

Institutions affect preferences:
The value of autonomy under liberal and authoritarian regimes*

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Abstract

Can liberal societies generate and sustain the preferences – including social norms and ethical values – upon which they depend? This question motivated our experiment measuring the value of personal autonomy and opposition to being controlled by others among East Germans brought up after 1990 and those raised under Communist rule. Using West German cohorts to control for age effects, we find that liberalization of the East strongly favored adoption of pro-autonomy preferences. This result contributes to the literature on how institutions may affect the evolution of culture such that liberal institutions and cultures would be complementary in the long run.

KEYWORDS: endogenous preferences, control aversion, institutions, culture, intrinsic motivation, crowding-out, hidden costs of control, online experiment, conformist learning, preference falsification, inequality aversion.

JEL CLASSIFICATION: C81, C90, C91, C93, D02, M52.

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1 Introduction

Can liberal societies generate and sustain the preferences, including social norms and ethical values, essential to the working of their basic institutions? Or might liberalism fail the test proposed by John Rawls half a century ago, namely, that a viable social order must “generate its own supportive moral attitudes?” (Rawls, 1971, p. 399). The question resonated among the generation of scholars brought up in the aftermath of World War II, many of whom had been schooled in the psychology and politics of Theodor Adorno’s *Authoritarian Personality* (1950) and Erich Fromm’s *Escape from Freedom* (1941), both authors reacting to the rise of Fascism in their native Germany.

A troubling response to Rawls’ question was suggested by the title of the sociologist Daniel Bell’s book *The Cultural Contradictions of Capitalism* (Bell, 1976). Bell’s central idea was that liberal institutions are parasitic on traditional values: The proper functioning of markets, elections and other institutions endorsed by liberals depends on values and social norms that are endangered by these very institutions.¹ The possibility has renewed resonance in many countries today.

Assessing Bell’s concerns about the dynamics of culture under liberal institutions requires an understanding of whether and how preferences may be endogenous with respect to institutions. To see what this would entail, we distinguish between two senses in which institutions may affect preferences: framing and learning. Framing effects arise because institutions – for example whether an individual’s action is subject to a subsidy, fine, or prohibition – provide information about the actor imposing the measure as well as the nature of the situation and behavior appropriate to it. Borrowing a term from psychology, we characterize preferences subject to framing effects as situation-specific, that is, reversible by a change in the situation. Our experiments measure the value an individual places on personal autonomy, termed control aversion, by the extent to which a principal’s imposition of control on an agent leads the agent to react in a way contrary to the principal’s interest, a framing effect.

Institutions may also have more durable learning effects that arise because they shape how people regularly interact (patterns of socialization, who meets whom, with what feasible actions and rewards, for example). The nature of these interactions may favor the long-term adoption of some preferences over others, such that (distinct from framing effects) preferences endure even after the conditions under which they were learned no longer exist.² In the pages that follow we provide evidence for this learning-based process and the resulting endogenous nature of preferences, applied to control aversion.

We find that older East Germans who grew up prior to the fall of the Wall are much *less* control averse than younger East Germans who grew up in liberal unified Germany. In contrast, older West Germans are *more* control averse than younger West Germans, suggesting that our observed differences between the two East German cohorts are not due to an age effect. Our findings are consistent with the hypothesis that living under authoritarian rule may have induced

¹In another work Bell wrote: “The historic justifications of bourgeois society – in the realms of religion and character – are gone. [...] The lack of a rooted moral belief system is the cultural contradiction of the society” (Bell, 1973, p. 48). Other similar statements include that “liberalism depends on virtues that it does not readily summon and which it may even stunt or stifle” (Berkowitz, 1999, p. xiii). Prominent exponents of views consistent with the idea that liberalism fails Rawls’ dynamic stability test include Edmund Burke (1790; 1791), Alexis de Tocqueville (1830), Joseph Schumpeter (1950) and Jürgen Habermas (1975). See also Bowles (2011).

²Seminal early works on endogenous preferences are Gintis (1972) and Becker (1996); recent additions are Kreps (2023) and Von Weizsäcker (2023).

a lesser valuation of autonomy and greater tolerance of control, while the subsequent liberalization favored the adoption of more pro-autonomy, control-averse preferences. We have thus provided a piece of evidence counter to Bell’s parasitic liberalism hypothesis – from the same society that stimulated both Adorno’s *Authoritarian Personality*, and Fromm’s *Escape from Freedom* – showing that liberal institutions supported the evolution of a quintessential liberal preference: the value of personal autonomy.³

However, any claims about something as complex and difficult to measure as relationships between institutions and preferences must be taken with a grain of salt. Convincing evidence on the impact of institutions on the evolution of preferences via learning effects is limited (we review some exemplary studies below) in part because desiderata for an ideal research design are rarely jointly realized. Exogenous institutional changes or other natural experiments that could convincingly identify causal effects are few, and where these exist, the available data typically do not include experimental (rather than survey) measurements of preferences.

Our study is unusual in demonstrating a substantial and apparently robust effect of institutions on preferences based on exploiting a) a treatment difference arising from a sharp discontinuity in institutions (i.e., East Germans with different regime experiences depending on their age), b) a control treatment among people sharing an otherwise common culture who did not experience the discontinuity (i.e., West Germans of different cohorts), and c) an incentivized experimental measurement of preferences (rather than survey answers) in a non-student population.

In the next section, building on the relevant literatures from economics and the other social sciences, we lay out the reasoning motivating our main hypothesis and preview our experimental methods and main results. Section 3 describes the liberal and authoritarian institutions of post-World-War-II West and East Germany. Section 4 presents the design and practical procedures of our online experiment. Empirical tests of our hypothesis are provided in Section 5. We offer an interpretation of our results in Section 6, contrasting the individualism of liberal Germany and the collectivism of the East under Communist Party rule. We consider some caveats, provide robustness tests, and provide reasons for doubting an alternative hypothesis in Section 7. In Section 8, we propose a model of cultural evolution to clarify how the liberalization of the East could have supported heightened control aversion and the preference for individual autonomy. Section 9 returns to the questions of policy and institutional design raised at the outset.

2 Institutions and preferences: Background and preview

Economists’ understanding of the effect of institutions on the evolution of preferences (including social norms) has been advanced in recent decades by models of cultural evolution (Cavalli-Sforza and Feldman, 1981; Boyd and Richerson, 1985; Huck, 1998; Bisin and Verdier, 2001; Giuliano and Nunn, 2021; Akerlof and Kranton, 2000) including the coevolution of cultures and institutions (Belloc and Bowles, 2017; Tabellini, 2008b; Bisin and Verdier, 2023a,b) and by empirical evidence on the association of social norms and societal institutions (Bowles, 1998; Gächter et al., 2010;

³Consistent with this evidence is the finding by Guido Tabellini (2008a) that societies ruled by non despotic regimes in the past are more likely to exhibit the kinds of generalized (rather than familial or other limited) morality that is essential to the workings of modern markets and democracy. Similarly, Luigi Guiso, Paola Sapienza and Luigi Zingales (2016) find that self-governance in Italian cities in the medieval period supported an enduring culture of civic values.

Gächter and Schulz, 2016; Tabellini, 2008a, 2010; Lane et al., 2023).⁴

2.1 Empirical evidence on endogenous preferences

Experimental methods have convincingly demonstrated framing effects on preferences (e.g., Bowles and Polania-Reyes, 2012; Fehr and Rockenbach, 2003; Gneezy and Rustichini, 2000; Falk and Kosfeld, 2006; Martinsson et al., 2019). In contrast, identifying the causal processes whereby institutions might make preferences endogenous has proven much more challenging. The reason is that the developmental processes by which we learn new preferences do not take place in the course of an hour in an experimental session, but over years or decades of upbringing and life experience.

Empirical studies of endogenous preferences, as a result, have drawn on plausibly exogenous temporal or spatial discontinuities to establish treatment differences for alternative societal institutions. Nathan Nunn and Leonard Wantchekon (2011), for example, exploited geographical differences in the extent to which enslaved people were taken from Africa along with contemporary survey responses to make a convincing case that the slave trade had an enduring negative effect on interpersonal trust. In order to estimate the effect of institutions on experimentally measured contemporary social norms, Sara Lowes and her co-authors (2017) studied populations on either side of what had been the boundaries of the Kuba Kingdom in early 17th century Central Africa to capture differences in the degree of political centralization and state capacity.

Similarly, Sascha Becker and his coauthors (2016) found that populations of modern day Ukraine, Poland, Montenegro, Poland and Serbia living within the boundaries of what had been the Habsburg Empire at least a century earlier reported on surveys that they had substantially greater trust in the police and courts than did their fellow citizens living on the other side of the Habsburg border. The staggered extension of the vote to women in Switzerland provided a treatment difference allowing Michaela Slotwinski and Alois Stutzer (2022) to use age differences to identify institutional changes as a cause of transformation of gender norms as measured, for example, by female labor force participation.

Benjamin Enke (2022) studied differences in the content of folklore among ethno-linguistic groups and found a strong positive association between market-like themes in the folklore and themes relating to social preferences and moral universalism, consistent with the cross-cultural experimental evidence provided by Joseph Henrich and his coauthors (2001). Bruno Caprettini and Hans-Joachim Voth (2022) leveraged exogenous geographical variation in government spending along with individual data on bond purchases, volunteering for military service and bravery in battle to show that Americans who benefited from social spending during the New Deal were substantially more likely to exhibit patriotic behavior during World War II.

2.2 What can we learn about endogenous preferences from East Germany?

Studies treating the East-West spatial discontinuity in Germany as a natural experiment for the study of endogenous preferences have found substantial differences. For example, having experienced Communist rule was associated with more egalitarian gender norms (Lippmann et al., 2020) and redistributive preferences (Alesina and Fuchs-Schündeln, 2007). Becker et al. (2020) provide a review of these studies.

⁴Recent reviews are found in Bowles et al. (2021); Nunn (2021), and Persson and Tabellini (2021).

Becker and his coauthors, however, have pointed out that due to “preexisting differences [...] German division and reunification do not provide a straightforward case of a natural experiment” (Becker et al., 2020, p. 143). Many of these preexisting differences are related to control and attitudes toward control. While sharing a common language and many aspects of culture, historically the East and the West were governed by different social institutions regulating the extent and types of control by some people over others. More hierarchical landowner-dominated social relationships were common in the East and more liberal institutions in the West, for example, the free cities of south-western Germany from the 15th century (Becker et al., 2020; Brenner, 1976; Domar, 1970; Gerschenkron, 1944).

Becker et al. show that long prior to Communist rule the East was distinct from the West in political culture (greater support for far left parties) and the degree of autonomy at work (lesser fraction of self-employed and greater fraction of “working class”). They also note that one in five residents of East Germany migrated to the West before the Iron Curtain was imposed in 1961. Beyond the obvious – the migrants chose to avoid living under an authoritarian regime – Becker et al. show that they are far from representative in ways likely to be associated with greater control aversion (more advanced education and self employment, for example). The much fewer migrating from West to East during this period may have been (as Becker et al. suggest) at least “tolerant” of an authoritarian political regime. The result of these pre-existing differences and selective migration is that East-West comparisons do not provide a clean identification of the effects of institutional differences on preferences.

