

Let Bygones be Bygones?

Socialist Regimes and Personalities in Germany

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Abstract

We investigate the influence of political regimes on personality, using the separation of Germany and its reunification as a natural experiment. There are significant differences between former GDR and FRG residents in terms of personality. To understand the regime's influence on personality, we test a channel by exploiting variation in the number of unofficial state-security collaborators across East German counties. Our results strongly suggest that surveillance intensity was a determinant of the personalities of GDR citizens. The differences in personality imply that former GDR citizens face different economic prospects than former FRG citizens, which we hint at with back-of-the-envelope calculations.

Keywords: Personality; Political regime; East Germany; History; Socialism; Big Five; Locus of control; SOEP

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1 Introduction

1.1 Motivation and main results

This paper aims to demonstrate the effect of a repressive socialist regime on personality and, in particular, explores the role of state-security surveillance in this regard. To this end, we treat the reunification of the socialist German Democratic Republic (GDR) and the democratic Federal Republic of Germany (FRG) in 1990 after more than four decades of separation as a “natural experiment”. We are motivated by the fact that personality is a key determinant of behavior and life outcomes, one that complements economic preferences in explaining heterogeneity in these respects (e.g., Almlund et al. 2011, Becker et al. 2012). Personality emerges strongly in youth, becoming relatively stable in middle adulthood (e.g., Specht et al. 2014). The political regime under which an individual lives may influence personality development because it severely impacts, *inter alia*, education, parental investment, and feedback from the social environment, and there is a growing body of evidence suggesting that such aspects can causally affect personality traits (e.g., Almlund et al. 2011, Reitz et al. 2014).¹

The GDR’s socialist regime pervaded all aspects of life and influenced interpersonal relationships in one way or another for more than forty years, suggesting that peoples’ personalities will show traces of the regime. In this vein, Fulbrook (2005: 5) argues that people who came of age in the GDR were “products of the regime”. For personality development, the years leading up to adulthood are very important, implying that schooling and youth organizations are highly relevant. With regard to the role of education in the GDR, Fuchs-Schündeln and Masella (forthcoming: 3) point out that “the curricula systematically aimed at creating *a socialist personality*” (emphasis added). Indeed, there was a required class explicitly expounding the superiority of the socialist regime and explaining how to behave as a citizen within the regime (e.g., Latsch 2015). The influence exerted during school hours was complemented by the role of the youth organizations – the Young Pioneers (ages six to ten), the Pioneers (ages ten to fourteen), and the *Freie Deutsche Jugend (FDJ)* (ages 14 to 25) – in which membership was expected. For example, the FDJ, which included more than 75 percent of the respective age cohort in the 1980s, had the objective of developing children into class-conscious socialists and also functioned as a selection platform for leadership positions (Fulbrook 2005: 128). “Maladjusted” youths were placed in community homes for so-called “re-education” – that is, an attempt to better align their personalities with socialist ideals (e.g., Schnurr 2015). Parents taught their children how to get by under

¹While personality traits are to some extent hereditary (e.g., Riemann et al. 1997) and relatively stable during adulthood (e.g., Cobb-Clark and Schurer 2012, 2013), they can be influenced by experiences and investment (Almlund et al. 2011, Borghans et al. 2008, Kautz et al. 2014). Behavioral geneticists argue that about 50 percent of the variation in personality is attributable to genes, while the other half is shaped by environmental factors (Krueger and Johnson 2008).

this political regime, for example, by instructing them that it was often better to keep to yourself what you actually do or want to do (e.g., Jahn 2014: 53). Moreover, parents had to explain to their children that many important aspects of life (e.g., housing, career options, the availability of consumer goods and services) were determined by the state. After maturity, personality development is primarily driven by investments in changing social roles that are associated with different expectations (e.g., Lodi-Smith and Roberts 2007). In this regard, the political regimes in the GDR and the FRG were associated with different community structures and gender-role attitudes (see, e.g., Bauernschuster and Rainer 2012), implying diverging investment incentives and thus personality development. One particularly infamous aspect of the GDR’s political regime was the massive state-security service and its extensive reliance on unofficial collaborators. There was roughly one state-security collaborator for every random sample of 50 citizens (e.g., Heineck and Süßmuth 2013).² Denunciations frequently resulted in extreme repression, setting examples for all witnesses (e.g., Kowalczyk 2013). As a result, people were on alert with regard to the opinions they could voice and the activities they could undertake without endangering their career, their opportunity to study at a university, their personal freedom or their physical integrity (Fulbrook 2005: 9). In addition, people often behaved submissively in order to avoid harming relatives and friends (e.g., Jahn 2014: 139).

This paper studies the socialist regime’s impact on the locus of control, the Big Five personality inventory, and reciprocity. We use data from the German Socio-Economic Panel (SOEP). The locus of control represents an individual’s belief regarding the relationship between behavior and consequences. Individuals with a high internal locus of control believe they have a strong impact on what happens in their lives, whereas those scoring lower on this scale attribute incidents to sources outside their influence (e.g., chance, fate, or powerful others). The Big Five personality inventory includes the traits openness, conscientiousness, extraversion, agreeableness, and neuroticism. This taxonomy is generally viewed as a set of core dimensions that provides a useful and economical way to describe individual differences in personality (Specht et al. 2014). With respect to reciprocity, we include measures of positive and negative reciprocity.

Our results show a significant, long-lasting impact of the GDR’s socialist regime on personality. Experience with the socialist regime is associated not only with higher neuroticism and conscientiousness scores but also with lower openness ratings, even almost 20 years after reunification. Moreover, in comparison to citizens from West Germany, individuals who lived in the GDR have a lower internal locus of control; that is, they ascribe consequences less to their own behavior and more to external circumstances. Regressions by age cohort are consistent with the hypothesis that the duration of the exposure to the political regime and the completion of one’s

²As Rainer and Siedler (2009: 251-252) report, “The Stasi kept files on an estimated six million people... By 1995, 174,000 East Germans had been identified as unofficial collaborators... In fact, the ratio of watchers’ to watched’ was even higher than (i.e., roughly 90 times) that of the Soviet Union under communism.”

education in the GDR are important for the regime’s influence on personality. Robustness checks give confidence that these differences can be attributed to the political regime and are not driven by either regional variation or differential post-reunification experiences. In order to rule out that our results are an artifact of multiple hypothesis testing, we apply the stepdown procedure by Holm (1979).

To identify one channel through which the regime influenced personality, we consider the well-known practice of infiltration by unofficial collaborators, that is, individuals who monitored the behavior of their fellow citizens and reported “deviations” to the state-security services. We can establish that variations in the number of unofficial collaborators across GDR counties are related to significant differences in personality. Specifically, an individual who experienced more regional secret-service surveillance under the GDR’s socialist regime is more likely to reciprocate negative acts and have a lower internal locus of control. In other words, the consideration of the within-treatment variation with respect to the surveillance intensity produces findings aligned with our baseline estimates and thus contributes to their explanation.

The socialist regime’s impact on personalities has economic significance today. Personality is decisive for economic success, health, criminality, and other life outcomes (e.g., Almlund et al. 2011, Borghans et al. 2008, Fletcher 2013, Ozer and Benet-Martinez 2006). The stable association between personality traits and life outcomes indicates that although the regime ceased to exist in the political sphere, it continues to shape the lives of its former citizens to this day and will continue to do so in the future. In our penultimate section, we present both qualitative implications and some rough estimates of the magnitude of the current economic repercussions of the socialist regime’s effect on personality.

1.2 Related literature

The present paper investigates whether and how political regimes shape personalities, taking advantage of the German separation and reunification. Our paper is related to contributions that consider the role of personality, papers that search for the footprints of past institutions, and studies that similarly make use of the recent German history as a natural experiment.

Previous research has already suggested that there are differences between East and West Germans. Using survey responses to questions such as “Do you agree that the state has to care for the sick, poor, old, and unemployed?”, Bauernschuster et al. (2012) present evidence in support of the intuitive notion that East Germans have less of an individualistic mentality than West Germans. With regard to the role of the state and the individual, two other studies are noteworthy. First, Brosig-Koch et al. (2011) investigate experimental data from the solidarity game – building on the experimental findings of Ockenfels and Weimann (1999) – and find lasting differences: East Germans exhibit far less solidarity than West Germans and, instead, attribute

more responsibility to the state. In this vein, Alesina and Fuchs-Schündeln (2007) show that East Germans support redistribution and state intervention more than West Germans (and that there is a moderate convergence in this regard). These lasting consequences are attributed to social norms and intergenerational transmission. Necker and Voskort (2014) study intergenerational transmission, focusing on East and West Germany and the responses of parents and children to value questions (e.g., whether owning a house is important). The present paper establishes that the political regime imprinted itself on peoples' personalities, which are stable over much of the life cycle, thereby highlighting a channel capable of explaining persistent differences between East and West Germans, such as the relative importance of conspicuous consumption (Friehe and Mechtel 2014) and the level of trust (e.g., Rainer and Siedler 2009). Heineck and Süßmuth (2013) examine differences in trust, cooperation, and risk in a study that relies on the same data source that we use (i.e., the SOEP). Our focus is on personality traits, which are complementary to the economic preferences (studied by Rainer and Siedler 2009, Heineck and Süßmuth 2013) when it comes to explaining heterogeneity in important life outcomes and behavior (as established by Becker et al. 2012, for example).

There is some recent literature on the long-term persistence and long-lasting effects of institutions. For example, Acemoglu et al. (2001) relate colonization styles to present economic performance, Nunn and Wantchekon (2009) explain present levels of trust in Africa with references to the slave trade, and Voigtländer and Voth (2012) find that pogroms in medieval times predict anti-Semitic violence in Nazi Germany. In comparison to these and related important contributions (see Bisin and Verdier 2011 for a recent overview), our interest involves a much shorter time span and a very different object of study.

Traditionally, economists have focused on differences in risk, time, or social preferences to explain heterogeneous behavior. However, there has been a recent upsurge in interest in personality traits, in part because they offer complementary explanatory power (e.g., Cobb-Clark 2015, Dohmen 2014). For example, Almlund et al. (2011), Becker et al. (2012), and Borghans et al. (2008) emphasize the importance of personality for life outcomes. There are different mechanisms that help to explain such findings. For example, Gill and Prowse (forthcoming) show that personality traits may influence outcomes because they imply asymmetric strategic abilities. Relatedly, Cobb-Clark (2015) elaborates on how labor market behavior is affected by the locus of control. In this regard, Caliendo et al. (2015) argue that the locus of control influences the subjective beliefs about how own search effort changes the job offer arrival rate, for instance. Regarding the specific impact of personality traits, many more nuanced questions have been addressed, ranging from their relationship with cooperation (Kagel and McGee 2014, Proto and Rustichini 2014, Volk et al. 2012) to health-related conduct (Cobb-Clark et al. 2014). The present paper is instead primarily interested in how differences in personality traits come about by exploring whether or

not political regimes *create* their citizens' personalities, a research question that has to the best of our knowledge not previously been addressed.

