How democracy alters our view of inequality — and what it means for our health

Alexi Gugushvili [a,*], Aaron Reeves [b]

[a] Department of Sociology and Human Geography, University of Oslo, Postboks 1096 Blindern, 0317, Oslo, Norway
[b] Department of Social Policy and Intervention, University of Oxford, 32 Wellington Square, OX1 2ER, Oxford, United Kingdom

ARTICLE INFO

ABSTRACT

Background: Income inequality is associated with poor health when economic disparities are especially salient. Yet, political institutions may alter this relationship because democracies (as opposed to autocracies) may be more inclined to frame inequalities in negative rather than positive ways. Living in a particular political system potentially alters the messages individuals receive about whether inequality is large or small, good or bad, and this, in turn, might affect whether beliefs about inequality influence health. Further, media coverage of economic inequality may negatively affect health if it contributes toward the general perception that the gap between rich and poor has gone up, even if there has been no change in income differentials.
Methods: In this study, we explore the relationship between democracy, perceptions of inequality, and self-rated health across 28 post-communist countries using survey and macro-level data, multilevel regression models, and inverse probability weighting to estimate the average treatment effect on the treated.
Results: We find that self-rated health is higher in more democratic countries and lower among people who believe that inequality has risen in the last few years. Moreover, we observe that people in democracies are more likely to learn about rising inequality through watching television and that when they do it has a more harmful effect on their health than when people in autocracies learn about rising inequality through the same channel, suggesting that in countries where there is less trust in the television media learning about rising inequality is not as harmful for health.
Conclusions: Our results indicate that while democracies are generally good for well-being, they may not be unambiguously positive for health. This does not mean, of course, that inequality is good for health nor that, on average, autocracies have better health than democracies; but rather that being more aware of inequality can negatively affect self-rated health.

1. Introduction

Rising levels of income inequality may undermine health (Wilkinson and Pickett, 2018). The mere fact of income inequality could damage the health of the exploited or economically advantaged but, in addition to this, there also appears to be a psychosocial aspect to the health effects of inequality, that is, economic inequality leads to poor health once we become aware of it. This psychosocial aspect of inequality may not be true for all people in all places, however. For some, rising inequality may be seen as unimportant (Guillaud, 2013), fair (Bjørnskov et al., 2013), or even legitimate (Schneider, 2012), and for these individuals it appears perceptions of rising inequality do not lead to worse health. Of course, many people do believe inequality is important, unfair, or illegitimate

and these people, by contrast, are worse off when they see inequality going up. How people view inequality—good or bad—seems to moderate whether perceptions of rising inequality undermine their health.

Our perceptions of inequality (whether it has changed and whether such changes are good) appear to be connected to the political institutions that shape our societies. This is because certain political systems are more institutionally inclined to frame inequalities as either negative or positive. Living in a particular political system, such as a democracy, potentially alters the messages we receive about whether inequality is large or small, good or bad, and this, in turn, might influence whether beliefs about inequality influence health. For example, media coverage of economic inequality may negatively affect health if it contributes toward the general perception that the gap between rich and

---

poor has increased, even if there has been no change in income differentials. Democracies and autocracies typically approach inequality in different ways (Boix, 2003; Iversen and Soskice, 2019). Inequality tends to be lower in democracies than autocracies but people also appear to be more worried about the gaps between rich and poor in democracies too. At the same time, freedom of the press in democracies may enable the media to talk about inequality in a more negative light than journalists in autocratic states (Stier, 2015). Indeed, this lack of press freedom may simply weaken the degree to which people believe what they hear on the television or read in the print media. If correct, then, coming to believe inequality has risen in a democracy could have a more detrimental effect on your health than coming to believe inequality has risen in an autocracy.

In this study, we explore the relationship between perceptions of inequality and health according to the degree of democracy in a given country. To test this hypothesis, we examine the relationship between perceptions of inequality, the level of democracy, and self-rated health in a set of post-communist countries in Central and Eastern Europe and Central Asia. We draw on the Life in Transition Survey (LITS), containing around 40,000 individuals from 28 post-communist countries, and measures of democracy from Freedom House. We find that, consistent with earlier work, self-rated health is higher in more democratic countries and lower among people who believe that inequality has risen in the last few years. In addition, we observe that it does not matter how you learn about rising inequality, most channels of inequality information are typically associated with worse self-rated health. However, what is striking is that this relationship does vary according to the level of democracy for one specific channel. When people in democracies learn about rising inequality through the television it has a more harmful effect on their self-rated health than when people in autocracies learn about rising inequality, suggesting that in countries where there is less trust in the television media learning about rising inequality is not as harmful for health.

Our results indicate that while democracies, in line with the previous research, are generally good for individuals' well-being, they may not be unambiguously positive for self-rated health. That is, if democracies are more likely to create anxieties about rising inequalities—particularly when there has actually been little change—then this could undermine health. This does not mean, of course, that inequality is good for health nor that, on average, autocracies have better health than democracies; but rather that being more aware of inequality can negatively affect individuals' health.

2. Background

2.1. Why perceptions of inequality affect health?

There are two main explanations for how inequality negatively affects health. First, inequality often makes some people poorer and poverty is bad for health (Curran and Mahutga, 2018; Truesdale and Jencks, 2016). But this is not all: inequality can also alter how people feel about their relative position in the social hierarchy and this can negatively affect health too. This (second) psychosocial mechanism connecting inequality and health has dominated research in this area, with some downplaying the importance of the poverty pathway between inequality and health, particularly in high-income countries. The theory argues that 'larger income differences increase social distances' between socio-economic groups (Pickett and Wilkinson, 2015, p.323) and these gaps in the status hierarchy negatively affect health because larger social distances erode social trust and lead people to feel their lives are less valuable. This is the 'status syndrome', the process by which individual-level perceptions of macro-level inequality get under the skin through these psycho-social mechanisms (Marmot, 2004).

There is, however, a tension at the heart of this theory. There is an assumption that people are aware of the fact that they live in highly unequal societies and then that they are negatively affected by this perception (or awareness). This is very often not true, however. Many people are bad at estimating the level of inequality within society. Indeed whether people believe inequality is high or low is informed by whether they think inequality is good or bad, with people who do not like inequality often overestimating how big it is (Hauser and Norton, 2017). This disconnect between 'objective' and 'subjective' perceptions of inequality is a problem for these psychosocial mechanisms because these pathways could work independently of the level of objective inequality (Gugushvili et al., 2020). Indeed, what may be most important for health is not whether inequality is high or low, rising or falling; but rather whether people *believe* inequality is high or low, rising or falling.

This tension in the psychosocial theory of inequality and health has now produced a fairly sizeable body of research—drawing on both small experimental studies and large-scale observational surveys—and there is growing evidence that our *perceptions* of inequality affect health and well-being (Payne, 2017). For example, passengers in airplanes with first-class cabins, that is, when status inequality is more salient, are more likely to experience air rage (Decelles and Norton, 2016). In Japan, perceived income inequality was negatively associated with subjective well-being and, while lower incomes predicted respondent's perception of income inequality, this relationship was not entirely explained by controlling for income (Oshio and Urakawa, 2014). Rising inequality may be particularly harmful for well-being if you feel left behind by the changes in the economy that are producing greater inequality, such as skill-biased technological changes (Zhao, 2012). Moreover, these are not trivial associations. Among participants in the famous Whitehall studies, where respondent's placed themselves on a status ladder was a better predictor of health than either income or education (Singh-Manoux et al, 2003, 2005). More generally, a review of this literature has observed that subjective perceptions of inequality affect well-being as much as objective measures (Buttrick et al., 2017).

This does not seem to be true for everyone, however. The degree to which our perceptions of inequality affect well-being depends on how we frame and interpret it (Buttrick et al., 2017). For example, when people believe inequality is unimportant (Guillaud, 2013), fair (Bjørnskov et al., 2013), or legitimate (Schneider, 2012) then high levels of inequality matter much less for well-being. This means that both our perceptions of inequality (whether it has risen or fallen) and our beliefs about inequality (whether it is good or bad) may influence our health, and both of these may, we argue below, be informed by the political regimes in which people live.

2.2. How democracies alter how we see inequality—and why might it affect health?

What people believe about the level of inequality and whether inequality is good or bad is informed by a variety of factors, such as personal experience and socio-economic position. We form these beliefs about inequality against some background which permeates the societies in which we live. This background is not deterministic but it does influence what shows up to us in the world (what is salient) and how we interpret or respond to those things that show up to us (Benzecry and Winchester, 2017). Political institutions and regimes are part of this background because they are manifestations of taken-for-granted values and also because they actively reinscribe those values in everyday actions. To be more concrete, people living in democracies and autocracies may simply be forming their beliefs about inequality against different backgrounds and this may have implications for health. These political cultures may influence health in two similar but distinct ways.

First, people living in more democratic countries may, in general, simply be more likely to think inequality is rising and to be more concerned about rising inequality than people in autocracies. If true, then perceptions of rising inequality will be more detrimental for health in democracies and this difference may be rooted in the fact that the values of the people within these two kinds of society are different.