However, the Becker-critique does not mean that the East German case is uninformative about the effect of institutions on preferences. Nicola Fuchs-Schündeln and her coauthors have used cohort differences in survey responses among East Germans to identify regime effects on preferences, applying the same method also to respondents in 17 formerly Communist Party ruled nations (Alesina and Fuchs-Schündeln, 2007; Fuchs-Schündeln and Schündeln, 2015, 2020; Bondar and Fuchs-Schündeln, 2023). We adopt the same strategy, exploiting age cohort differences within East Germany as our identification mechanism.

Our question of interest is how liberalization has affected the population that was raised under Communism in the East and the next generation, who were not (instead of how did the East and West differ). Accordingly, we compare cohorts within the East and within the West (serving as our control). Thus, our strategy is not subject to the two confounds that Becker et al. (2020) pointed out, i.e., the fact that the populations on the two sides of the post 1948 borders differed culturally prior to the division of Germany and the substantial amount of selective out-migration.

None of our results depend on an East-West comparison. Age cohort differences among West Germans are our control, capturing effects of aging on preferences in the absence of fundamental institutional change. In contrast, Table 1 in the Appendix shows that the vast majority of studies using German data to explore the effects of institutional differences are based on East-West comparisons (rather than cohort comparisons in the East), using non-experimental measurements of preferences.

Out of the 52 studies reviewed, we only found four studies based on experimental evidence (Ockenfels and Weimann, 1999; Brosig-Koch et al., 2011; Friehe and Mechtel, 2014; Ariely et al., 2019). All of these focus on East-West differences as the basis for the identification of the effects of institutions, and only one (Ariely et al., 2019) also analyzes age cohort differences among East Germans (rather than East-West differences only). Our study is thus distinct in this literature by combining *age cohort differences among East Germans* as the main strategy to identify a

potential causal effect of institutions using *experimental measures* of preferences.

2.3 Endogenous control aversion

How might the older East German cohort have become distinctly less control averse, as our data suggest? Evolutionary anthropology and social psychology may provide clues.

During the evolution of biologically modern humans prior to the development of states and other political hierarchies five or six thousand years ago, it is likely that accepting being controlled or manipulated by another would have reduced an individual’s fitness and that those seeking to control others would have encountered resistance by the targets of control. Mobile hunter gatherers are notoriously hostile to aggrandizing power seekers, sometimes reacting with violence (Boehm, 1993; Knauft, 1991). Thus, it could well be that we are genetically predisposed to value self-determination. But to understand the effect of different institutions on control aversion over brief historical periods rather than multi-millennial biological timescales we focus on the process by which control aversion is learned (rather than being genetically inherited).

Anthropologists and social psychologists have studied how people come to have differing values about obedience, independence and related dispositions. Barry et al. (1959) asked why “a particular society select[s] child training practices which will tend to produce a particular kind of typical personality?” From a survey of 79 mostly illiterate small-scale societies, they provide evidence that it is “because this kind of typical personality is functional for the adult life of the society” (p. 51). They observed large differences in the recorded child rearing practices along the lines predicted by the above reasoning, concluding that “knowledge of the economy alone would enable one to predict with considerable accuracy whether a society’s socialization pressures were primarily toward compliance or assertion” (p. 59). In similar vein, Doepke and Zilibotti (2017) develop a model and provide supporting evidence from OECD countries showing how economic conditions (degree of inequality, returns to higher education, progressivity of taxation, social safety nets) affect whether parental styles are permissive, authoritative, or authoritarian.

Kohn et al. (1990) explored a related topic: parents’ value of self-determination as opposed to obedience in raising their children. In the U.S., Japan and Poland, they studied the relationship between self-direction in a person’s work and how important they thought self-direction and independence were for their children. They conclude that “the experience of occupational self-direction [...] has a profound effect on people’s values, orientation, and cognitive functioning” (p. 967). For employees with little occupational self-direction, placing a high value on autonomy (as typical for a control-averse person) would not be “functional” as it could lead to disappointment at work or even losing one’s job. Similar reasoning suggests that daily life in authoritarian East Germany before 1990 may have been a similar learning environment, discouraging the adoption of control averse preferences.

2.4 Four mechanisms accounting for the evolution of control aversion

To model these insights from psychology and anthropology, the key idea is that control aversion is to an important extent a learned cultural trait, and that individual differences may result from differing experiences. Though one’s social interactions in early life appear to be particularly important in this process and parents transmit preferences to their children (as in Bisin and Verdier, 2001), the preferences of the members of a particular generation are not simply replica’s of the parental generations preferences.

There are two reasons for this. First, evidence on parent-offspring similarity on food tastes, aspects of personality, and other individual traits that are to some extent learned suggests that parental transmission of preferences is far from perfect as we show in Appendix B. Second, parents may anticipate that the future environments of their grown-up offspring will differ from their own and respond accordingly in raising their children. Alberto Bisin and Thierry Verdier (2000, p. 957), for example, model parents deliberately seeking “to influence the cultural traits of their children, rationally reacting to their children’s social environment.”

Accordingly, we consider four possible mechanisms by which institutions could affect preferences.

The first is *private updating based on expected payoffs*: parents socializing their children or individuals themselves may favor a particular preference (for example, not enjoying smoking) because they believe that adopting it will contribute to subsequent well-being.

The second is *deliberate societal socialization*: schools and other institutions may inculcate preferences - either, like parents, to develop adults that are functional in that particular society (as in Bowles and Gintis, 1976; Bandiera et al., 2019) or to promote what are regarded as superior values (Friedman et al., 2016; Paglayan, 2022).

The third mechanism is an unconscious positive effect of “*mere exposure*” on preferences, for example to particular cuisines or musical styles, as documented in both humans and non-human animals by the psychologist Robert Zajonc and others (Birch and Marlin, 1982; Murphy et al., 1995; Zajonc, 1968, 2001; Modlinska and Stryjek, 2016).

The fourth is *conformist learning* in conjunction with *preference falsification*. By this we mean the combined effect a tendency to adopt more common preferences in a population (as in Boyd and Richerson, 1985) and the distortion in perceived preferences induced by preference falsification. In our case preference falsification takes the form of not revealing control aversion under an authoritarian regime (Kuran, 1987), as apparently was common in East Germany under Communist rule (Lohmann, 1994).⁵

We will see that these four mechanisms imply that the shift from authoritarian to liberal institutions for East Germans would have fostered more control averse preferences. The mechanisms also suggest that as people age and are promoted to positions with greater self-direction (supervisor rather than supervisee, as in our data set for example), they may adopt more control averse preferences as they are both less exposed to control by others and are less subject to penalties if they act in autonomous control averse ways. Because the value of self-determination that is central to control aversion appears to be acquired primarily at a young age, during adolescence (Erikson, 1950; Palmer et al., 2017; Wehmeyer and Shogren, 2017), it follows that if societal institutions affect the process by which preferences are learned, we would expect to greater tolerance of control in the older East German cohorts. (The within-West cohort difference provides a control for likely effects of aging *per se*.)

2.5 Experimental evidence on control aversion

What economists term control averse behavior was first studied experimentally by psychologists, who observed that incentives or constraints could be counterproductive when they compromised

⁵Conformist cultural transmission has been modeled (Bisin and Verdier, 2011; Bowles, 1998; Boyd and Richerson, 1985; Cartwright and Wooders, 2014; Ross and Nisbett, 1991; Wooders et al., 2006) and documented for humans and non-human animals (Aplin et al., 2015; Fatas et al., 2018; Goeree and Yariv, 2015; Haun et al., 2013; Morgan and Laland, 2012).

a person’s sense of “self-determination” (Deci, 1971; Deci and Ryan, 1985; Lepper et al., 1973) and cause “reactance” (Brehm, 1966). Mark Lepper and his coauthors pointed to the “detrimental effects of unnecessarily close adult supervision or the imposition of unneeded temporal deadlines” or other “superfluous constraints on children’s actions” (Lepper et al., 1982, p. 62). The neural mechanisms associated with individual differences in control aversion have recently been identified using fMRI technology.⁶ Developmental psychology and psychoanalytic theory have tracked the quest for increasing autonomy and self-determination as part of the aging process of children across cultures (Erikson, 1950; Helwig, 2006).

More recently, following Falk and Kosfeld (2006), behavioral experiments have documented control aversion as an economically relevant phenomenon: an agent who, in the absence of constraints, was intrinsically motivated to exert some effort that conferred benefits on a principal, appears to be less motivated to do so if required by the principal (e.g., Dickinson and Villeval, 2008; Ziegelmeyer et al., 2012; Kocher et al., 2016; Burdin et al., 2018; Kosfeld, 2020, and work cited below).

Control aversion appears to be a common response to limits on autonomy that lack a legitimate public purpose (Schnedler and Vadovic, 2011), consistent with Lepper’s above reference to children’s negative reactions to “unneeded” or “superfluous” constraints. By contrast, as suggested by the literature on the expressive function of law (Bentham, 1789; Sunstein, 1996; Posner, 2000), the legitimate imposition of control may also raise the salience and support the evolution of public spirited social norms (Bowles and Polanía-Reyes, 2012; Lane et al., 2023).

2.6 Preview

Here, we exploit the staggered timing of liberalization in East and West Germany allowing us to identify a possible causal effect of institutions on control aversion, i.e., the preference for autonomy as opposed to being constrained by others. We expect the older cohort that lived under authoritarian rule in the German Democratic Republic (GDR) to be less control averse than the younger East German cohort that grew up under liberal institutions, controlling for a possible effect of age using the two West German cohorts, both of which were raised under liberal institutions.⁷

To explore this hypothesis, we study the incentivized experimental behavior of a sample of 721 East and West Germans from the working population. In our experiment, an agent chooses an effort level that is costly to them but beneficial to the principal. The level of effort chosen by the agent determines the distribution of payoffs between the two.⁸

As in the Falk-Kosfeld control aversion game, prior to the agent’s choice, the principal can place a lower bound on the agent’s permissible effort or choose not restrict the agent’s choice in any way. A control averse agent who is also motivated by altruism, inequality aversion or some other reason to place a positive value on the payoffs of the principal, prefers to provide more effort if not controlled by the principal than if controlled. Thus, we observe control aversion in

⁶In Rudorf et al. (2018a), we show that the heterogeneity in control aversion is reflected in systematic differences of the stable functional brain organization. We identify a neural trait underlying control-averse behavior, i.e., a task-independent neural measurement that is stable across time, similar to a neural fingerprint. This finding suggests some intra-individual stability over the adult life course of control-related preferences.

⁷In Section 9 we consider the alternative hypothesis that the older East Germans might be more control averse (rather than less) than West Germans and younger East Germans due to the malign purposes of governmental controls in the East under Communism.

⁸Our principal-agent game is an extension of the game used by Falk and Kosfeld (2006) in their main treatments as detailed in Schmelz and Ziegelmeyer (2020).

our experiment if the effort provided by the agent is greater in the unrestricted case than when control (i.e., a lower bound) is imposed. Consistent with Falk and Kosfeld (2006) and others, a substantial fraction of subjects in our experiment are control averse – at least in three out of our four cohorts.

This is what we find: The older cohort of East Germans is substantially less control averse than the younger generation. By contrast, the older cohort in the West is *more* control averse than the younger West cohort, suggesting that the observed difference in the East cohorts could not be an age effect.