This paper contributes to the literature in several ways. First, it demonstrates the influence of the GDR's socialist regime on personalities. Second, the present paper identifies one facet of the socialist regime (namely, secret-service surveillance intensity) as an important driver of the observable footprint of the GDR system.³ Third, we present back-of-the-envelope calculations of the implications of these traces of the GDR's socialist regime for peoples' life outcomes today. Moreover, we contribute to a better understanding of socialist regimes' impact on observed behavior as exemplified by the differences between East and West Germans presented in the prior literature (e.g., Brosig-Koch et al. 2011, Ockenfels and Weimann 1999). In addition, our findings suggest a more cautious interpretation of previous findings. We establish that exposure to the socialist regime changes the personality of subjects. Hence, studies that investigate the socialist regime's effect on aspects such as college attendance and labor market outcomes (Fuchs-Schündeln and Masella forthcoming) without controlling for personality traits might overemphasize the *direct* effect of the political regime due to the omission of important moderating variables.

The remainder of our paper is organized as follows: In Section 2, we discuss our research design in more detail. In Section 3, we describe the data used in our analysis. In Section 4, we present our empirical analysis. The influence of secret-service infiltration (as an important facet of the socialist regime) on personality traits is considered in Section 5. Section 6 presents rough economic implications of the estimated differences in personality. The final section concludes.

2 Research design

We propose that differences in the personality traits of East and West Germans measured after the country's reunification are related to how the two different political regimes *treated* their citizens during the 40-plus years of separation. In other words, we consider the German separation into the FRG and the GDR to be a *natural experiment*.

To isolate the *causal* impact of the socialist regime on personality, a key identifying assumption is that East and West Germans did not differ from each other in this regard prior to the German separation. Because we lack data on personality traits from before the imposition of the respective political regimes, we propose that the similarity between East and West Germans with respect to a host of other variables prior to the separation may be sufficiently indicative that our assumption is reasonable. In line with our argument, Fuchs-Schündeln and Hassan (2015) forcefully argue that the separation of Germany was exogenous to the preferences of the affected populations and

³Jacob and Tyrell (2010) study the association between secret-service surveillance and social capital. Lichter et al. (2015) revisit their research question, utilizing a different empirical approach.

the economic conditions in East and West Germany at the time.

When the two political regimes were imposed, the inhabitants in the treatment and control regions must have been comparable in important dimensions. Notably, the imposition of these regimes was not done by request of the inhabitants. In fact, the geographical division of regimes was a result of the agreement between the United Kingdom, the United States, and the Soviet Union on a protocol for the partition of postwar Germany in 1944, which split the territory into three sectors of roughly equal population size. Later on, the US and the UK handed over small parts of their sectors to France (e.g., Burchardi and Hassan 2013). Accordingly, the actual imposition of the regimes was unrelated to the personalities of the inhabitants. In this vein, Redding and Sturm (2008) highlight that the decisions determining the partition of East and West Germany are unlikely to be correlated with the prewar characteristics of respective regions. Moreover, as argued by Alesina and Fuchs-Schündeln (2007), the regions that became the FRG and the GDR were similar in terms of pre-World War II average per-capita income levels and the amount of destruction experienced during World War II. The available data confirms the similarity of the two regions in other regards as well. This applies, for instance, to the proportions of the working population involved in various industries (Beblo and Görge 2015, Schäffgen 1998), the political orientation of voters at the turn of the century (Alesina and Fuchs-Schündeln 2007), and the population density (Hubert 1998). Moreover, Wolf (2009) states that by the end of the Weimar Republic in 1933, Germany was an economically well-integrated area, such that the separation into East and West Germany that existed between about 1946 and 1989 could not have been predicted in 1939. Based on such evidence, Fuchs-Schündeln and Hassan (2015), among others, conclude that the two parts of Germany were indistinguishable prior to the separation.

After the two political regimes had been imposed, around three million people emigrated from the GDR to the FRG before the Berlin Wall was built in August 1961 (e.g., Heidemeyer 1994, Hubert 1998), whereas there was little migration after 1961 or from West to East Germany. Importantly, intellectuals and entrepreneurs were overrepresented among the sample of migrants (e.g., Heidemeyer 1994).⁴ Alesina and Fuchs-Schündeln (2007) and Geissler (2008), among others, argue that the main motives for migration were family reunions, the lack of economic opportunities, and political restrictions. This migration during our treatment period is potentially problematic for our identification of a treatment effect, especially if the migrating population differed consistently with regard to their personality traits – a possibility that is not testable due to the lack of data. To address this migration issue, we include information pertaining to the survey respondent’s parents to control for the characteristics of the individuals responsible for the migration decision at the time.

⁴Schäffgen (1998: 58) nevertheless asserts that the structure of society with respect to educational achievement and implied differences between social groups remained relatively stable and comparable in East and West Germany.

After the fall of the GDR’s socialist regime, we have full control with regard to migration.⁵ More specifically, our data set allows us to differentiate between East Germans who lived in the GDR in 1989 and continue to live in that region of Germany today from those who lived in the GDR in 1989 but moved westwards before their participation in the survey years of relevance to us. In addition, the rich SOEP data set enables us to take into account individual information about the post-reunification period – in particular, individual employment history. This is important for our identification strategy because adverse life events (such as long spells of unemployment) were relatively more likely in East Germany after reunification, a factor that may have impacted personalities (Cobb-Clark and Schurer 2012).

In summary, we believe that our identifying assumption that differences in personality traits were shaped by the populations’ experiences under the two political regimes (paralleling the approach taken by Alesina and Fuchs-Schündeln 2007, Bauernschuster and Rainer 2012, Burchardi and Hassan 2013, Heineck and Süßmuth 2013, and Rainer and Siedler 2009) seems justified. When we analyze regional variation in secret-service surveillance intensity across GDR counties in Section 5, we find notable within-treatment heterogeneity perfectly aligned with the idea that our main results are due to *treated* East Germans and *non-treated* West Germans. However, we cannot rule out the possibility that migration during the treatment period confounds our results.

3 Data

Our empirical analysis is based on the German Socio-Economic Panel (SOEP), a nationally representative longitudinal data set that was started in 1984.⁶ The SOEP combines extensive socio-demographic information with various measures of preferences and personality traits. We restrict our working sample to respondents with valid information about where they lived in 1989 (i.e., the year before reunification). Furthermore, we include only subjects who were either born in Germany or immigrated before 1949. These data selection criteria mirror the argument in our research design section that the separation and reunification of East and West Germany constitute a unique natural experiment. In this spirit, German natives living in East Germany in 1989 constitute the treatment group, while natives living in West Germany in 1989 represent the control group. For all respondents, we collect data on personality constructs provided by the SOEP in the years 2005, 2009, and 2010. Our working sample is therefore an unbalanced panel data set for these years.

⁵See, for example, Hunt (2006) and Fuchs-Schündeln and Schündeln (2009) for a description and analysis of migration after the end of the GDR.

⁶For more information about the SOEP in general, refer to Wagner et al. (2007).

Personality traits

We study the relationship between the political regime and personality. To measure the latter, we use the locus of control, positive/negative reciprocity, and the Big Five personality traits. The locus of control may be understood as “a generalized attitude, belief, or expectancy regarding the nature of the causal relationship between one’s own behavior and its consequences” (Rotter 1966: 2). From an economic point of view, it is important to understand that people with an internal locus of control perceive future outcomes as contingent on their own decisions and behavior, whereas people with an external locus of control believe that most events in their life are beyond their control. Following Caliendo et al. (2015), we construct a standardized continuous measure of locus of control whereby high values indicate a more internal locus of control.⁷ Turning to reciprocity as an individual trait, we note that people are positively reciprocal when they reward the kind actions of others and negatively reciprocal when they punish others for unkind actions. Dohmen et al. (2009), among others, have emphasized the importance of distinguishing positive from negative reciprocity, as they represent distinct traits. The Big 5 approach comprises the personality traits neuroticism, conscientiousness, openness, agreeableness, and extraversion. Table 1 presents a definition and correlated trait descriptors for the Big 5 traits, in accordance with Becker et al. (2012) and Heckman and Kautz (2012). Like the instruments measuring locus of control and reciprocity, the Big 5 personality trait scores employ respondents’ self-assessments in the form of ratings of how well specific statements describe their personality (e.g., Costa and McCrae 1992) on a scale from 1 (*not at all true*) to 7 (*completely true*).⁸ All measures of personality are generated by standardizing the sum of the scores of the dimension-specific questions. Note that a higher value of the derived variable represents a stronger intensity of that trait (e.g., being more conscientious). Information on the Big Five comes from the survey years 2005 and 2009, whereas information on the locus of control and reciprocity scores is available in 2005 and 2010.

Individual and household characteristics

The covariate of key interest in the first part of our empirical analysis is a dummy variable that is equal to one (zero) when the respondent was a resident of the GDR (FRG) in 1989. We include a host of further covariates in order to isolate the causal impact of the socialist regime (see Table

⁷Using the SOEP youth sample, Piatek and Pinger (forthcoming) argue that a measure of external locus of control is more predictive for economic outcomes than an overall locus of control measure. Our findings reported below are qualitatively unchanged when we incorporate only information on the external locus of control in our regression exercises.

⁸Gerlitz and Schupp (2005) describe the implementation of the Big Five inventory in the SOEP and the reliability of measurements. Cobb-Clark and Schurer (2012) provide evidence that these measured traits are stable over time and that intra-individual changes are not economically meaningful. They thus conclude that the Big Five measures may be considered stable input for economic decisions. Specht et al. (2011) test the stability of personality traits in terms of mean-level and rank-order consistency using the SOEP.

Table 1: Big Five Personality Traits (Becker et al. 2012, Heckman and Kautz 2012).

Description of trait	Correlated trait descriptors
<i>Openness</i>	
Individual differences in the tendency to be open to new aesthetic, cultural, and intellectual experiences	Imaginative, artistic, excitable, wide interests, curious, unconventional
<i>Conscientiousness</i>	
The tendency to be responsible and hardworking; located at one end of a dimension of individual differences (conscientiousness versus lack of direction)	Efficient, organized, not careless, ambitious, not lazy, not impulsive
<i>Extraversion</i>	
An orientation of one's interests and energies toward the outer world of people and things rather than the inner world of subjective experience	Friendly, sociable, self-confident, energetic, adventurous, enthusiastic
<i>Agreeableness</i>	
The tendency to act in a cooperative, unselfish manner; located at one end of a dimension of individual differences (agreeableness versus disagreeableness)	Forgiving, not demanding, warm, not stubborn, not show-off, sympathetic
<i>Neuroticism</i>	
A chronic level of emotional instability and proneness to psychological distress	Worrying, irritable, not contented, shy, moody, not self-confident

2). Because the information from the SOEP allows us to track subjects, we include a dummy variable equal to one should a former GDR citizen have moved westwards after reunification. The age of the respondent is included as well, since it influences personality. Even during the period in which personality traits are relatively stable, it has generally been established that, for example, conscientiousness tends to increase with age (Borghans et al. 2008). Gender is included as a dummy variable equal to one when the respondent is male and zero otherwise. Because personality is very much shaped by one's parents and environment during childhood, we also include information about whether or not the respondent was raised in a small, medium-sized, or large community and about the educational background of the parents (for which we use dummy variables for the highest degrees obtained by the father and the mother). The latter inclusion is also intended to address potential selection effects arising from migration after the imposition of the GDR's socialist regime but before the erection of the Berlin Wall. With respect to family status, we differentiate between married, divorced, and widowed, such that single is the reference category. In terms of work status, our categories cover respondents working full- and part-time, as well as those in training and the unemployed. Furthermore, we include information about the employment history of the respondent (i.e., we consider years in full- or part-time employment and unemployment). This is important because adverse events such as long-term unemployment may influence personality traits. In addition, potential effects arising from being a pensioner, a blue-collar worker, or a civil servant are taken into account in our empirical model. The logarithm

of net household income also enters some regressions. Poor health status belongs in the group of adverse events with a potential impact on personality, motivating our inclusion of a dummy variable to control for its influence (Specht et al. 2013). This dummy variable is equal to one when the respondent reports that his or her current health is either “not good” or “bad” (i.e., either a four or a five on a five-point scale). In our empirical analysis, we run specifications in which only arguably exogenous variables enter the equation (the upper part of Table 2) and others with the full set of control variables (to be referred to as Specification 1 and Specification 2, respectively). Employing the full set of covariates leads to smaller working sample sizes because some of the presumably endogenous variables have higher rates of item non-response. Item non-response might itself be informative with respect to personality.

