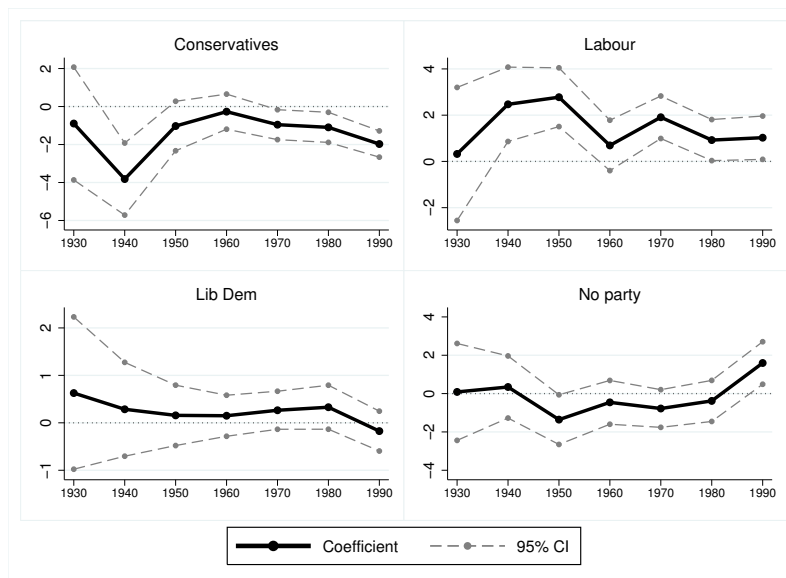
Table A3: Raw correlations between personality traits and cognitive skills

	Math	Verbal	Agree	Open	Cons.	Extra.	Neuro.
Math	1						
Verbal	0.409***	1					
Agree	-0.064***	-0.036***	1				
Open	0.147***	0.180***	0.190***	1			
Cons.	0.026***	0.035***	0.332***	0.212***	1		
Extra.	-0.011**	0.075***	0.164***	0.250***	0.196***	1	
Neuro.	-0.085***	-0.003	-0.062***	-0.106***	-0.176***	-0.177***	1

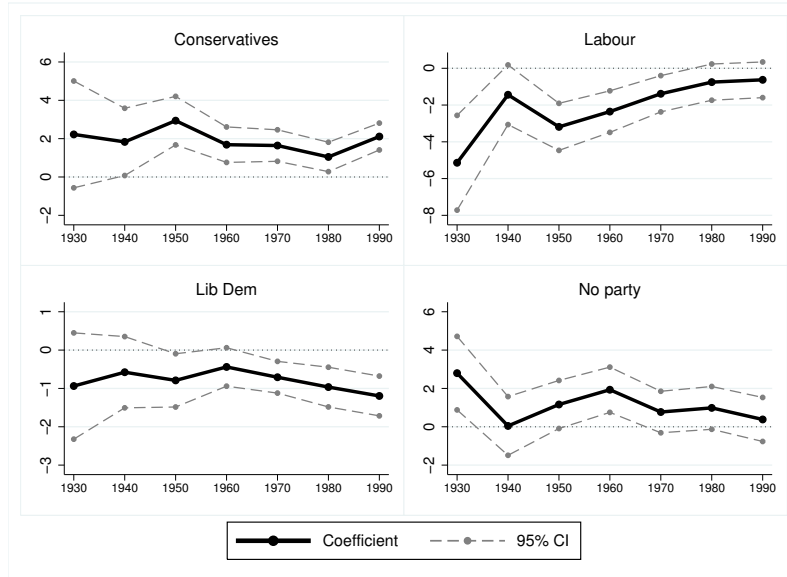Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Source: UKHLS.

Figure A2: Coefficient on *Agreeableness* by birth cohort

Source: BHPS, UKHLS.