Three other behavioral types are possible in our setup: First, an entirely self-regarding agent will always choose the lowest permitted level of effort. Second, the control neutral type shows the same level of effort with and without control (conditionally on contributing more than the controlled amount in the absence of the control); and third, we call control prone those who respond positively to control by voluntarily exerting more effort when control is imposed, compared to the absence of control.

Figure 1 provides a preview of our results. Only 13 percent of the elder East Germans in our sample are control averse, compared to 30 percent of the younger East Germans. It appears that, consistent with the four mechanisms suggested above, people having grown up in the East under authoritarian rule are less control averse and that the liberalization of the East German institutional environment following the fall of the Wall instead favored the adoption of personal autonomy as a value.

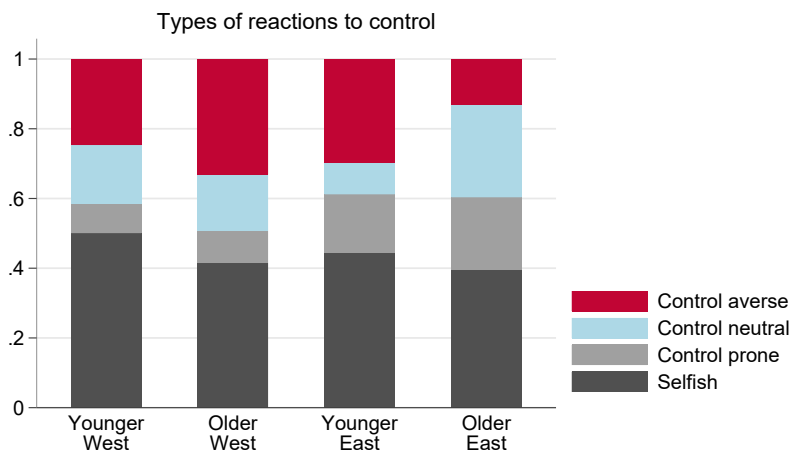


Figure 1: Frequency of types of choices among younger and older East and West Germans.

Note: The figure shows responses to medium control, as introduced later in the paper. A more fine-grained representation of the types is provided in Figure 7 and the Appendix.

Three robustness checks support our results. First, consistent with our understanding that one’s degree of control aversion is shaped by experiences early in life, we find that among the small number of migrants between the two parts of Germany in our data set, an individual’s degree of control aversion is similar to their peers from the region of their upbringing but different from their peers in their destination. Second, based on a separate experiment with a new subject pool - students in East and West Germany - we find little East-West differences, consistent with our observation of convergence in the younger cohorts. Third, in a representative survey during the first wave of the COVID-19 pandemic, we find that people who were raised under

the authoritarian institutions of the GDR were less control averse than West Germans in their responses to the prospect of mandatory public health measures. This was the case for COVID policies similar to what East Germans would have experienced under authoritarian rule in the GDR (e.g., vaccination mandates or travel restrictions), but not in response to mandatory mask wearing (to which German citizens of either region would not have had any exposure) as shown in Schmelz (2021).

3 How the institutions of the GDR may have affected control aversion

We begin with the institutional differences between liberal Germany and the GDR that affected people’s daily life experience with control, to provide the basis for the intuitions motivating our hypothesis.

3.1 The nature and institutional basis for control averse behaviors in Germany

The experimental evidence that we present in Section 5 suggests that the presence of control reduces or eliminates an agent’s motivation to act in the interest of the principal. We are not yet concerned about the nature of this motivation, for now it could be altruism, inequality aversion, or reciprocity (if the agent’s belief about the principle’s type is affected by their decision to impose control or not). We will refer to this motivation generically as “generosity”.

For agents’ experimental behavior to provide evidence of control aversion it must be first, that in the absence of control agents are generous towards the principal, and second, that the imposition of control diminishes this generosity. A plausible mechanism for the second is that the agent places a positive value on self-determination and/or a negative value on the perceived malign intent or the distrust that is conveyed by controls (Falk and Kosfeld, 2006; Rudorf et al., 2018b; Eisenkopf and Walter, 2022). Falk and Kosfeld (2006, p. 1612) explain that “most agents indicate that they perceive the decision to control as a signal of distrust and a limitation of their choice autonomy.”

We see little reason to expect regional or cohort differences in generosity in the absence of control. And we observe none: among our older Eastern cohort, intrinsic generosity - agents’ effort provided in the absence of control - is slightly greater than among the younger Eastern cohort (as can be seen from Figure 3 below).

But the degree to which the second requirement – valuing autonomy and having an averse reaction to control – is met may differ across regions and cohorts. The limited autonomy of East Germans prior to 1990 apparently had far-reaching and enduring cultural effects. Based on self-reporting, East Germans are less self-reliant than West Germans (Bauernschuster et al., 2012). Frese et al. (1996) document that East Germans show lower initiative at work than West Germans and more generally, workers in countries ruled by the Communist Party value the opportunity to use initiative less than workers in other countries (Warr, 2008). Startup activity in the East is less than the West (Burda and Severgnini, 2018). Thus, East Germans having been brought up in the GDR may value autonomy less and in turn, react less negatively to restrictions on their freedom of choice.

We suspect that due to the ‘mere exposure effect’ East Germans accustomed to a culture

of distrust might also react less negatively to experiencing the distrust conveyed by principals' restrictions in our experimental game. The vast network of unofficial collaborators in East Germany nurtured ubiquitous uncertainty about being spied on and created a latent atmosphere of distrust (Gieseke, 2014). Heineck and Süßmuth (2013) find that East Germans express lower levels of interpersonal trust than West Germans. Lichter et al. (2021) find that higher levels of former surveillance (i.e., spy density) resulted in lower levels of social capital (interpersonal and institutional trust) in the Eastern part of post-reunification Germany.

We conclude that the cohort differences in experimental behavior that we observed among the East Germans – less control aversion among the elders – did not occur because among older East Germans there less generosity there to be crowded out, but instead because of their less control averse preferences.

3.2 Liberal and authoritarian regimes in Germany since 1933

Figure 2 provides a timeline of German institutions over the last century and also clarifies our strategy for identifying an effect of institutions on control averse preferences.

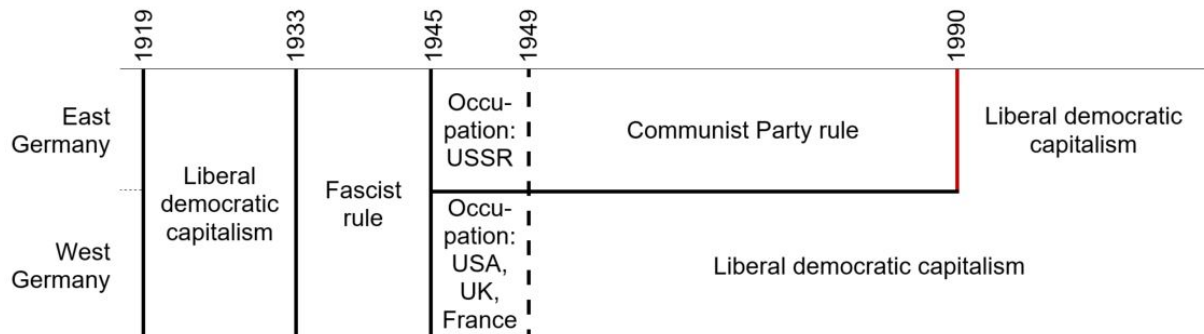


Figure 2: Institutional discontinuities in authoritarian and liberal Germany.

Note: The solid lines indicate institutional discontinuities. The vertical red one at 1990 is the discontinuity we exploit in our study. The heavy dashed lines at 1949 refer to the end of occupation and the beginning of the new regimes in East and West Germany.

The liberal democratic institutions established in Germany at the end of World War I were swept away following Hitler's rise to power in 1933. He imposed a policy of massive control and "Gleichschaltung" (literally, putting everyone in the same gear - establishing totalitarian control and coordination over all aspects of German society, including the economy, education, media and culture), enforcing conformity and suspending most civil liberties.

With the end of the allied (Soviet Union, USA, UK and France) occupation following World War II, in 1949, the Federal Republic of Germany (FRG) and the German Democratic Republic (GDR) were officially founded. Then, in 1990 the two Germanies celebrated their reunification and since then, Germans in all regions have lived under a liberal democratic market-based institutional regime with common administrative, education, legal and regulatory systems.⁹

⁹Unless otherwise referenced, the summary of the two systems is based on Fulbrook (2008).

3.2.1 A liberal regime: West Germany since 1949 and East Germany since 1990

West Germany created a pluralist democracy and a substantially competitive economy. Citizens were free to influence the democratic process, for example by voting independently, debating public issues, or by forming pressure groups. Though many worked in hierarchically structured large firms, they could move up the career ladder based on their performance and were formally free to change occupations, form new enterprises, and introduce innovations. In this pluralistic political system, various ideologies and belief-systems coexisted.

Values of freedom, autonomy and individualism were deliberately promoted in West Germany. Pupils were encouraged to develop independent points of view, intellectual curiosity and the skill of debating (Oettingen et al., 1994). At work, even in large firms, steps were taken to increase self-direction and to enhance employees' control, such as by trade unions and owner-worker co-determination in firm governance (Frese et al., 1996). Integral to the political life of the West (and the East since 1990) have been protest movements like the student movement of 1968, strikes led by labor unions, or the rise of the Green Party.

3.2.2 The coercive regime of East Germany prior to 1990

Between 1949 and 1990, the East German regime created a vast apparatus of surveillance and repression unprecedented in scale and depth. The dreaded State Security Police, the *Stasi*, was by far the most extensive state security service in history. Restrictions and control invaded all areas of life, including travel, publications, assembly; and those showing insufficient loyalty were denied higher education and positions.

More intrusive techniques included shadowing suspects with bugs or cameras, and through telephone and postal surveillance. Torture and intimidation were used to mute dissent, and even death sentences were imposed until 1987. The failure to denounce a fellow citizen was a crime punishable by up to five years imprisonment. Accordingly, people who did not accept control suffered tremendous costs (see Jacob and Tyrell, 2010, and references therein).

The (apparently few) East Germans who were control averse had exceptionally strong incentives to falsify their preferences, and they did. When polled (using a clever design that ensured anonymity) from from 1970 until the fall of the Wall in 1989, the fraction of apprentices, young workers and students expressing "strong" identification with Marxism-Leninism or belief in socialism never exceeded half (half or more expressing "weak" or "none", as shown in Lohmann, 1994). But from the brutal repression of the June 1953 uprising to the late 1980s, opposition to these official doctrines did not surface.

Instances where citizens risked suffering heavy punishment in order to express their dislike of control and desire for greater freedom were concealed. The rapid cascade of political opposition represented by the Leipzig demonstrations in 1989 "stunned" observers because preference falsification had been so extensive (Lohmann, 1994).

The East German educational ethos valued producing obedient subjects rather than participatory citizens. In addition to altruistic values within the community of solidarity, conformity and obedience were instilled. Educating children to conform to their teachers' opinion was part of the political program. Pupils' performance was not only publicly evaluated in front of the whole class, but even at their parents' workplace, making them responsible for their childrens' potential failure or disobedience. Teaching materials and curricula were highly standardized and teachers were required to strictly adhere to them (see Oettingen et al., 1994, and the references

therein).