Table 2 presents summary statistics by treatment status for all the variables used in our empirical analysis. The descriptive results indicate that former GDR and FRG residents differ with respect to covariates such as age, marital status, and labor market experience, suggesting adjustments for covariate differences in our linear regression framework. Imbens and Wooldridge (2009) point out that differences in the observable characteristics of the treatment group and the control group might lead to sensitive estimation results in a linear regression framework. They propose that the imbalance of the covariate distributions should be assessed by testing whether or not the scale-free normalized difference between treatment and control group covariate means exceeds 0.25 (as a rule of thumb). The normalized differences in our data are less than 0.25 for all but three covariates in Column 3 of Table 2, and are in these three cases very close to 0.25.

Secret-service surveillance

Having established the relationship between GDR residence and personality, we consider one specific aspect of the GDR’s socialist regime in more detail. To this end, we exploit variation in the number of unofficial collaborators across counties. Unofficial collaborators were critical in the regime’s attempts to keep all citizens in line with the expectations of the Socialist Unity Party (*SED*) and were responsible for sowing distrust among the population. Accordingly, the head of state security services, Erich Mielke, repeatedly emphasized that unofficial collaborators were their “main weapon” (Müller-Enbergs 2008b: 12). These agents collected information about specific individuals or groups, about the general mood, about conditions at workplaces, in sports clubs, and in families, and much more. In fact, the ministry of state security distinguished different types of unofficial collaborators according to their main duties (e.g., Müller-Enbergs 2008a: 15-35). The majority were denoted “Unofficial Collaborator for Specific Tasks (*Inoffizielle Mitarbeiter zur Sicherung des Verantwortungsbereichs, IMS*) and collected information, *inter alia*, within state-owned companies and educational institutions. Other kinds of collaborators provided housing, phone connections, or simply postal addresses for the work of the state-security services. Unofficial

Table 2: Descriptive statistics by treatment status

	(1)		(2)		(3)
	FRG		GDR		absolute value normalized difference
	count	mean	count	mean	
Locus of control	22,366	4.870	9,579	4.798	0.063
Neuroticism	23,714	3.894	10,103	4.021	0.071
Conscientiousness	23,625	5.830	10,071	5.897	0.048
Openness	23,596	4.427	10,066	4.363	0.036
Extraversion	23,711	4.782	10,094	4.791	0.005
Agreeableness	23,723	5.369	10,091	5.400	0.021
Positive Reciprocity	22,860	5.829	9,722	5.842	0.010
Negative Reciprocity	22,788	3.093	9,723	3.137	0.020
Age	34,137	51.00	14,554	48.80	0.083
Male	34,137	0.483	14,554	0.477	0.008
Raised in a large city	34,137	0.225	14,554	0.202	0.038
Raised in a medium city	34,137	0.176	14,554	0.182	0.009
Raised in a small city	34,137	0.206	14,554	0.229	0.037
Mother: Secondary lower school	34,137	0.678	14,554	0.539	0.194
Mother: Secondary intermediate school	34,137	0.153	14,554	0.279	0.206
Mother: Secondary higher school	34,137	0.0508	14,554	0.0594	0.025
Mother: No vocational degree	34,137	0.386	14,554	0.212	0.266
Mother: Vocational degree	34,137	0.437	14,554	0.551	0.155
Mother: Technical school degree	34,137	0.00668	14,554	0.0498	0.169
Mother: University degree	34,137	0.0283	14,554	0.0505	0.076
Father: Secondary lower school	34,137	0.643	14,554	0.525	0.163
Father: Secondary intermediate school	34,137	0.120	14,554	0.241	0.210
Father: Secondary higher school	34,137	0.106	14,554	0.0910	0.035
Father: No vocational degree	34,137	0.119	14,554	0.0645	0.130
Father: Vocational degree	34,137	0.670	14,554	0.678	0.012
Father: Technical school degree	34,137	0.0168	14,554	0.0415	0.097
Father: University degree	34,137	0.0799	14,554	0.0854	0.013
Moved West	34,137	0	14,554	0.164	–
Married	34,137	0.551	14,554	0.505	0.063
Divorced	34,137	0.0946	14,554	0.115	0.044
Widowed	34,137	0.0934	14,554	0.0785	0.036
Years of education	32,611	12.05	13,961	12.23	0.052
Employed full-time	34,137	0.384	14,554	0.394	0.014
Employed part-time	34,137	0.104	14,554	0.0896	0.032
Employed vocational	34,137	0.0170	14,554	0.0252	0.038
Unemployed	34,137	0.0407	14,554	0.108	0.170
Pensioner	34,137	0.291	14,554	0.273	0.027
Self-employed	34,137	0.0584	14,554	0.0517	0.020
Blue-collar worker	34,137	0.138	14,554	0.181	0.079
Civil servant	34,137	0.0434	14,554	0.0218	0.084
Net household income	32,071	2,620.0	14,018	2,013.2	0.306
Experienced full-time employment (in years)	34,098	17.73	14,547	19.38	0.076
Experienced part-time employment (in years)	34,098	3.273	14,547	1.998	0.160
Experienced unemployment (in years)	34,098	0.679	14,547	1.628	0.252
Poor health status	34,058	0.194	14,520	0.198	0.007

Notes: We use SOEP data from 2005, 2009, 2010. SOEP-weights are applied. The dividing line separates our dependent and (arguably) exogenous explanatory variables from those explanatory variables that may be influenced by personality traits. For each covariate, the normalized difference is defined as the difference in averages by treatment status, scaled by the square root of the sum of variances.

collaborators were usually motivated on ideological, non-material grounds (although some were blackmailed into collaboration) and were mainly recruited based on their trustworthiness and other selection criteria for the task at hand (Müller-Enbergs 2008a). The recruitment was always initiated by the secret service and not by potential candidates, as adding an unofficial collaborator usually necessitated the completion of extensive background checks. Those contacted by the ministry usually did not decline the request, which was sometimes due to the contact person highlighting likely repercussions from such a denial. Overall, many people participated as it served their ideals, a consideration that was fueled by the psychologically well-trained contact men's statements about contributing to the greater good. The typical recruit was male and between 25 and 65 years old, even though the secret services also had underage informants (about 1% of all collaborators in 1988; see Müller-Enbergs 2008a: 39). Unofficial collaborators were usually not remunerated and regularly met their secret service contact persons in conspiracy dwellings to report information. The ministry for state security kept personnel files for their unofficial collaborators (e.g., Müller-Enbergs 2008a: 10). In fact, each department of the ministry for state security kept monthly statistics regarding the different kinds of unofficial collaborator, which must be relied upon in many cases for statistics because very little aggregated data is available (Müller-Enbergs 2008b: 26-28). The ministry destroyed parts of its files in late 1989, but a lot of information was preserved due to protesters intervening and because numerous shredded files could be restored after reunification. However, complete listings are available only for selected years. As a result, we must deal with missing data as we will explain below.

We collected information on the number of unofficial collaborators for the East German state-security (*Stasi*) from official records. These records are provided and updated by the Agency of the Federal Commissioner for the Stasi Records (BStU) and documented in Müller-Enbergs (2008b).⁹ These data provide the number of collaborators in the regional security offices at the county level.¹⁰ For our main variable (*IM*), we include the different types of secret collaborators. We also use a broader measure (*IM & public collaborators*) in order to approximate the surveillance intensity, which additionally includes collaborators whose assigned task was to openly agitate in favor of the socialist party and the state (Kowalczyk 2013: 220). At the end of 1988, such publicly recognizable collaborators amounted to 18,145 individuals, accounting for 20 percent of all collaborators at the county level. To allocate the appropriate number of collaborators in the county offices to the counties in existence around the time of reunification, we rely on the exact location of the regional

⁹Jacob and Tyrell (2010) and Lichter et al. (2015) rely on the same data source in examining the association between surveillance and social capital.

¹⁰In addition to unofficial collaborators at the county level, informants worked at the higher regional level (*Bezirk*). Because we lack information on how to allocate these collaborators to the different counties, we focused on the number of unofficial informants at the county level. As is detailed in Table 4 in Müller-Enbergs (2008b) for the 1980s, the majority of unofficial collaborators worked for the state-security services at the county level, whereas only about 27% worked at the district level.

offices.¹¹ We have observations for about 90 percent of these counties (see Figures 1 and 2 in Section 5). The data published by the Agency of the Federal Commissioner for the Stasi Records is incomplete and relies exclusively on exact and verifiable data (Müller-Enbergs 2008b: 29). The incompleteness means for our endeavor that data is not consistently reported for all counties and points in time. It may be conjectured that the fact that *IM* data is missing for some counties is not by coincidence but rather tells something about the extent of surveillance or the population in these counties, for example. However, when we empirically test whether individuals who lived in GDR counties without *IM* information are different from individuals who lived in GDR counties with *IM* information, we do not find any support for this conjecture.¹² We use averages across the 1980s and scale the number of collaborators by the population living in the counties at the time.¹³ Table 3 shows that there is notable variation in the secret-service surveillance intensity across counties. To give just one example, the number of unofficial collaborators in Cottbus was particularly high in the 1980s – about twice as high as in Halle or Leipzig.

Table 3: Descriptive statistics for the number of unofficial collaborators at the county level per 1,000 inhabitants

	(1)	(2)	(3)	(4)
	Mean	SD	Min	Max
<i>IM</i>	4.19	1.52	1.27	8.46
<i>IM</i> & public collaborators	5.36	2.04	1.41	10.4

Notes: We compiled our secret service data using Müller-Enbergs (2008b).

We link this data on the number of unofficial collaborators with our SOEP working sample described above as follows: We select the subsample of people from our main working sample who (i) lived in East Germany in 1989, (ii) participated in the first wave of the SOEP in 1990 before the German reunification, and (iii) provided valid county identifier information in 1990. These three criteria ensure that all sample members were part of the treated group in terms of state-security surveillance. Next, we merge the two data sets using the county-level identifier.¹⁴ This second working sample of former GDR citizens contains all variables of our main working sample. To account for regional differences, we include the contemporaneous unemployment rate

¹¹We used the counties in East Germany that existed before the redistricting reforms in Saxony in 2008, Saxony-Anhalt in 2007, and Mecklenburg-Vorpommern in 2011.

¹²In particular, we did regress the different personality traits on an *IM value missing* dichotomous indicator and the small set of covariates. The coefficient of the *IM value missing* indicator is never significantly different from zero.

¹³More specifically, we use the average population reported to have been living in the counties of the German Democratic Republic during the 1980s from the *Statistisches Jahrbuch der DDR* (see www.digizeitschriften.de/dms/toc/?PPN=PPN514402644 for details.)

