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# Who do you trust? The role of level and change in trust and personality across young to middle adulthood for political interest and voting intentions

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## Abstract

We studied the longitudinal interplay between five-factor model personality traits, interpersonal, and institutional trust from young to middle adulthood and examined whether concurrent levels and change of all constructs predict civic outcomes. We found stability and change in trust variables and personality across almost 20 years in 4,120 adults from Germany. Although concurrent levels were related, we found non-significant to small longitudinal links between constructs. Change in trust and personality predicted people's interest in politics and their preference for parties at the edge of the political spectrum, but not their intention to vote. Results highlight the role of levels and change in trust and personality for civic outcomes, but also call for further investigations on why trust changes over time.

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## 1. Introduction

Research emphasizes that trust functions as the glue which holds a democracy together (Dyck, 2009; Marien & Hooghe, 2011). What predicts inter-individual differences in trust and change in trust over time? Previous research suggests that trust, defined as the expectancy of the reliability of other people (interpersonal) or of institutions (institutional; Bauer & Freitag, 2017), is influenced by two major sources: on the one hand, relatively stable sources of individual characteristics and values acquired during childhood and adolescence, and, on the other hand, changing sources that are based on ongoing experiences in life such as daily political information (Halmburger et al., 2019; Schoon & Cheng, 2011). Referring to the most established taxonomy to describe individual characteristics—the Five-Factor model (Costa & McCrae, 1992) distinguishes five broad personality traits which include emotional stability (or negatively poled neuroticism), extraversion, openness, agreeableness, and conscientiousness—these characteristics should explain differences in narrower trust constructs as a relatively stable source. As personality traits are also prone to change, particularly in young and middle adulthood (Lucas & Donnellan, 2011; Roberts et al., 2006), the development of these traits should furthermore be related to the development of trust. Empirically, however, little is known, in what way individual characteristics such as personality traits relate to initial standings and changes of trust in young and middle adulthood.

With the current study, we aim to fill this gap by conducting a longitudinal study with three major aims. First, we investigate whether people on average develop in their mean values (i.e., mean-level change) and whether they change in their relative ordering (i.e., rank-order stabilities) across the time span in trust and personality. Second, we test whether trust and personality are longitudinally interrelated. Specifically, we will enrich previous cross-sectional findings showing associations of initial standings (correlated baseline level) by investigating whether change in trust and personality are interrelated over time (correlated change). As trust and personality traits were previously linked to a multitude of civic outcomes (Bäck & Christensen, 2016; Cichocka et al., 2017; Gerber et al., 2011), our third aim is to study whether changes in trust and personality are related to political interest and voting intentions above initial standings. To do so, we used two assessment waves from an ongoing longitudinal German data set (Educational Careers and Psychosocial Development in Adolescence and

Adulthood BIJU; Baumert et al., 1996) of 4,120 young adults and estimated latent change models across almost 20 years.

### 1.1. *Who do you trust? Interpersonal and institutional trust*

Trust can be either given to other people (i.e., interpersonal trust) or specific institutions (i.e., institutional trust; for an overview see Uslaner, 2018). Although theory suggests that interpersonal trust lays the foundation for later institutional trust (Schoon & Cheng, 2011), interpersonal and institutional trust reflect distinct factors showing only small to moderate positive associations that vary strongly across countries (Dománski & Pokropek, 2021; Kaase, 1999). This is most likely explained with the different experiences that potentially shape interpersonal and institutional trust. For instance, economic uncertainty, as a result of the bank crisis in 2008, was found to be associated with institutional trust but not interpersonal trust in Europe (Algan et al., 2017). In general, people trust others although interpersonal trust levels have been found to vary across countries (Bjørnskov, 2006). A majority of citizens is furthermore always or most of the time trusting institutions with some differences between nations (van de Walle et al., 2008). In Germany, for example, roughly 50 % of respondents trusted the civil service between 2000 and 2002. Research has emphasized that both interpersonal trust (e.g., Miething et al., 2020; Poulin & Haase, 2015) and institutional trust (Catterberg & Moreno, 2006; Marien & Hooghe, 2011) play an important role for individual, interpersonal, and societal functioning. It is, thus, crucial to understand what predicts inter-individual differences and change in trust.

### 1.2. *Who trusts? Concurrent relations between personality and trust*

One perspective about the etiology of trust focuses on trust as a stable inter-individual difference that is influenced by genes and early experiences children have with their primary caregivers (i.e., attachment, Bowlby, 1969; Wegemer & Vandell, 2020). As Erikson (1950) noted, trust is a developmental milestone that needs to be reached in the first two years of life. Within the personality structure of the Five-Factor model, (interpersonal) trust is defined as a narrower trait facet of agreeableness; that is, trust is defined as one attribute contributing to the behavioral and emotional pattern that is summarized in the more global trait domain agreeableness (Costa & McCrae, 1995). Interindividual differences in trust therefore should be related to differences in agreeableness.

However, in an integrative overview, Thielmann and Hilbig (2015) suggest that inter-individual differences in trust are composed of several personality characteristics of the Five Factor Model. As people have to deal with the possibility of being disappointed by other people or institutions when trusting, they are likely to be afraid to experience losses. Thus, inter-individual differences in fear and anxiety, captured in the domain of emotional stability, should be particularly important. Furthermore, a person's agreeableness comes into play when influencing their expectations towards others as people might infer from their own honesty and fairness to the fairness of other people, and therefore, how trustworthy they believe others are. At the same time, when trusting, the person has to accept his/her own vulnerability in the case of betrayal that makes inter-individual differences in forgivingness an interesting source for differences in trust (Thielmann & Hilbig, 2015). Forgivingness should be influenced by both high agreeableness and high emotional stability (Steiner et al., 2012).

Cross-sectional studies support the assumed small to medium-sized positive association of emotional stability with interpersonal trust (Dinesen et al., 2014; Dohmen et al., 2008; Hiraishi et al., 2008; Weinschenk & Dawes, 2019), whereas emotional stability was not related to institutional trust in US samples (Anderson, 2010; Mondak & Halperin, 2008). For agreeableness, there is substantial evidence that people with higher scores in agreeableness also report more interpersonal trust across nations (Anderson, 2010; Dinesen et al., 2014; Freitag & Bauer, 2016; Hirsh et al., 2010; Mondak & Halperin, 2008; Weinschenk & Dawes, 2019). These medium-sized associations even remain statistically significant after excluding the trust facet of agreeableness (Dinesen et al., 2014; Hiraishi et al., 2008). People with higher agreeableness also exhibit greater institutional trust in US samples (Anderson, 2010; Mondak & Halperin, 2008).

Regarding the other personality traits, openness showed positive small to medium-sized associations with interpersonal trust (Dinesen et al., 2014; Dohmen et al., 2008; Freitag & Bauer, 2016; Hiraishi et al., 2008), and small-sized negative associations with institutional trust (Anderson, 2010; Mondak & Halperin, 2008). As open people embrace creative, artistic, and liberal values they might be suspicious about strongly regulated institutions such as the police, public administration, or the army. Besides openness, conscientiousness showed small-sized negative associations with interpersonal trust in European samples (Dinesen et al., 2014; Dohmen et al., 2008; Freitag & Bauer, 2016), whereas a medium-sized positive association occurred in a Japanese sample (Hiraishi et al., 2008). People scoring higher in conscientiousness make more detailed plans for their life and are, thus, more motivated to avoid uncertainty (Berenbaum et al., 2008). Finally, across different studies, those higher in extraversion reported greater interpersonal trust with small to medium effect sizes (Dinesen et al., 2014; Hiraishi et al., 2008; Oskarsson et al., 2012). This might suggest that trust in other people benefits from the great variety of positive interpersonal experiences that are more likely to occur in the larger social networks of people scoring high in extraversion.

In sum, agreeableness illustrated the most robust positive associations with both interpersonal and institutional trust whereas associations of other traits differed more in terms of the object of trust. Overall, these findings clearly indicate a reliable link between several personality traits and inter-individual differences in concurrent levels of trust with associations being small to medium in size (Funder & Ozer, 2019).

### 1.3. *Who changes in trust? Longitudinal relations between personality and trust*

More recent research argued for change in trust across the entire lifespan (e.g., Dweck, 2017; Schoon & Cheng, 2011). More generally, dynamic interactions between the individual and the environment promote changes in different aspects of human functioning across the entire adult life span (e.g., Baltes et al., 2006). That is, ongoing life experiences will mold the development of trust. Such trust-affecting experiences can be potentially found at three levels: first, personal experiences the individual has made with other people or institutions, second, experiences made by close others, and third, societal experiences people make via media consumption (e.g., radio, tv, newspapers, internet) or their social network (e.g., gossip; Van Lange, 2015).

At the same time, research has shown that personality traits also develop across the entire life span with particularly pronounced changes in early and middle adulthood (Lucas & Donnellan, 2011; Roberts et al., 2006; Wagner et al., 2019). Particularly in young adulthood, changes in people's lives are known to be profound as they enter new environments, make new friends, and have more contact with bureaucracy, resulting in many new experiences that might shape how they think, feel, and behave. Based on notions of person-environment transactions (Scarr & McCartney, 1983), a person's dispositional makeup might increase the likelihood of certain experiences and, in turn, these experiences might shape the development of the person's dispositions (Lüdtke et al., 2011; Wrzus & Roberts, 2017; Quintus et al., 2021).