Political conformity was a prerequisite for career advancement. Those who in any way stepped out of line were denied entrance to university, however brilliant their performance at school might have been. Consequently, East German youth gained little experience of genuine debate. Employees in East Germany experienced little control over their work, supervision was tight and management responses to initiative were typically negative (Frese et al., 1996). Though East German workers did not need to fear unemployment, they also had no right to strike.

We hypothesize that the sharp contrast between the authoritarian and liberal institutions in the East before and after 1990 and the continuity of liberal institutions in the West explains the contrasting evolution of the extent of control aversion among subsamples experiencing those contrasting institutions. Concretely, the main hypothesis that we now test experimentally is that older East Germans are less control averse than younger East Germans, and that this finding is not due to an age effect.

4 Experimental design, procedures and sample

To study how people who have experienced different institutional regimes react to restrictions of their freedom of choice we conducted an online experiment measuring reactions to the imposition of control among older and younger East and West German working adults.

4.1 The principal-agent interaction

In our experiment, we let one actor choose whether to restrict the action set of the other in the following interaction. An agent chooses a level of “effort,” which is costly to the agent and beneficial to the principal, the agent’s choice determining the distribution of payoffs between the two. Before the agent chooses an effort level, the principal can either leave the agent’s effort set unrestricted by choosing “no control” ($\underline{e} = 1$), or they can to restrict the agent’s effort set by choosing one of two control levels: “low control” ($\underline{e} = 2$) or “medium control” ($\underline{e} = 3$).¹⁰ (There is no “high control” option; the potentially enforced effort costs are at most moderate, as shown in Table 1.) The agent then chooses an effort level $e \in \{\underline{e}, \underline{e} + 1, \dots, 10\}$.

Control averse agents exert more effort in the absence of control than if controlled, i.e., their generosity is crowded out when $\underline{e} > 1$. For example, aversion to medium control is expressed if more effort is provided in the absence of control than when medium control is imposed ($e(1) > e(3)$).¹¹ We employ the strategy method, meaning that the agent chooses an effort level for each of the three possible control levels before knowing the principal’s choice of no, low or medium control.¹²

¹⁰Typically, employers not only choose whether or not to control their employees, but they also choose to which extent they exert control. Our design allows us to take account of the fact that reactions to the presence of control as well as the extent of control could differ, but this is not what we find.

¹¹Though the agent knew that the principal could not select a minimal level less than 1 (so choosing level 1 meant granting the agent as much freedom of choice as was permitted), to avoid a demand effect, we described all three levels of effort in the same terms in the instructions and on the decision screens. Thus, our instructions are conservative with respect to the categorical effect of control.

¹²Concretely, each agent is asked to choose a triplet of effort levels $(e(1), e(2), e(3))$ where $e(1) \in \{1, 2, \dots, 10\}$ is payoff-relevant in case the principal does not enforce a minimal effort, $e(2) \in \{2, 3, \dots, 10\}$ is payoff-relevant in case the principal enforces a low effort and $e(3) \in \{3, 4, \dots, 10\}$ is payoff-relevant in case the principal enforces a medium effort.

Table 1 shows the monetary payoffs (in experimental currency units, ECUs) where the effort level that equalizes the payoffs of the two (and also maximizes total payoffs) is $e = 7$.

	Effort level									
	1	2	3	4	5	6	7	8	9	10
Agent’s monetary payoffs	99	98	96	93	89	83	75	65	51	35
Principal’s monetary payoffs	1	16	29	41	53	64	75	82	87	90

Table 1: Monetary payoffs by effort level.

The fact that our research interest is not the extent of control aversion in the population but instead cohort differences in the extent of control aversion explains our selection of the payoffs shown in Table 1. Agents who always choose the minimal level of effort (those making selfish choices) convey no information about a preference for control aversion. The strongly convex effort costs for the agent and concave resulting benefits to the principle were selected to make exerting more than the minimal effort cheap for the agent and extremely beneficial for the principal. This ensures that even agents with little generosity can at very low cost express a willingness to increase the principal’s payoff when control is absent ($\underline{e} = 1$), making it more likely that control aversion would be observed in our experiment.

Before they interacted in the employment relationship, participants were asked to state their beliefs about the average behavior of their counterpart. In each round, participants indicated three beliefs. Principals were asked to guess, for each control level (no, low and medium control), the average effort that would be chosen by all of the agents (since we employed the strategy method, *all* agents chose an effort for each control level). Agents were asked to guess the share of principals that would choose each of the three control levels. We describe how beliefs were incentivized in Appendix C.

In a given session, each participant was assigned to be either an agent or a principal. To allow for learning about the experimental setting, they played 10 one-shot interactions, where participants met each partner only once. We implemented a “no-contagion” matching protocol, described in the Appendix, such that a player’s future interaction partners could not be indirectly affected by their own choice. To limit the possibility that players would learn about the choices of other participants, subjects were informed only about the behavior of their own counterpart in each round. Subjects did not learn about the correctness of their beliefs during the experimental session. Experimental screens including the instructions and decision screens are provided in Appendix D.

4.2 Rationale for matched sampling

Our aim is to isolate the effect of regime experience on preferences rather than to make inferences about differences in the distributions of preferences in the general population of the two regions. Therefore, we adopted a matched sampling approach rather than representative sampling, confining our subjects to relatively highly educated people in employment (Rubin, 2006; Young, 2018).

By conducting our experiment online (rather than in the laboratory), we gained access to a sample of the German population with substantial heterogeneity in terms of age, regime experience, and place of living. From this sample, we create rather homogeneous subsamples of

East and West Germans that are matched on a series of background variables like their level of education.

4.3 Procedures and payment

As the experimental setting in which we test our hypothesis concerns control and motivation at the workplace, we rely on a subsample of the working population: university graduates of various ages from both parts of Germany. This sample also has the advantage that their jobs are typically characterized by responsibility, complexity and leeway, three aspects that foster the experience of autonomy in everyday life and the intrinsic motivation that control might crowd out.

To isolate the effect of institutions on control aversion from other explanatory variables, we also elicited individual characteristics that could potentially be related to control-related preferences. Participants completed a survey in which they were asked about their socio-economic characteristics as well as their subjective attitudes towards trust and control, and we also collected information about subjects' job and their perceptions of control and freedom at their workplace.

Because of budget constraints of our large-scale experiment, we relied on a hybrid random incentive scheme (Baltussen et al., 2012) where a randomly selected choice or belief is paid to only a randomly selected subset of participants. Paying out only a few randomly chosen participants has been shown to be an effective alternative to traditional payment schemes (e.g. Cubitt et al., 2011; Harrison et al., 2002). To account for the professional status of our participants, we aimed at rather high conditional payoffs. Before registering, participants were informed that 4 winners would be paid a minimum of 155 euros and a maximum of 645 euros and that none of the other participants would be paid.¹³ The four winners earned on average 376 euros. Further details on the participation and payment procedures are provided in Appendix C.

Participants were aware that other participants also belonged to the German working population, but the distinction between East and West Germans of different cohorts was never mentioned. Moreover, when registering, participants were unaware of the content of the study.

4.4 Recruitment and sample

Our recruitment strategy included: (i) Issuing a press release and contacting journalists of newspapers to report about a novel internet platform for interactive online experiments¹⁴ (without providing any information about the topic of the experiment); (ii) Announcing the study in mailing lists of former students (in particular, alumni lists of the Max Planck Society, of the German Up with People Alumni Association, and of a few universities who consented); (iii) Posting in social networks (facebook, twitter, maxNet); (iv) Advertising in a job newsletter for academic professionals (academics.de); (v) And finally, recruiting former students from subject pools of German experimental laboratories via ORSEE (Greiner, 2015).¹⁵

¹³The announced numbers are the sum of a fixed amount of 30 ECUs for completing the survey plus the lowest (1 ECU) or highest (99 ECUs) possible income from the employment interaction as evident from Table 1, multiplied by a conversion rate of 1 ECU to €5.

¹⁴The experiment was conducted in February 2011 with the help of an internet platform developed by the authors, as detailed in Schmelz and Ziegelmeyer (2020).

¹⁵We are grateful to the researchers in charge of the experimental laboratories in Bonn, Cologne, Duisburg-Essen, Erfurt, Heidelberg, Karlsruhe, Konstanz, Magdeburg, Mannheim, Munich and Oldenburg for allowing us to access their subject pools and sending invitations.

A total of 721 professionals with a university degree participated in 22 sessions of the experiment. The data analyses reported to test our hypothesis are based on the sample of 532 subjects (agents and principals pooled) who spent their childhood, their studies and adult lifetime either only in East Germany or only in West Germany. We refer to those subjects as non-migrants.¹⁶

We split this sample of non-migrants into younger and older cohorts, i.e., Germans born in the 1980s and born before 1980, so the oldest in the young cohort were nine years old when the Wall fell. As shown in Appendix F.3, our results are robust to alternative cutoff years as well as continuous representations of age (which means number of years under Communist rule for East Germans). The average age of our younger and older cohorts (116 younger and 75 older East Germans, 202 younger and 139 older West Germans) is virtually identical in East and West (see Appendix E.3).¹⁷

Because prior to registering participants were unaware of the experiment’s content, it appears unlikely that there would be selection biases on preferences relevant to our results. Virtually all of those who dropped out during the course of the experiment did so for exogenous reasons (for the most part, technical failures), as detailed in Appendix E.2.

Most of our subjects in all cohorts are employees working in full-time jobs. Appendix E.4 provides work-related statistics for our subsamples. Apart from a few exceptions which are not surprising given the German labour statistics, our younger and older cohorts in East and West are similar with respect to their job characteristics. For example, our younger cohorts are rarely self-employed and less often in charge of other employees than our older cohorts. Our subsamples are very comparable with respect to their skill level: as intended by our recruitment strategy, the large majority of our subjects are highly skilled professionals.

5 Results

We first give an overview of agents’ effort choices, and then present our results on control aversion by cohort and region. Our main result is that younger East Germans are more control averse than their elders, while the reverse is true for West Germans. The results presented in this section are complemented by additional data analyzes in Appendix F.

5.1 Agents’ average effort

Figure 3 shows agents’ effort levels under the three cases: no control and low or medium control. The degree of generosity revealed by agents’ effort in the absence of control (i.e., $\underline{e} = 1$) is sufficiently large so that aversion to low and medium control could potentially be observed, as it exceeds the minimum requirement by far in all subsamples. It will be important in what follows to note that the older East cohort is not less generous than the younger East. Thus, a putative lack of generosity in the absence of control could not account for the fact that we observe little control aversion among the older East Germans.

The bars on low and medium control reflect a combination of two effects: the direct effect of controls, increasing the effort of selfish agents, and the possible indirect crowding-out effect

¹⁶In our survey, participants were asked to enter the cities where they spent most of their childhood, their studies and their time after their studies. Based on these entries, we classified the locations into East or West Germany.