¹⁴Because the county-level identifiers from the SOEP are confidential, this must be done by submitting STATA jobs via e-mail to the secured SOEPremote system at DIW Berlin. For details about data access, refer to Goebel (2014).

at the county level (official statistics provided with the SOEP data) as well as a set of dummies at the former GDR state level (*Bezirke*).

4 Personality and the GDR’s socialist regime

Our findings on whether or not the political regime of the GDR had a significant influence on personality are presented in this section. We will proceed in several steps. In the next section, we present results from our baseline estimations of the direct effect of the GDR’s regime. Throughout, we will rely on ordinary least squares regressions in which the dependent variables are the standardized personality measures, standard errors are clustered at the individual level, and SOEP weights are used.¹⁵ Since we aim to assess the GDR treatment effect on eight different personality measures, we face the risk of finding spurious treatment effects by looking at single-hypothesis-at-a-time based clustered standard errors. To account for the multiplicity of hypotheses being tested, we apply the simple stepdown multiple testing procedure suggested by Holm (1979) to our key treatment parameter.

After describing our baseline estimates, we will present results for different age cohorts, as it is likely that the duration of exposure to the political regime affects the influence on personality traits. In Section 4.3, we present robustness checks that consider different subsamples of the data in order to establish that we are not merely capturing regional differences or differential post-reunification unobservables with regard to personality. In Section 4.4, we discuss the robustness of our results with respect to some econometric issues.

4.1 Main results

We first turn to the influence of the socialist regime on the locus of control. The political regime severely restricted individual discretion with regard to the activities that could be undertaken. In many cases, external circumstances preordained a specific outcome. For example, many young adults were barred from attending university because their parents were regarded as suspect by official decision-makers.¹⁶ In other domains of life, Fulbrook (2005: 54, 76) notes that one of the greatest sources of frustration was the widespread dependence on the state with respect to housing and holidays, to name just two examples. In terms of the locus of control, the clear prediction that follows from these statements is confirmed by our data, as illustrated in Table 4 (for detailed regressions results, see Table 7 in the Appendix, as well as the Supplementary Materials): People

¹⁵Findings are comparable when we use random-effects specifications with a time-invariant individual variance component.

¹⁶The children of the present German president Joachim Gauck were not allowed to study, for instance (Fuchs-Schündeln and Masella forthcoming).

who lived in the GDR have a lower locus of control score, which implies that they more frequently attribute consequences to sources outside their control. In quantitative terms, our results indicate that the experience of living under the GDR's socialist regime leads to a reduction in the locus of control score of about a tenth of a standard deviation. The significant coefficient of the *Moved West* dummy variable in Specification 2 denotes that this difference in the locus of control is driven by subjects still living in East Germany after reunification.¹⁷ When we include the interaction of GDR and the year 2010, we find no effect for this variable with respect to the locus of control (which is similarly true for the personality traits to come).¹⁸

¹⁷Results from t-tests support this conclusion. The estimated effect remains significant after adjusting for multiple hypothesis testing.

¹⁸Results are available upon request. In view of the relatively brief interval of either four or five years (2005 to either 2009 or 2010) and the stability of personality traits over time, this is not surprising. Relatedly, Alesina and Fuchs-Schündeln (2007) estimate that differences in attitudes towards redistribution will persist for up to 40 years.

Table 4: Personality traits and GDR treatment

	(1)	(2)
Locus of control		
GDR	-0.129** <i>M</i> (-6.16)	-0.0869** <i>M</i> (-3.67)
Moved West		0.142** (2.95)
<i>N</i>	31,945	28,793
Neuroticism		
GDR	0.124** <i>M</i> (5.97)	0.104** <i>M</i> (4.60)
Moved West		-0.105* (-2.00)
<i>N</i>	33,817	30,524
Conscientiousness		
GDR	0.104** <i>M</i> (5.10)	0.100** <i>M</i> (4.39)
Moved West		-0.0216 (-0.41)
<i>N</i>	33,696	30,419
Openness		
GDR	-0.0981** <i>M</i> (-4.88)	-0.0770** <i>M</i> (-3.36)
Moved West		0.0402 (0.71)
<i>N</i>	33,662	30,396
Extraversion		
GDR	-0.00875 (-0.41)	-0.00486 (-0.20)
Moved West		0.123* (2.09)
<i>N</i>	33,805	30,506
Agreeableness		
GDR	0.0446* (2.23)	0.0370 (1.62)
Moved West		0.0258 (0.50)
<i>N</i>	33,814	30,514
Positive reciprocity		
GDR	0.0176 (0.83)	0.0361 (1.48)
Moved West		-0.000202 (-0.00)
<i>N</i>	32,582	29,316
Negative reciprocity		
GDR	0.0404 ⁺ (1.88)	0.0356 (1.45)
Moved West		-0.115* (-2.36)
<i>N</i>	32,511	29,263

Notes: We use SOEP data from 2005, 2009, and 2010 (main sample). Parameter estimates are from ordinary least squares specifications. The dependent variable is the respective standardized personality measure. Specification 1 includes all covariates from the upper part of Table 2. Specification 2 includes all covariates and a dummy for the year 2009 or 2010. Robust standard errors are clustered at the individual level. SOEP weights are applied. *t* statistics in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Index M represents p-values smaller than 0.05 after accounting for multiple hypothesis testing with regard to our treatment variable by means of the step-down procedure in Holm (1979). For more detailed regression results, refer to Table 7 in the appendix and the Supplementary Materials.

We now consider the GDR’s influence on personalities, as measured by the Big 5 inventory of personality traits. We first turn to neuroticism, which is a broad domain of negative affect, including predispositions to experience anxiety, anger, shame, and other distressing emotions. Our empirical results show that former GDR residents exhibit higher levels of neuroticism (see Table 4). This result may be attributed to different aspects of the GDR’s political regime. As explained above, the reliance of the state-security services on a wide web of unofficial collaborators caused people to distrust a great number of individuals destabilizing the social fabric of society (Kowalczyk 2013). In addition, citizens suffered frequent, harsh, and unpredictable punishments imposed by a capricious system. For example, one critical remark in class could result in the sudden expulsion of the commenting student (Jahn 2014: 23), or an “inappropriate” hair length could lead to a compulsory haircut (Fulbrook 2005: 71). There also were circumstances in which the state-security services fabricated wrongdoings (Kowalczyk 2013: 9, Müller-Enbergs 2008a: 3). For the effect on neuroticism, whether or not a former GDR resident moved westwards tends to be consequential (i.e., the effects for subjects who moved to West Germany cancel out). However, the *Moved West* effect is no longer significant after adjusting for multiple hypothesis testing.¹⁹

Next, we address the personality trait of conscientiousness. The GDR regime idealized labor and the working class (Fulbrook 2005: 214). Moreover, the scarcity of goods that quickly became an everyday reality in the GDR required people to be organized and to carefully plan ahead. These shortages were so drastic that people were induced to steal materials from their workplaces in sizable amounts (Fulbrook 2005: 57). The infiltration by unofficial collaborators induced great care with regard to what could be told and to whom and incentivized controlling impulses. More generally, abiding by conventional rules and norms was also relatively more important in the GDR; this willingness to conform is closely related to conscientiousness (Costa and McCrae 1992). In fact, many people in the GDR simply followed rules and norms without questioning, accepting them as “how it works” (e.g., Jahn 2014). All of these aspects lead us to expect that former GDR residents will exhibit a higher level of conscientiousness, which is exactly what we find (see Table 4). With regard to conscientiousness, the *Moved West* dummy variable is insignificant.

The personality trait openness is intended to capture aspects such as creativity, originality, and open-mindedness to new experiences. Needless to say, the political regime of the GDR severely restricted individual freedom within both private and work domains. In the GDR, all issues were interpreted in political terms (Fulbrook 2005: 49), which limited individual leeway even in private matters. Non-standard behavior usually drew the unwanted attention of the state authorities (e.g., Jahn 2014: 39). Accordingly, it is intuitive that we find that GDR residents exhibit lower openness ratings (see Table 4).

¹⁹The other coefficients are in line with previous results (see the Supplementary Materials for details) – for example, the finding that women on average have higher scores for neuroticism (e.g., Costa et al. 2001).

Next, we examine the regime’s influence on extraversion, which is an important interpersonal trait. Extraverts are said to be enthusiastic, talkative, gregarious, and concerned with obtaining gratification from outside the self. For the GDR, it has been argued that many citizens sought refuge in the private domain. Moreover, the potential presence of unofficial collaborators encouraged people to keep things to themselves. For example, although most people watched television from West Germany or at least wanted to do so, it was imperative not to disclose this fact in order to avoid repression.²⁰ These arguments suggest that GDR residents will exhibit a lower extraversion score on average. However, our empirical results do not confirm this hypothesis (see Table 4).

Agreeableness is a personality trait that is usually associated with warmth, friendliness, and kindness. Women generally have higher ratings in this dimension (Costa et al. 2001), which also holds true for our sample (see the Supplementary Materials for details). With regard to the influence of the GDR’s socialist regime, it is not easy to arrive at a prediction, since the relatively greater ruthlessness faced in the more anonymous outer world (with its constant threat of repression) might have been compensated by greater warmth in the inner circle. In our estimations, we find weak evidence for a positive GDR treatment effect only in the model with the small set of covariates and this effect is not significant after correcting for the multiplicity of hypotheses being tested (see Table 4).

Finally, we address whether or not reciprocity scores differ for GDR residents. Charness and Rabin (2002) have emphasized the importance of reciprocity concerns for social preferences. With respect to social preferences, Heineck and Süßmuth (2013) argue that the GDR’s socialist regime proclaimed the desirability of altruism but instead ingrained selfishness. The results obtained by Brosig-Koch et al. (2011) and Ockenfels and Weimann (1999) may be interpreted as consistent in the sense that subjects from East Germany both showed and expected less solidarity from others, giving a clear indication of a different social norm in this regard. Instead of unconditional help and cooperation, people in the GDR may have relied to a greater extent on conditionality to sustain cooperation in the small and non-anonymous groups that were vital for survival under the GDR’s regime (for the exchange of goods, swapping of flats, etc.). It may thus be expected that the levels of positive and negative reciprocity will be impacted by exposure to the GDR’s political regime. In our baseline estimations, the coefficients are aligned with intuition but are – at conventional levels – not significant (see Table 4).

²⁰Bursztyn and Cantoni (2016) present a very interesting analysis of the repercussions of watching television from West Germany on consumption patterns after reunification.

4.2 Variation in exposure to the GDR’s regime: Cohort analysis

We now consider the effect of the number of years spent under socialism on personality traits. In particular, we define four groups according to the year of birth: born before 1946, born in or after 1946 but before 1961, born in or after 1961 but before 1976, and born in or after 1976 but before 1989. We split the whole main sample and run ordinary least squares regressions for every cohort, using the GDR dummy as our variable of interest. Our estimations include the covariates from Specification 1 (where results are qualitatively unaffected by the consideration of the full set of covariates). Table 5 summarizes the regime coefficients, Table 8 presents full results for the locus of control, and the Supplementary Materials section contains all other regression results.