Notes: The Figure exhibits the coefficients δ_A (y-axis) and the 95% confidence interval from regression (2) for each birth cohort (x-axis).
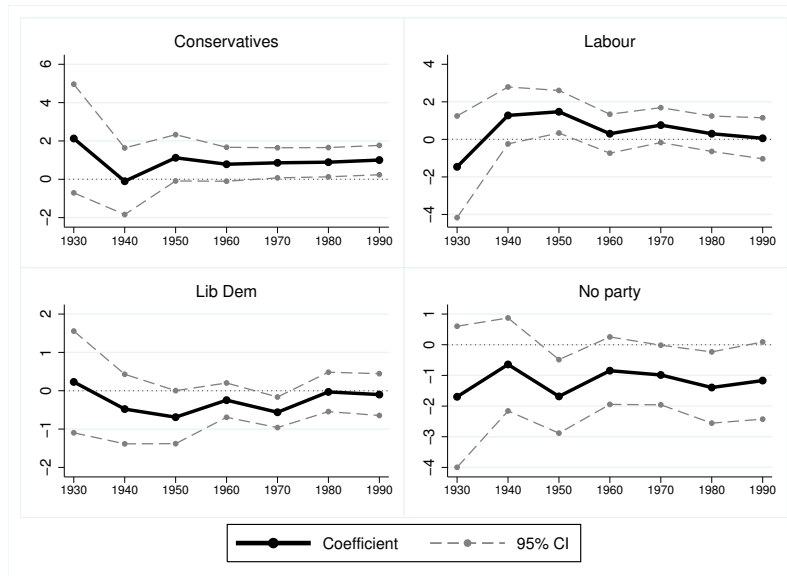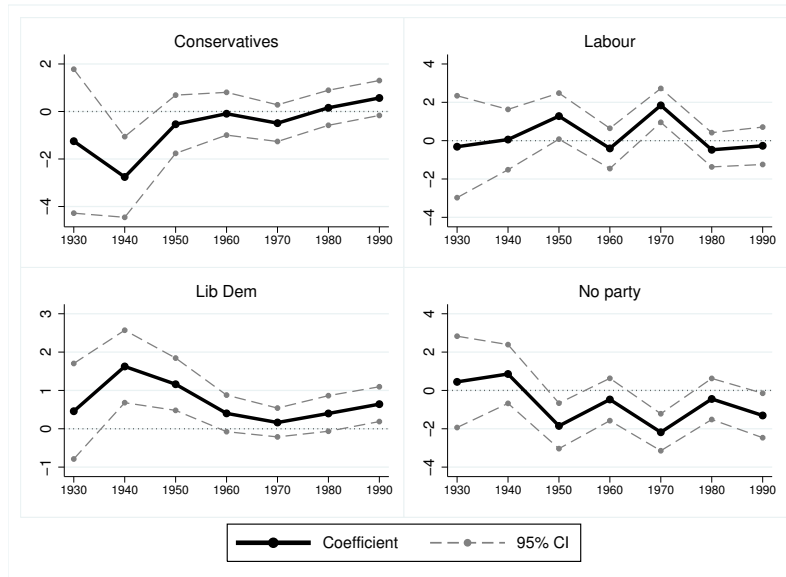
Figure A3: Coefficient on *Conscientiousness* by birth cohort

Source: BHPS, UKHLS.
Notes: The Figure exhibits the coefficients δ_C (y-axis) and the 95% confidence interval from regression (2) for each birth cohort (x-axis).
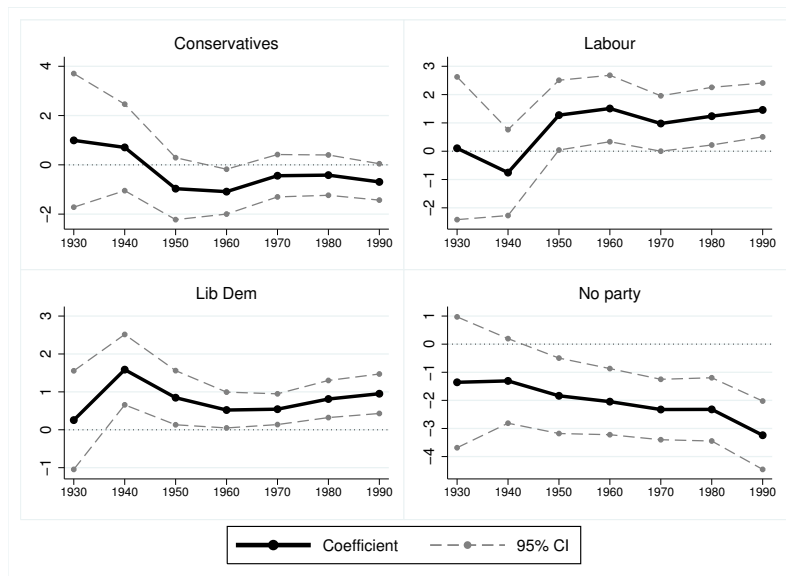
Figure A4: Coefficient on *Extraversion* by birth cohort