Democracies do in fact have a different orientation to inequality than autocracies. Countries with more democratic political regimes tend to have lower levels of economic inequality (Iversen and Soskice, 2019; Muller, 1988). In some respects, a distaste for inequality is baked into the ideology of democracies (Boix, 2003): that is, democracies regard (at least some) individuals as having equal voice in decision-making processes. This is obviously not to say that democracies are egalitarian (Karpowitz et al., 2009). Democratic countries have long excluded some groups from fully participating in their decision-making processes. But, democracies do tend to be rooted in a particular conception of equality that is not as common in some autocratic states. Former communist countries clearly once had ideological commitments to material equality but their transition to post-communist autocracies rather democracies may mean that they interpret increased inequality as a good thing for society at large positively because it implies greater equality of opportunity (Benabou and Ok, 2001; Gugushvili, 2019; Shariff et al., 2016).

Two empirical predictions flow from this discussion: *people living in more democratic countries may be more inclined to believe inequality is rising* (Hypothesis 1) and *believing inequality is rising should be worse for your health in more democratic countries* (Hypothesis 2). This general explanation of why perceptions of rising inequality may harm health in democracies more than autocracies suggests it does not matter how people come to form their impressions about increased inequality. That is, it should not matter whether they develop these impressions through everyday experiences in their community or through the media or some other mechanism.

In contrast to this general explanation, the second explanation is more focussed on the specific ways in which people come to learn about inequality. In this account, the precise channels through which people form these impressions matter and they may affect people's health in different ways depending on whether they are in a democracy or an autocracy. Here, we are particularly concerned about the role the media plays in how people form their impressions about the level of inequality, and also whether they think inequality is good or not. The function of the media certainly seems to differ between democracies and autocracies and these differences may have implications for how the media represents inequality.

Autocracies have far less media freedom than democracies and so tend to influence both the content and the tone of media coverage (Egorov et al., 2009; Gehlbach and Sonin, 2014; Stier, 2015). This may apply to inequality in the same way as it applies to other politically salient areas of social life. This recognition of the power of autocratic states to shape the media narrative around inequality also suggests that one reason democratic states may have a different connection between perceptions of inequality and health through the media is trust. Autocratic control of the media may fundamentally alter the degree to which perceptions of inequality learned through the media affect health because people are less trusting of the media as a source. That is, people in autocratic states may be less likely to acquire their information about inequality from the media because they do not trust it as a source.

People who learn about inequality from the media in autocratic states are perhaps more likely to adopt the view of inequality that permeates those societies. That is, in autocracies people who learn about inequality from the media are more likely to view inequality as unimportant (Guillaud, 2013), fair (Bjørnskov et al., 2013), or legitimate (Schneider, 2012) and so even if they see inequality rising this will not harm their health. In democracies, by contrast, people who learn about inequality from the media will be more likely to view inequality in a negative way and so when they believe inequality is rising this will harm their health. In Germany, for example, psychological health declines when the media give more attention to inequality and this is part of the reason why well-being tends to be lower in periods of high inequality (Grisold and Theine, 2017). Our argument is that while this may be true in Germany it may not apply to more autocratic states where the media frames inequality in quite different ways.

Two more empirical implications flow from this discussion. In contrast to the general explanation offered above, here we suggest that the influence of inequality on health may depend on how people form their impressions of inequality. Specifically, we argue that the media in both democratic and autocratic states may influence the relationship between perceptions of inequality and health in different ways. Hypothesis 3, then, is: *people in autocracies are less likely to use information gleaned from the media about inequality and this may be rooted in the general lack of trust people have towards the media in autocratic states*. Hypothesis 4, by contrast, suggests that *if people learn about rising inequality through the media in a democracy then this will harm health more than if people learn about rising inequality through the media in an autocracy*. This is because learning about inequality from the media in these two contexts entails adopting more completely the framing of inequality promulgated by the media in those contexts.

2.3. Democratic transition in post-communist societies and health

We test our theories of the link between inequality, democracy, and health in 28 post-communist countries. There are two reasons why this is a useful setting to test the described hypotheses.

First, starting from the largely comparable levels and modes of authoritarianism in the beginning of the 1990s, post-communist societies were significantly different from each other in terms of the degree of democracy they achieved by the mid-2010s and this provides an opportunity to explore the main research questions of this study in comparative perspective. The most democratically advanced post-communist societies are the Central and Eastern European countries that are also new EU member countries such as Czechia, Slovakia, and Slovenia (Gugushvili, 2020). The three Baltic States of Estonia, Lithuania and Latvia have generally made a greater progress toward democratization than other former Soviet republics since gaining independence in 1991 (Duvold and Berglund, 2014). The Balkan countries consists of severely war-torn societies characterised by considerable variance of democratic practices (Grimm and Mathis, 2018). Lastly, the group of non-Baltic former Soviet Union republics is made up of countries in Central Asia and South Caucasus as well as Belarus, Moldova, Russia, and Ukraine. These states are the least democratic among other post-communist societies (Balaev, 2009).

Second, in addition to the level of democracy, as discussed above, we know that other observed and unobserved macro-level characteristics such as economic development (Lange and Vollmer, 2017) and income inequality (Wilkinson and Pickett, 2009a), among others, are important predictors of population health. Limiting the analytical sample to only post-communist societies allows us to account for some of the most important contextual characteristics. It also allows us to mitigate the problem of unobserved heterogeneity related to, for instance, geographic proximity, cultural norms, or the path dependency in health care provision. Whereas the variation in health outcomes in post-communist societies has been investigated most prominently in relation to economic reforms, unemployment, and welfare state retrenchment (Doniec et al., 2019; Azarova et al., 2017; Jarosz and Gugushvili, 2020; Scheiring et al., 2019), the role of democracy in health and its potential intersections with inequality perceptions has not yet been examined in detail.

3. Methods

3.1. Individual-level data

Our individual-level data comes from the third wave of Life in Transition Survey (LITS) collected in 2016 b y the European Bank for Reconstruction and Development (EBRD) (EBRD, 2016). LITS covers 34 countries in Central and Eastern Europe and Asia. After excluding countries without communist experience (Cyprus and Turkey) and those with relatively mature democracies (Germany, Greece, and Italy), the following 28 post-communist societies remained for our analysis:

Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czechia, Estonia, North Macedonia, Georgia, Hungary, Kazakhstan, Kosovo, the Kyrgyz Republic, Latvia, Lithuania, Moldova, Mongolia, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, and Ukraine. We could not use data for Uzbekistan due to the unavailability of information on the key explanatory variable described below.

The survey is of high quality, has been employed in comparative social and health research and it ensures the national representativeness of the collected data by using a multi-stage random probability stratified clustered sampling (Gugushvili and Jarosz, 2019; Jarosz and Gugushvili, 2021; Habibov et al., 2020). After list-wise deletion of observations with missing information, 3.5% of the total sample, 40,095 individuals were available for our analysis. The original sample sizes and the detailed demographic profiles of respondents in the considered countries are given in supplementary materials (Table S1).

3.1.1. Self-rated health

Our primary outcome variable is self-rated health, measured as 5 categories ('very bad', 'bad', 'medium', 'good', or 'very good'). Self-rated health has been validated as an important predictor of more objective health measures such as mortality (Baćak and Ólafsdóttir, 2017; Lorem et al., 2020) and has been also used extensively in the post-communist countries which usually lack comparative survey data with information on physical examinations (Gugushvili et al., 2019; Lyytikäinen and Kemppainen, 2016; Sieber et al., 2019). Nonetheless, measures of self-rated health are also characterised by reporting heterogeneity, for instance, males usually report having better health than females when in reality, on average, females are healthier and live longer than males (McCullough and Laurenceau, 2004). The 5-point scale is used in most analysis but when estimating specific treatment effects (described below) we created a dummy variable that takes value of 1 if individuals rate their health as 'good' or 'very good'.

3.1.2. Channels of perceptions of increasing inequality

The survey also contains a measure of perceptions of inequality over time. Respondents are asked: 'Do you think the gap between rich and poor in the past 4 years has stayed the same, become larger or become smaller in [country]?' The available answer options were: 'Stayed the same,' 'became smaller', 'became larger', and 'don't know'. If survey respondents reported perceived changes in inequality, interviewers were asked this follow-up question: 'Which one, if any, of the reasons explains why you think the gap between the rich and poor has increased/decreased?'. From the following seven answer options, respondents could select only one: (1) 'what I have seen in my neighbourhood', (2) 'what I have seen in a village or city outside of my neighbourhood'; (3) 'information on TV'; (4) 'information in printed press'; (5) 'information on the internet'; (6) 'discussion with friends and family'; and (7) 'other'. We focus on perceptions of increased inequality because of the low number of observations for certain channels of learning about decreasing inequality (0.33% and 0.28% of the sample, respectively, for printed press and internet channels).