The cohort comprising people born before 1946 spent most of their lives in the GDR, making this the group with the longest exposure to the GDR’s socialist regime. However, not all individuals from this cohort completed all of their schooling under the GDR’s regime. The cohort including subjects born in or after 1946 but before 1961 completed all of their education and socialization in the GDR. This will also be true for most of the subjects born in or after 1961 but before 1976. In contrast, individuals born in or after 1976 have not necessarily experienced all the important steps in the *socialist upbringing*. In this context, one might assume that the two cohorts comprising people born before 1961 should show the strongest effects.

We find that the significant negative effect of the GDR dummy variable on the locus of control shows for the two cohorts comprising people born before 1961. Thus, our main result for the treatment effect on the locus of control is stronger for individuals with longer regime exposure. With regard to neuroticism and conscientiousness, the GDR treatment effect is significant only for the oldest cohort (when accounting for testing multiple hypotheses). The openness score is affected for people born in or after 1961 but before 1976 who were raised and educated in the GDR. The cohort analysis mirrors our baseline estimates in that positive reciprocity is not significantly different for GDR residents, whereas we find a higher negative reciprocity for subjects born after 1975. When we use Specification 2 in our cohort regression exercises, there is a clear correlation between the length of exposure to the socialist regime and the locus of control, neuroticism, and conscientiousness.²¹

The erection of the Berlin Wall in 1961, which finalized the closing of the border between the FRG and the GDR, was a truly dramatic experience for East German citizens at that time (e.g., Taylor 2006). This turning point distinctively highlighted that East Germans’ lives were directed by others in matters of utmost importance, and allows us to undertake a test for the relevance of the length of exposure in a difference-in-difference framework. We calculate the differences in personality trait measures for the cohorts born before and after the construction of the Berlin Wall for East and West Germany. The difference-in-difference estimate informs us about the GDR-effect

²¹Results available upon request.

Table 5: Personality traits and GDR treatment: Cohort Analysis

	(1)	(2)	(3)	(4)
	<1946	1946-60	1961-75	1976-89
Locus of control				
GDR	-0.153** ^M	-0.182** ^M	-0.0563	-0.081
	(-4.13)	(-4.39)	(-1.36)	(-1.54)
<i>N</i>	8,737	8,585	8,651	5,972
Neuroticism				
GDR	0.118** ^M	0.118**	0.109*	0.145**
	(3.51)	(2.82)	(2.53)	(2.72)
<i>N</i>	9,334	8,955	9,139	6,389
Conscientiousness				
GDR	0.110** ^M	0.087*	0.0928*	0.144**
	(3.19)	(2.21)	(2.29)	(2.60)
<i>N</i>	9,238	8,945	9,138	6,375
Openness				
GDR	-0.0226	-0.117**	-0.179** ^M	-0.0154
	(-0.66)	(-2.94)	(-4.44)	(0.30)
<i>N</i>	9,236	8,940	9,112	6,374
Extraversion				
GDR	0.0714*	0.00713	-0.0683	-0.0407
	(2.16)	(0.17)	(-1.48)	(-0.74)
<i>N</i>	9,324	8,955	9,140	6,386
Agreeableness				
GDR	0.0724*	0.0610	0.0469	0.0214
	(2.17)	(1.53)	(1.13)	(0.41)
<i>N</i>	9,350	8,955	9,127	6,382
Positive reciprocity				
GDR	0.0181	0.0120	0.0466	0.00375
	(0.50)	(0.26)	(1.17)	(0.07)
<i>N</i>	8,999	8,725	8,775	6,083
Negative reciprocity				
GDR	-0.0159	0.0141	0.0594	0.160** ^M
	(-0.44)	(0.30)	(1.33)	(3.31)
<i>N</i>	8,974	8,722	8,751	6,064

Notes: We use SOEP data from 2005, 2009, and 2010 (main sample). Parameter estimates are from ordinary least squares specifications. The dependent variable is the respective standardized personality measure. The specification includes all covariates from the upper part of Table 2. Robust standard errors are clustered at the individual level. SOEP weights are applied. *t* statistics in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Index M represents p-values smaller than 0.05 after accounting for multiple hypothesis testing with regard to our treatment variable by means of the step-down procedure in Holm (1979). For more detailed regression results, refer to the Supplementary Material.

for the older East German cohort, net of the GDR-effect on the younger East German cohort and net of any differences between the two corresponding West German cohorts. In line with the heteronomy argument, we find a significant estimate for the locus of control of about -0.12 . This result considerably strengthens our results presented above. We do not find consistently significant results for the other psychological measures when we use the cohort-specific DID-specification.²²

Overall, this focus on cohorts suggests that longer exposure to the political regime of the GDR and completion of all one's education and socialization in the GDR makes the treatment effect somewhat more pronounced. Related results were obtained by Alesina and Fuchs-Schündeln (2007).

4.3 Robustness checks: Regional effects and “smooth transition” subgroups

In this section, we first present robustness checks that consider different subsamples of the data in order to establish that we are not merely capturing regional or cultural differences with regard to personality. Next, we focus on subgroups that had a relatively “smooth transition” to life in reunified Germany. This robustness check is warranted due to the possible concern that the post-reunification experiences of East Germans were different from those of West Germans in a way that is not fully captured by our extensive covariate vector.

In the first check regarding regional effects, we split the sample into North and South subsamples. While the GDR-FRG split is unambiguous, classification with respect to North and South is somewhat arbitrary. The definition we use for South Germany includes Bavaria, Baden-Wuerttemberg, Hesse, Rhineland-Palatinate, Saarland, Saxony, and Thuringia because they geographically represent the southern half of the country. This check is meant to ensure that we are not merely measuring regional differences. The regression results are included in the Appendix (see Tables 9-10). When we run parsimonious specifications (using Specification 1), we obtain findings that reproduce our baseline estimates with regard to the locus of control, conscientiousness, neuroticism, and openness.

We now move on to the second robustness check. East and West Germany are very different when it comes to religion. This may be seen as an outcome of the political regimes in the two parts of Germany, since religiosity was suppressed in the GDR. Before the imposition of the political regime, residents who lived in the area of what became the GDR were mostly Protestant, whereas individuals living in West Germany may be either Protestant or Catholic (Bauernschuster and Rainer 2012). In order to provide a robustness check that takes religion into account, we restrict our sample to regions that were unambiguously Protestant, omitting data from Bavaria,

²²Results available upon request.

Baden-Wuerttemberg, Northrhine-Westfalia, Rhineland-Palatinate, and Saarland. Reassuringly, our findings for the influence of the GDR’s political regime are robust to this consideration (see Table 11).

In the last check regarding regional effects, we address the possibility of state-specific effects. While we argue that we are capturing the influence of GDR’s socialist regime, it is in principle possible that only a few particular regions from the former GDR drove the reported personality differences, calling our fundamental argument into question. In order to rule out this possibility, we consider specifications that comprise state-specific interaction effects for each state from East Germany (applying the post-reunification demarcation of states that was almost identical to that between 1945 to 1952), using survey respondents without state information as the reference category. Encouragingly, the results do not reveal significant heterogeneity across states (see Table 12), such that almost all interaction terms are insignificant. Moreover, the small heterogeneity we find is not consistent across personality constructs. This leads us to believe that the significant differences we find in personality traits are due to the experience of living under the socialist regime, an experience shared by all East German states. This conjecture is also supported by the fact that we can perform the same regression exercises using interaction terms with the demarcation of states applicable between 1952 and 1990 (then called *Bezirke*) without qualitatively altering our results.²³

As argued in our research design section, causally attributing the established personality differences to the GDR’s socialist regime presupposes that the life experiences of East and West Germans after 1990 were either comparable or trackably different. The reunification introduced the FRG’s institutional framework in the former GDR. However, the economic performance of East Germany after the reunification was worse than that of West Germany, implying that people in East Germany experienced a markedly higher unemployment rate and lower average income levels, for example. In Specification 2, we include a host of socioeconomic controls that address this heterogeneity. One may nevertheless be concerned that there are post-reunification unobservables influencing our main results. In order to address this concern, we consider two identifiable subgroups who had a “smooth transition” in economic terms. The first group includes individuals that were 55 years old at the time of reunification, as these people could opt to enter retirement at a net replacement rate of at least 65 percent, allowing them to simply sidestep any possible adverse economic reunification experiences (e.g., Börsch-Supan and Schnabel 1999: 159). Running our regressions with a subsample consisting of people born in or before 1935, we find a negative

²³Our reported results are interesting in another way as well. The GDR was divided with respect to whether or not people could watch FRG television programs. This division has been shown to be significant for aspirations and consumption (Bursztyń and Cantoni 2016, Hyll and Schneider 2013). As a result of the positioning of transmitters, the so-called “valley of the innocent” was very much concentrated in Mecklenburg-Western Pomerania and Saxony. Our results do not suggest that the reception of Western television was an important factor in how the regime impacted personality traits.

coefficient for the locus of control in Specification 1 that is statistically significant after application of the multiple hypotheses testing procedure (-0.191^{**M}). Likewise, in Specification 2, the estimated GDR coefficients in regressions regarding the locus of control (-0.229^{**M}), neuroticism (0.169^{**M}), and openness (-0.164^{**M}) are statistically significant. A second group of subjects with a relatively “smooth transition” are individuals who – during GDR times – had had a social network with links into the FRG.²⁴ This subgroup is likely to have had relatively better post-reunification experiences based on the argument that Burchardi and Hassan (2013) establish for West Germans with social ties in East Germany. The positive income impact of social ties that they report can also be found in our data for East Germans with links in the FRG. Focusing on this subpopulation of East Germans, we find using Specification 1 that East Germans have a lower locus of control score (-0.125^{**M}), and higher conscientiousness (0.135^{**M}), neuroticism (0.177^{**M}), and negative reciprocity scores (0.090^{**M}). Results are comparable when we use Specification 2, such that we conclude that the data strongly suggests that we are not merely measuring the long-term effects of adverse post-reunification experiences.

4.4 Robustness checks: Propensity score matching, selection on unobservables, and unobserved individual heterogeneity

The use of ordinary least squares regressions entails assuming that the conditional expectation of the outcome variable will be linear and that the overlap in the covariate distributions will be sufficient across treatment and control group. In additional robustness checks, we apply propensity score matching to allow for nonlinearity and enhance the comparability of the former GDR and FRG residents in our sample. In a first step, we use the arguably exogenous set of covariates from Specification 1 to estimate the probability of living in the former GDR instead of the FRG (i.e., the probability of having received the treatment). These estimated propensity scores are used in the subsequent matching procedure. For the matched sample, we calculate estimates of the average GDR treatment effect on the treated. The results obtained are very similar to those presented above for all personality traits considered (see Column 1 in Table 4). The estimated GDR effect is -0.148^{**M} for the locus of control, 0.122^{**M} for neuroticism, 0.101^{**M} for conscientiousness, -0.091^{**M} for openness, and 0.033^* for agreeableness. Our analysis of negative reciprocity yields a significantly positive effect of 0.078^{**M} that is driven by the cohort with younger individuals, as was true for the ordinary least squares regressions.