Along these lines, findings point to increases in the personality traits conscientiousness, agreeableness, and emotional stability suggesting a pattern of greater maturity from young to early adulthood (Graham et al., 2020; Lucas & Donnellan, 2011; Roberts et al., 2006). The relative ordering of people has been characterized by an inverted U-shape with increasingly stability until midlife without ever reaching perfect

stability (Anusic & Schimmack, 2016; Ferguson, 2010; Wagner et al., 2019). Given their conceptual overlap, changes in personality traits should be related to changes in trust. However, knowledge on change in personality facets is still limited, except for initial evidence on the generalizability of developmental trends of agreeableness facets across adolescence (Brandes et al., 2020). However, the trust facet was not considered in the reported study, but fear (as a facet of emotional stability) decreased across adolescence.

Specifically in terms of trust, detailed research on its change is still scarce. Despite this scarce evidence, we identified three important characteristics of trust: First, *meta*-analytic evidence for cross-sectional age differences in interpersonal trust point to more trust in older than in younger adults across countries (Bailey & Leon, 2019; Li & Fung, 2013). Second, a recent longitudinal study found very small year-to-year mean-level increases in interpersonal trust across a time span of four years calling for investigations of change using longer intervals (Poulin & Haase, 2015). In contrast, institutional trust decreased between the years of 1981 to 2001 at the country level (Catterberg & Moreno, 2006). A more mixed pattern was found based on Eurobarometer data, showing differences between countries and no clear trend of increase or decline between 1997 and 2002 (Van de Walle et al., 2008). Findings from studies investigating rank-order stabilities of institutional trust are also mixed and highly dependent on the studied time interval. Across one century, relatively low rank-order stabilities of  $r < 0.20$  were observed, but increased up to stabilities of  $r > 0.80$  in one year-intervals (Bromme & Rothermund, submitted; Jennings et al., 2009; Schoon & Cheng, 2011). For interpersonal trust, latent rank-order stabilities were 0.43/0.44 across two intervals four years apart (Poulin & Haase, 2015). Third, applying intensive assessments of states across two weeks, Baumert et al. (2017) illustrated the existence of within-person variability in interpersonal and institutional trust in German students that might scale up to longer term changes in trust.

Together, more longitudinal research is needed to better understand patterns and correlates of change in trust across adulthood. Given that levels of personality traits and trust are related and both characteristics change in young and middle adulthood, a longitudinal perspective is needed to examine their potential longitudinal interplay.

#### 1.4. Predicting political interest and voting intentions – The role of level and change in trust and personality

In young adulthood, people become productive and participating members of society as they have full legal capacity and get the right to vote. Thus, citizens should be, to some extent, interested in political affairs and should use their right to vote. But why do people differ in how interested they are in political issues, whether they have an intention to vote, and where on the political spectrum they orient themselves and their beliefs? With the current study we aim to better understand how levels and the change of human functioning from early to middle adulthood in terms of trust and personality traits predict political interest and voting intentions.

##### 1.4.1 Trust, political interest, and voting intentions

Although politicians and scholars have made strong claims about the relevance of interpersonal and institutional trust, expecting consequences for both the individual and the democratic society (for a review see Nannestad, 2008), the role of trust for political attitudes and behavior is not well understood so far. Two opposing perspectives on trust divide the field: The first perspective predicts low levels of particularly institutional trust to be alarming as they undermine the legitimacy of the government and political institutions. The second perspective considers institutional (dis)trust as a relevant source to create controversy between citizens and politics and, thus, to motivate people to get involved (Catterberg & Moreno, 2006; Marien & Hooghe, 2011). Empirical findings regarding these claims were inconclusive, showing that people who have more trust in political institutions reported to be more interested in politics in general and were less likely to take radical political positions (Catterberg & Moreno, 2006). In terms of interpersonal trust, however, people with lower levels of interpersonal trust have higher intentions to vote (Bäck & Christensen, 2016).

Emphasizing the role of changes in institutional trust for voting behavior, politicians attribute a significant role for changes in voting intentions to the loss of (institutional) trust. Empirically it was shown that changing economic and societal conditions, such as the occurrence of an economic crises, have been related to both decreases in institutional trust and the election of non-mainstream or populist parties (Algan et al., 2017; Murtin et al., 2018). Drawing on the formative phase in early and middle adulthood, the current paper sheds light on the consequences of changes in both interpersonal and institutional trust for political interest and intended voting behavior in Germany.

##### 1.4.2 Personality, political interest, and voting intentions

Whereas scientists have identified a multitude of characteristics associated with civic outcomes (e.g., Ballew et al., 2020; Rothstein & Uslaner, 2005), personality traits were often overlooked. In terms of political interest, openness and extraversion are particularly relevant (Furnham & Cheng, 2019; Gerber et al., 2011). Being open-minded and curious about the world, these people appear to be particularly interested, also in politics. Regarding extraversion, it was found that people high in extraversion prefer to discuss political topics (Gerber et al., 2012) and report political life goals (Atherton et al., 2021) more than introverts. Looking at the remaining traits, agreeableness was positively and conscientiousness was negatively associated with political interest (Furnham & Cheng, 2019, but see Gerber et al. (2011), whereas agreeableness was negatively associated with political life goals (Atherton et al., 2021). Gerber and colleagues (2011) found positive associations between emotional stability and political interest.

Besides interest in politics, those reporting to be more open and emotionally stable have also reported more often that they have voted in the last election (Furnham & Cheng, 2019). Furthermore, personality traits have predicted political ideology (e.g., Gerber et al., 2012; Vecchione et al., 2011; Xu et al. 2020), and might also predict whether people embrace more established political positions or whether they favor positions of parties on the right or left edge of the political spectrum. Initial work found that regions with people scoring lower on emotional stability were more likely to vote for Trump in the US or to support Brexit in the UK (Obschonka et al., 2018) than regions with people scoring higher in emotional stability. As these campaigns mainly focused on triggering fear and nationalistic isolation, emotional stability might be particularly affected by those campaigns. Additionally, German people scoring lower in emotional stability intend to vote for parties at the edge of the political spectrum, irrespective of the values the party holds (right or left orientation; Schoen & Schumann, 2007).

Besides level effects in predicting civic outcomes, the described mechanisms might further reflect intra-individual processes (Voelkle et al., 2014). Particularly in the phase from young to middle adulthood, people become full members of society equipped with the right to vote. At the same time, trust and personality are both malleable in this developmental phase (Poulin & Haase, 2015; Roberts et al., 2006). Such changes in trust and personality traits might add to a person's average levels in predicting civic outcomes at a specific point in time. Particularly, the often-described pattern of change to personality maturity in young adulthood might come along with greater engagement in civic life, which could be reflected in political interest or voting intentions.

#### 1.5. The present study

In the present work we address three research aims. First, we investigate mean-level changes and rank-order stabilities of trust and personality traits across the time span of almost 20 years. Second, we investigate concurrent and longitudinal associations between interpersonal and institutional trust and personality traits. Third, we investigate

the consequences of levels and changes in trust and in personality for political interests and voting intentions. In doing so, we use two waves of a large, representative dataset—the BIJU study—following the change trajectories of personality and trust in an economically, socially, and politically turbulent phase from 2001/2002 to 2018/2019 including the major economic crisis in 2008, the so-called refugee crisis in Europe in 2014/2015, and the ongoing climate crisis, with increasingly more visibility and protests in 2018 and 2019. Within this sphere, our participants are in an early phase of political participation as they were able to vote in the next federal elections, the very first federal election for a majority of our participants.

Based on previous findings and theoretical assumptions (Anderson, 2010; Dinesen et al., 2014; Thielmann & Hilbig, 2015), we propose the following preregistered hypotheses: We expect to find positive associations between levels of agreeableness with levels of both interpersonal and institutional trust (Hypothesis 1a). We furthermore expect positive associations of levels of emotional stability with levels of interpersonal trust (Hypothesis 1b). Regarding levels of openness, we expect positive associations with levels of interpersonal trust and negative associations with levels of institutional trust (Hypothesis 1c). We expect to find negative associations of levels of conscientiousness with interpersonal trust (Hypothesis 1d) and positive associations between levels of extraversion and levels of interpersonal trust (Hypothesis 1e).

Taking the changeability of trust and personality traits into account, we further assume that their changes are linked (Hypothesis 2a). Particularly, we expect to find linked changes (correlated slopes) in terms of agreeableness and emotional stability and interpersonal and institutional trust (Thielmann & Hilbig, 2015) (Hypothesis 2b). As no previous longitudinal research exists, we refrain from stating definitive hypotheses regarding the longitudinal interplay of further personality traits and trust.

Regarding our third research question on consequences, we expect to find associations between levels and changes of trust and personality traits with political interest and voting intentions. Based on the assumption that (dis)trust can motivate people to get involved, we expect that changes in interpersonal and institutional trust predict political interest positively (Hypothesis 3a). At the same time, changes in interpersonal and institutional trust should predict the intention to vote positively (Hypothesis 3b). We furthermore expect that decreases in interpersonal and institutional trust will predict voting intentions of parties at the edges of political spectrum (Hypothesis 3c).