Source: BHPS, UKHLS.
Notes: The Figure exhibits the coefficients δ_E (y-axis) and the 95% confidence interval from regression (2) for each birth cohort (x-axis).

Figure A5: Coefficient on *Neuroticism* by birth cohort

Source: BHPS, UKHLS.
Notes: The Figure exhibits the coefficients δ_N (y-axis) and the 95% confidence interval from regression (2) for each birth cohort (x-axis).

Figure A6: Coefficient on *Openness* by birth cohort

Source: BHPS, UKHLS.
Notes: The Figure exhibits the coefficients δ_O (y-axis) and the 95% confidence interval from regression (2) for each birth cohort (x-axis).

References

Bakker, B. N. (2016). Personality traits, income, and economic ideology. *Political Psychology*, forthcoming.

Bakker, B. N., D. N. Hopmann, and M. Persson (2015). Personality traits and party identification over time. *European Journal of Political Research 54*(2), 197–215.

Barbaranelli, C., G. Caprara, M. Vecchione, and C. Fraley (2007). Voters' personality traits in presidential elections. *Personality and Individual Differences 42*(7), 1199–1208.

Bartels, L. M. (2000). Partisanship and voting behavior, 1952-1996. *American Journal of Political Science 44*(1), 35–50.

Bloeser, A. J., D. Canache, D.-G. Mitchell, J. J. Mondak, and E. R. Poore (2015). The temporal consistency of personality effects: Evidence from the British Household Panel Survey. *Political Psychology 36*(3), 331–340.

Brown, S. and K. Taylor (2014). Household finances and the 'big five'personality traits. *Journal of Economic Psychology 45*, 197–212.

Capara, G. V., C. Barbaranelli, and P. G. Zimbardo (1999). Personality profiles and political parties. *Political Psychology 20*(1), 175–197.

Caprara, G. V., S. Schwartz, C. Capanna, M. Vecchione, and C. Barbaranelli (2006). Personality and politics: Values, traits, and political choice. *Political Psychology 27*(1), 1–28.

Caprara, G. V. and P. G. Zimbardo (2004). Personalizing politics: A congruency model of political preference. *American Psychologist 59*(7), 581 – 594.

Caspi, A., B. Roberts, and R. Shiner (2005). Personality development: Stability and change. *Annual Review of Psychology 56*, 453–484.

Clarke, H. D. and A. L. McCutcheon (2009). The dynamics of party identification reconsidered. *The Public Opinion Quarterly 73*(4), 704–728.

Clarke, H. D. and M. C. Stewart (1998). The decline of parties in the minds of citizens. *Annual Review of Political Science 1*(1), 357–378.

Cobb-Clark, D. A. and S. Schurer (2012). The stability of big-five personality traits. *Economics Letters 115*(1), 11–15.

Cobb-Clark, D. A. and S. Schurer (2013). Two economists' musings on the stability of locus of control. *The Economic Journal 123*(570), F358–F400.

Converse, P. E. (1969). Of time and partisan stability. *Comparative Political Studies 2*(2), 139–145.

Converse, P. E. (1976). *The dynamics of party support: Cohort-analyzing party identification*. Beverly Hills, California: Sage Publications.

Cooper, C. A., L. Golden, and A. Socha (2013). The big five personality factors and mass politics. *Journal of Applied Social Psychology 43*(1), 68–82.