One might be concerned that covariates unobserved during the treatment period like East-West migration before 1961 lead to omitted variable bias. To address this concern, we estimate bounds

²⁴The information about social ties stems from a question addressed at participants of the new East German SOEP sample in spring 1990. At the household level, participants were asked whether they have had relatives or friends in the former FRG.

for our GDR treatment effect based on the approach suggested by Oster (2015). In particular, following Oster, we assume (1) that observable and unobservable covariates are equally correlated with GDR treatment and (2) that the R^2 of the hypothetical regression of the outcomes on GDR treatment as well as both observed and unobserved controls is 1.3 times the R^2 of our preferred specification. Based on these bounding rules the so-called identified set consists of $\hat{\beta}_{GDR}$ – our estimated GDR treatment effect (see Column 1 in Table 4) – and $\hat{\beta}_{GDR}^{*,bias-adjusted}$ that is based on Oster’s bias-adjustment formula. The results for the four personality measures for which the estimated treatment effect remains significant after application of the multiple testing procedure are presented in Table 13 in our Appendix. In all four cases, the “identified sets” do not include zero, which suggests robustness against omitted variable bias.

In view of our main results, the issue of unobserved individual heterogeneity may be raised because unobserved characteristics (e.g., cognitive ability) might be correlated with observed variables included to control for individual post-reunification experiences (e.g., unemployment duration). To speak to this issue, we implement a simple two-step fixed-effects (FE) procedure (Wooldridge 2002: 325-326), where we use a FE specification in the first step to identify the effects of time-varying covariates (e.g., bad health status) on the respective personality trait and, in step 2, calculate the time-invariant individual FEs in order to use them as dependent variables in ordinary least squares cross-section regressions on all time-invariant covariates (including the GDR treatment dummy). Standard errors for step 2 stem from a nonparametric panel-bootstrap procedure with 1000 replications. Considering the GDR treatment effect estimates, we find evidence in support of our main results in Table 4. Specifically, we obtain -0.147^{**M} as the coefficient of the GDR dummy variable in the regression regarding the locus of control, and 0.135^{**M} in the one for neuroticism, 0.119^{**M} in that for conscientiousness, and -0.100^{**M} regarding openness.

5 Secret-service infiltration as a driver of personality differences

Our analysis reveals the footprint left by the GDR’s political regime in the personalities of those living in reunified Germany today. To follow up on a possible channel, we explore the implications of variation in one of the most notable aspects of the GDR regime. The massive state-security apparatus, the draconian methods it applied, and its extensive reliance on unofficial collaborators stand out as the most blatantly repressive feature of the GDR’s socialist system. The omnipresence of state security in all of its dark facets became clear after the fall of the Berlin Wall, but it was an open secret to GDR citizens, some of whom learned about it the hard way (Kowalczyk 2013: 277-281). In many cases, state-security services set *examples* and relied on the fact that “word travels fast” (Müller-Enbergs 2008a: 3).

State-security surveillance density

Whereas many aspects of the political regime were applied more or less uniformly throughout the GDR (e.g., indoctrination in school and youth organizations), there was quantifiable regional variation in surveillance, as approximated by the number of unofficial collaborators per 1,000 inhabitants. Figure 1 (2) illustrates the regional distribution of surveillance intensity at the county level for our secret-service variable *IM* (*IM & public collaborators*).

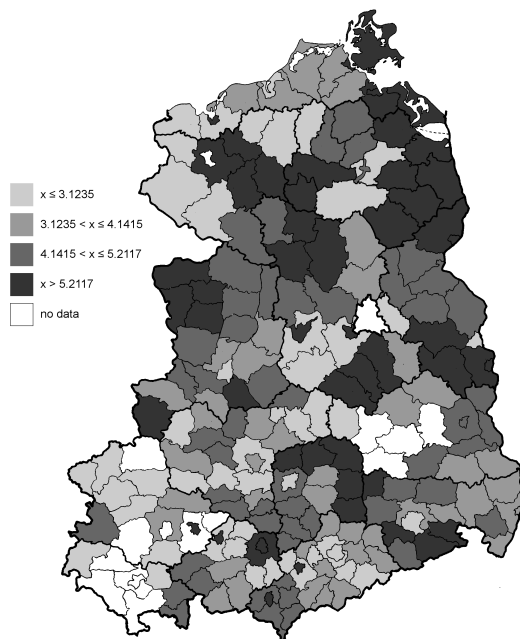


Figure 1: Surveillance intensity across GDR counties for unofficial collaborators

Notes: The category limits result from the 25th, 50th, and 75th percentiles. The data stem from Müller-Enbergs (2008b).

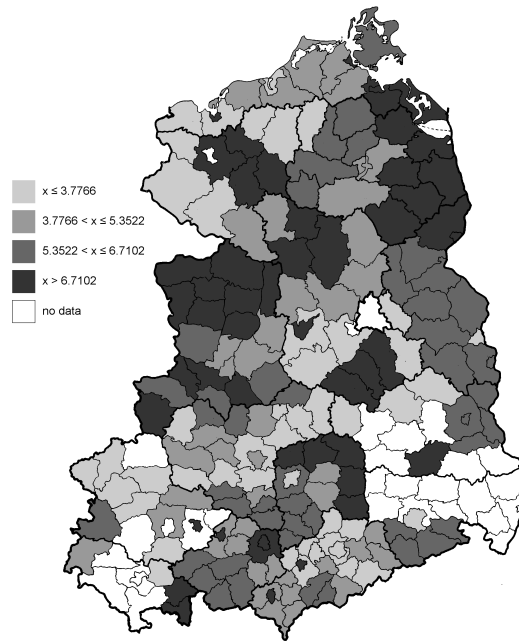


Figure 2: Surveillance intensity across GDR counties for unofficial & public collaborators

Notes: The category limits result from the 25th, 50th, and 75th percentiles. The data stem from Müller-Enbergs (2008b).

Regional secret-service surveillance intensity, as measured by the number of unofficial collaborators per capita (our measure IM), varies significantly across counties. Figure 1 indicates that there was no obvious systematic regional pattern. For example, counties with high surveillance intensity were not clustered along the border with the FRG, nor was surveillance intensity always particularly high in large cities. Moreover, simple inspection of the figures shows that surveillance intensity was not higher in the GDR's industrial centers, even though it is known that collaborators were often recruited in these areas (Müller-Enbergs 2008a).²⁵ We also find no convincing evidence that the variation in surveillance intensity at the county level can be explained via state-specific decision-making in the former 15 GDR states (*Bezirke*).²⁶

Nevertheless, there is a possibility that the allocation of unofficial collaborators across counties was influenced either by the state-security services' response to the people living in the county or by the fact that people in the county responded to the surveillance intensity by moving elsewhere. Such behavioral responses by the state-security services or by the treated citizens would call our identification strategy concerning the within-treatment heterogeneity into question. With regard

²⁵For example, surveillance intensity was high in industrial centers such as Eisenhüttenstadt and Schwedt, but moderate in Rostock and Bitterfeld.

²⁶When we run an ordinary least squares regression of surveillance intensity on GDR state fixed effects (like Lichter et al. 2015), we find that – using either IM or IM & *public collaborators* – only one of the GDR state fixed-effect coefficients is significantly different from zero at the $\alpha = 0.05$ level. To account for this evidence, we include a set of GDR state dummy variables in our regression exercises below.

to the concern that the number of state-security collaborators was endogenously determined by the behavior of the local population, it should be noted that the number of unofficial collaborators seemingly did not correspond to the strength of the opposition (Giesecke 1995) and varied relatively little over time. For example, the regional office in Eisenhüttenstadt had the same number of collaborators in 1980 and 1989. In the same vein, Giesecke (2014) reports that the number of unofficial collaborators was stable from 1975 onwards. Moreover, the characteristics of the county population were unlikely to impact recruitment, as requests were rarely denied due to the fear of adverse consequences (e.g., Müller-Enbergs 2008a: 45). With regard to the concern that people may have responded to surveillance by moving elsewhere, it is important to remember that spatial mobility was severely restricted in the GDR. Both the allocation of people across occupations and the allocation of employees across counties were critically influenced by the social and economic objectives set by the planning committees (see, e.g., Bursztyrn and Cantoni 2016). The infamous housing shortages provided an additional impediment. According to Grundmann (1998: 98), on average only 2.5 out of 100 GDR citizens changed their residence in the years 1970 to 1990, implying a rate of spatial mobility three times lower than the corresponding value for the FRG.

On the strength of this evidence, we believe that it is appropriate to analyze the relationship between the surveillance intensity and our measures of personality in a linear regression framework based on the sample of former GDR residents. Before we turn to the results from our empirical exercise, it is important to briefly consider why variations in the density of unofficial collaborators may have influenced personalities (that is, even though these agents were ostensibly undercover). In reality, there were several potential channels through which ordinary people could learn about the extent of secret-service activity. In many cases, state-security services set examples with regard to repression, relying on the fact that “word travels fast” (Müller-Enbergs 2008a: 3). In all likelihood, such incidents were more frequent in areas with a higher number of secret-service collaborators. In addition, if some share of unofficial collaborators was more inept at maintaining their cover, then living in an area with a higher surveillance density would make it more likely that one would be regularly reminded of the presence of informants. Moreover, at least in some social contexts (e.g., church activist groups), people exchanged information about the secret service’s attempts to recruit unofficial collaborators, and thus the presence of these observers was the subject of regular debate. Such channels make it highly plausible that people were aware of the extent of the activity as proxied by the surveillance density.

Empirical analysis of the East German sample: Main findings

When we include the intensity measure as a continuous variable in our empirical model, we find that people who lived in GDR counties with a greater number of unofficial collaborators have a locus of control that is more external, even fifteen to twenty years later (see Table 6, Table

14 for full results regarding the locus of control, and the Supplementary Materials for details on negative reciprocity). Our estimates imply that the locus of control decreases by about a tenth of a standard deviation when the secret-service surveillance intensity is higher by one standard deviation. When external influences (measured by a greater presence of state security) have more say in people's lives, then individuals tend to associate the outcomes that they experience with aspects outside of their control. This result is thus in perfect alignment with the findings presented above and reveals notable treatment heterogeneity within the treatment group. In addition, there is a notable positive relationship between the number of state-security collaborators and negative reciprocity (though it remains significant after application of the multiple testing procedure in only one out of the four cases). This association is very intuitive. In our baseline estimations, the influence of the regime on negative reciprocity was positive but not significant at conventional levels, although it was also found in the cohort analysis and the North-South robustness check. The reported findings for state-security surveillance also result when we use a dummy variable that is equal to one when the number of collaborators in a district exceeds the median number for all districts instead of simply including the number directly as a control variable. Our estimates imply that living in a county with a secret-service surveillance intensity higher than the median is associated with a reduction (increase) in the locus of control score (negative reciprocity score) of about a tenth of a standard deviation. We do not include the tables for the other personality traits because the estimated parameter of the surveillance level is never significant when we account for multiple testing.