In terms of personality traits, we expect that changes in openness and extraversion will show positive associations with political interest (Hypothesis 3d) and thus, people should be more inclined to vote (Hypothesis 3e). We furthermore expect that decreases in emotional stability will be associated with the tendency to vote for a party on the edges of the political spectrum (irrespective of aligned to right or left, Hypothesis 3f). Although we do not hypothesize a specific pattern for all combinations of predictor and outcome variables, we will explore the associations between levels and changes of trust variables and all personality traits with all outcome variables in an exploratory fashion.

## 2. Method

All hypotheses and the analytic plan were preregistered on the Open Science Foundation (OSF) before conducting any data screening or analyses (<https://osf.io/musc9>). Model codes and online supplementary materials can also be found on the project's OSF site (<https://osf.io/qdbu4/>). Because the data included in this study are part of an ongoing research project, they have yet to be made openly accessible.<sup>1</sup> The BIJU study was carried out in accordance with the ethical guidelines for research with human participants as proposed by the American Psychological Association. The study materials and procedures were approved by the responsible ministries of education, and by the ethics committee of the participating research institutions.

### 2.1. Participants

The BIJU study (Baumert et al., 1996), is an ongoing longitudinal study that started in 1991. It follows the psychosocial development of adolescents from secondary school onward in Germany. We used two waves of data from the original sample that first include the key variables of this study. We took the data from wave 6 (2001/02) of  $N = 3,261$  participants when they had entered vocational training, the labor market or went to university. We will refer to this as T1. We also took data from wave 8 (2018/19) of  $N = 2,687$  participants, assessed about twenty years later. We will refer to this as T2. We included all participants in our sample who provided data either at time point T1 or T2, which resulted in a final sample of  $N = 4,120$  participants (62 % female) with an average age of  $M = 22.80$  ( $SD = 0.70$ ) at T1 and an average age of  $M = 39.81$  ( $SD = 0.71$ ) at T2. 97 % of participants at T1 were born in Germany.

Attrition analyses between the full sample at T1 and the sample that provided data at both time points (complete longitudinal participation,  $n = 1,827$ ) showed that participants who dropped out between T1 and T2 were not statistically significantly different (all  $ps > 0.01$ ) or substantially different (all  $ds < |0.07|$ ) from continuers in terms of personality traits, interpersonal or institutional trust, gender, or cognitive abilities.

### 2.2. Measures

#### 2.2.1. Five-factor model personality traits

We used a short version of the German NEO-FFI adapted for the BIJU study with originally 25 items (Borkenau & Ostendorf, 1991) on a four-point Likert scale ranging from 1 (*does not apply at all*) to 4 (*fully applies*). As a modeling precondition, we used confirmatory factor analysis to investigate the measurement structure for each personality domain separately. This resulted in measurement models with good fit for emotional stability with five items (no items were reverse coded). In each of the remaining domains, one item had to be excluded from the model in order to establish the configural factor structure. Thus, agreeableness was measured with four items, three of which were reversed coded; extraversion was measured with four items, none of

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<sup>1</sup> In terms of our main constructs of interest, Big Five personality trajectories from the BIJU data have already been analyzed and published in one previous study (Brandt et al., 2021b) that looked into developmental pathways of motivational constructs, personality traits, and occupational success. Thus, the focus of the already published paper differs strongly from the aims of the current study. Two other studies exist that used BIJU data focusing on political interest and voting intentions (Baumert et al., 2016; Savage et al., 2021). However, these studies investigated different research questions (role of education for political outcomes, development of political interest and political self-concept) and data used in these studies and the present study only overlaps in terms of our first assessment point (wave 6) but not the last assessment point (wave 8). This is the first study looking at civic outcomes in middle adulthood with the BIJU data.

which were reverse coded; conscientiousness was measured with four items of which one item was reverse coded; and finally, openness was measured with four items, including two reverse-coded items (for item wordings, see Table S17; for model fits, see the configural invariance models in Table S1 in the online supplementary materials). The reliabilities, which were based on the measurement-model-based reliability index  $\omega$  (McDonald, 1999), were reasonable ( $\omega_{\text{Emotional stability}} = .79/.78$ ,  $\omega_{\text{Agreeableness}} = .72/.75$ ,  $\omega_{\text{Extraversion}} = .70/.71$ ,  $\omega_{\text{Conscientiousness}} = .74/.73$ ,  $\omega_{\text{Openness}} = .77/.75$  at T1/T2).

### 2.2.2. Interpersonal trust

We used one single forced choice item from the World Value Study Group to assess interpersonal trust. Participants had to choose between the two options “You can trust most people” and “You can’t be too careful”. The re-test reliability across 20 years (between T1 and T2) was  $r_{tt} = 0.37$ . We modeled interpersonal trust as a single-indicator latent variable (Westfall & Yarkoni, 2016) by fixing the error variance to 0.05 which reflects an estimated reliability of 0.95.<sup>2</sup> We report mean-level differences and rank-order stabilities for both the manifest variable and the single-indicator latent variable to provide the reader with the full information.

### 2.2.3. Institutional trust

In BIJU, ten items from the World Value Study Group assess how much people trust in different institutions (church, school, unions, police, public administration, court of law, political parties, TV or newspapers, environmental organizations, and army) at both waves. They were rated on a four-point Likert scale ranging from 1 (*not at all*) to 4 (*strongly*). To establish a latent measurement model, we first tested the underlying factor structure using exploratory factor analyses. At both assessment points, we found that specifying two factors provided a better fit than the (theoretically expected) one factor solution (see Table S18, S19 for factor loadings). The two factors can roughly be interpreted as trust in institutions that are regulated by the government (school, police, public administration, court of law, political parties, army) versus trust in public institutions that are not directly linked to governmental actions (unions, TV, environmental institutions, church). However, since (a) the allocation to the two factors was slightly different across the two assessment points, (b) the variance explained by the second factor was low at both time points ( $<0.20$ ), and (c) the two factors showed a strong correlation ( $>0.60$ ), we decided to exclude the variables that loaded on the second (non-governmental) factor. That is, we established a joint solution across time, and, thus, modeled a one-factor solution based on the governmental institution items. A confirmatory factor analysis resulted in a well-fitting measurement model across time (see Table 1) with satisfactory reliabilities at T1/T2  $\omega_{\text{Institutional Trust}} = .83/.78$ .

### 2.2.4. Political interest

We used a single item to assess interest in politics by asking the participants “How much are you interested in politics?” on a five-point Likert scale ranging from 1 (*not at all*) to 5 (*very strongly*). Political interest was modeled as a single-indicator latent variable (Westfall & Yarkoni, 2016), by fixing the item loading to one and the residual variance to  $(1 - \alpha_j) \times s_j^2$ , where  $\alpha_j$  denotes the (re-test) reliability and  $s_j^2$  denotes the variance of the item at each time point of assessment.

### 2.2.5. Voting intentions

Voting intentions were assessed by asking the participants “If there were a federal election on Sunday, which party would you vote for?” Participants had to choose one party from a list including all German parties<sup>3</sup> represented at the parliament in 2018 (1 = CDU/CSU, 2 = SPD, 3 = The Left, 4 = Bündnis 90/The Greens, 5 = FDP, 6 = AfD, 7 = NPD, 8 = Republicans, 9 = other 10 = I would not vote). In Germany, only German citizens are allowed to vote in federal elections starting at the age of 18. However, the item asks for intentions, and therefore, every participant was invited to state their intention.

We first built a dummy-variable assessing *intent to vote* with 0 (including all people that crossed “I would not vote”) and 1 (including all other people who stated their intention to vote for any party). Second, based on analyses of the party spectrum in Germany (Wagschal & König, 2014, 2015), we built another dummy-variable assessing *voting at the edge*. We included all those who chose the CDU/CSU, FDP, SPD, or Bündnis 90/The Greens in the category 0 (intention to vote for a party toward the center of the German political spectrum) and those who chose the NPD, Republicans, AfD, and The Left were included in the category 1 (intention to vote for a party toward the edges of the German political spectrum).

### 2.2.6. Covariates

In all our analyses, we controlled for the influence of a set of variables with relevance to political attitudes and behavior in a second step (Denny & Doyle, 2008; Furnham & Cheng, 2019) and thus reported all estimates adjusted and unadjusted for the covariates. These were gender of participants (0 = female, 1 = male), cognitive abilities in Grade 10 assessed with 25 items from a nonverbal subtest (figure analogies) of the cognitive abilities test (in German: *Kognitiver Fähigkeitstest* [KFT]; N2- Test, KFT 4–13 + R; Heller et al., 1985), and participants’ individual educational level counting the years of education 10 years after T1 (at about age 30). In doing so, we used the Comparative Analysis of Social Mobility in Industrial Nations classification scheme (König et al., 1988) to code both general and tertiary education. This scheme allows a transformation into years of education (Blossfeld, 1993). On average, participants in our sample had 16.8 years of education ( $SD = 2.68$ ), pointing to a well-educated sample. As an additional measure of socioeconomic status, we further controlled for parent occupational prestige (ISEI; Ganzeboom et al., 1992) that is based on the International Standard Classification of Occupations (ISCO-88; International Labor Organization, 1990). Parental occupations were reported by students at wave 5 (around the age of 18) and the highest value was used for the classification (see Table 1 for more descriptive information and manifest intercorrelations between study variables).