3.1.3. Covariates of self-rated health

In our multivariable models, we also include a number of covariates in order to account for possible confounders of the association between perceptions of inequality and self-rated health. We considered measures of age and gender, whether respondents lived in an urban or rural part of the country, and their marital status (never married, married, widowed, and separated/divorced). We differentiated individuals' educational attainment by primary, secondary, and tertiary levels. LITS did not allow us to identify respondents' occupational class but we did include a measure of labour market status, distinguishing those who never worked, who were unemployed, and who were employed at the time of the interview. Subjective socio-economic position is also correlated with self-rated health (Präg, 2020) and so we include a measure of subjective

status in our models, which is operationalised as respondents' self-placement of their households on a 10-step ladder with 1 (bottom of the scale) representing a country's poorest 10% of people, and 10 (top of the scale) representing the richest 10%. To account for material conditions directly affecting individuals' self-rated health, we used the survey question asking if respondents' households could afford consumption of meat, chicken, fish, or vegetarian equivalent each second day (a commonly used measure of material deprivation). Further, as sedentary lifestyle is an important predictor of health, we operationalised it with the number of hours that individuals watched television a day prior to the interview. Lastly, we considered the role of social support with a measure of how often respondent's met up with friends or relatives who were not living in their households. The descriptive statistics for all individual-level variables is shown in supplementary materials (Table S2).

3.2. Country-level data

We have supplemented the LITS dataset by combining it with a number of country-level variables, including measures of democracy, economic development, and income inequality.

3.2.1. Level of democracy

Our primary moderator is the level of democracy. We use the aggregate score of democracy from Freedom House's Freedom in the World annual global report. This commonly-used measure is useful because Freedom House have specialised in the democratic transition in post-communist countries, drawing on regional experts to create their indices (Freedom House, 2012). It also benefits from using a consistent methodology which is rooted in the Universal Declaration of Human Rights that was adopted by the United Nation's General Assembly in 1948. It assesses the real-world rights and freedoms experienced by individuals in the considered countries, rather than governments' democratic performance as such. The maximum score on Freedom House's aggregate score of democracy is 100 and the lowest is 0. Specific indicators used by the Freedom House to generate the aggregate score of democracy are shown in supplementary materials (Table S3).

3.2.2. Economic development and income inequality

Democratic transition in the post-communist countries is often discussed alongside free market-oriented reforms and economic development (Bohle and Greskovits, 2012). The level of democracy is closely associated with the level of economic development (Knutsen et al., 2019) and economic development itself is one of the most important predictors of population health (Lange and Vollmer, 2017). We assessed economic development of post-communist countries by the level of GDP per capita based on purchasing power parity (PPP) in constant 2011 international dollars (World Bank, 2020).

We include the net Gini coefficient as a measure of income inequality taken from the Standardized World Income Inequality Database (SWIID) because it is a particularly good source for post-communist countries (Solt, 2016). We also considered change in income inequality in 2012–2016 because our main explanatory variable at the individual level (described above) asked about respondents' perceptions of change in inequality for this same period. Gini coefficients are not perfect measures of inequality nor even the real distribution of income, but they are one of the few comparable and temporally consistent measures of inequality available for this set of countries. The specific country values for all macro-level variables are given in supplementary materials (Table S4).

3.3. Statistical analysis

We start our empirical analysis by looking at bivariate country-level associations followed by multilevel mixed-effects linear regressions. This model specification allows us to simultaneously account for

potential links between country- and individual-level characteristics and respondents' self-rated health. One particularly useful characteristic of this model specification is that we can test whether the level of democracy and other country-level variables moderate the individual-level effects on self-rated health by fitting cross-level interaction terms. In our initial analysis, we use a linear function of multilevel regression models rather than a logistic function (after dichotomising self-rated health) because we are concerned with the dose-dependence of self-rated health and the linear specification allows us to capture the full variation in the dependent variable (Schnittker and Bacak, 2014).

One of the main shortcomings of our models is that selection into different channels of inequality information is not random. For instance, individuals who learned that inequality increased from friends might not be comparable to those who learned about inequality through watching television (Curtis et al., 2007). Therefore, we use inverse probability weighting (IPW) to partially mitigate this concern. The main difference between regression analysis and IPW approach is that 'the former models the relationship between a covariate and the outcome, whereas the latter models the relationship between the covariate and the putative cause (i.e., treatment assignment)' (Thoemmes and Ong, 2016, p 41).

We made the assumption that the channels through which respondents learnt about increasing inequality could be viewed as specific exposures and conducted treatment-effects estimation for binary outcome variable of good self-rated health. More specifically, we estimate the average treatment effect on treated (ATET) by IPW. This approach uses probability weights to correct for the absence of data on the counterfactual for each subject in our analytical sample—having 'good' or 'not good' self-rated health. IPW approach first estimates the parameters of the treatment model and then computes the estimated inverse probability weights. Next, it uses the estimated inverse probability weights to compute weighted averages of the outcomes for different treatment levels—specific channels of perception formation regarding changes in inequality. The contrasts of these weighted averages provide the estimates of the ATET. Our treatment estimators were derived using Stata 16 function for treatment-effects estimation for observational data 'teffects' with specification of 'ipw' and the results are presented as a percentage change of the mean good self-rated health.

Despite using multilevel regression models and treatment estimators, the cross-sectional nature of observational data precludes us from making causal statements. It is entirely possible, for example, that endogeneity underpins our findings. Whilst we cannot fully rule out this possibility, we have conducted a large number of additional tests (fully shown in supplementary materials) to help us understand this matter, including, among other issues, the role of hours television watched,

changes in macro-level variables, alternative measures of democracy and the measure of the freedom of the press, gender-specific analysis, more detailed description of decreasing inequality perceptions, and the role of outliers in the derived findings.

4. Results

4.1. Country-level associations

Fig. 1 shows country-level associations between self-rated health, democracy, income inequality, change in income inequality, and perceived increase in inequality in 28 post-communist countries. We find no clear correlation between the level of democracy and the mean level of self-rated health (Fig. 1A) (although there is a positive association between life expectancy and democracy as shown in supplementary materials, Fig. S1A). Income inequality is not a good predictor of self-rated health in post-communist countries (Fig. 1B) and there is also no association between perceived change in inequality between 2012 and 2016 and change in the Gini coefficient over the same period (Fig. 1D) (even if we remove Tajikistan from the calculation). Apparently, individuals do not have an accurate idea of whether inequality has changed (at least as captured by the Gini coefficient). Finally, Fig. 1E also shows that there is a weak negative association between self-rated health and perceived change in inequality, which could possibly be explained by mechanisms envisaged by the psychosocial theory of health (Wilkinson and Pickett, 2009a, 2009b, 2009b). In supplementary materials, Fig. S1B, we do not find a significant association between income inequality and the level of democracy.

The one important exception is that perceived increases in income inequality are positively associated with the level of democracy (Fig. 1C), but this is largely driven by having Tajikistan in the sample. Once removed from the scatterplot, the R^2 falls from 0.17 to 0.07. It does not seem that people in democracies are more likely to think inequality is rising and therefore this finding partially goes against Hypothesis 1. Fig. S2 in supplementary materials depicts various alternative functional associations between the described variables and suggests that the non-linear curves do not fit data well.

However, when we look at specific channels through which people form their beliefs about inequality, we start to see a more complex picture. Fig. 2C and D shows that people in democracies are more likely to believe inequality has been rising if they form their opinions about the changes in inequality through the television and the print media. People in autocracies are far less likely to think inequality is rising and this is partially consistent with Hypothesis 1. There is a positive correlation between believing inequality has risen and the level of democracy for
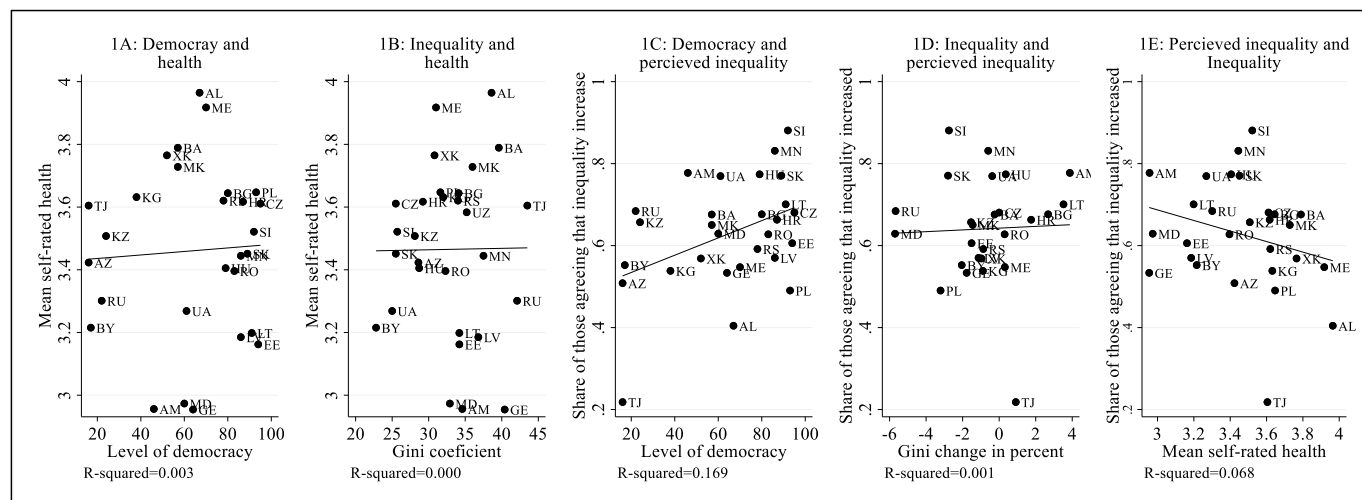