Robustness checks: Clustering of standard errors and selection on unobservables

In the previous regression exercises, we cluster standard errors at the individual level, since we use individual panel data and the estimated within-individual correlation of the errors is between 0.48 and 0.55. However, our key variables of interest *IM* and *IM & public collaborators* are averages for the 1980s at the GDR county level. Hence, although we observe our personality traits at least fifteen to twenty years later, one might be concerned that standard errors are clustered at the regional level for a given year. The estimated within-group correlation of the errors at the county level in the relevant years is rather small (0.01 to 0.04). Nevertheless, correlated errors at the county level may possibly lead to overstated estimator precision (see, e.g., Baum et al. 2011, Cameron and Miller 2015). As a robustness check, we implement two alternative cluster-robust-inference strategies. First, we cluster at the (higher) regional level only (i.e., at the GDR county level from 1990). Second, we implement two-way cluster-robust inference, that is, we allow for clustering at the individual level and the GDR county 1990 level times year levels. With

Table 6: Personality traits and surveillance intensity

	(1)	(2)	(3)	(4)
	Spec 1	Spec 2	Spec 1	Spec 2
Continuous measure of surveillance intensity				
Locus of control				
<i>IM</i>	-0.0508** ^M	-0.0585** ^M		
	(-3.00)	(-3.61)		
<i>IM & public collaborators</i>			-0.0429** ^M	-0.0510** ^M
			(-3.10)	(-3.80)
<i>N</i>	3935	3626	3684	3408
Negative reciprocity				
<i>IM</i>	0.0458** ^M	0.0407*		
	(2.74)	(2.44)		
<i>IM & public collaborators</i>			0.0284*	0.0266*
			(2.13)	(2.00)
<i>N</i>	3987	3667	3732	3446
Dummy variable for surveillance intensity				
Locus of control				
Dummy <i>IM</i>	-0.135*	-0.161** ^M		
	(-2.33)	(-2.87)		
Dummy <i>IM & public collaborators</i>			-0.186** ^M	-0.211** ^M
			(-3.05)	(-3.51)
<i>N</i>	3935	3626	3684	3408
Negative reciprocity				
Dummy <i>IM</i>	0.165** ^M	0.153** ^M		
	(3.11)	(2.91)		
Dummy <i>IM & public collaborators</i>			0.128**	0.107 ⁺
			(2.31)	(1.95)
<i>N</i>	3987	3667	3732	3446

Notes: We use SOEP data from 2005, 2009, and 2010 (East German working sample). Parameter estimates are from ordinary least squares specifications. The dependent variable is the respective standardized personality measure. Specification 1 includes all covariates from the upper part of Table 2. Specification 2 includes all covariates in Table 2, a dummy for the year 2010 and the contemporaneous unemployment rate at the county level. In both specifications a set of dummy variables at the state level (*Bezirke*) is also included. Robust standard errors are clustered at the individual level. SOEP weights are applied. *t* statistics in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Index M represents p-values smaller than 0.05 after accounting for multiple hypothesis testing with regard to our treatment variable by means of the step-down procedure in Holm (1979). For more detailed regression results, refer to the Supplementary Materials.

respect to the locus of control, we find that seven out of eight *IM* density parameter estimates obtained from the specifications with the continuous measures of the surveillance intensity are significant using the multiple testing procedure thresholds. However, the *IM* density effects from the specifications with the dummy measures that are significant using the single hypothesis p-values are significant when using the multiple testing procedure thresholds only in two cases. A similar picture emerges for negative reciprocity. We find significant correlations in most cases at conventional single-hypothesis p-values, but significance after application of the multiple testing procedure remains in only one out of the 16 regressions.

One might be concerned that unobserved variables at the regional level lead to omitted variable bias. To address this concern, we estimate bounds for the surveillance intensity effects in our preferred specifications (Columns 1 and 3 in Table 6) based on the approach suggested by Oster (2015) and outlined in Section 4.4. In all cases, the “identified sets” do not include zero, which is indicative of robustness against omitted variable bias.

In summary, when considering the number of unofficial collaborators, we find remarkable within-treatment heterogeneity very much in line with our main results. Our findings highlight a channel through which the repressive political regime had a profound impact on the personalities of its citizens. The GDR’s socialist regime indeed left its footprints, especially where surveillance intensity was high.

6 Implications of the shadows of the past: The relationship between personality and life outcomes

Our empirical analysis has established that native Germans who lived in the GDR in 1989 (still) differ from those who lived in West Germany in terms of personality. In this section, we discuss the potential economic consequences of this long-lasting impact of the GDR’s political regime on personality. We also present some rough quantitative estimates. Specifically, building on the results of the existing literature regarding the implications of a standard deviation in personality traits on life outcomes, we can use our estimated impact of the GDR’s socialist regime on a particular personality trait to arrive at approximations in concrete dimensions.

Former citizens of the GDR exhibit a more external locus of control. Becker et al. (2012) report that a more internal locus of control is associated with better health, more years of education, higher gross wages, a lower chance of unemployment, and overall higher life satisfaction. In a recent survey, Cobb-Clark (2015) summarizes that the locus of control is indeed one of the core determinants of labor market success: Important individual decisions (e.g., on acquiring human capital, seeking out new challenges, or working hard) have all been linked to the extent to which one believes that what one does has consequences. Taking our results at face value, the difference

in the locus of control that is attributable to the GDR system would imply a wage penalty of about 0.7 percent (building on Heineck and Anger 2010), a job-finding rate that is lower by about 0.4 percent (Caliendo et al. 2015), and a probability of self-employment that is lower by about 2 percent (building on Caliendo et al. 2014). The suggested wage penalty makes up about 2 percent of the East-West wage gap (e.g., Brenke 2014).

In addition, the experience of living under the GDR regime results in a higher conscientiousness score. Becker et al. (2012) assert that a higher conscientiousness score correlates with better health, more years of education, a lower chance of unemployment, and overall higher life satisfaction. There are intuitive significant relationships with respect to college grades (Borghans et al. 2008). The results presented by Uysal and Pohlmeier (2011) suggest that the difference in conscientiousness due to the GDR system increases the probability of finding a job by about 0.9 percent and lowers the chance of losing employment by about 0.8 percent.

Moreover, our findings indicate that the GDR’s socialist regime has made East Germans more neurotic. A higher neuroticism score is clearly disadvantageous. For example, Becker et al. (2012) report that *less* neurotic individuals are more likely to enjoy better health, more years of education, higher gross wages, a lower chance of unemployment, and overall higher life satisfaction. Specifically, neuroticism is influential with respect to job search efforts (Almlund et al. 2011).

Finally, the openness of former GDR citizens is lower. Becker et al. (2012) report that higher openness is associated with better health, more years of education, higher gross wages, a lower chance of unemployment, and overall higher life satisfaction. Relying on the results presented by Caliendo et al. (2014), the difference in openness due to the GDR system is expected to lower the probability of self-employment by about 2 percent.

7 Conclusion

This paper takes advantage of the natural experiment created by the division and reunification of Germany to analyze whether political regimes influence personalities. We find that via its impact on personalities – even more than 25 years after its demise – the GDR’s socialist regime is still relevant in important ways today and will continue to be so well into the future. This follows from the fact that personalities are relatively stable over time and are to some extent passed on to the next generation. Our empirical analysis uncovers lasting implications of the GDR system in terms of personalities. In comparison to people from the FRG, people who lived in the GDR in 1989 are more neurotic, less open, more conscientious, and have a more external locus of control. To better understand the socialist regime’s influence on personality, we test an important channel by exploiting regional variation in state-security surveillance in terms of unofficial collaborators, finding that local surveillance intensity is indeed an important determinant of the personalities of

former GDR citizens.

We can assert that these shadows of German history are economically significant today, building on the well-established relationships between personality traits and life outcomes. Our study is not confined to describing differences in behavior by East and West Germans but rather proceeds to the roots of potential behavioral asymmetries. Repercussions can be felt individually but also at the regional level; indeed, our results may contribute to an explanation of the relatively disappointing economic development of some of the regions of the former GDR. The finding that personalities are to some extent shaped by investment opens up unconventional possibilities for economic policy aimed at narrowing the gap between East and West Germany.

Our results are important for other contexts and countries as well. Many aspects of the GDR's socialist regime are contained in other political regimes as well. For example, all totalitarian and authoritarian regimes are usually characterized by their reliance on massive state-security services with far-reaching powers. It is thus reasonable to expect that the impact of variation in surveillance intensity on personalities that we established, for instance, will be relevant to the hundreds of thousands individuals subject to authoritarian regimes presently.

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Appendix

Table 7: Locus of Control and GDR treatment

	(1)	(2)
GDR	-0.129** ^M (-6.16)	-0.0869** ^M (-3.67)
Moved West		0.142** (2.95)
Age	-0.00209 (-0.74)	-0.0285** (-6.37)
Age ²	0.0000315 (1.17)	0.000254** (6.25)
Male	0.0825** (4.50)	-0.0000770 (-0.00)
Additional controls?		
Childhood town size	Yes	Yes
Parental education	Yes	Yes
Education, health status, and net household income		Yes
Employment status & history		Yes
Marital status		Yes
Dummy 2010		Yes
<i>N</i>	31,945	28,793
<i>R</i> ²	0.013	0.086

Notes: We use SOEP data from 2005 and 2010 (main sample). Parameter estimates are from ordinary least squares specifications. The dependent variable is the standardized locus of control score. Specification 1 includes all covariates from the upper part of the descriptive statistics Table 2. Specification 2 includes all covariates and a dummy for the year 2010. Robust standard errors are clustered at the individual level. SOEP weights are used. *t* statistics in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Index M represents p-values smaller than 0.05 after accounting for multiple hypothesis testing with regard to our treatment variable by means of the step-down procedure in Holm (1979).

Table 8: Locus of Control and GDR treatment: Cohort analysis

	(1)	(2)	(3)	(4)
	<1946	1946-60	1961-75	1976-89
GDR	-0.153 ^{**M} (-4.13)	-0.182 ^{**M} (-4.39)	-0.0563 (-1.36)	-0.081 (-1.54)
Age	0.0347 (0.99)	-0.282 ^{**} (-4.71)	0.109 ^{**} (2.63)	-0.025 (-0.59)
Age ²	-0.000199 (-0.84)	0.00263 ^{**} (4.78)	-0.00140 ^{**} (-2.71)	0.0006 (0.70)
Male	0.160 ^{**} (4.69)	0.0631 ⁺ (1.71)	0.0966 ^{**} (2.90)	-0.0201 (-0.47)
Additional controls?				
Childhood town size	Yes	Yes	Yes	Yes
Parental education	Yes	Yes	Yes	Yes
<i>N</i>	8,737	8,585	8,651	5,972
<i>R</i> ²	0.024	0.025	0.013	0.025

Notes: We use SOEP data from 2005 and 2010 (main sample), and cluster subjects according to year of birth into one out of four cohorts. Parameter estimates are from ordinary least squares specifications. The dependent variable is the standardized score for the personality trait at hand. The specifications include all covariates from the upper part of the descriptive statistics Table 2. Robust standard errors are clustered at the individual level. SOEP weights are used. *t* statistics in parentheses; ⁺ $p < 0.10$, ^{*} $p < 0.05$, ^{**} $p < 0.01$. Index M represents p-values smaller than 0.05 after accounting for multiple hypothesis testing with regard to our treatment variable by means of the step-down procedure in Holm (1979).