## 2.3. Analytical strategy

For all constructs with more than two indicators, we used latent variable modeling and therefore started with the specification of measurement models. These models were described in the Measures section above. To address our research aims, we carried out three main analytical steps.

First, we tested for measurement invariance across time for multiple indicator constructs as personality traits and institutional trust separately. By starting with a configural model, we evaluated the model fit of increasingly restrictive measurement models across metric invariance (i.e., equality of factor loadings across time) and scalar invariance (i.e., adding equality of item intercepts across time). All models were

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<sup>2</sup> We pre-registered to fix the item loading to one and the residual variance to  $(1 - \alpha_j) \times s_j^2$ , where  $\alpha_j$  denotes the (re-test) reliability and  $s_j^2$  denotes the variance of the item at each time point of assessment. As the re-test reliability was rather low across the study interval of 20 years for interpersonal trust, we decided to slightly deviate from the pre-registration.

<sup>3</sup> CDU = Christlich Demokratische Union Deutschlands [Christian Democratic Union of Germany], CSU = Christlich-Soziale Union in Bayern [Christian Social Union in Bavaria], SPD = Sozialdemokratische Partei Deutschlands [Social Democratic Party of Germany], FDP = Freie Demokraten [Free Democratic Party], AfD = Alternative für Deutschland [Alternative for Germany], NPD = Nationaldemokratische Partei Deutschlands [National Democratic Party of Germany].

identified by the effect-coding method (restricting the loadings of the items on average to one and the item intercepts on average to zero within time points, Little et al., 2006). We evaluated the increasingly restrictive models regarding their overall fit with CFI > .95/.90, RMSEA < .05/.08, and SRMR < .08/.11 for good/acceptable model fit, respectively (Hu & Bentler, 1999; Schermelleh-Engel et al., 2003). When model fit was unacceptable, we tested for partial invariance (see Table S1 for results of measurement invariance testing). In all of these models, we allowed the residual variances of the same items to correlate across time. The measurement models served as the input for all latent (change) models described next. After the establishment of these measurement models, we investigated the first aim of our paper by testing for mean-level changes and rank-order stabilities (i.e., latent test–retest correlations) of personality traits and trust, respectively.

Second, we estimated bivariate latent change models (Duncan et al., 2006; Sayer & Cumsille, 2001) for each of the personality–trust combinations separately (see Fig. 1) to address our second research aim. The means and variances of first-order latent variables were fixed to zero to identify the model. The correlation of the intercepts explores associations of variables at baseline (effect a in Fig. 1, Hypotheses 1a–1e). The association between the two linear latent change factors (slope factors) explores the correlated change between personality traits and trust (effect b in Fig. 1, Hypotheses 2a and 2b).

Third, we investigated the role of levels and changes in personality and trust in the prediction of political interest and voting intentions to test our third aim. These models allowed us to investigate level effects (effects c and d, see Fig. 1), as well as effects of change in trust (slopes, effect f in Fig. 1, Hypotheses 3a and 3b) and of change in personality traits (slopes, effect e in Fig. 1, Hypotheses 3c–3f) on political interest and voting intentions.

Given the large number of estimated models and in line with previous research in the field (e.g., Deventer et al., 2019; Mund & Neyer, 2014), we only interpret findings with a  $p < .01$  level, but we also report exact  $p$ -values and 99 % confidence intervals to provide the reader with the complete information. We used full information maximum likelihood procedures so that we could use all of the information available in the data set (see Enders, 2010). When using maximum likelihood procedures with binary dependent variables (voting intentions), this reflects logistic regressions and odds ratios will be reported together with logits. All analyses were done with the lavaan package (Version 0.6–6, Rosseel, 2012) in R (4.0.2; R Core Team, 2020), except for logistic regressions which were modeled in Mplus (8.5; Muthén & Muthén, 1998–2018) by using the MplusAutomation package (0.7–3; Hallquist & Wiley, 2018) in R.

### 3. Results

We present the findings of our main analyses along the lines of our three research aims. We first report all findings of the models without covariates (unconditional models) and then evaluate whether findings change when including covariates (conditional models).

#### 3.1. Stability and change of trust and personality across 20 years

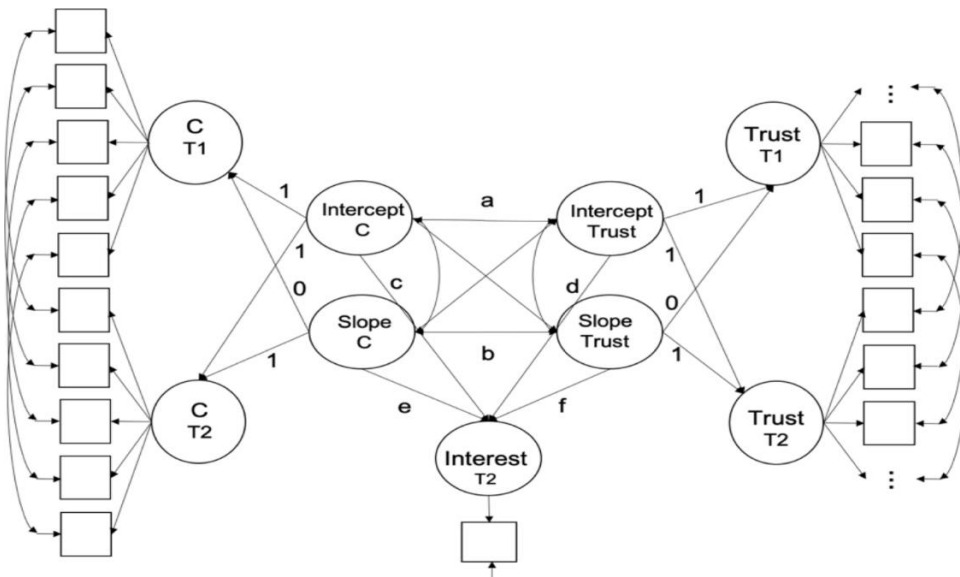
For our first aim, we found evidence for both mean-level changes and rank-order stabilities in interpersonal and institutional trust (see Table 2) as well as in personality traits with all latent change scores having statistically significant variances. Institutional trust and interpersonal trust showed mean-level increases across time, with the most pronounced increases for institutional trust across all constructs considered. Mean-level changes in personality traits followed the expected pattern of greater maturity with increasing age; Emotional stability, agreeableness, and conscientiousness increased, whereas extraversion and openness decreased across time. Rank-order stabilities were lowest for institutional trust, followed by interpersonal trust and then by personality traits, with the highest rank-order stabilities for

**Table 1**  
Means, Standard Deviations, and Intercorrelations of Study Variables at Both Time Points.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<i>Personality</i>																					
1. ES T1	2.84	.57																			
2. E T1	3.02	.48	.30**																		
3. A T1	3.14	.45	.13**	.25**																	
4. C T1	3.03	.48	.27**	.17**	.15**																
5. O T1	2.82	.62	-.06**	.08**	.10**	-.05**															
6. ES T2	3.00	.57	.49**	.19**	.05*	.15**	-.08**														
7. E T2	2.77	.49	.26**	.52**	.16**	.15**	.02	.41**													
8. A T2	3.21	.44	.04	.19**	.47**	.11**	.08**	.18**	.31**												
9. C T2	3.13	.47	.16**	.11**	.08**	.46**	-.06*	.29**	.22**	.22**											
10. O T2	2.66	.63	-.02	.05*	.04	-.11**	.58**	-.05*	.10**	.17**	-.03										
<i>Trust</i>																					
11. IPT T1	1.39	.49	.12**	.12**	.13**	-.08**	.13**	.09**	.10**	.06*	-.02	.11**									
12. IPT T2	1.59	.49	.11**	.09**	.08**	-.05	.14**	.13**	.16**	.16**	-.03	.17**	.37**								
13. IT T1	2.45	.38	.08**	.10**	.14**	.11**	-.04*	.06*	.11**	.10**	.10**	-.05*	.20**	.13**							
14. IT T2	2.64	.43	.08**	.12**	.12**	.05	.05*	.11**	.16**	.23**	.08**	.12**	.23**	.35**	.43**						
15. Int T2	3.20	.97	.18**	.05*	-.08**	-.02	.16**	.16**	.08**	-.03	.05**	.29**	.11**	.18**	.04	.13**					
16. vot T2	.96	.20	.04	.05*	.02	-.06*	.07**	.05*	.07**	.07**	-.01	.08**	.05*	.10**	.07**	.13**	.20**				
17. edg T2	.18	.39	-.07**	-.11**	-.04	-.12**	.06*	-.08**	-.12**	-.06**	-.13**	.07**	-.07**	-.10**	-.15**	-.28**	.07**	NA			
<i>Covariates</i>																					
18. sex	.37	.48	.21**	-.11**	-.17**	-.09**	-.13**	.19**	-.08**	-.20**	-.07**	-.04*	.07**	.07**	.01	.00	.33**	-.00	.06**		
19. educ	16.49	2.74	.08**	.01	-.04	-.07**	.16**	.10**	.03	.05*	.03	.18**	.19**	.25**	.06**	.18**	.20**	.17**	-.08**	.04*	
20. HISEI	57.17	16.41	.02	.03	-.03	-.08**	.07**	.01	.01	-.02	-.03	.12**	.09**	.12**	.02	.06*	.15**	.10**	.00	.04*	.32**

Note. T1 = first assessment wave, T2 = second assessment wave; ES = emotional stability, E = extraversion, A = agreeableness, O = openness to experience, IPT = interpersonal trust, IT = Institutional trust, Int = political interest, vot = intention to vote, edg = voting for a party at the edge, educ = education, HISEI = parent occupational prestige.