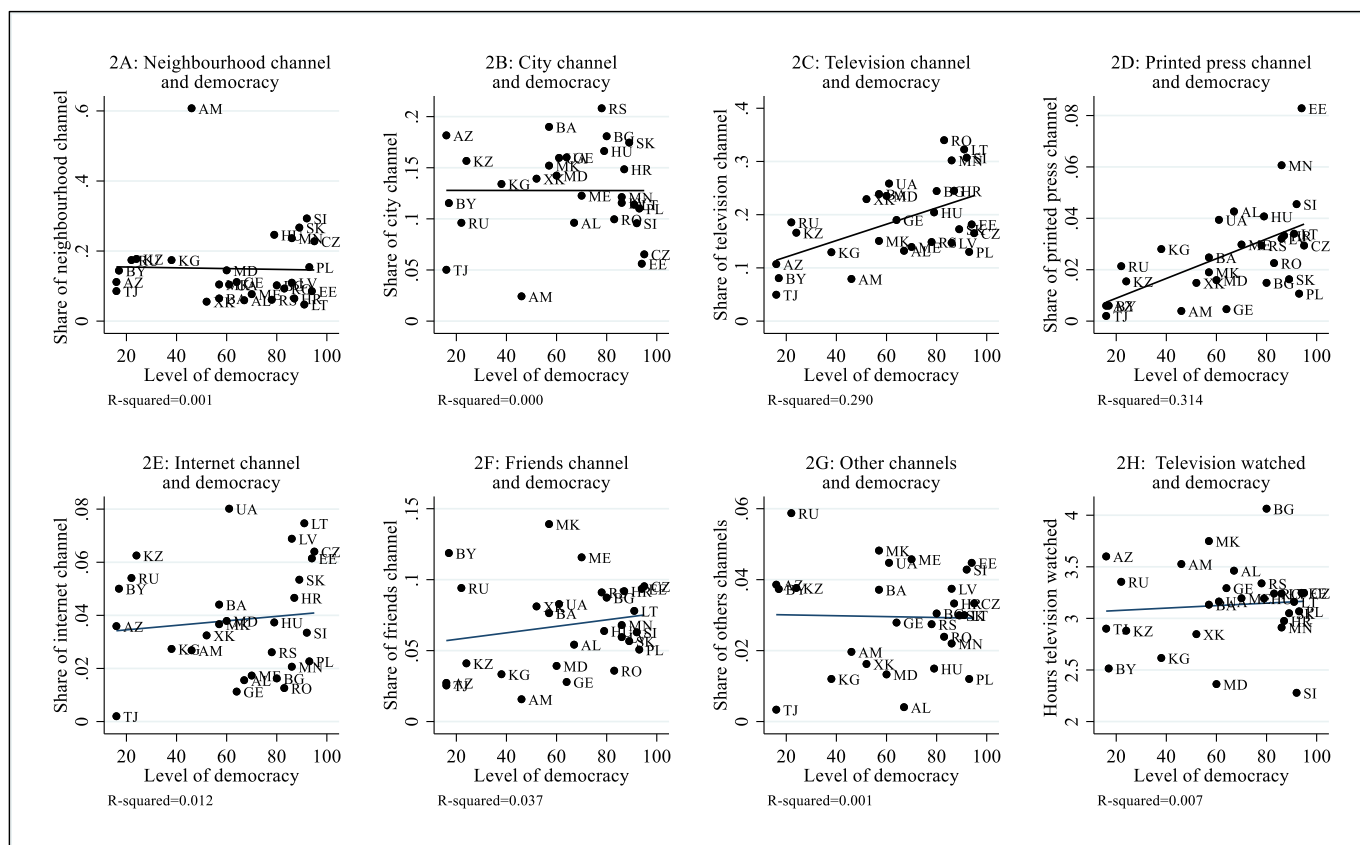**Fig. 1.** Bivariate associations between country-level characteristics.

Fig. 2. The level of democracy and the channels through which individuals learnt about increasing inequality.

both those who formed their beliefs about inequality through (a) the television and (b) the printed press. But the television channel is far more substantively important because the proportion of people that have used the television to form their beliefs about inequality is about 7 times higher than the share of people learning about inequality through the printed press.

Crucially these differences are not explained by variation in the number of hours that people watch television in democracies and autocracies (Fig. 2H). Average length of television watching a day prior to the interview does not vary by the level of democracy.

4.2. Multilevel analysis

Next, we fitted multilevel mixed-effects linear regressions which explore the association between the level of democracy and self-rated health, adjusting for multiple covariates (Table 1). We find that the level of democracy has a significant positive association with self-rated health regardless of the model specifications. In fact, once the level of democracy is accounted for in Model 4, neither economic development nor income inequality are significantly associated with self-rated health. Furthermore, the perception of increasing inequality at the individual-level is consistently and significantly associated with worse self-rated health.

Contrary to our Hypothesis 2, we do not find a significant interaction effect between the perception of increasing inequality and the level of democracy, which means that, on average, the perception of increasing inequality is linked to the lower level of self-rated health and that this does not vary between more democratic and more autocratic post-communist countries. Other individual-level socio-demographic and socio-economic characteristics included in Models 1–4 behave in the expected fashion—younger individuals, males, married, better educated, those who are employed, occupy higher socio-economic

position, maintain frequent contacts with friends and relatives, and watch less television have better self-rated health.

We now unpack whether learning about inequality from specific channels alters the association with self-rated health (Table 2). Model 1 shows that learning about rising inequality through a variety of channels undermines self-rated health. Specifically, when people form their beliefs about inequality based on experience in their local community, what they see on the television, what they learn from friends, and indeed through other possible channels they seem to report that their health is not as good. Individuals who live in more democratic countries still report better self-rated health even after economic development and income inequality are accounted for.

We also explore whether the relationship between these channels and self-rated health is moderated by the level of democracy and also two other contextual variables—economic development and income inequality. In almost all cases we find no clear interaction effects with one exception: people learning about rising inequality from the television (see Model 2). This finding, largely in line with Hypothesis 4, suggests that in more democratic post-communist societies learning about increasing inequality through television has a more negative effect on self-rated health than it does in more autocratic countries. Importantly, as Table S5 in supplementary materials suggests, learning about increasing inequality through television is not significantly affected by the longer hours of television watching.

It is a possibility that not only the level of democracy, but also other macro-level variables moderate the effect of television watching on self-rated health. This is the reason why we consecutively interact the channels of learning about increasing inequality with economic development (Model 3) and income inequality (Model 4). The results from these multilevel mixed-effects linear regression models, however, suggest that there are no significant interaction effects between economic development and income inequality, on the one hand, and the channels

Table 1

Point estimates from multilevel mixed-effects linear regression models of self-rated health (1 = very bad, 5 = very good).

	Model 1: Baseline model		Model 2: With socio-economic controls		Model 3: Cross-level interactions with democracy		Model 4: With economic development and income inequality	
	B	(SE)	β	(SE)	β	(SE)	β	(SE)
Intercept	4.57***	(0.09)	4.06***	(0.10)	4.06***	(0.10)	4.05***	(0.10)
Macro-level variables								
Level of democracy	0.10***	(0.03)	0.08**	(0.03)	0.08*	(0.03)	0.10**	(0.04)
Economic development	–	–	–	–	–	–	−0.04	(0.06)
Income inequality	–	–	–	–	–	–	−0.01	(0.04)
Gap between rich and poor in past 4 years …								
Stayed the same	0.00	–	0.00	–	0.00	–	0.00	–
Don't know	−0.05	(0.03)	0.00	(0.03)	−0.00	(0.03)	−0.00	(0.03)
Became smaller	−0.02	(0.03)	−0.02	(0.04)	−0.00	(0.03)	−0.00	(0.03)
Became larger	−0.12***	(0.02)	−0.09***	(0.02)	−0.09***	(0.02)	−0.09***	(0.02)
Cross-level interactions								
Stayed the same*democracy	–	–	–	–	0.00	–	0.00	–
Don't know*democracy	–	–	–	–	−0.02	(0.03)	−0.02	(0.03)
Became smaller*democracy	–	–	–	–	0.02	(0.04)	0.02	(0.04)
Became larger*democracy	–	–	–	–	−0.01	(0.01)	−0.01	(0.01)
Socio-demographic and socio-economic characteristics								
Gender								
Female	0.00	–	0.00	–	0.00	–	0.00	–
Male	0.11***	(0.01)	0.06***	(0.01)	0.06***	(0.01)	0.06***	(0.01)
Age	−0.02***	(0.002)	−0.02***	(0.002)	−0.02***	(0.002)	−0.02***	(0.002)
Age-squared/100	−0.01	(0.001)	0.01**	(0.001)	0.01**	(0.001)	0.00**	(0.001)
Settlement								
Urban	–	–	0.00	–	0.00	–	0.00	–
Rural	–	–	−0.01	(0.01)	−0.01	(0.01)	−0.01	(0.01)
Marital status								
Single	–	–	0.05**	(0.02)	0.05**	(0.02)	0.05**	(0.02)
Married	–	–	0.05***	(0.01)	0.05***	(0.01)	0.05***	(0.01)
Widowed	–	–	0.00	(0.02)	0.00	(0.02)	0.00	(0.02)
Divorced	–	–	0.00	–	0.00	–	0.00	–
Education								
Primary	–	–	0.00	–	0.00	–	0.00	–
Secondary	–	–	0.12***	(0.02)	0.12***	(0.02)	0.12***	(0.02)
Tertiary	–	–	0.22***	(0.02)	0.22***	(0.02)	0.22***	(0.02)
Labour market status								
Never worked	–	–	0.00	–	0.00	–	0.00	–
Unemployed	–	–	−0.09***	(0.02)	−0.09***	(0.02)	−0.09***	(0.02)
Working	–	–	0.16***	(0.02)	0.16***	(0.02)	0.16***	(0.02)
Subj. Socio-economic position	–	–	0.06***	(0.01)	0.06***	(0.01)	0.06***	(0.01)
Household cannot afford fish, meat or chicken	–	–	−0.14***	(0.03)	−0.14***	(0.03)	−0.14***	(0.03)
Contact with friends and relatives								
Every other day	–	–	0.12***	(0.02)	0.12***	(0.02)	0.12***	(0.02)
Monthly	–	–	0.07***	(0.01)	0.07***	(0.01)	0.07***	(0.01)
Rarely	–	–	0.00	–	0.00	–	0.00	–
Hours TV watched	–	–	−0.02***	(0.001)	−0.02***	(0.001)	−0.02***	(0.001)
AIC	98299.5		91136.5		91137.4		91138.9	
BIC	98385.9		91334.3		91361.0		91371.0	
Countries	28		28		28		28	
Observations	40,095		40,095		40,095		40,095	