¹⁷Note that the greater number of West Germans in our sample is due to the preponderance of West Germans in the country (64.4 million of West as opposed to only 15.9 million of East Germans at the time of data collection, O’Neill, 2022).

that might lead intrinsically generous agents to decrease their effort under control. For most subsamples, control increases average effort. Among the older East cohort, the overall positive effect on effort is substantial: for example, medium control increases effort by about one effort level unit. For the older West Germans, on average the positive direct effect of control is entirely offset by the indirect crowding-out effect.

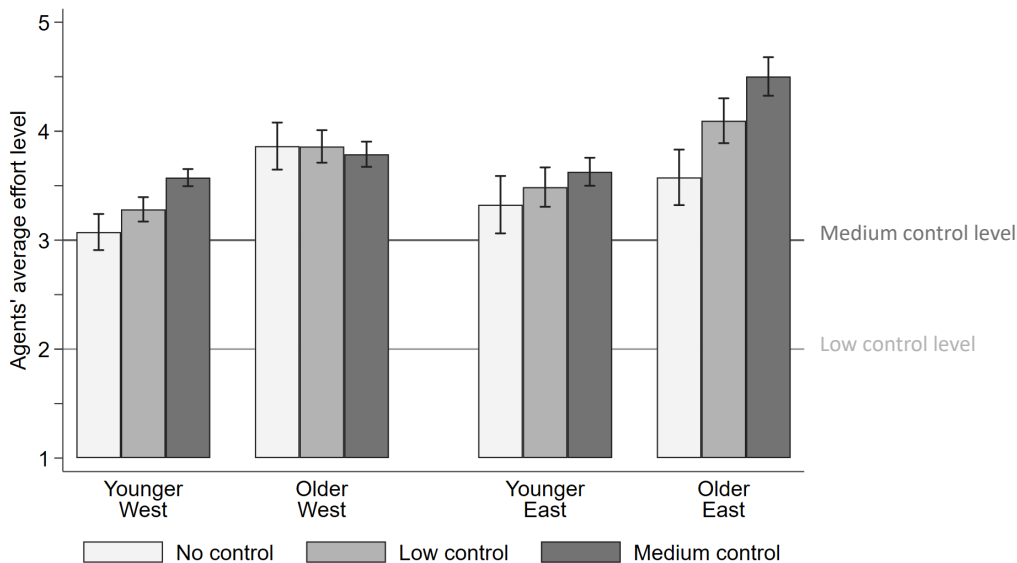


Figure 3: Average agents' effort under no, low, and medium control.

Note: The error bars represent 95% confidence intervals.

5.2 Control averse behavior by cohort and region

To measure the extent of control averse behavior in our four regional cohorts, we have to isolate the indirect effect of control from the direct disciplining effects of control on the average effort level. To do this, we abstract from increases in effort that were mechanically enforced by the imposition of the lower bound. Following the standard procedure in the literature on control aversion due to Falk and Kosfeld (2006), to measure the extent of the indirect effects, we set aside the direct increases in subjects' effort that resulted from the imposition of the lower bound.

Our measure of the extent of aversion to low control in a cohort is $\max[e(1), 2] - e(2)$ averaged across all members of the cohort sample, and analogously for medium control.¹⁸ Thus, we refer to control aversion on the sample level as the net indirect effect of control averse and control prone behaviors, negative control aversion in a sample indicating that control prone behaviors more than offset control averse behaviors.

Figure 4 provides an overview of average control aversion among younger and older East and West Germans. Pooled across all rounds, average aversion to low control (on the left) and medium control (on the right) is clearly positive for all subsamples except for older East Germans.

¹⁸Concretely, to calculate the level of control aversion, in the no control setting ($\underline{e} = 1$), any effort smaller than the enforced effort level $e(1) < \underline{e} = 2$ and $e(1) < \underline{e} = 3$ is reset to the enforced effort level \underline{e} . Aversion to low control implies that the difference between the reset efforts under no control and efforts under low control ($\max[e(1), 2] - e(2)$) is positive, and aversion to medium control implies that the difference between the reset efforts under no control and efforts under medium control ($\max[e(1), 3] - e(3)$) is positive. Note that for the ease of reading, we present control aversion by positive values.

On average, the older East Germans are slightly control prone, exerting more effort when a (non binding) lower bound is imposed than in the absence of the bound. Consistent with our reasoning in Section 2.4, the younger cohort of East Germans is more control averse than their parents' generation, and the reverse is the case in the West.

The difference between younger and older East Germans results from a combination of liberalization and an age effect, working in the opposite direction. Correcting for this, the bars in Figure 4 labeled “Total effect of liberalization” take account of the fact that we would expect older cohorts to be more control averse than younger cohorts, based on the reasoning in Section 2, and as we see to be the case in the Western cohorts. We take the observed age effect in the West (cohorts between which there were no substantial institutional discontinuities) as the expected difference between the older and younger Eastern cohorts in the absence of an institutional discontinuity, adding this to the observed cohort difference in the East to measure the total effect.¹⁹

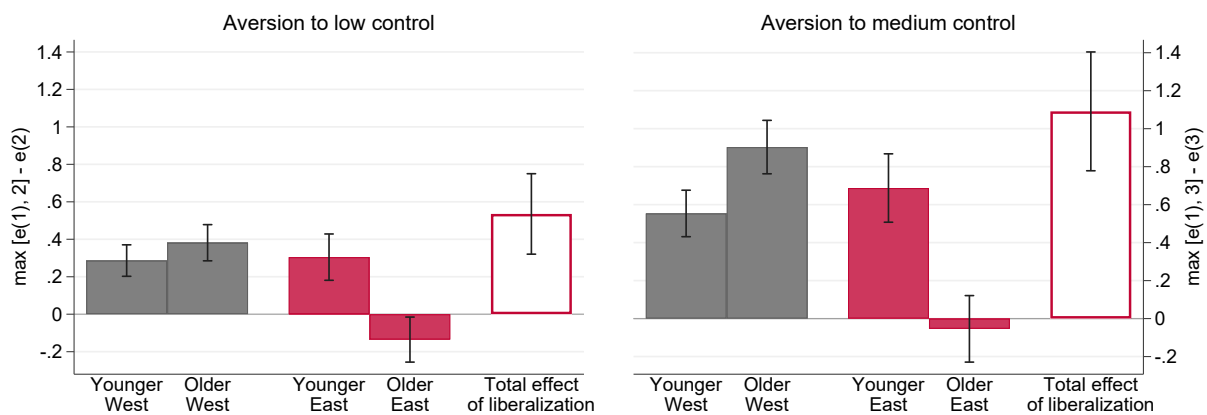


Figure 4: Average control aversion by cohort and region.

Note: The larger the values, the more control averse a subsample is on average. The error bars represent 95% confidence intervals.

To test our main hypothesis, we rely on OLS regressions with standardized dependent variables and standard errors clustered for agents. While our subjects are of similar education level, East and West Germans differ slightly in their socio-demographics, so we also include controls. Figure 5 shows our estimation results. The experimental behavior of older East Germans is captured by the constant and thus, the coefficients shown in the figure are differences from older East Germans.

Main result. *Older East Germans are less control averse than younger East Germans; the reverse is true for West Germans.*

For example, the second pair of estimates in the figure shows that, compared to older East Germans, being a younger East German accounts for an increase in aversion to low and medium control of 37% and 42% of a standard deviation, respectively. Comparing the third and fourth

¹⁹Formally, where CA is our measure of control aversion, the *Total effect of liberalization* is: $[CA(YoungerEast) - CA(OlderEast)] + [CA(OlderWest) - CA(YoungerWest)]$, that is, the observed difference between the two Eastern cohorts plus the expected age-related difference in CA based on the difference between the two West cohorts.

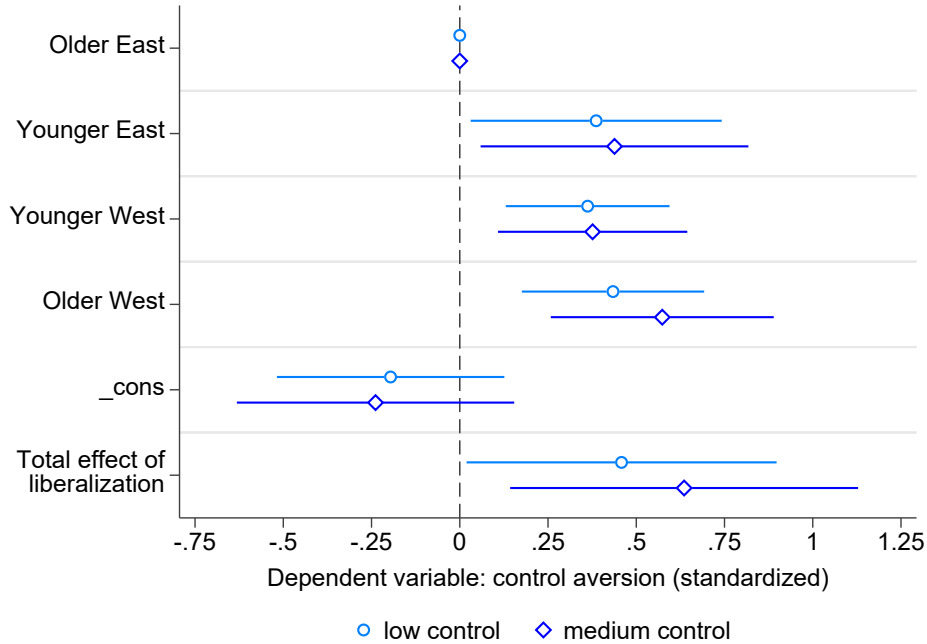


Figure 5: Difference in the degree of control aversion from the older East cohort and the total effect of liberalization.

Note: The figure shows coefficient plots with 95% CIs, estimated in ordinary least squares linear regressions with standardized dependent variables of aversion to low and medium control, standard errors clustered on agents, and socio-demographic controls. For clarity, we also plot the coefficient of zero for the older East cohort, representing the baseline cohort in the regression.

pairs of lines reveals that the age effect is in the opposite direction for West Germans, in line with our expectation of somewhat more control aversion among older agents. The total effect of liberalization is the difference between the elder and younger Eastern cohorts augmented by the ageing adjustment based on the two western cohorts as a control (as explained above). The bottom line shows that the total effect of liberalization accounts for an increase in aversion to low and medium control of 43% and 60% of a standard deviation, respectively.

These results are robust to the following alternative model specifications, as shown in the Appendix: (i) not controlling for sociodemographics; (ii) using OLS regressions with standard errors clustered for subjects as well as fixed session effects; (iii) relying on multilevel mixed-effects linear regressions including random intercepts for experimental sessions and for agents nested in the sessions; (iv) restricting the data to more experienced agents (behavior in the second half of rounds); (v) measuring control aversion based on effort costs instead of effort levels to account for the non-linearity of the payoff functions; (vi) restricting the sample to agents sufficiently generous to express control aversion; (vii) adding work-related controls; (viii) considering alternative divisions into younger and older cohorts by varying the age cutoff; and (ix) performing randomization inference tests (rather than conventional p-values, as suggested by Young, 2018) on the subsamples of main interest, i.e., older and younger East Germans.