\*  $p < .05$ . \*\*  $p < .01$ .



**Fig. 1.** SEM Including all Paths For Research Aims 2 and 3 Including Conscientiousness (C), Institutional Trust (Trust), and Political Interest (Interest) as Exemplary Constructs of Personality, Trust, and Political Outcomes. *Note.* The key information from these analyses are the associations between trust and personality at baseline (a) [intercepts, Hypotheses 1a-1e] and the associations between the changes (slopes), that is, the correlated changes in trust and personality (b) [Hypotheses 2a,b] for research aim 2. For aim 3, of key interest were the associations between levels and changes in trust and political outcomes (effect d and f) [Hypotheses 3a,b] and levels and changes in personality and political outcomes (effect c and e) [Hypotheses 3c-3f].

**Table 2**  
Latent Mean Differences and Rank-Order Stabilities for Trust and Personality across 20 Years from Young to Middle Adulthood.

Construct	T1		-	T2		M change <i>d</i>	Stability <i>r</i>
	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>		
<i>Trust</i>							
Institutional Trust	2.48	0.39		2.73	0.43	0.61 (0.02)	0.31 (0.01)
Interpersonal Trust <sup>a</sup>	1.39	0.49		1.59	0.49	0.41 (0.03)	0.37 (0.02)
Interpersonal Trust <sup>b</sup>	1.39	0.43		1.59	0.44	0.46 (0.02)	0.47 (0.01)
<i>Personality</i>							
Emotional stability	2.84	0.51		3.00	0.50	0.33 (0.02)	0.59 (0.01)
Extraversion	3.02	0.40		2.70	0.40	-0.81 (0.02)	0.62 (0.01)
Agreeableness	3.09	0.41		3.18	0.39	0.24 (0.02)	0.57 (0.01)
Conscientiousness	3.02	0.41		3.08	0.40	0.14 (0.02)	0.54 (0.00)
Openness	2.80	0.57		2.57	0.57	-0.35 (0.02)	0.71 (0.01)

*Note.* *d* = standardized mean level difference using the pooled standard deviation across time (Cohen's *d*), i.e.,  $d = \frac{meanT_t - meanT_{t-1}}{pooledSD}$ . Standard errors in parentheses.

T1 = after participants finished high school, T2 = about 20 years later. <sup>a</sup>Interpersonal trust: manifest results based on single items. <sup>b</sup>Interpersonal trust: results based on single-indicator latent variable approach. *N* = 3,986.

openness. Compared to studies using shorter time intervals (e.g., 1–4 years; Bromme & Rothermund, submitted), the rank-order stabilities of institutional trust reduced substantially across our longer time interval of 20 years whereas rank-order stabilities of interpersonal trust were comparable to previous findings with shorter intervals (Poulin & Haase, 2015). In sum, both trust variables and personality traits show stability and change. We, thus, further explore whether both construct groups are related cross-sectionally and longitudinally.

### 3.2. Concurrent and longitudinal relations between trust and personality

Testing our second aim, all bivariate models showed at least acceptable model fit (all CFIs > .90, RMSEAs < .08, and SRMRs < .11). Table 3 summarizes the correlated latent intercepts and latent changes (effect a and b in Fig. 1) across all estimated unconditional bivariate models (for model fits and parameter estimates see Tables S2-S6 in the online supplementary materials). We found strong empirical support for statistically significant associations at baseline (correlated intercepts). Supporting Hypotheses 1a, 1b, and 1e, higher levels in both interpersonal and institutional trust were related to higher levels in



agreeableness, emotional stability, and extraversion. Furthermore, interpersonal trust was related to higher openness, but institutional trust was related to lower openness supporting Hypothesis 1c. We also found the expected negative association of interpersonal trust with conscientiousness (Hypothesis 1d). Together, we were able to support all level- related hypotheses.

Despite this strong evidence for cross-sectional level associations between trust and personality, there was only little proof for joint change trajectories across time (Hypothesis 2a). Confirming Hypothesis 2b, the latent change of institutional and interpersonal trust showed statistically significant associations with the latent change of agreeableness but no correlated change occurred between trust and emotional stability. This finding of correlated change between trust and agreeableness remained stable even when the agreeableness item that covers trust content was excluded (see Table 3).

Including the covariates in the models (see Tables S7 to S11 in the online supplementary materials for model fits and parameter estimates), the patterns remained completely stable. Interestingly, we found that education was the only covariate related to change in personality and trust. That is, higher educated people showed accelerated change in these constructs compared to less educated people. In summary, our results emphasize the conceptual relatedness of trust and personality traits, however, change scores in trust and personality variables were largely unrelated indicating stationary interrelations between variables.

### 3.3. Predicting political interest and voting intentions from trust and personality

To test aim 3, we added the civic outcomes to our latent change models. Results on unconditional latent change models can be found in Tables 4 to 8, whereas findings on the conditional latent change models can be found in the online supplementary materials (Tables S12 to S16).

#### 3.3.1. Predictive validity of levels and changes: Unconditional latent change models

As expected, and across all combinations with personality traits, levels and changes of both institutional and interpersonal trust showed positive associations with political interest (Hypothesis 3a). People who reported to trust more in governmental institutions and in people in general were more interested in political topics than lower trusting people. At the same time, a more mixed pattern emerged for intentions to vote. Supporting Hypothesis 3b, levels of institutional and interpersonal trust showed statistically significant associations with the intention to vote, regardless which personality trait was included (except for institutional trust in the model with emotional stability). Also, in line with Hypothesis 3b, increases in institutional trust were associated with the intent to vote (irrespective of personality traits), whereas people who showed increases in interpersonal trust were more motivated to vote only in the model with conscientiousness. People who trusted governmental institutions and people in general more, were less likely to vote for a party at the edge of the political spectrum, supporting the expected level effects (Hypothesis 3c). Furthermore, people who report decreases in institutional and interpersonal trust were more likely to vote for a party at the edge of the political spectrum (irrespective of the pairing with personality traits for institutional trust and in all models except for extraversion and openness for interpersonal trust) supporting the expected change effects (Hypothesis 3c).

In terms of personality traits, as expected, people who scored higher in openness and had increases across time reported more interest in political topics than people scoring lower in openness, irrespective of the pairing with trust variables (Hypothesis 3d). Whereas this was also true for more extraverted people, increases in extraversion were not statistically significantly associated with political interest (rejecting Hypothesis 3d in terms of change effects for extraversion). We, however, found additional, unexpected level effects: People higher on emotional stability, agreeableness, and conscientiousness reported to be more interested in politics (irrespective of trust variables except for conscientiousness only in models with institutional trust). Becoming more conscientious across time was further associated with being more politically interested compared to people who did not show an increase (in models with institutional trust). In keeping with Hypothesis 3e, those higher in openness reported stronger intentions to vote (irrespective of trust variables), whereas neither changes in openness nor levels or changes in extraversion predicted people's intent to vote (partly rejecting Hypothesis 3e). Being more emotionally stable decreased the chance to vote for a party at the edges of the political spectrum. However, no effects of change in emotional stability occurred and, thus, Hypothesis 3f was not supported by the data. Besides further negative level effects of extraversion, openness, and conscientiousness on the intention to vote for a party at the edges of the political spectrum, we found that increases in conscientiousness came along with being less inclined to vote for parties at the edges of the political spectrum (irrespective of trust variables). Across all models, combinations of personality traits with institutional trust explained the highest amount of variance in intent to vote for parties at the edges of the political spectrum (up to 23 %) and the lowest amount of variance in political interest (5 %).

#### 3.3.2. Predictive validity of levels and changes: Conditional latent change models

When including the covariates sex, years spent in formal education, parental socio-economic status, and cognitive abilities into the models, the amount of explained variance increased up to 49 % for political interest, up to 32 % for intention to vote, and up to 23 % for voting intentions for a party at the edges of the political spectrum across models. Men reported to be more interested in politics than women and were less likely to vote for a party toward the center of the political spectrum. People who spent more years in formal education and have parents in more prestigious job positions also reported to be more politically interested. Whether a person is inclined to vote was positively predicted by their cognitive abilities and years spent in formal education.