Note: *p < 0.05, **p < 0.01, ***p < 0.001.
Sources: EBRD (2016), Freedom House (2017), Solt (2016), and World Bank (2017).

of learning about increasing inequality, on the other hand. It is only the association between self-rated health and learning about inequality through the television that is altered by the level of democracy. This significant association is maintained even after applying a Bonferroni correction procedure which involves adjusting the conventional level of significance (*p*-value = 0.05) by dividing it by the number of cross-level interactions in Table 2 (0.05/21 = 0.002, whereas the *p*-value for democracy-television interaction is 0.001).

In supplementary materials (Table S6), we also test if changes in democracy, income inequality and economic development in 2012–2016 rather than the absolute values of these variables in 2016 have any association with self-rated health or if these variables moderate the association between inequality learning channels and self-rated health. We find no evidence that changes in contextual environment has any direct or moderating effect on self-rated health.

4.3. Specific effects of democracy and treatment estimators

We further unpack this association by exploring the country-specific differences. Doing so allows us to see more clearly how to interpret the interaction effects in our regression models (see Brambor et al., 2006). In Fig. 3, we report the predicted mean levels of self-rated health for those individuals who say inequality did not change and for those who believed that inequality increased based on information they received through watching television. We also report the marginal differences in self-rated health between these two groups of individuals for each of our 28 post-communist countries according to their level of democracy, with the corresponding 95% confidence intervals. These estimates are derived after running Model 2 in Table 2.

This figure reinforces the implication that the observed differences between political systems are substantively meaningful. Countries with higher levels of democracy do, on average, have better self-rated health but this partly depends on whether you believe inequality has risen or

Table 2
Point estimates from multilevel mixed-effects linear regression models of self-rated health (1 = very bad, 5 = very good) with cross-level interactions.

	Model 1: Without cross-level interactions		Model 2: Cross-level interactions with democracy		Model 3: Cross-level interactions with economic development		Model 4: Cross-level interactions with income inequality	
	β	(SE)	β	(SE)	β	(SE)	β	(SE)
Intercept	4.05***	(0.10)	4.05***	(0.10)	4.05***	(0.10)	4.05***	(0.10)
Macro-level variables								
Level of democracy	0.09**	(0.03)	0.10**	(0.04)	0.09**	(0.03)	0.09**	(0.03)
Economic development	−0.04	(0.06)	−0.04	(0.06)	−0.03	(0.06)	−0.04	(0.06)
Income inequality	−0.01	(0.04)	−0.01	(0.04)	−0.01	(0.04)	−0.00	(0.04)
Gap between rich and poor in past 4 years …								
Stayed the same	0.00	–	0.00	–	0.00	–	0.00	–
Don't know	−0.02	(0.04)	−0.00	(0.03)	0.00	(0.03)	−0.00	(0.03)
Became smaller	−0.00	(0.03)	−0.01	(0.03)	−0.00	(0.03)	0.00	(0.03)
Became larger - the most important way you formed your perception …								
Neighbourhood	−0.10***	(0.02)	−0.10***	(0.02)	−0.10***	(0.02)	−0.10***	(0.02)
City	−0.09***	(0.02)	−0.09***	(0.02)	−0.09***	(0.02)	−0.09***	(0.02)
TV	−0.10***	(0.02)	−0.09***	(0.02)	−0.10***	(0.02)	−0.09***	(0.02)
Press	−0.07	(0.04)	−0.08	(0.05)	−0.07	(0.04)	−0.07	(0.04)
Internet	−0.03	(0.03)	−0.03	(0.03)	−0.03	(0.03)	−0.03	(0.03)
Friends	−0.09***	(0.02)	−0.09***	(0.02)	−0.09***	(0.02)	−0.09***	(0.02)
Other	−0.10**	(0.04)	−0.10**	(0.03)	−0.10**	(0.03)	−0.09**	(0.04)
Cross-level interactions								
Stayed the same	–	–	0.00	–	0.00	–	0.00	–
Became larger - the most important way you formed your perception …								
Neighbourhood	–	–	−0.01	(0.02)	−0.01	(0.02)	−0.02	(0.02)
City	–	–	0.03	(0.02)	−0.03	(0.02)	0.01	(0.02)
TV	–	–	−0.05**	(0.02)	−0.02	(0.02)	−0.00	(0.02)
Press	–	–	0.00	(0.03)	0.04	(0.05)	−0.06	(0.04)
Internet	–	–	0.01	(0.03)	−0.03	(0.04)	−0.00	(0.03)
Friends	–	–	−0.02	(0.02)	0.00	(0.02)	−0.01	(0.02)
Other	–	–	0.00	(0.03)	−0.05	(0.03)	0.01	(0.03)
AIC	91133.5		91094.8		91120.6		91108.4	
BIC	91365.7		91326.9		91352.7		91340.6	
Countries	28		28		28		28	
Observations	40,095		40,095		40,095		40,095	

Note: *p < 0.05, **p < 0.01, ***p < 0.001.
Sources: EBRD (2016), Freedom House (2017), Solt (2016), and World Bank (2017).
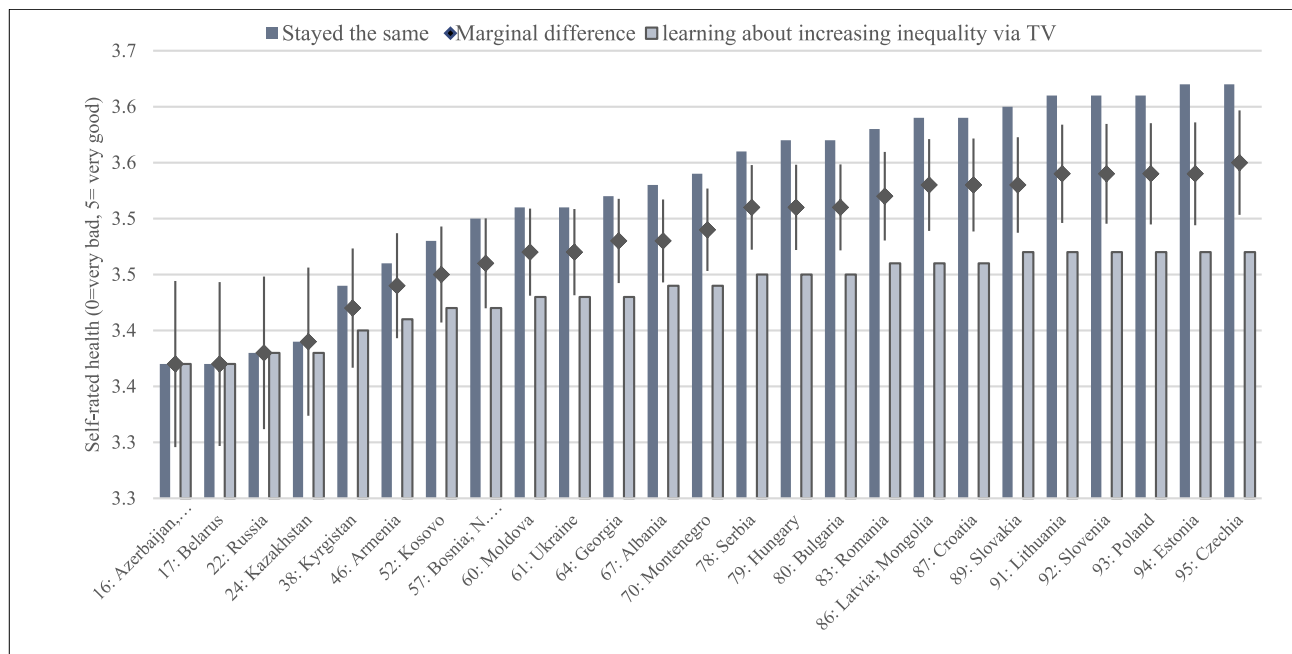

Fig. 3. Predicted mean levels of self-rated health (1 = very bad, 5 = very good) by the level of democracy (higher scores = higher democracy) for those who thought that inequality did not change and those who learnt about increasing inequality through watching television. Bars show 95% confidence intervals.

not. For those in democracies who think inequality has risen and who have formed this impression via the television, the improvements in self-rated health are more modest compared to less democratic countries.