Costa, P. T. and R. R. McCrae (1992). Revised NEO personality inventory (NEO PI-R) and NEO five-factor inventory (NEO FFI): Professional manual. *Psychological Assessment Resources*.

Crewe, I. (1976). Party identification theory and political change in Britain. In I. Budge, I. Crewe, and D. Farlie (Eds.), *Party identification and beyond.*, pp. 33–61. London: Wiley.

Cunha, F., J. J. Heckman, and S. M. Schennach (2010). Estimating the technology of cognitive and noncognitive skill formation. *Econometrica 78*(3), 883–931.

Cutler, N. E. (1975). The political character of adolescence: The influence of families and schools. *The Journal of Politics 37*(02), 600–601.

Dalton, R. J. and M. P. Wattenberg (2002). *Parties without partisans: Political change in advanced industrial democracies*. Oxford, UK: Oxford University Press on Demand.

Denny, K. and O. Doyle (2008). Political interest, cognitive ability and personality: Determinants of voter turnout in Britain. *British Journal of Political Science 38*(02), 291–310.

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology 41*(1), 417–440.

Fatke, M. (2016). Personality traits and political ideology: A first global assessment. *Political Psychology*, n/a–n/a.

Fiorina, M. P. (1981). *Retrospective voting in American national elections*. New Haven, CT: Yale University Press.

Gerber, A. S., G. A. Huber, D. Doherty, and C. M. Dowling (2011). The big five personality traits in the political arena. *Annual Review of Political Science 14*, 265–287.

Gerber, A. S., G. A. Huber, D. Doherty, and C. M. Dowling (2012). Personality and the strength and direction of partisan identification. *Political Behavior 34*(4), 653–688.

Gosling, S. D., P. J. Rentfrow, and W. B. Swann (2003). A very brief measure of the big-five personality domains. *Journal of Research in Personality 37*(6), 504–528.

Grasso, M. T. (2014). Age, period and cohort analysis in a comparative context: Political generations and political participation repertoires in Western Europe. *Electoral Studies 33*, 63–76.

Hatemi, P. K. and B. Verhulst (2015, 03). Political attitudes develop independently of personality traits. *PLOS ONE 10*(3), 1–24.

Heckman, J. J., J. Stixrud, and S. Urzua (2006). The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. *Journal of Labor Economics 24*(3), 411–482.

Helson, R., V. S. Y. Kwan, O. P. John, and C. Jones (2002). The growing evidence for personality change in adulthood: Findings from research with personality inventories. *Journal of Research in Personality 36*, 287 – 306.

Jennings, M. K. and R. G. Niemi (1981). *Generations and politics: A panel study of young adults and their parents*. Princeton, NJ: Princeton University Press.

John, O. P., L. P. Naumann, and C. J. Soto (2008). Paradigm shift to the integrative big five trait taxonomy. In O. P. John, R. W. Robins, and L. A. Pervin (Eds.), *Handbook of personality: Theory and research*, Volume 3, pp. 114–158. Guilford Press New York, NY.

John, O. P. and S. Srivastava (1999). The big five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin and O. P. John (Eds.), *Handbook of personality: Theory and research*, Volume 2, pp. 102–138. Guilford Press New York, NY.

Key, V. O. (1961). *Public opinion and American democracy*. New York: Alfred A. Knopf.

Le Moglie, M., L. Mencarini, and C. Rapallini (2015). Is it just a matter of personality? On the role of subjective well-being in childbearing behavior. *Journal of Economic Behavior & Organization 117*, 453–475.

Lindbeck, A. and J. W. Weibull (1987). Balanced-budget redistribution as the outcome of political competition. *Public Choice 52*(3), 273–297.

Ludeke, S. and S. Rasmussen (2016). Personality correlates of sociopolitical attitudes in the big five and eysenckian models. *Personality and Individual Differences 98*, 30–36.

McCrae, R. R. (2004). Human nature and culture: A trait perspective. *Journal of Research in Personality 38*, 3 – 14.

McCrae, R. R. and P. T. Costa (1999). A five factor theory of personality. In O. P. John and L. A. Pervin (Eds.), *Handbook of personality: Theory and research*, pp. 139–153. Guilford Press New York, NY.