Regarding the associations of trust variables and personality traits with civic outcomes derived from the conditional latent change models, the pattern varied across different civic outcomes with strongest changes in the models predicting voting intentions. When including the covariates, cognitive abilities and years spent in formal education yielded the only significant associations. For political interest and voting for a party at the edge of the political spectrum, however, the pattern remained highly stable with two exceptions. First, levels of institutional trust did not predict political interest anymore in models with emotional stability, extraversion, and conscientiousness. Second, changes in interpersonal trust were not statistically significantly associated with voting intentions for parties at the edge of the political spectrum anymore in the model

**Table 3**  
Correlations of Intercepts and Changes (Slopes) between Trust and Personality.

	Trust			
	Institutional Trust		Interpersonal Trust	
	Intercept	Slope	Intercept	Slope
<i>Personality</i>				
Emotional stability	<b>0.17</b>	0.08	<b>0.14</b>	0.07
Agreeableness	<b>0.09</b>	<b>0.15</b>	<b>0.13</b>	<b>0.15</b>
Agreeableness*	<b>0.09</b>	<b>0.15</b>	<b>0.10</b>	<b>0.12</b>
Extraversion	<b>0.10</b>	0.06	<b>0.15</b>	0.08
Openness	<b>-0.11</b>	0.01	<b>0.15</b>	0.03
Conscientiousness	<b>0.16</b>	0.09	<b>-0.08</b>	-0.04

Note. Results were obtained from unconditional second-order latent change models, estimated separately for each combination of personality trait and trust. Bold correlations are statistically significant at  $p < .01$ , and the 99 % confidence intervals exclude zero. \*as a robustness check, one agreeableness item (A2r) that covers trust content was excluded.  $N = 3,986$ .

**Table 4**  
Predictions of Political Outcomes from the Intercepts and Changes (Slopes) of Two Trust Indicators and Emotional Stability.

Predictor	Political Outcomes												
	Political interest				Intention to vote				Voting at the edge				
	Est	<i>p</i>	99 % CI		Log	<i>p</i>	99 % CI		Odds Ratio	Log	<i>p</i>	99 % CI	
I ES	.29	<.001	[.19, .38]		0.60	.050	[-.19, 1.40]	1.82		-0.22	.178	[-.63, .20]	.80
I IT	.12	.003	[.02, .22]		1.04	.012	[-.03, 2.12]	2.83		-2.35	<.001	[-2.99, -1.72]	.10
S ES	.11	.016	[-.01, .22]		0.17	.614	[-.69, 1.03]	1.19		-0.12	.522	[-.62, .37]	.89
S IT	.15	<.001	[.05, .25]		1.22	.003	[.16, 2.28]	3.39		-1.86	<.001	[-2.43, -1.29]	.16
R <sup>2</sup>	.100				.100				.207				
I ES	.27	<.001	[.18, .37]		0.64	.035	[-.14, 1.42]	1.90		-0.47	.002	[-.86, -.08]	.63
I IPT	.26	<.001	[.16, .35]		1.36	.001	[.33, 2.38]	3.90		-0.70	<.001	[-1.17, -.23]	.50
S ES	.10	.022	[-.01, .21]		0.14	.685	[-.73, 1.01]	1.15		-0.31	.089	[-.78, .16]	.73
S IPT	.20	<.001	[.10, .30]		0.97	.013	[-.04, 1.98]	2.64		-0.47	.010	[-.94, .00]	.63
R <sup>2</sup>	.133				.113				.040				

Note. Est = Standardized regression coefficient obtained from latent change models with trust and personality as predictors of political interest. Log = Unstandardized regression coefficient (logit) obtained from logistic latent change models with trust and personality as predictors of intention to vote or non-mainstream voting. *p* = *p*-value, CI = confidence interval, I = Intercept, S = Slope, IT = Institutional trust, IPT = Interpersonal trust. *N* = 3,986.

**Table 5**  
Predictions of Political Outcomes from the Intercepts and Changes (Slopes) of Two Trust Indicators and Agreeableness.

Predictor	Political Outcomes												
	Political interest				Intention to vote				Voting at the edge				
	Est	<i>p</i>	99 % CI		Log	<i>p</i>	99 % CI		Odds Ratio	Log	<i>p</i>	99 % CI	
I A	-.16	<.001	[-.26, -.06]		0.61	.099	[-.34, 1.57]	1.84		0.03	.894	[-.48, .54]	1.03
I IT	.18	<.001	[.08, .28]		1.13	.006	[.08, 2.17]	3.10		-2.41	<.001	[-3.04, -1.77]	.09
S A	-.05	.258	[-.16, .06]		0.39	.362	[-.71, 1.48]	1.48		0.00	.995	[-.62, .62]	1.00
S IT	.20	<.001	[.10, .30]		1.22	.002	[.19, 2.24]	3.39		-1.89	<.001	[-2.47, -1.31]	.15
R <sup>2</sup>	.053				.093				.205				
I A	-.17	<.001	[-.27, -.07]		0.63	.105	[-.37, 1.62]	1.88		-0.22	.219	[-.70, .25]	.80
I IPT	.32	<.001	[.23, .41]		1.40	.001	[.33, 2.48]	4.06		-0.76	<.001	[-1.23, -.29]	.47
S A	-.04	.363	[-.15, .07]		0.55	.225	[-.61, 1.71]	1.73		-0.40	.082	[-1.00, .20]	.67
S IPT	.25	<.001	[.15, .35]		0.97	.014	[-.05, 1.98]	2.64		-0.48	.008	[-.95, -.01]	.62
R <sup>2</sup>	.097				.104				.032				

Note. Est = Standardized regression coefficient obtained from latent change models with trust and personality as predictors of political interest. Log = Unstandardized regression coefficient (logit) obtained from logistic latent change models with trust and personality as predictors of intention to vote or non-mainstream voting. *p* = *p*-value, CI = confidence interval, I = Intercept, S = Slope, IT = Institutional trust, IPT = Interpersonal trust. *N* = 3,986.

**Table 6**  
Predictions of Political Outcomes from the Intercepts and Changes (Slopes) of Two Trust Indicators and Extraversion.

Predictor	Political Outcomes												
	Political interest				Intention to vote				Voting at the edge				
	Est	<i>p</i>	99 % CI		Log	<i>p</i>	99 % CI		Odds Ratio	Log	<i>p</i>	99 % CI	
I E	0.14	<0.001	[0.05, 0.24]		0.95	0.018	[-0.09, 2.00]	2.59		-0.72	<0.001	[-1.24, -0.19]	0.49
I IT	0.14	<0.001	[0.04, 0.24]		1.07	0.007	[0.04, 2.10]	2.92		-2.31	<0.001	[-2.93, -1.68]	0.10
S E	0.06	0.204	[-0.06, 0.18]		0.69	0.239	[-0.82, 2.20]	1.99		-0.34	0.225	[-1.05, 0.38]	0.71
S IT	0.17	<0.001	[0.07, 0.27]		1.18	0.003	[0.15, 2.22]	3.25		-1.83	<0.001	[-2.40, -1.27]	0.16
R <sup>2</sup>	0.050				0.112				0.219				
I E	0.11	0.002	[0.02, 0.21]		0.91	0.024	[-0.13, 1.95]	2.48		-0.89	<0.001	[-1.41, -0.38]	0.41
I IPT	0.28	<0.001	[0.19, 0.37]		1.32	0.001	[0.27, 2.38]	3.74		-0.63	0.001	[-1.11, -0.16]	0.53
S E	0.04	0.435	[-0.08, 0.16]		0.62	0.280	[-0.86, 2.11]	1.86		-0.49	0.062	[-1.17, 0.19]	0.61
S IPT	0.22	<0.001	[0.12, 0.32]		0.92	0.014	[-0.05, 1.89]	2.51		-0.44	0.016	[-0.90, 0.03]	0.64
R <sup>2</sup>	0.085				0.120				0.057				

Note. Est = Standardized regression coefficient obtained from latent change models with trust and personality as predictors of political interest. Log = Unstandardized regression coefficient (logit) obtained from logistic latent change models with trust and personality as predictors of intention to vote or non-mainstream voting. *p* = *p*-value, CI = confidence interval, I = Intercept, S = Slope, IT = Institutional trust, IPT = Interpersonal trust. *N* = 3,986.

with agreeableness. Surprisingly, some additional associations of personality traits reached statistical significance in models with covariates but not in the unconditional models. Level effects of emotional stability, extraversion, and openness showed statistically significant negative associations with voting intentions for parties at the edge of the political spectrum irrespective of the trust variable considered.

In sum, levels and changes of institutional trust and interpersonal trust were predictive of how interested people are in politics and whether they are likely to vote for a party at the edges of the political spectrum. Being and becoming more trusting comes along with being interested in political affairs and with support of more mainstream/centrist political parties. Personality traits were also able to predict

**Table 7**  
Predictions of Political Outcomes from the Intercepts and Changes (Slopes) of Two Trust Indicators and Openness.

Predictor	Political Outcomes											
	Political interest			Intention to vote				Voting at the edge				
	Est	<i>p</i>	99 % CI	Log	<i>p</i>	99 % CI	Odds Ratio	Log	<i>p</i>	99 % CI	Odds Ratio	
I O	0.29	<0.001	[0.20, 0.38]	0.82	0.002	[0.13, 1.51]	2.27	0.28	0.038	[-0.07, 0.62]	1.32	
I IT	0.16	<0.001	[0.07, 0.26]	1.28	0.003	[0.17, 2.40]	3.60	-2.42	<0.001	[-3.05, -1.79]	0.09	
S O	0.32	<0.001	[0.21, 0.43]	0.77	0.051	[-0.25, 1.79]	2.16	0.42	0.054	[-0.14, 0.98]	1.52	
S IT	0.15	<0.001	[0.05, 0.25]	1.14	0.005	[0.09, 2.19]	3.13	-1.95	<0.001	[-2.52, -1.38]	0.14	
R <sup>2</sup>	0.148			0.131				0.214				
I O	0.24	<0.001	[0.15, 0.33]	0.68	0.007	[0.03, 1.32]	1.97	0.38	0.003	[0.05, 0.72]	1.46	
I IPT	0.24	<0.001	[0.15, 0.33]	1.23	0.002	[0.22, 2.24]	3.42	-0.92	<0.001	[-1.39, -0.45]	0.40	
S O	0.30	<0.001	[0.19, 0.41]	0.68	0.089	[-0.35, 1.71]	1.97	0.40	0.057	[-0.14, 0.93]	1.49	
S IPT	0.19	<0.001	[0.09, 0.29]	0.93	0.015	[-0.05, 1.92]	2.53	-0.64	<0.001	[-1.10, -0.17]	0.53	
R <sup>2</sup>	0.165			0.123				0.041				

Note. Est = Standardized regression coefficient obtained from latent change models with trust and personality as predictors of political interest. Log = Unstandardized regression coefficient (logit) obtained from logistic latent change models with trust and personality as predictors of intention to vote or non-mainstream voting. *p* = *p*-value, CI = confidence interval, I = Intercept, S = Slope, IT = Institutional trust, IPT = Interpersonal trust. *N* = 3,986.