Based on a somewhat limited sample on which we have data on skill level, years in the current job, self-employment, hours of work, and sector of occupation, we control for work-related exposure to and experience with control. Plausibly, those whose occupations place them in leadership positions appear to be somewhat more control averse than others (possibly because control

averse individuals chose leadership positions, or because the experience of being a leader favors the adoption of control averse preferences). Those who studied the humanities are somewhat more control averse than those who studied economics while those who studied technical subjects are somewhat less control averse. Finally, those employed in public bureaucracies are less control averse than those in private business. However, the relevant coefficient sizes (leadership, course of study, public employment) are much smaller than the cohort differences from the elder East Germans shown in Figure 5, very imprecisely estimated, and do not affect our main findings.

6 Interpretation

The contrast we have drawn in the institutions experienced by our cohorts is between distinctive German brands of authoritarianism for those raised in the GDR and liberalism for the other cohorts. Our interpretation of the results is that they reflect a cultural difference between collectivism and individualism, with toleration of control being a characteristic of the former and control aversion being characteristic of the latter.²⁰ To develop this necessarily speculative interpretation, we further explore our data to better understand the mechanisms that may underlay the observed experimental behavior.

6.1 Egalitarianism, collectivism and individualism

We have referred to the many possible motives for providing effort above the minimum possible in this game generically as “generosity”. The more detailed evidence in Figure 6 provides some clues as to the nature of these motives.

In the figure the horizontal black line represents the minimal effort level under control (some scatters are slightly below this line because of jittering). Observations on the diagonal are control neutral choices, below the diagonal are control averse choices, and above both the diagonal and the lower bound are control prone choices. The relative absence of control averse choices among elder East Germans is evident in the upper right panel of the figure.

Those who provided the effort level of 7 implemented an equal split of the payoffs, as was obvious to the subjects from the payoff table on their decision screen. We call individuals implementing the equal payoff outcome under no control “egalitarians”.²¹ Perhaps surprisingly, egalitarian choices in the absence of control constituted a substantial and very similar fraction of the total across the four cohorts: 18 percent (younger West), 24 percent (older West), 21 percent (younger East) and 22 percent (older East), as shown in the Appendix.

The panels on the right of Figure 6 show that the young East German cohort is distinctive in their paucity of egalitarian choices under control. Virtually all of the younger East Germans who implemented an equal split in the absence of control made the self-interested choice (providing the minimum required by the lower bound) under control. A similar though less dramatic pattern was evident in the two (also control averse) Western cohorts.

By contrast, the egalitarianism of the elder East Germans was unaffected by the imposition of control (the upper right panel shows that there were very few who offered effort level 7 in

²⁰The individualism-collectivism distinction has been widely used in psychology (Triandis et al., 1988; Lonner et al., 1980) and was introduced to economics by Avner Greif (1994).

²¹These choices may also have been motivated by efficiency considerations because providing effort level 7 also implemented the maximum sum of the payoffs of principal and agent. We cannot know how many subjects would have actually done the calculation required to see this.

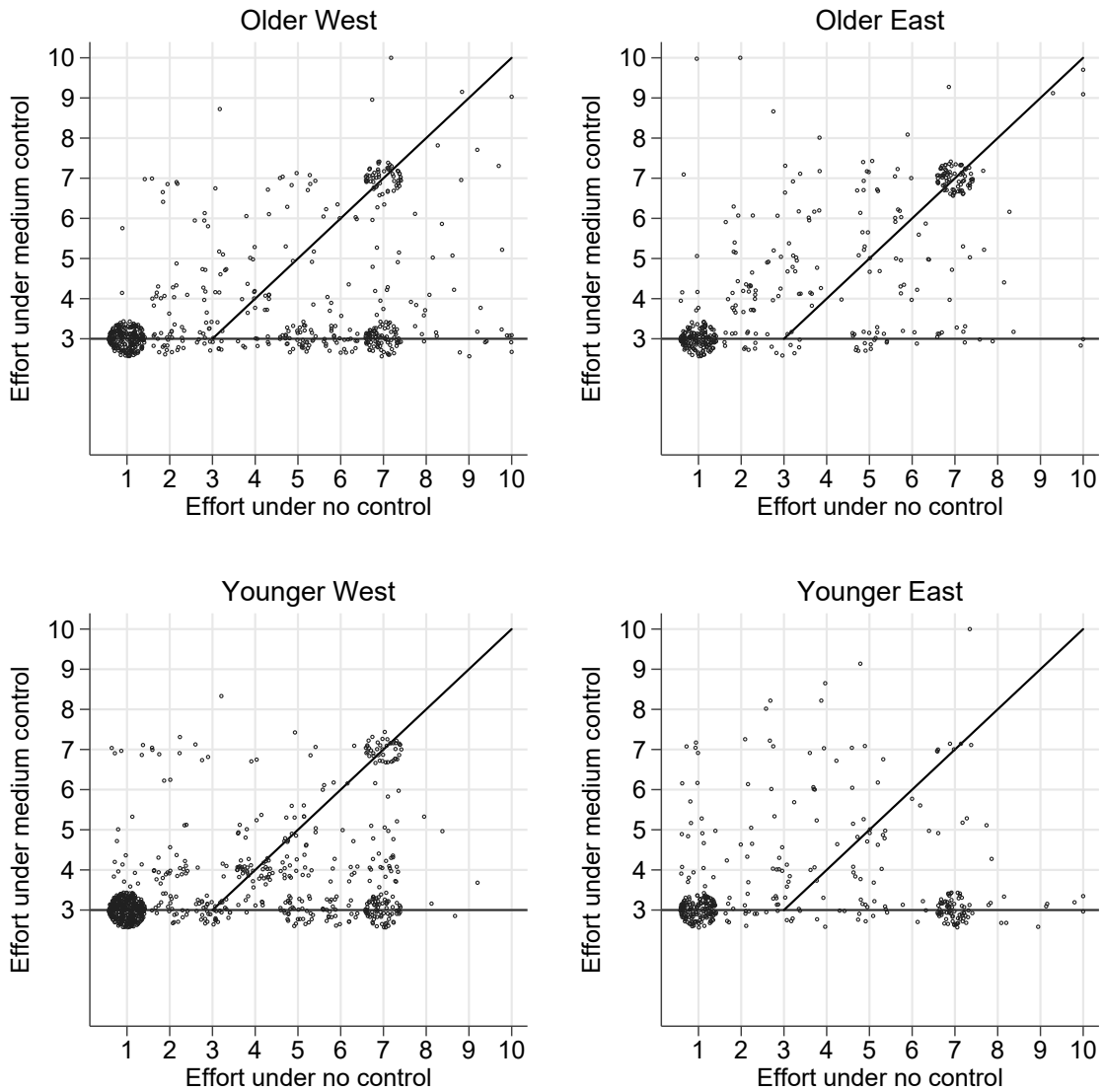


Figure 6: Agents' (jittered) effort levels provided in the case of no control and medium control.

the absence of control *and* the minimal amount when control was imposed.) If we are right in interpreting those providing effort level 7 as “egalitarian,” then the primary mechanism at work in our experiment was that among those raised in liberal Germany, control crowded out inequality aversion, a preference for equal splits of payoffs evident in many behavioral experiments (Fehr and Schmidt, 1999).

In Figure 7 we further refine our typology of choices as introduced in Figure 1, based on those who were sufficiently generous in the absence of control to be observed as control averse.²² Among the control averse choices, we distinguish those that were egalitarian in the no control setting and others. We make the same distinction (egalitarian, other) among the control-neutral choices. Among this subsample, in both the low and medium control conditions, the majority

²²The corresponding figures including all agents, also the less generous ones, are shown in the Appendix. Also, note that the types presented in Figure 7 refer to types of choices. A single agent can be represented in several types as they made repeated choices across 10 rounds. As shown in the Appendix, these choice patterns can be associated with fairly stable types of responses to control.

of control averse younger East Germans were egalitarians; and virtually all of the egalitarians were control averse. Among their parents' generation, however, most egalitarians were control neutral, explaining why control did not crowd out inequality aversion in that cohort.

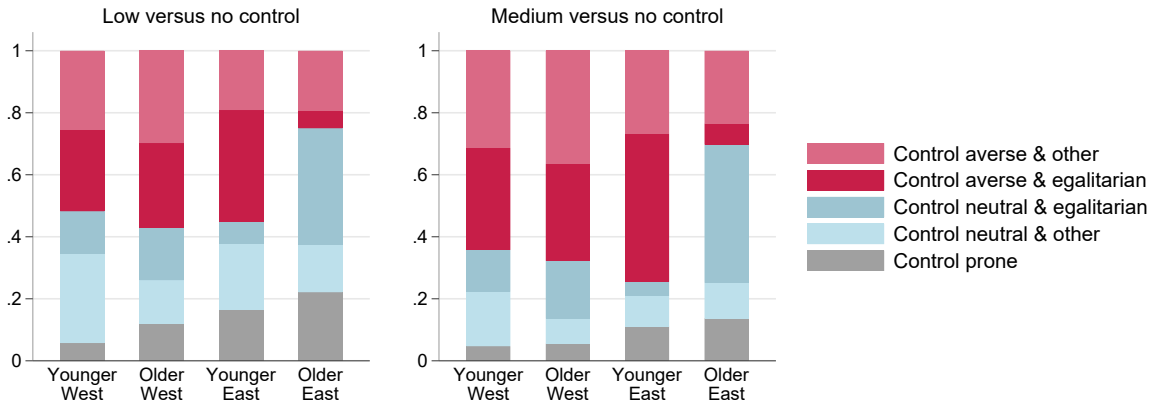


Figure 7: Types of choices among younger and older East and West Germans who are sufficiently generous to potentially express control aversion.

The particular nature of inequality aversion evident in the choices made by the elder East Germans suggests an interpretation of their lack of control aversion. This is that those conforming to a relatively equal division of reward as a shared social norm may resent others transgressing the norm by acting in a self-interested manner; they might as a result accept control as a legitimate measure imposed to help sustain the norm (i.e., Schnedler and Vadovic, 2011, observe less control aversion if control prevents selfishness).

In sum, the difference between the “liberal” and “authoritarian” cohorts was not in their degree of egalitarianism, but instead in the extent to which egalitarianism was susceptible to being crowded out by the principal imposing control. We interpret this as a manifestation of a cultural difference between the collectivism of the GDR and the individualism of liberal Germany. Collectivist egalitarianism, in this interpretation, is a commitment to uphold an equal end state of the process. In contrast to the liberal variant, collectivist egalitarianism is less contingent on what the process of interacting might reveal about the deservingness or other aspects of the type of the person with whom one is sharing payoffs (consistent with the fact that procedural fairness may mitigate control aversion as shown in Kessler and Leider, 2016).

6.2 The crowding out effects of uncommon or unnecessary controls

We can garner additional clues about the mechanisms accounting for our results from agents' beliefs about the trustworthiness of others and their expectations about the likelihood that the principal would impose control.

Agents who believed that more principals would refrain from imposing control tended to be more control averse, the estimated effect being of substantial size in the medium control case as shown in the Appendix. If their own exposure to control in everyday life is what led agents to expect the principal to impose control, this finding is consistent with our expectation (explained in Section 2 and modelled in Section 8) that the experience of control may contribute to tolerating control. In our sample, younger people from both parts of Germany expected more principals

to control, and as we have seen, those from the West were less control averse than their elders. However, we do not observe differences in agents' beliefs along the East-West dimension - in particular, older East Germans are similar in their control expectations to other cohorts.²³

Agents who believed that others were more "trustworthy" expressed more control aversion, consistent with the "detrimental effects of unnecessarily close [...] surveillance or [...] superfluous constraints" pointed out by the psychologist Lepper (1982, p. 62) and his coauthors. Elder East Germans in our data set were somewhat less confident in the trustworthiness of their fellow citizens, possibly contributing to our result.