Indeed this difference only appears after countries reach a certain threshold of democratization—the democracy score of 57, which roughly equals the threshold after which the Freedom House assigns to a

country the status of electoral democracy. In authoritarian post-communist countries—Azerbaijan, Tajikistan, Belarus, Russia, and Kazakhstan—knowledge of increasing inequality through television was not associated with the lower levels of self-rated health but this is not the case in democratic post-communist societies such as Czechia, Estonia, Poland, Slovenia, Lithuania, and others. Here, we see that learning about increasing inequality through watching television reduced self-rated health by more than a fifth of a standard deviation compared to those who believed inequality did not change.

Exposure to our moderator—the level of democracy—is clearly not randomly assigned and so our results may be biased because, on average, people living in more democratic countries may be different from those in less democratic countries. We address this problem by using IPW to estimate ATET (Gangl, 2010). To estimate this model, we first split our measure of democracy into 3 levels and then estimate whether this alters our findings. After discovering consistent results, we estimate the IPW model (see supplementary materials, Table S7 and S8, for regressions with the tertiles of democracy and auxiliary-equation output). In Fig. 4 we show that for less democratic countries the effect of believing inequality has risen because of what you have heard on the television is not significantly different from 0, while in more democratic countries the proportion of people who report having good health is 11 percent lower among those who learned about increasing inequality through watching television compared to those who did not think the level of inequality had changed.

4.4. Alternative measures of democracy, freedom of the press, gender and outliers

There is no single measure of democracy and it might be the case that our results are explained by the particular measure we have used in the main analysis. We check whether our results change if we use the sub-scores of Freedom House's democracy index on political rights and civil liberties, Polity IV scores (Marshall et al., 2018), or the democracy index of the Economist Intelligence Unit (EIU, 2016). In all these tests, we find the same results for the interaction terms between the alternative measures of democracy and learning about inequality through watching television (supplementary materials, Table S9).

We also consider in more depth the role of freedom of the press in our analysis because it is one of the main mechanisms we propose to explain the potential moderating effect of democracy on the links between inequality perceptions and self-rated health. While measuring press freedom is not straightforward, Freedom House does generate scores for media independence in its annual reports (Freedom House, 2017). We then check whether our results change if we substitute the overall democracy score with the freedom of press scores, finding almost identical results (again in Table S9).

Considering that the determinants of an individuals' self-rated health

Fig. 4. ATET as a percentage of the mean value of good self-rated health from IPW estimators by countries' level of democracy. Bars show 95% confidence intervals.

are likely to be structurally different for females and males, we test if our main findings are affected by survey participants' gender. After fitting mixed-effects regression models with gender-specific interaction terms (supplementary materials, Table S10), we do not find evidence that males and females differ in terms of the links between inequality perceptions, learning about inequality through television, and self-rated health. We also find that the channels of learning about decreasing inequality are not associated with self-rated health (supplementary materials, Table S11), which is in line with the existing evidence from social psychology that losses in income (which is perhaps most closely associated with increasing inequality) have a larger effect on individuals than do equivalent gains (Sokol-Hessner and Rutledge, 2019).

We also check whether our results are explained by any particular country by re-estimating our main analysis after sequentially removing each country from the regression model (supplementary materials, Table S12). This exercise did not produce any deviations from the main analysis. In the process we also calculated DF Betas for the main variables of interest in all considered countries and in the same table we show that the vast majority are below their cut off value of 0.378, suggesting country-level outliers do not significantly affect the results (Van der Meer et al., 2010).

5. Discussion

In this study, we explored whether the relationship between perceptions of inequality and self-rated health may vary depending on the level of democracy in a set of 28 post-communist countries. Three key observations emerge from our analysis. First, self-rated health is lower among people who believe inequality has gone up in the last few years, reinforcing earlier work showing how local conditions and experiences of inequality are associated with self-rated health (Baidin et al., 2021; Gugushvili et al., 2020). Second, this association between perceptions of rising inequality and self-rated health is largely consistent across the different channels through which people come to learn about rising inequality. However, and third, the level of democracy moderates the degree to which one of these channels—learning about rising inequality from the television—affects self-rated health. To be more precise, we find that learning about rising inequality from the television is more harmful for self-rated health in more democratic countries.

But, why is learning about inequality through television more harmful for self-rated health in democracies as opposed to autocracies? We have argued that more democratic countries have largely free and uncensored television channels that more comprehensively present the social problems associated with increasing inequality such as poverty, material deprivation, and health inequality. This applies not only to the news but also to other aspects of television broadcasting such as talk shows, entertainment features, and documentaries. It is true that in more autocratic countries, a significant share of population learn about increasing inequality through television (albeit much less than in democracies), but arguably the extent of the coverage and the general salience of social issues related to inequality, particularly of those stemming from corruption and the abuse of power, is less pronounced and information which individuals get is less reliable (Jakubowicz and Sükösd, 2008).

One possible reason why learning about inequality through television does influence health in more authoritarian countries is that people trust the media less in those contexts. Unfortunately, we are not aware of comparative survey data for the least democratic post-communist countries on the extent to which information received through television is trusted. The Eurobarometer for 2017 does provide data on the share of individuals who trust television across 28 European societies, and this variable is, as our theory expects, moderately and positively correlated ($r = 0.36$, $p < 0.00$) with the level of democracy in these countries (Eurobarometer, 2017). Moreover, survey data for the three former Soviet republics—Armenia, Azerbaijan, and Georgia—suggest that those individuals who think that their country is a full democracy

have significantly higher trust in the media as shown in Fig. 5 (CRRC, 2013).

Our results should be read in the light of existing research on public perceptions and media coverage of inequality, and how both influence health. Earlier work suggests local experiences of increasing inequality are correlated with poorer self-rated health (Gugushvili et al., 2020) but also that inequality only harms health when people think it is unfair or unjust. Additionally, there is evidence that health is negatively affected when media coverage of inequality increases. Our findings sit alongside these results. We show that learning about increasing inequality through the media might also undermine health but that this association likely varies across countries. Post-communist countries are a particularly illuminating context in which to explore these themes because some of them continue to be relatively authoritarian political regimes (exercising a high degree of control over the media) and because they have a more ambivalent relationship to discourses of equality (Habibov, 2011). Indeed it is in these contexts where we might expect governments and media elites to promote and popularise the virtues of inequality such as the idea that inequality is an inevitable part of modern economy or that being in poverty is the fault of the impoverished (Gugushvili, 2016; Teo, 2019).

As Acemoglu (2006) has argued, one reason post-communist autocratic elites might want to legitimise socio-economic inequalities is their interest in defending and justifying their own privileged access to national resources against precarious workers and emerging entrepreneurs. In fact, post-communist countries with more sustainable democratic institutions today also tended to have lower inequality at the start of their democratic transition (Gerry and Mickiewicz, 2008). Above we noted the possibility that one explanation for our results was a lack of trust in the media but another possible explanation for our main finding—that learning about rising inequality from the television is less harmful for self-rated health in authoritarian countries—is how the mass media frames and understands inequality. Put simply, people in authoritarian contexts may be far less worried about rising inequality than people in liberal democracies.