**Table 8**  
Predictions of Political Outcomes from the Intercepts and Changes (Slopes) of Two Trust Indicators and Conscientiousness.

Predictor	Political Outcomes											
	Political interest			Intention to vote				Voting at the edge				
	Est	<i>p</i>	99 % CI	Log	<i>p</i>	99 % CI	Odds Ratio	Log	<i>p</i>	99 % CI	Odds Ratio	
I C	0.08	0.053	[-0.03, 0.18]	-0.64	0.060	[-1.50, 0.23]	0.53	-0.72	<0.001	[-1.25, -0.19]	0.49	
I IT	0.15	<0.001	[0.05, 0.25]	1.36	0.001	[0.32, 2.40]	3.90	-2.35	<0.001	[-2.98, -1.71]	0.10	
S C	0.17	<0.001	[0.06, 0.29]	0.27	0.571	[-0.96, 1.51]	1.31	-0.69	0.004	[-1.29, -0.08]	0.50	
S IT	0.17	<0.001	[0.07, 0.27]	1.30	0.001	[0.27, 2.32]	3.67	-1.85	<0.001	[-2.42, -1.28]	0.16	
R <sup>2</sup>	0.056			0.108				0.225				
I C	0.12	0.001	[0.02, 0.22]	-0.37	0.296	[-1.27, 0.54]	0.69	-1.05	<0.001	[-1.57, -0.52]	0.35	
I IPT	0.30	<0.001	[0.21, 0.39]	1.43	<0.001	[0.39, 2.47]	4.18	-0.88	<0.001	[-1.34, -0.41]	0.41	
S C	0.20	<0.001	[0.09, 0.32]	0.38	0.436	[-0.88, 1.64]	1.46	-0.73	0.001	[-1.31, -0.15]	0.48	
S IPT	0.24	<0.001	[0.14, 0.34]	1.07	0.005	[0.09, 2.06]	2.92	-0.57	0.002	[-1.04, -0.11]	0.57	
R <sup>2</sup>	0.106			0.107				0.070				

Note. Est = Standardized regression coefficient obtained from latent change models with trust and personality as predictors of political interest. Log = Unstandardized regression coefficient (logit) obtained from logistic latent change models with trust and personality as predictors of intention to vote or non-mainstream voting. *p* = *p*-value, CI = confidence interval, I = Intercept, S = Slope, IT = Institutional trust, IPT = Interpersonal trust. *N* = 3,986.

whether a person is into politics and likely to vote for parties at the edges of the political spectrum. Only few associations of personality changes and civic outcomes occurred, but becoming more conscientious and open was associated with becoming more politically interested. Decreases in conscientiousness were, however, associated with being more inclined to vote for a party at the edges of the political spectrum. In terms of the general intention to vote, trust and personality did not play a role above cognitive variables or education.

## 4. Discussion

In the current work, we investigated concurrent and longitudinal associations between trust and personality and their role for political interest and voting intentions across a developmentally and politically sensitive period from young to middle adulthood. Based on our latent change models, we highlight four main findings. First, interpersonal trust, institutional trust, and personality traits were related at baseline indicating the role of individual characteristics as predictors of trust. Second, trust and personality were subject to change in terms of both mean-levels and rank-order stabilities, underscoring recent assumptions about the developmental plasticity of both trust and personality across the whole adult life span (Dweck, 2017; Schoon & Cheng, 2011; Wagner et al., 2019). At the same time, their developmental trajectories were largely independent from each other across the studied time interval. Third, levels and changes of both trust variables and of some personality traits predicted people's interest in politics, their intention to vote, and whether they are inclined to vote for a party at the edges of the political spectrum. Fourth, although the associations with political interest and voting at the edge were highly robust across covariates, the association of trust and personality with people's intention to participate in an election was fully explained by the associations of people's cognitive abilities and how many years they have spent in formal education.

### 4.1. Who trusts? Concurrent relations between trust and personality

As expected, our findings revealed that levels of interpersonal and institutional trust are linked with personality trait levels. In line with theoretical assumptions and empirical evidence, emotional stability and agreeableness were positively linked to both interpersonal and institutional trust (e.g., Anderson, 2010; Freitag & Bauer, 2016; Weinschenk & Dawes, 2019). Those higher in emotional stability and agreeableness are able to accept uncertainty and their own vulnerability in the case of betrayal (Thielmann & Hilbig, 2015). Besides emotional stability and agreeableness, those higher in extraversion also showed higher levels of interpersonal and institutional trust. Thus, we were able to enrich previous findings on associations between extraversion and interpersonal trust (Dinesen et al., 2014; Hiraishi et al., 2008; Oskarsson et al., 2012) with additional associations for institutional trust. People scoring higher on extraversion might benefit not only from the great variety of positive interpersonal experiences in their larger social networks but potentially also from more positive institutional experiences due to their optimistic and agentic approach towards the world (Sharpe et al., 2011).

We were furthermore able to replicate the differential pattern of openness with interpersonal (positive associations) and institutional (negative associations) trust found in previous work in a large, longitudinal dataset (e.g., Anderson, 2010; Dinesen et al., 2014; Freitag & Bauer, 2016). People with high scores on openness make more diverse experiences as they appreciate a diversified life. These diverse experiences seem to enrich a person's trust in other people but may decrease trust in institutions. We also found the expected negative association of conscientiousness with interpersonal trust in keeping with previous work (Dinesen et al., 2014; Dohmen et al., 2008; Freitag & Bauer, 2016). Those high in conscientious might be motivated to avoid uncertainty when making detailed plans for their life compared to people with lower scores in conscientiousness and might therefore generally be less likely to assign responsibilities to other people. As a result, these people appear to be more skeptical about whether they can trust other people.

Besides the level effects, we found only little proof for joint change trajectories of the trust variables and personality traits. Becoming more agreeable across time came along with an increased trustworthiness in others. Although this is in line with theoretical assumptions about the paramount role of agreeableness for trust (Thielmann & Hilbig, 2015) and cannot be simply attributed to conceptual overlap as we still found correlated change after removing trust content from the agreeableness measure, we did not find the expected evidence for linked changes in emotional stability and trust. One potential reason for this missing link may lie in our two-wave study design. Additional assessment waves can help to better trace the developmental trajectory. Furthermore, interpersonal trust was assessed with one item only and results might differ when using longer inventories that can cover the full conceptual breadth. Future work needs to test whether findings differ in other countries, as at least institutional trust levels vary considerably across nations (Dománski & Pokropek, 2021; Kaase, 1999).

Theoretical assumptions on why trust changes emphasize the role of people's daily experiences with other people or institutions, what they learn from experiences of close others, or from media consumption (Van Lange, 2015). Although personality traits are known to shape these experiences (Mueller et al., 2019), a more direct assessment of the specific individual experiences that mold changes in trust is needed. Interestingly, although participants experienced rather turbulent economic, social, and political spheres between measurement occasions (major economic crisis in 2008, the so-called refugee crisis in Europe in 2014/2015 and the ongoing, increasingly more visible climate crisis in 2018 and 2019), mean-levels of both interpersonal and institutional trust increased over the study interval. At the same time, rank-order stabilities were rather low (particularly compared to personality traits) and comparable to findings gained using shorter intervals (e.g., Poulin & Haase, 2015) pointing to the importance of specific individual experiences people undergo explaining interindividual differences in change of trust.

#### 4.2. Civic returns of trust

Although there is debate on whether people's trust in others or institutions is stimulating or paralyzing for participation in a democratic system (Marien & Hooghe, 2011), our results emphasize the beneficial role of being and becoming more trusting for civic outcomes that is in line with earlier findings (Catterberg & Moreno, 2006; Weißeno & Landwehr, 2019). People who reported higher levels in interpersonal and institutional trust were more interested in political topics and they were more likely to vote for a party toward the center of the political spectrum than people with lower levels. Besides the level effects, people who showed increases in interpersonal and institutional trust were also more interested in politics than people who showed no increases, whereas decreases in interpersonal and institutional trust were associated with a stronger intention to vote for parties at the edges of the political spectrum.