Our evidence on beliefs may indicate that crowding-out is associated with the belief that controls are uncommon or unnecessary. However, the distinctiveness of the elder East German cohort in its relative lack of control aversion is only slightly mitigated when our estimates are conditioned on agents' beliefs about trustworthiness and the fraction of principals likely to impose control. So, cohort differences in these beliefs is not the primary cause of our results.

7 Caveats, robustness checks and an alternative hypothesis

As we conceded at the outset, identifying something as complex as the causal impact of institutions on preferences is bound to be subject to substantial uncertainty. We point out two limits of our study, that we will take up in the two subsections immediately following. The first is that it is virtually impossible to implement the ideal test, namely backing out the parameters of a control averse utility function from observed experimental behavior. The other is due to the fact that our elder East German cohort, while raised under the GDR, also experienced the institutional structure of liberal Germany, possibly resulting in an underestimate of our main effect. We also provide three robustness tests based on older migrants in our data set, control averse experimental behavior among students from the territories of formerly East and West Germany, and the extent of control averse responses to mandated COVID-19 policies among cohorts of West and East Germans. Finally, we consider the contrary hypothesis, that the elder East German cohort would be expected to be more control averse, not less.

7.1 Caveat 1: Inferring preferences from behavior

Can we precisely measure a difference in preferences concerning control from the observed cohort differences in control averse experimental behavior? An affirmative answer seems obvious, but it is not.

The reason is that control averse preferences are not directly observed in isolation; evidence for control aversion arises in experimental behavior because some *other* preference is crowded out by a principal's choice to impose control. In our experiment, in order to observe control averse behavior, there must be some generosity in the absence of control that is negated or attenuated by the imposition of control. Thus, for control averse behavior to be experimentally observed, it must be that in the absence of controls the agent would contribute more than the lower bound on contributions that the principal imposes. Agents insufficiently generous for this to be the

²³As shown in the Appendix, agents' beliefs are well in line with principals' actual behavior. Most principals across all cohorts impose medium control, the younger cohorts do so more often than their elders, and older East German principals are not distinct in their behavior. In all cohorts, the vast majority of principals chooses the control level which maximizes their payoff according to their beliefs about agents' behavior, and this pattern is robust over the course of the session. Those additional data suggest that while older East Germans are less control averse than others, they are similar in their other behaviors not directly related to their regime experience.

case could not be observed to be control averse, so their experimental behavior is uninformative about control aversion as a preference.

This raises the possibility that our finding that the older East German cohort is less control averse than the younger East Germans could have arisen because fewer of the East Germans were sufficiently generous when not controlled to be observed as control averse. As we have already noted, this does not appear to be the case. First, in the absence of control (as Figure 3 shows), the older East Germans are somewhat more generous than the younger Eastern cohort. Second, confining our analysis to those agents whose effort levels in the absence of controls were sufficient so that control averse behavior could have been observed in the presence of controls yields qualitatively very similar results and leads to the same conclusion (as we show in the Appendix).

7.2 Caveat 2: Elder East German exposure to liberal institutions since 1990

Our data set cannot address a possible bias that would result in an underestimate of the effect of institutions. The bias arises from the fact that at the time of our experiment the East German cohort raised under Communist rule had been exposed to liberal institutions for two decades. While there is some evidence that control averse preferences develop during youth, the process apparently continues (albeit in attenuated form) in response to experiences over the entire life course. This is consistent with our observation that the older West German cohort is somewhat more control averse than the younger West cohort.

The same reasoning suggests that the levels of control aversion observed in the older East German cohort would reflect them having acquired some degree of control aversion as a result of their adult exposure to liberal institutions since 1990. If this is the case, then their behavior in our experiment overstates the degree of their control aversion acquired from being brought up and living under authoritarian rule. Recalling that our key result is the relative lack of control aversion among those brought up under authoritarian rule, our data may underestimate the effect of the institutional change from authoritarian to liberal rule.²⁴

7.3 Robustness 1: Older German migrants

To complement our findings and provide evidence on their robustness, we compare control aversion among migrants and non-migrants in our older cohort.²⁵ If institutional experience during adolescence or earlier has a permanent effect on control-related preferences, our older migrants' control aversion should be closer to their peers in the part of their origin than to their peers in the part of their destination, and this is what we find. Control aversion of East and West German migrants is very similar to their peers in the part of their origin, but in both cases differs substantially from their peers in the part of their destination. Thus, older East Germans who have migrated to the West are substantially less control averse than older non-migrant West Germans and older West Germans who have migrated to the East are substantially more control averse

²⁴An analogous unavoidable possible downward bias in the estimate of our main effect is the fact that our younger cohort was exposed to the authoritarian regime for some years possibly cultivating control tolerance.

²⁵In our sample, we have 88 choices from 10 older agents born before 1980 who migrated from East to West Germany and 64 choices from 9 agents who migrated from West to East Germany. This sample size is small and the results should be treated with caution, but at least it gives an impression. We consider as migrants people who spent most of their childhood between 3 and 12 years in one part of Germany and who spent most of their studies and/or time after studies in the other part of Germany.

than older non-migrant East Germans (as shown in the Appendix). This is additional evidence that experiencing a liberal or coercive regime during one’s youth has a long-lasting impact on control-related preferences.

7.4 Robustness 2: Experiment with students

We conducted a second online experiment which relies on the usual subject pool of undergraduate students from four locations, two in the East of Germany (Magdeburg and Jena) and two in the West (Oldenburg and Heidelberg). The full experiment is detailed in Appendix G. This experiment enables us to conduct three robustness checks. First, we test whether our finding of East Germans’ convergence in control aversion to West German levels is robust to the subject pool (all subjects were born after 1989). Second, we test whether reactions to control are sensitive to two key procedural aspects of our main experiment, namely the incentive scheme (paying few instead of all participants) and the scale of interactions (national instead of local) - and we find that they are not. The procedures are very similar to our main experiment and students repeatedly take part in the principal-agent interaction described in Subsection 4.1.

We rely on two cities instead of one from each part of Germany to limit the risk of misattributing unsystematic differences to the East-West dimension. We searched for two sufficiently comparable city pairs where each is equipped with an experimental laboratory. Thanks to the consent of the respective laboratories, we were able to implement our favored matching of the city pairs Magdeburg (East)/Oldenburg (West) and Jena (East)/Heidelberg (West). The more southern cities Jena and Heidelberg are smaller, have more students and overall a younger population, a lower unemployment rate and a higher GDP relative to East or West Germany than the northern cities Magdeburg and Oldenburg.

We observe somewhat more control aversion in the two Western cities than in the two Eastern cities, but the differences are small and imprecisely estimated.²⁶ In sum, students’ choices are consistent with the convergence of younger East Germans’ control aversion to the West.

7.5 Robustness 3: Control aversion concerning anti-COVID-19 policies

Our third robustness check is based on different data (an online representative sample of 4,799 East and West Germans in 2020), a different method (a survey) and a different setting (agreement with following anti-COVID-19 policies if strongly advised by the government but voluntary, and if enforced and checked.) We elicited to what extent Germans were okay with following such policies in five domains: contact tracing apps, vaccination, contact restrictions, limitations on travel, and wearing masks.²⁷ In that study (published in Schmelz, 2021), we compare the responses of older and younger East and West cohorts.

As Figure 8 shows, older East Germans are clearly less control averse than older West Germans in all domains except for mask wearing.²⁸ This exception is informative and consistent with the

²⁶The same conclusion holds for experienced agents and is robust with respect to demographic controls

²⁷For example, the survey question on the contact tracing app reads as follows: “We are currently discussing an app that accesses the movement and contact data of mobile phones to inform users anonymously about a possible infection. This app is more useful the more people use it. To what extent do you agree with using this app yourself if: . . . using the app is strongly recommended by the government but remains voluntary? . . . using the app is compulsory and checked by the government?” Answers were given on a 5-point Likert scale ranging from 0 (“not agree at all”) to 4 (“fully agree”). The questions on the other four domains follow the same scheme.

²⁸An implication of this result and our finding that younger East Germans are control averse is that the opposition to covid policies in the East primarily came from the younger generations, though we cannot test this

mere exposure effect (Zajonc, 1968, 2001), our third mechanism mentioned in Section 2. All covid policies except for masks had parallels with the GDR experience: those brought up in East Germany prior to 1990 were subject to ubiquitous surveillance, compulsory vaccination, and restrictions on movements (where stay-at-home orders, coming along with contact restrictions, could be interpreted as an extreme form of travel restrictions). In contrast, for both East and West Germans, wearing masks in 2020 seemed rather exotic and not in their prior experience.

In line with the evidence from our students experiment, among the younger cohorts, West Germans tend to be somewhat more control averse than East Germans but differences are small, suggesting once more that control aversion converges.²⁹

Though collected a decade later than our experimental evidence, by different methods, and in a novel domain, these results are consistent with those reported above: older East Germans are less control averse. The survey findings are also remarkable as they show that people who experienced an authoritarian institutional environment are, three decades later, less averse to government mandated anti-COVID-19 measures which arguably are similar to controls they had experienced in their formative years. This observation lends some external validity to our experimental results.

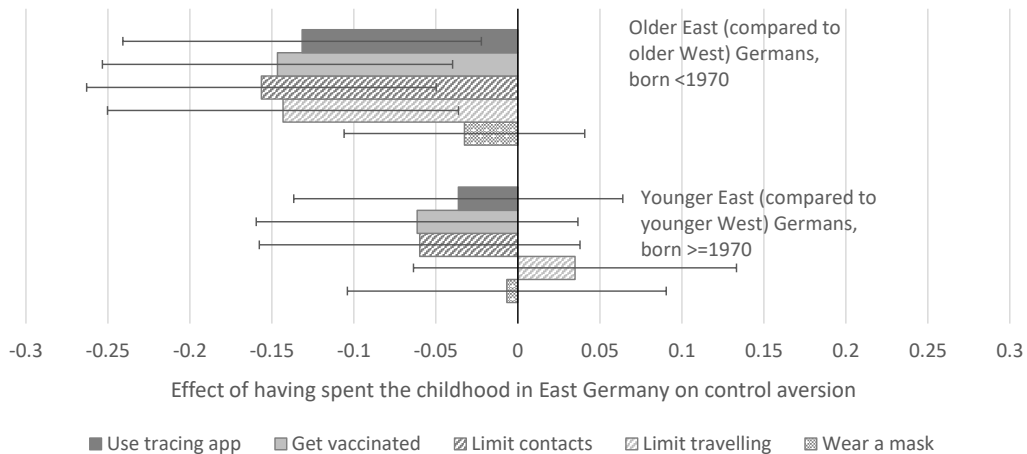


Figure 8: Effect of experience in East (compared to West) Germany on control aversion with respect to anti-Covid-19 policies.