Table 9: Personality traits and GDR treatment: North sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOC		Neuroticism	Conscientiousness	Openness	Agreeableness	Extraversion	PosRec	NegRec
GDR	-0.136** <i>M</i> (-4.52)	0.119** <i>M</i> (4.03)	0.111** <i>M</i> (4.00)	-0.0795** (-2.83)	0.0354 (1.27)	0.00260 (0.09)	0.0562* (2.03)	0.0594+ (1.90)
Age	-0.000974 (-0.25)	0.00179 (0.45)	0.0514** (11.07)	0.0161** (3.92)	-0.00458 (-1.01)	0.000810 (0.20)	0.0123** (3.04)	-0.00913* (-2.25)
Age ²	0.0000283 (0.77)	-0.0000226 (-0.59)	-0.000444** (-10.17)	-0.000187** (-4.71)	0.0000932* (2.15)	-0.0000637+ (-1.67)	-0.0000990** (-2.65)	0.0000108 (0.28)
Male	0.0755** (2.93)	-0.372** (-14.56)	-0.156** (-6.10)	-0.109** (-4.31)	-0.328** (-12.66)	-0.178** (-6.83)	0.0416 (1.62)	0.282** (10.78)
Additional controls?								
Childhood town size	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parental education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	15,936	16,882	16,834	16,806	16,896	16,891	16,275	16,224
<i>R</i> ²	0.011	0.040	0.053	0.042	0.040	0.024	0.006	0.044

Notes: We use SOEP data from 2005, 2009, and 2010 (main sample). Parameter estimates are from ordinary least squares specifications. The dependent variable is the standardized score for the respective personality. The specifications include all covariates from the upper part of the descriptive statistics Table 2. South Germany includes Bavaria, Baden-Wuerttemberg, Hesse, Rhineland-Palatine, Saarland, Saxony, and Thuringia. Robust standard errors are clustered at the individual level. SOEP weights are used. *t* statistics in parentheses; + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Index M represents p-values smaller than 0.05 after accounting for multiple hypothesis testing with regard to our treatment variable by means of the step-down procedure in Holm (1979).

Table 10: Personality traits and GDR treatment: South sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOC		Neuroticism	Conscientiousness	Openness	Agreeableness	Extraversion	PosRec	NegRec
GDR	-0.124** (-4.24)	0.134** (4.56)	0.0941** (3.14)	-0.112** (-3.90)	0.0502 ⁺ (1.74)	-0.0213 (-0.68)	-0.0220 (-0.68)	0.0223 (0.76)
Age	-0.00308 (-0.77)	0.0134** (3.52)	0.0456** (10.24)	0.0101* (2.41)	-0.0167** (-4.41)	-0.0119** (-2.93)	0.0134** (3.16)	-0.00521 (-1.35)
Age ²	0.0000320 (0.82)	-0.000115** (-3.14)	-0.000400** (-9.54)	-0.000127** (-3.17)	0.000217** (5.99)	0.0000585 (1.51)	-0.000113** (-2.78)	-0.0000340 (-0.94)
Male	0.0902** (3.46)	-0.389** (-15.12)	-0.0926** (-3.54)	-0.0934** (-3.59)	-0.333** (-12.85)	-0.166** (-6.18)	0.00320 (0.12)	0.265** (10.11)
Additional controls?								
Childhood town size	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parental education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	16,009	16,935	16,862	16,856	16,918	16,914	16,307	16,287
<i>R</i> ²	0.019	0.049	0.050	0.036	0.048	0.025	0.004	0.044

Notes: We use SOEP data from 2005, 2009, and 2010 (main sample). Parameter estimates are from ordinary least squares specifications. The dependent variable is the standardized score for the respective personality. The specifications include all covariates from the upper part of the descriptive statistics Table 2. South Germany includes Bavaria, Baden-Wuerttemberg, Hesse, Rhineland-Palatine, Saarland, Saxony, and Thuringia. Robust standard errors are clustered at the individual level. SOEP weights are used. *t* statistics in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Index M represents p-values smaller than 0.05 after accounting for multiple hypothesis testing with regard to our treatment variable by means of the step-down procedure in Holm (1979).

Table 11: Personality traits and GDR treatment: Protestant states

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LOC		Neuroticism	Conscientiousness	Openness	Agreeableness	Extraversion	PosRec	NegRec
GDR	-0.171** (-6.45)	0.136** (5.08)	0.125** (4.73)	-0.134** (-5.14)	0.0241 (0.91)	-0.0365 (-1.37)	0.00652 (0.24)	0.0452 (1.62)
Age	-0.00454 (-1.12)	0.00250 (0.63)	0.0488** (10.02)	0.0169** (3.97)	-0.00741 (-1.51)	-0.00600 (-1.45)	0.0155** (3.56)	-0.000663 (-0.16)
Age ²	0.0000459 (1.20)	-0.0000234 (-0.62)	-0.000419** (-9.14)	-0.000192** (-4.70)	0.000119* (2.52)	-0.00000122 (-0.03)	-0.000130** (-3.19)	-0.0000659 (-1.64)
Male	0.0675** (2.59)	-0.395** (-15.13)	-0.140** (-5.31)	-0.109** (-4.27)	-0.330** (-12.48)	-0.162** (-6.24)	0.0525+ (1.95)	0.274** (10.26)
Additional controls?								
Childhood town size	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parental education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	15,918	16,814	16,766	16,760	16,813	16,816	16,192	16,162
R ²	0.016	0.049	0.049	0.048	0.041	0.022	0.006	0.042

Notes: We use SOEP data from 2005, 2009, and 2010 (main sample). Parameter estimates are from ordinary least squares specifications. The dependent variable is the standardized score for the respective personality. The specifications include all covariates from the upper part of the descriptive statistics Table 2. We do not include the Catholic states: Bavaria, Baden-Wuerttemberg, Northrhine-Westfalia, Rhineland-Palatinate, and Saarland. Robust standard errors are clustered at the individual level. SOEP weights are used. t statistics in parentheses; + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Index M represents p-values smaller than 0.05 after accounting for multiple hypothesis testing with regard to our treatment variable by means of the step-down procedure in Holm (1979).

Table 12: Personality traits and GDR treatment: GDR-states interactions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	LOC	Neuroticism	Conscientiousness	Openness	Agreeableness	Extraversion	PosRec	NegRec
GDR	-0.123** <i>M</i> (-4.71)	0.0947** <i>M</i> (3.61)	0.103** <i>M</i> (4.17)	-0.111** <i>M</i> (-4.54)	0.0494* (2.05)	-0.0103 (-0.39)	0.0384 (1.46)	0.0220 (0.81)
GDR × Berlin	0.197+ (1.87)	0.147 (1.51)	-0.0285 (-0.32)	0.0780 (0.81)	0.0256 (0.26)	0.109 (0.98)	-0.0567 (-0.68)	-0.185* (-2.10)
GDR × Brandenburg	-0.0175 (-0.28)	0.0982+ (1.74)	0.0211 (0.33)	0.00123 (0.02)	-0.0466 (-0.77)	-0.110 (-1.64)	-0.122+ (-1.87)	0.0509 (0.84)
GDR × Saxony	-0.119* (-2.54)	0.0734 (1.61)	-0.0582 (-1.24)	0.0126 (0.27)	-0.0457 (-0.97)	-0.0627 (-1.26)	-0.0132 (-0.27)	0.0240 (0.51)
GDR × Saxony-Anhalt	-0.00214 (-0.03)	0.105+ (1.84)	-0.0196 (-0.31)	0.0389 (0.61)	0.0414 (0.74)	0.0288 (0.45)	-0.0698 (-1.15)	0.243** (3.90)
GDR × Meck. West. Pom.	0.152* (2.23)	0.0229 (0.31)	0.205** (2.80)	0.0546 (0.78)	0.0858 (1.39)	0.00557 (0.07)	-0.00742 (-0.11)	-0.0287 (-0.40)
GDR × Thuringia	-0.0666 (-1.03)	0.0707 (1.26)	-0.0000940 (-0.00)	0.0833 (1.51)	-0.0692 (-1.20)	0.174** (2.84)	-0.116+ (-1.66)	0.0977 (1.63)
Age	-0.00223 (-0.79)	0.00743** (2.68)	0.0488** (15.10)	0.0131** (4.43)	-0.0109** (-3.65)	-0.00535+ (-1.86)	0.0127** (4.34)	-0.00696* (-2.48)
Age ²	0.0000330 (1.23)	-0.0000681* (-2.57)	-0.000424** (-13.94)	-0.000156** (-5.51)	0.000157** (5.49)	-0.00000424 (-0.16)	-0.000105** (-3.81)	-0.0000140 (-0.53)
Male	0.0826** (4.50)	-0.379** (-20.83)	-0.127** (-6.92)	-0.102** (-5.57)	-0.330** (-17.99)	-0.173** (-9.20)	0.0230 (1.23)	0.274** (14.85)
Additional controls?								
Childhood town size	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parental education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	31,945	33,817	33,696	33,662	33,814	33,805	32,582	32,511
<i>R</i> ²	0.014	0.043	0.049	0.037	0.042	0.024	0.004	0.043

Notes: We use SOEP data from 2005, 2009, and 2010 (main sample). Parameter estimates are from ordinary least squares specifications. The dependent variable is the standardized score for the respective personality. The specifications include all covariates from the upper part of the descriptive statistics Table 2. Robust standard errors are clustered at the individual level. SOEP weights are used. *t* statistics in parentheses; + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Index *M* represents *p*-values smaller than 0.05 after accounting for multiple hypothesis testing with regard to our treatment variable by means of the step-down procedure in Holm (1979).

Table 13: Identified sets (following Oster 2015).

Personality trait	Treatment effects $\left[\hat{\beta}_{GDR}, \hat{\beta}_{GDR}^{*,bias-adjusted} \right]$
Locus of control	$[-0.129; -0.142]$
Neuroticism	$[0.124; 0.131]$
Conscientiousness	$[0.104; 0.115]$
Openness	$[-0.098; -0.113]$

Notes: $\hat{\beta}_{GDR}$ is the particular treatment effect from Column 1 of Table 4. $\hat{\beta}_{GDR}^{*,bias-adjusted}$ is the corresponding bias-adjusted treatment effect following Oster (2015), calculated using Oster's STATA code `pscal`.

Table 14: Locus of control and surveillance intensity: Continuous measure for intensity

	(1)	(2)	(3)	(4)
	Spec 1	Spec 2	Spec 1	Spec 2
<i>IM</i>	-0.0508 ^{**M}	-0.0585 ^{**M}		
	(-3.00)	(-3.61)		
<i>IM & public collaborators</i>			-0.0429 ^{**M}	-0.0510 ^{**M}
			(-3.10)	(-3.80)
Moved West		0.231*		0.268*
		(2.05)		(2.35)
Age	0.00577	0.00357	0.00615	0.00275
	(0.73)	(0.27)	(0.76)	(0.20)
Age ²	-0.0000889	-0.000092	-0.0000922	-0.0000908
	(-1.21)	(-0.83)	(-1.22)	(-0.81)
Male	-0.0233	-0.0112	-0.000682	0.00150
	(-0.48)	(-0.20)	(-0.01)	(0.03)
Additional controls?				
Childhood town size	Yes	Yes	Yes	Yes
Parental education	Yes	Yes	Yes	Yes
State-level dummy variables (<i>Bezirke</i>)	Yes	Yes	Yes	Yes
Education, health status, and net household income		Yes		Yes
Employment status & history		Yes		Yes
Marital status		Yes		Yes
Dummy 2010		Yes		Yes
Contemporaneous unemployment rate (county level)		Yes		Yes
<i>N</i>	3935	3626	3684	3408
<i>R</i> ²	0.063	0.129	0.070	0.139

Notes: We use SOEP data from 2005 and 2010 (East German working sample). Parameter estimates are from ordinary least squares specifications. The dependent variable is the standardized locus of control score. Specification 1 includes all covariates from the upper part of the descriptive statistics Table 2. Specification 2 includes all covariates and a dummy for the year 2010. Robust standard errors are clustered at the individual level. SOEP weights are applied. *t* statistics in parentheses; ⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Index M represents p-values smaller than 0.05 after accounting for multiple hypothesis testing with regard to our treatment variable by means of the step-down procedure in Holm (1979).