Mondak, J. J. (2010). *Personality and the foundations of political behavior*. Cambridge, UK: Cambridge University Press.

Mondak, J. J. and K. D. Halperin (2008). A framework for the study of personality and political behaviour. *British Journal of Political Science 38*(02), 335–362.

Mondak, J. J., M. V. Hibbing, D. Canache, M. A. Seligson, and M. R. Anderson (2010). Personality and civic engagement: An integrative framework for the study of trait effects on political behavior. *American Political Science Review 104*(01), 85–110.

Neundorf, A. and J. Adams (2016). The micro-foundations of party competition and issue ownership: The reciprocal effects of citizens' issue salience and party attachments. *British Journal of Political Science*, forthcoming.

Neundorf, A. and R. G. Niemi (2014). Beyond political socialization: New approaches to age, period, cohort analysis. *Electoral Studies 33*, 1–6.

Nyhus, E. K. and E. Pons (2005). The effects of personality on earnings. *Journal of Economic Psychology 26*(3), 363–384.

Persson, T. and G. E. Tabellini (2002). *Political economics: Explaining economic policy*. Cambridge, MA: MIT Press.

Prior, M. (2010). You've either got it or you don't? The stability of political interest over the life cycle. *The Journal of Politics 72*(3), 747–766.

Rentfrow, P. J., J. T. Jost, S. D. Gosling, and J. Potter (2009). Statewide differences in personality predict voting patterns in 1996-2004 U.S. presidential elections. In J. T. Jost, A. C. Kay, and H. Thorisdottir (Eds.), *Social and psychological bases of ideology and system justification*, pp. 314–347. Oxford University Press New York, NY.

Roberts, B. W., J. Luo, D. A. Briley, P. I. Chow, R. Su, and P. L. Hill (2017). A systematic review of personality trait change through intervention. *Psychological Bulletin 143*(2), 117–141.

Roberts, B. W., D. Wood, and J. L. Smith (2005). Evaluating Five Factor Theory and social investment perspectives on personality trait development. *Journal of Research in Personality 39*, 166 – 184.

Robins, R. W., R. C. Fraley, B. W. Roberts, and K. H. Trzesniewski (2001). A longitudinal study of personality change in young adulthood. *Journal of Personality 69*(4), 617–640.

Schoen, H. and S. Schumann (2007). Personality traits, partisan attitudes, and voting behavior. Evidence from Germany. *Political Psychology 28*(4), 471–498.

Sears, D. O. (1975). Political socialization. In F. I. Greenstein and N. W. Polsby (Eds.), *Handbook of Political Science*, Volume 2, pp. 93–153. Reading, MA: Addison-Wesley.

Sears, D. O. and C. L. Funk (1999). Evidence of the long-term persistence of adults' political predispositions. *The Journal of Politics 61*(1), 1–28.

Van Gestel, S. and C. Van Broeckhoven (2003). Genetics of personality: Are we making progress? *Molecular psychiatry 8*(10), 840–852.

Vecchione, M., H. Schoen, J. L. G. Castro, J. Cieciuch, V. Pavlopoulos, and G. V. Caprara (2011). Personality correlates of party preference: The big five in five big european countries. *Personality and Individual Differences 51*(6), 737 – 742.

Verhulst, B., L. J. Eaves, and P. K. Hatemi (2012). Correlation not causation: The relationship between personality traits and political ideologies. *American Journal of Political Science 56*(1), 34–51.

Verhulst, B. and P. Hatemi (2016). Correcting honest errors versus incorrectly portraying them: Responding to ludeke and rasmussen. *Personality and Individual Differences 98*, 361–365.

Walczak, A., W. van der Brug, and C. E. de Vries (2012). Long-and short-term determinants of party preferences: Inter-generational differences in Western and East Central europe. *Electoral Studies 31*(2), 273–284.

Winter, D. G. (2003). Personality and political behavior. In D. O. Sears, L. Huddy, and R. Jervis (Eds.), *Oxford handbook of political psychology*, pp. 110–145. Oxford, UK: Oxford University Press.