Notes: Control aversion is measured by the difference between voluntary agreement and agreement under control in the five domains. Shown are the coefficients and 95% CI on control aversion, estimated in OLS linear regressions with standardized variables. Here, negative values reflect *reductions* in control aversion. For example, the upper part of the figure shows that older East Germans are somewhere between 13% and 16% of a standard deviation less control averse than older West Germans in all domains except for masks. The figure is adopted from Schmelz (2021).

7.6 Alternative hypothesis

One may wonder, however, why the experience of living under the GDR appears to have made people *less* instead of *more* control averse. Germans under liberal institutions in the West or after 1989 throughout the country were subjected to a multitude of controls. These were not

hypothesis.

²⁹The reason for the different age cutoffs in the experimental (1980) and the survey (1970) study is the different distribution of age in the two samples. The qualitative results of the survey do not change if we split the sample at the year of birth 1980 instead of 1970 (which is the median in the survey) as done in the experimental study.

only less intrusive but many (like driving speed limits) were transparently intended to promote a public purpose, conveying favorable information about those instituting the controls. Many similar public-spirited controls (including vaccinations) were also imposed in the GDR. However, controls and restrictions harmful to citizens were pervasive, conveying “bad news” (Bowles and Polania-Reyes, 2012) about the East German state and about being controlled, which could have resulted in greater instead of less aversion to control among the elder East German cohort. This is not what we observed. The evidence we have presented is consistent with the interpretation that control averse behavior in our experiment reflects an intrinsic preference against being restricted in one’s autonomy *per se* (shared by Falk & Kosfeld, 2006, as well as Rudorf et al., 2018b).

Having to take being controlled as a given, older East Germans may have accommodated to this reality by being less psychologically averse to control and by this means reduced their cognitive dissonance. Leon Festinger (who first developed the cognitive dissonance concept) described the mechanism as follows: “the human organism tries to establish internal harmony, consistency or congruity among his opinions, attitudes, knowledge, and values [...] there is a drive toward consonance among cognitions” (Festinger, 1957, p. 260). Festinger frequently used this reasoning to explain “specific ideological changes or opinion changes subsequent to the change in a person’s way of life” (pp. 271-2).

Among East Germans prior to 1990, the unconscious process of cognitive dissonance reduction may have lowered the perceived intrinsic value of autonomy, discouraging parents from inculcating and individuals from adopting this trait. The fall of the Wall and subsequent emergence of a liberal East Germany may have constituted an example of Festinger’s “change in a person’s way of life,” mitigating this need to limit one’s control aversion in order to reduce cognitive dissonance.

8 Evolution of control aversion under different institutions

In our Section 2 we suggested four possible mechanisms that might lead Germans raised under Communist Party rule to be less control averse, possibly accounting for our results. To make our interpretation of the data more explicit, here we draw on these mechanisms to model the evolution of control aversion. We consider two aspects of the individual’s learning process by which preferences are updated: ones’ parents or one’s own assessment of how intrinsically valuable control aversion is (similar to payoff-based updating in conventional evolutionary models) and how common it appears to be in the population (conformist learning).³⁰

We model control aversion as a learned trait (from parents, others in the previous generation, peers, and cultural models like teachers). For simplicity, we consider two mutually exclusive traits, being control averse and being control neutral. In this model, cultural evolution is thus the process of change or stasis in the population fraction that are control averse, p , as a result of preference updating whereby people may switch from one trait to another.

The first mechanism, *private updating*, is a process by which people acquire a trait according to its intrinsic value (given by parental socialization and one’s own experience). This would favor being more control averse in a liberal society, because the reward to autonomy (rent seeking in out-of-equilibrium markets and innovation, for example) could be considerable. By contrast, in an authoritarian society placing a high value on self-determination and resisting control could be extremely costly to an individual, as we have seen. Importantly, consistent with the reasoning of Bisin and Verdier quoted above in Section 2 parents who themselves were brought up under

³⁰“Intrinsic” here means simply “independent of how common the trait is.”

authoritarian conditions but know that their children will live under liberal institutions would have less incentive to socialize them to be control-tolerant.

The second mechanism, *societal socialization*, will in any society seek to inculcate values that are functional in adults given the social structure, including obedience to laws and legitimate authority. These functional values would include self-determination to a greater extent in a liberal than in an authoritarian society.

On the basis of the third mechanism, *exposure*, we expect that older East Germans would be more inclined to accept control while the other cohorts should show a stronger preference for the absence of control.

The fourth mechanism, *conformist learning and preference falsification*, implies that for reasons of self-interest and personal safety, under an authoritarian regime people hide their own control aversion, leading all to underestimate the frequency of control averse fellow citizens. A conformist updating process that favors the adoption of what is perceived as the more common trait would then make the adoption of control averse preferences less likely. Our experimental findings could be the result of any combination of these four mechanisms; with the available data we cannot identify the relative weights of the four.

The underlying model we propose is that an individual has an opportunity to update their cultural trait, plausibly while young under the influence of parental as well as societal socialization. Cultural change is monotonic in the difference between the two traits in their average propensity to be adopted, or what we call the cultural fitness of control aversion (f_a) and control neutrality (f_n). So, p increases when $\Delta_{a-n} \equiv f_a - f_n > 0$ and conversely.³¹

Where π_a and π_n are the intrinsic value of the two traits (appropriately scaled) and β is the importance of intrinsic value-based updating (relative to conformist updating, $1 - \beta$) we write the cultural fitness of control aversion and control neutrality among those having grown up in liberal Germany (superscript L) respectively as:

$$f_a^L = \beta (\pi_a^L - \pi_n^L) + (1 - \beta) (p^L - 0.5) \quad (1)$$

$$f_n^L = \beta (\pi_n^L - \pi_a^L) + (1 - \beta) ((1 - p^L) - 0.5) \quad (2)$$

The conformist learning effect is zero if $p^L = 0.5$ or $\beta = 1$. The difference in the cultural fitness of the two traits that drive the evolutionary process in a liberal institutional environment is:

$$\Delta_{a-n}^L \equiv f_a^L - f_n^L = 2\beta (\pi_a^L - \pi_n^L) + (1 - \beta) (2p^L - 1) \quad (3)$$

The analogous equations for East Germans influenced by coercion and collectivism (superscript C) prior to 1990 are similar to those for liberal Germany, except that the conformism term is affected by preference falsification. For the East under authoritarian rule the perceived fraction of control averse individuals is not p^C but instead μp^C where $\mu < 1$. The cultural fitness

³¹ An unrealistic feature of the model as presented is that it supports two evolutionarily stable stationary states with respectively uniform presence or absence of control aversion; the basin of attraction of the latter being larger for the older cohort of East Germans. A more realistic and complete model would assume that the intrinsic value placed on either trait will depend also on the individual's genetic predisposition towards the trait, which differs among individuals but is identically distributed among both East and West Germans of both cohorts. A distribution of genetically transmitted predispositions favoring one or the other traits with sufficiently many strongly disposed to each would ensure that the above process will support one or more interior stationary values of p . Modeling this explicitly would not enrich the model in any way for our purposes here.

equations for East Germany prior to 1990 are:

$$f_a^C = \beta (\pi_a^C - \pi_n^C) + (1 - \beta) (\mu p^C - 0.5) \quad (4)$$

$$f_n^C = \beta (\pi_n^C - \pi_a^C) + (1 - \beta) ((1 - \mu p^C) - 0.5) \quad (5)$$

The difference in the cultural fitness of the two, favoring the evolution of control aversion is then:

$$\Delta_{a-n}^C = 2\beta (\pi_a^C - \pi_n^C) + (1 - \beta) (2\mu p^C - 1) \quad (6)$$

To get a sense of the impact of preference falsification, we can see from equation 6 that if the preference falsification parameter $\mu = 0.75$ then the conformist learning effect will not favor control aversion unless more than two-thirds of East Germans are (truly) control averse.³²

For East Germans prior to 1990, for the reasons explained above, all four of our mechanisms – affecting the payoff term and the learning term – work against the evolution of control aversion. Thus, we have provided reasons that both terms in equation 6 would be negative.³³

9 Discussion

Writing at the same time as Rawls and Bell quoted at the outset, Robert Lucas (1976) observed that taxes and other policy interventions affect behavior not only by altering the costs and benefits of actions citizens may take, as intended by the policy maker, but also by changing citizens’ beliefs about the likely future actions of other actors – including the government – possibly in counterproductive ways. Henry Aaron (1994) pointed to “the failure of economists to take the formation of preferences seriously” (p. 4) and suggested that the Lucas critique be extended to cover preferences as well as beliefs.

Generalizing Aaron’s critique, we conclude that understanding how institutions or policies affect behavior requires going beyond their effect on the constraints and incentives faced by actors (as conventionally modelled) and beliefs (as in a Bayesian Nash equilibrium) to also include effects on individuals’ preferences, as advocated by Cass Sunstein (1996), Eric Posner (2000), Albert Hirschman (1985), Linus Mattauch et al. (2022), and others.

Do these writers and others have good empirical reason to think that institutions affect preferences? Our lens combining experimental evidence on cohort differences in control aversion with an institutional discontinuity in East Germany and a contrasting continuity of institutions in the West has provided another piece of evidence that preferences are indeed endogenous due to the learning effects of institutions. We found the following.

First, the sharply contrasting behavior of East Germans raised under coercive and liberal regimes is evidence that institutions do affect the evolution of individual values, suggesting that

³²We assume that β does not differ across cohorts or regions. But the fear of standing out as different in the East prior to 1990 may have led some to adopt a more conformist learning rule (a lesser value of β) which would have promoted the evolution of control neutrality as long as the fraction of control averse people was $p < 0.5/\mu$. If this were the case preference falsification would explain a greater part in the relative lack of control aversion among older East Germans that we observe.

³³Other mechanisms could also have been at work. For example, beyond socialization by parents and teachers, other cultural models like media personalities or film characters who appeared to be less control averse than the general population may have been selected by the elites.

economists involved in public policy and mechanism design should as Aaron put it “take the formation of preferences seriously.”

Second, the limited degree of control aversion in the older East German cohort suggests a degree of consistency (albeit fragile in the longer run) between the coercive political institutions of the GDR and the culture that life experiences under the regime supported. This is consistent with Fuchs-Schündeln and Schündeln (2020, p. 189) who compared survey evidence on values of those living in countries that had been under Communist Party rule (“East”) and those in liberal democratic Europe (“West”), finding that “Older cohorts in the East, who have lived under communism for a longer time, show preferences more in line with communism than younger cohorts, compared with the same cohort gradient in the West.”

Third, the value of personal autonomy that is evident in the control-averse behaviors of people socialized in liberal Germany is a piece of evidence shedding doubt on the putative cultural-institutional instability of liberalism raised at the outset.

Taking a broader perspective on German history of the 20th century, our evidence and reasoning is consistent with the following speculation about control preferences before the German division at the end of World War II. Conservative values including obedience to authority would have been more common then than today and by 1945 all Germans would have experienced over a decade of intrusive Fascist controls. It seems unlikely that control averse behavior would have been wide-spread under these conditions. Then, we speculate, while post World War II East Germans sustained or perhaps even enhanced their tolerance of control in the coercive environment of the GDR, West Germans adopted more control averse preferences under the liberal regime following the end of allied occupation, much as did East Germans after the institutional change in 1990.

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