We would like to highlight that whereas the associations of trust with political interest and voting for parties at the edges of the political spectrum were largely robust when including the covariates into our models, all associations of levels and changes of trust with the intent to vote itself disappeared. Solely, people's cognitive abilities and how much time they have spent in formal education predicted whether they intend to vote. As we see that both interpersonal and institutional trust is changing across time and these changes predict which party a person is inclined to vote for or whether he or she loses interest in political topics, the general attitude of intending to vote seems unaffected. It appears that education reveals a socializing influence on the belief that voting is important, not weakened by declining trust and largely irrespective of an individual's socioeconomic background such as parental occupational prestige (Hoskins & Janmaat, 2019).

#### 4.3. Civic returns of personality

According to the view that personality traits represent the filter through which we perceive, understand, and behave in our world, they also revealed associations to civic outcomes. Being and becoming more open and conscientious across time was associated with more interest in political topics, as well as being more extraverted, agreeable, and emotionally stable. Whereas findings are in line with previous work for most of the traits (Furnham & Cheng, 2019; Gerber et al., 2011), associations of conscientiousness were more mixed. Differences in personality operationalizations between studies might explain these varying patterns (Gerber et al., 2011).

Personality trait levels also predicted to which part of the political spectrum people feel attracted to. In keeping with earlier findings, being more emotionally stable reduced the intent to vote for a party at the edges of the political spectrum (Schoen & Schumann, 2007). People who report to be easily stressed or afraid are more likely to respond to more radical or populist political campaigns that trigger fear or nationalistic/ nativist isolation (Obschonka et al., 2018). We found that people who reported higher scores in extraversion, openness, and conscientiousness were also less likely to vote for a party at the edges of the political spectrum. An optimistic and open approach of people seems to buffer against more radical political positions. As conscientiousness is known to be related to conservative values (Gerber et al., 2012; Mondak & Halperin, 2008; Vecchione et al., 2011), these people may be more inclined to vote for a party toward the center of the political spectrum in Germany than people being less conscientious. Above the level effects, becoming more conscientious across time was additionally related to a lower chance to vote for parties at the edge indicating that personality maturation is also linked to less extreme political attitudes.

Comparable to effects of trust, all associations of personality traits with the intention to participate in elections disappeared when including the covariates. Again, education and cognitive abilities played a more prevalent role for the intent to vote. Nevertheless, we would like to note that educational success is also shaped by the personality makeup of individuals (McAbee & Oswald, 2013; Poropat, 2009; Richardson et al., 2012), and thus appear to play a more indirect role for people's intent to vote through their influence on educational pathways.

#### 4.4. Limitations and future directions

Although the study is characterized by a number of strengths such as using a large data set that covers almost 20 years of adult development and founding all procedures on a thorough pre-registration, some limitations need to be discussed. First, due to restrictions on time and personal resources in large-scale assessments, the applied measures are often characterized by brevity (e.g., Thalmayer et al., 2011). This was true for our personality inventory, which consisted of four or five items per trait, and even more true for our measures of interpersonal trust and political interest, which were both single item indicators. Although these single-item measures are well-established in the field (Freitag & Traunmüller, 2009; Poulin & Haase, 2015), we additionally applied a

single-indicator latent variable approach to separate true variance from measurement error (Westfall & Yarkoni, 2016). Future research should replicate our findings with more extensive measures of trust and political interest.

Second, all assessments were based on self-reports. Although self-reports offer meaningful insight into the internal states of a person (Vazire, 2010), and maturity-related personality change has been observed from both self- and observer reports (Luan et al., 2017), observer reports can help validate or enrich the findings by controlling for overlapping variance in predictor and outcome variables (e.g., Brandt et al., 2021a).

Third, we set up measurement models that meet all basic requirements to draw mean-level inferences across time, that is, we implemented strong measurement invariance across time for all trust and personality variables. Although this resulted in well-fitting models in terms of all fit indices, in some cases further restrictions led to significant model fit deteriorations along the lines of changes in fit criteria (e.g., Chen, 2007). However, we would like to highlight the ongoing debate on the “failure” to establish measurement invariance that is often criticized as being a simplistic, binary decision of yes or no which might not mirror the complexity of the actual topic (Kirk, 2007; Little, 2013; Nye & Drasgow, 2011; 2004; Wetzel & Roberts, 2020). At present, researchers pay considerable attention to the change in fit criteria for detecting non-invariance. The establishment of changes in fit criteria have been, however, primarily based on multi-group measurement invariance models in cross-sectional data (e.g., Chen, 2007; Meade et al., 2008). Applications to longitudinal data are not yet established and even questioned in terms of consequences for mean-level comparisons across time (Little, 2013). In the current study, we followed Little’s (2013) three recommendations for dealing with measurement invariance in longitudinal data. These recommendations are: a) inspecting the general fit of a model, b) comparing findings with previous knowledge, and c) theorizing whether one should expect invariance or not. Along these suggestions, all of our reported final measurement models had acceptable or good model fit, illustrating a general match between our data and the implied measurement model. Second, and potentially most important, our findings on mean-level changes obtained based on these models are in line with previous established findings increasing confidence in the obtained results. Third, given that we studied a sample of early to middle-aged adults, we have reason to assume—based on existing multi-group MI investigations (e.g., Brandt et al., 2020)—that they understand and use personality items in a comparable manner.

Fourth, we only had information about whether people intended to vote but not their actual voting behavior. In our study, the reported intentions to vote were quite high (96 %), which is higher than reported voting rates after federal elections in Germany (~76 %, Bundeswahlleiter, 2021). Bearing differences between behavioral intentions and actual behavior in mind, differences potentially also result because of our well-educated sample limiting the generalizability of our findings to a less educated sample. Besides the general intention to vote, we studied political orientations in terms of whether people are inclined to vote at the edge of the political spectrum. Although previous research in Germany has established the external validity of such a type of variable illustrating that personality traits such as emotional stability predicted the intention to vote for parties at the edge of the political spectrum, irrespective of the values the party holds (right or left orientation; Schoen & Schumann, 2007), a more nuanced consideration of voting intentions could be an interesting avenue future research.

In a similar vein, civic outcomes are also related to the characteristics of the specific context in which they can be observed such as the geographic region or culture (e.g., Nannestad, 2008). Although our focus of the study was on individual differences instead of country-level differences, future studies should test the generalizability of our findings in other cultures and political systems.

Finally, although this study used longitudinal data it was correlational in design and drawing causal inferences is unwarranted. Although we offered theoretical arguments on, for instance, why levels and changes in trust and personality should influence civic outcomes, we cannot rule out that the direction of causality also flows in the opposite direction or is accounted for by third variables.

## 5. Conclusion

Recent assumptions have pointed to the important role of trust as the glue holding a well-functioning democracy together. The current study adds to the understanding of why people differ in whether they trust others or governmental institutions by demonstrating their association with five-factor model personality traits. Although initial levels were linked, they did not show a joint developmental trajectory across the studied time interval, except for agreeableness with both interpersonal and institutional trust. Besides shedding light on why people differ in how trusting they are, we demonstrated the role of both levels and changes in trust and in personality traits for civic outcomes. Specifically, level and changes in trust and in personality predicted people’s interest in political affairs and their intention to vote for parties at the edges of the political spectrum. After empirically highlighting the role of trust and personality traits for democratic needs and behaviors, future research needs to further our understanding of the antecedents and correlates of the observed changes in both constructs.

### Open Science Statements.

#### Preregistration Statement.

The hypotheses included in this manuscript and the analytical approach were all preregistered (see <https://osf.io/musc9>).

#### Sampling Statement.

The required sample size was not estimated a priori. Instead, the collection of data was restricted to the original participating population assessed in the first study wave in 1991.

#### Open Material Statement.

In the Method section, a detailed description of all procedures applied and all measures assessed in this study is reported. Our research questions were not previously investigated with this data set.

#### Open Data Statement.

Because the data included in this study are part of an ongoing research project, they have yet to be made openly accessible.

#### Reproducible Script Statement.

The code for our analyses can be accessed on the OSF (<https://osf.io/gdbu4/>).

#### Effects Statement.

In this manuscript, we report basic descriptive statistics, effect sizes, exact  $p$  –values, and confidence intervals. Further, we provide tables with descriptive statistics for and correlations between all measures. Reliability estimates are given for both time points.

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We have no conflicts of interest to disclose. The BIJU study was carried out in accordance with the ethical guidelines for research with human participants as proposed by the American Psychological Association. All of the study materials and procedures were approved by the responsible ministries of education, and by the ethics committee of the Max Planck Institute for Human Development, Berlin, Germany.

All hypotheses and the analytic plan were preregistered on the Open Science Foundation (OSF) before conducting any data screening or data analyses (see <https://osf.io/musc9>). Because the data included in this study are part of an ongoing research project and were provided under a license, they are not made openly accessible, yet. Model codes and online supplementary materials can also be found on the project’s OSF site (<https://osf.io/gdbu4/>).

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## CRedit authorship contribution statement

**N.D. Brandt:** Conceptualization, Methodology, Project administration, Formal analysis, Writing – original draft, Validation, Writing – review & editing. **C. Savage:** Validation, Writing – review & editing. **B. W. Roberts:** Validation, Writing – review & editing. **J. Baumert:** Validation, Writing – review & editing. **J. Wagner:** Conceptualization, Methodology, Project administration, Validation, Writing – review & editing, Funding acquisition.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://hdl.handle.net/21.11116/0000-000A-F3A8-6>.

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