5.1. Limitations

There are important limitations to this study. First, our results could be driven by the specific set of countries we study in this paper, their unique political and economic transformations may reduce the generalisability of our findings. For instance, the level of democracy observed for some of the post-communist countries may be measuring integration with the European Union or that the level of democracy is significantly determined by the overall levels of political consciousness and citizens' education which, in turn, are shaped by unique historical processes. If this is the case, future work might look at a different set of countries which might also include other European democracies. Second, since the analysed data were cross-sectional, we cannot confidently make causal claims for the associations reported here, even though our treatment estimators come as close as possible to causality with the observational data available to us. We cannot exclude the possibility, however, that individuals' health affects their selection of channels through which they get information about increasing inequality. For instance, those who report experiencing bad health may select television as their main source of information simply because they are much less exposed to other channels of acquiring inequality related information. Finally, our measure of income inequality is imperfect and very likely systematically underestimates the true level of inequality. It might also be true that the degree of underestimation is larger in some countries (e. g., Ukraine) and that such bias might alter our results. It is reassuring that our results are not explained by any single country but we cannot rule out the possibility that some set of countries have more bias than others.
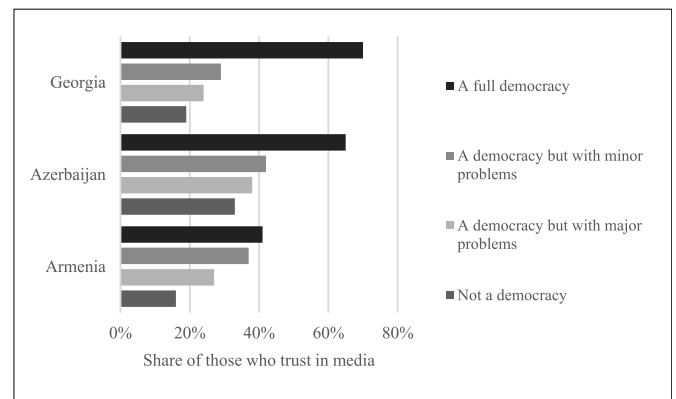

Fig. 5. Bivariate association between trust in media and individuals' perceptions of democracy in countries where they live.

6. Conclusions

Bearing in mind the limitations of our findings, one of the main implications of this study concerns the relationship between democracy and health. Countries with more democratic political regimes tend to produce better health outcomes for their populations by, for instance, increasing life expectancy and reducing infant mortality (Franco et al., 2004; Krueger et al., 2015). Democracies even seem better placed to deal with the challenges of non-communicable diseases which require complex, intersectoral action (Bollyky et al., 2019). In part, this seems to be because political leaders in democratic countries are more responsive to the demands of their citizens and therefore try to ensure basic standards of living are met and that the benefits of economic growth are more evenly shared (Baker et al., 2019; Besley and Kudamatsu, 2006). Not only are leaders in autocracies less responsive but the people living in those countries tend to have higher rates of depression, which may be linked with the experience of fewer civil liberties, weaker political rights and a general suppression of other freedoms (Safaei, 2006). However, our results suggest that democracies are not unambiguously good for health (Acharya et al., 2021). There may be some instances in which the values and institutions of liberal democracies undermine the more general gains in health experienced across the population. To be clear, our results do not indicate that democracies are bad for health but rather that the link between democracy and health could lead to some people to experiencing poor health when inequalities are perceived to have increased.

Credit author statement

Both authors contributed equally.

Funding

Declaration of competing interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.

org/10.1016/j.socscimed.2021.114190.

References

Acemoglu, D., 2006. Modeling Inefficient Institutions. NBER Working Paper Series, Cambridge, MA.

Acharya, A., Gerring, J., Reeves, A., 2021. Being close to an election does not make health more politically relevant: more experimental evidence during a global pandemic. BMJ Glob. Heal. 6, e004296 https://doi.org/10.1136/bmjgh-2020-004296.

Azarova, A., Irdam, D., Gugushvili, A., Fazekas, M., Scheiring, G., Horvat, P., Stefler, D., Kolesnikova, I., Popov, V., Szelenyi, I., Stuckler, D., Marmot, M., Murphy, M., McKee, M., Bobak, M., King, L., 2017. The effect of rapid privatisation on mortality in mono-industrial towns in post-Soviet Russia: a retrospective cohort study. Lancet Public Heal 2, e231–e238. https://doi.org/10.1016/S2468-2667(17)30072-5.

Baćak, V., Ólafsdóttir, S., 2017. Gender and validity of self-rated health in nineteen European countries. Scand. J. Publ. Health 45, 647–653. https://doi.org/10.1177/1403494817717405.

Baidin, V., Gerry, C.J., Kaneva, M., 2021. How self-rated is self-rated health? Exploring the role of individual and institutional factors in reporting heterogeneity in Russia. Soc. Indicat. Res. https://doi.org/10.1007/s11205-020-02604-4.

Baker, P., Hone, T., Reeves, A., Avendano, M., Millett, C., 2019. Does government expenditure reduce inequalities in infant mortality rates in low- and middle-income countries?: a time-series, ecological analysis of 48 countries from 1993 to 2013. Health Econ. Pol. Law 14, 249–273. https://doi.org/10.1017/S1744133118000269.

Balaev, M., 2009. The effects of international trade on democracy: a panel study of the post-soviet world-system. Socio. Perspect. 52, 337–362. https://doi.org/10.1525/sop.2009.52.3.337.

Benabou, R., Ok, E.A., 2001. Social mobility and the demand for redistribution: the poum hypothesis. Q. J. Econ. 116, 447–487. https://doi.org/10.1162/00335530151144078.

Benzecry, C.E., Winchester, D., 2017. Varieties of microsociology. In: Benzecry, C.E., Krause, M., Reed, I.A. (Eds.), Social Theory Now. University of Chicago Press, Chicago, pp. 42–74.

Besley, T., Kudamatsu, M., 2006. Health and democracy. Am. Econ. Rev. 96, 313–318. https://doi.org/10.1257/000282806777212053.

Bjørnskov, C., Dreher, A., Fischer, J.A.V., Schnellenbach, J., Gehring, K., 2013. Inequality and happiness: when perceived social mobility and economic reality do not match. J. Econ. Behav. Organ. 91, 75–92. https://doi.org/10.1016/j.jebo.2013.03.017.

Bohle, D., Greskovits, B., 2012. Capitalist Diversity on Europe's Periphery. Cornell University Press, Ithaca.

Boix, C., 2003. Democracy and Redistribution. Cambridge University Press, Cambridge.

Bollyky, T.J., Templin, T., Cohen, M., Schoder, D., Dieleman, J.L., Wigley, S., 2019. The relationships between democratic experience, adult health, and cause-specific mortality in 170 countries between 1980 and 2016: an observational analysis. Lancet 393, 1628–1640. https://doi.org/10.1016/S0140-6736(19)30235-1.

Brambor, T., Clark, W.R., Golder, M., 2006. Understanding interaction models: improving empirical analyses. Polit. Anal. 14, 63–82. https://doi.org/10.1093/pan/mpi014.

Buttrick, N.R., Heintzelman, S.J., Oishi, S., 2017. Inequality and well-being. Curr. Opin. Psychol. 18, 15–20. https://doi.org/10.1016/j.copsyc.2017.07.016.

CRRC, 2013. Caucasus Barometer (Tbilisi, Georgia).

Curran, M., Mahutga, M.C., 2018. Income inequality and population health: a global gradient? J. Health Soc. Behav. 59, 536–553. https://doi.org/10.1177/0022146518808028.

Curtis, L.H., Hammill, B.G., Eisenstein, E.L., Kramer, J.M., Anstrom, K.J., Curtis, L.H., Hammill, B.G., Eisenstein, M.S.E.L., Kramer, J.M., Anstrom, K.J., 2007. Using inverse probability-weighted estimators in comparative effectiveness analyses with observational databases. Med. Care 45, S103–S107.

Decelles, K.A., Norton, M.I., 2016. Physical and situational inequality on airplanes predicts air rage. Proc. Natl. Acad. Sci. U. S. A 113, 5588–5591. https://doi.org/10.1073/pnas.1521727113.

Doniec, K., Stefler, D., Murphy, M., Gugushvili, A., McKee, M., Marmot, M., Bobak, M., King, L., 2019. Education and mortality in three Eastern European populations: Findings from the PrivMort retrospective cohort study. Eur. J. Public Health 29. https://doi.org/10.1093/eurpub/cky254.

Duvold, K., Berglund, S., 2014. Democracy between ethnos and demos: territorial identification and political support in the Baltic states. East Eur. Polit. Soc. 28, 341–365. https://doi.org/10.1177/0888325413511851.

EBRD, 2016. Life in Transition Survey III (London).

Egorov, G., Guriev, S., Sonin, K., 2009. Why resource-poor dictators allow freer media: a theory and evidence from panel data. Am. Polit. Sci. Rev. 103, 645–668. https://doi.org/10.1017/S0003055409990219.

EIU, 2016. The Economist Intelligence Unit's Index of Democracy 2016 (London).

Eurobarometer, 2017. Media Use in the European Union 2017. https://doi.org/10.2775/116707. Brussels.

Franco, Á., Álvarez-Dardet, C., Ruiz, M.T., 2004. Effect of democracy on health: ecological study. BMJ Br. Med. J. (Clin. Res. Ed.) 329, 1421–1423. https://doi.org/10.1136/bmj.329.7480.1421.

Freedom House, 2012. Nations in Transit 2012: Democratization from Central Europe to Eurasia. Rowman & Littlefield Publishers.

Freedom House, 2017. Freedom of the Press 2017, New York.

Gangl, M., 2010. Causal inference in sociological research. Annu. Rev. Sociol. 36, 21–47. https://doi.org/10.1146/annurev.soc.012809.102702.

Gehlbach, S., Sonin, K., 2014. Government control of the media. J. Publ. Econ. 118, 163–171. https://doi.org/10.1016/j.jpubeco.2014.06.004.

Gerry, C.J., Mickiewicz, T.M., 2008. Inequality, democracy and taxation: lessons from the post-communist transition. Eur. Asia Stud. 60, 89–111. https://doi.org/10.1080/09668130701760356.

Grimm, S., Mathis, O. Lou, 2018. Democratization via aid? The European Union's democracy promotion in the Western Balkans 1994–2010. Eur. Union Polit. 19, 163–184. https://doi.org/10.1177/1465116517729761.

Grisold, A., Theine, H., 2017. How come we know? The media coverage of economic inequality. Int. J. Commun. 11, 4265–4284.

Gugushvili, A., 2016. Intergenerational Social Mobility and Popular Explanations of Poverty: A Comparative Perspective. Soc. Justice Res. 29, 402–428. https://doi.org/10.1007/s11211-016-0275-9.

Gugushvili, A., 2019. A multilevel analysis of perceived intergenerational mobility and welfare state preferences. Int. J. Soc. Welfare 28. https://doi.org/10.1111/ijsw.12316.

Gugushvili, A., 2020. Social origins of support for democracy: a study of intergenerational mobility. Int. Rev. Sociol. 30, 376–396. https://doi.org/10.1080/03906701.2020.1776918.

Gugushvili, A., Jarosz, E., 2019. Inequality, validity of self-reported height, and its implications for BMI estimates: An analysis of randomly selected primary sampling units' data. Prev. Med. Rep. 16, 100974.

Gugushvili, A., Jarosz, E., McKee, M., 2019. Compared with whom? Reference groups in socio-economic comparisons and self-reported health in 34 countries. Int. J. Epidemiol. 48, 1710–1720. https://doi.org/10.1093/ije/dyz122.

Gugushvili, A., Reeves, A., Jarosz, E., 2020. How do perceived changes in inequality affect health? Health Place 62, 102276. https://doi.org/10.1016/j.healthplace.2019.102276.

Guillaud, E., 2013. Preferences for redistribution: an empirical analysis over 33 countries. J. Econ. Inequal. 11, 57–78. https://doi.org/10.1007/s10888-011-9205-0.

Habibov, N., 2011. Public beliefs regarding the causes of poverty during transition: evidence from the Caucasus, Central Asia, Russia, and Ukraine. Int. J. Sociol. Soc. Pol. 31, 53–74. https://doi.org/10.1108/01443331111104805.

Habibov, N., Luo, R., Auchynnikava, A., Fan, L., 2020. Height and life satisfaction: evidence from 27 nations. Am. J. Hum. Biol. 32, 1–13. https://doi.org/10.1002/ajhb.23351.

Hauser, O.P., Norton, M.I., 2017. (Mis)perceptions of inequality. Curr. Opin. Psychol. 18, 21–25. https://doi.org/10.1016/j.copsyc.2017.07.024.

Iversen, T., Soskice, D., 2019. Democracy and Prosperity: Reinventing Capitalism through a Turbulent Century. Princeton University Press, Princeton, NJ.

Jakubowicz, K., Sükösd, M., 2008. Finding the Right Place on the Map: Central and Eastern European Media. Intellect, Bristol.

Jarosz, E., Gugushvili, A., 2020. Parental education, health literacy and children's adult body height. J. Biosoc. Sci. 52 https://doi.org/10.1017/S0021932019000737.

Jarosz, E., Gugushvili, A., 2021. BMI and dissatisfaction with life: contextual factors and socioemotional costs of obesity. Qual. Life Res. https://doi.org/10.1007/s11136-021-02912-3.

Karpowitz, C.F., Raphael, C., Hammond, A.S., 2009. Deliberative democracy and inequality: two cheers for enclave deliberation among the disempowered. Polit. Soc. 37, 576–615. https://doi.org/10.1177/0032329209349226.

Knutsen, C.H., Gerring, J., Skaaning, S.E., Teorell, J., Maguire, M., Coppedge, M., Lindberg, S.I., 2019. Economic development and democracy: an electoral connection. Eur. J. Polit. Res. 58, 292–314. https://doi.org/10.1111/1475-6765.12282.

Krueger, P.M., Dovel, K., Denney, J.T., 2015. Democracy and self-rated health across 67 countries: a multilevel analysis. Soc. Sci. Med. 143, 137–144. https://doi.org/10.1016/j.socscimed.2015.08.047.

Lange, S., Vollmer, S., 2017. The effect of economic development on population health: a review of the empirical evidence. Br. Med. Bull. 121, 47–60. https://doi.org/10.1093/bmb/ldw052.

Lorem, G., Cook, S., Leon, D.A., Emaus, N., Schirmer, H., 2020. Self-reported health as a predictor of mortality: a cohort study of its relation to other health measurements and observation time. Sci. Rep. 10, 4886. https://doi.org/10.1038/s41598-020-61603-0.

Lyytikäinen, L., Kemppainen, T., 2016. Regional inequalities in self-rated health in Russia: what is the role of social and economic capital? Soc. Sci. Med. 161, 92–99. https://doi.org/10.1016/j.socscimed.2016.05.037.

Marmot, M., 2004. The Status Syndrome: How Social Standing Affects Our Health and Longevity. Owl Book, New York.

Marshall, M.G., Jaggers, K., Gurr, T.R., 2018. Polity IV Project: Political Regime Characteristics and Transitions, 1800-2018. Societal-Systems Research Inc. and Colorado State University.

McCullough, M.E., Laurenceau, J.-P., 2004. Gender and the natural history of self-rated health: a 59-year longitudinal study. Health Psychol. 23, 651–655. https://doi.org/10.1037/0278-6133.23.6.651.

Muller, E.N., 1988. Democracy, economic development, and income inequality. Am. Socio. Rev. 53, 50–68. https://doi.org/10.2307/2095732.

Oshio, T., Urakawa, K., 2014. The association between perceived income inequality and subjective well-being: evidence from a social survey in Japan. Soc. Indicat. Res. 116, 755–770. https://doi.org/10.1007/s11205-013-0323-x.

Payne, K., 2017. The Broken Ladder: How Inequality Affects the Way We Think, Live, and Die. Penguin, New York.

Pickett, K.E., Wilkinson, R.G., 2015. Income inequality and health: a causal review. Soc. Sci. Med. 128, 316–326. https://doi.org/10.1016/j.socscimed.2014.12.031.

Präg, P., 2020. Subjective socio-economic status predicts self-rated health irrespective of objective family socio-economic background. Scand. J. Publ. Health 1–8. https://doi.org/10.1177/1403494820926053.

Safaei, J., 2006. Is democracy good for health? Int. J. Health Serv. 36, 767–786. https://doi.org/10.2190/6V5W-0N36-AQNF-GPD1.

Scheiring, G., Irdam, D., King, L.P., 2019. Cross-country evidence on the social determinants of the post-socialist mortality crisis in Europe: a review and performance-based hierarchy of variables. Sociol. Health Illness 41, 673–691. https://doi.org/10.1111/1467-9566.12846.

Schneider, S.M., 2012. Income inequality and its consequences for life satisfaction: what role do social cognitions play? Soc. Indicat. Res. 106, 419–438. https://doi.org/10.1007/s11205-011-9816-7.

Schnittker, J., Bacak, V., 2014. The increasing predictive validity of self-rated health. PloS One 9. https://doi.org/10.1371/journal.pone.0084933.

Shariff, A.F., Wiwad, D., Aknin, L.B., 2016. Income mobility breeds tolerance for income inequality: cross-national and experimental evidence. Perspect. Psychol. Sci. 11, 373–380. https://doi.org/10.1177/1745691616635596.

Sieber, S., Cheval, B., Orsholits, D., Van der Linden, B.W., Guessous, I., Gabriel, R., Kliegel, M., Aartsen, M.J., Boisgontier, M.P., Courvoisier, D., Burton-Jeangros, C., Cullati, S., 2019. Welfare regimes modify the association of disadvantaged adult-life socioeconomic circumstances with self-rated health in old age. Int. J. Epidemiol. 48, 1352–1366. https://doi.org/10.1093/ije/dyy283.

Singh-Manoux, A., Adler, N.E., Marmot, M.G., 2003. Subjective social status: its determinants and its association with measures of ill-health in the Whitehall II study. Soc. Sci. Med. 56, 1321–1333. https://doi.org/10.1016/S0277-9536(02)00131-4.

Singh-Manoux, A., Marmot, M.G., Adler, N.E., 2005. Does subjective social status predict health and change in health status better than objective status? Psychosom. Med. 67, 855–861. https://doi.org/10.1097/01.psy.0000188434.52941.a0.

Sokol-Hessner, P., Rutledge, R.B., 2019. The psychological and neural basis of loss aversion. Curr. Dir. Psychol. Sci. 28, 20–27. https://doi.org/10.1177/0963721418806510.

Solt, F., 2016. The standardized world income inequality Database. Soc. Sci. Q. 97, 1267–1281. https://doi.org/10.1111/ssqu.12295.

Stier, S., 2015. Democracy, autocracy and the news: the impact of regime type on media freedom. Democratization 22, 1273–1295. https://doi.org/10.1080/13510347.2014.964643.

Teo, T.K., 2019. Inequality under authoritarian rule. Gov. Oppos. 1–25 https://doi.org/10.1017/gov.2019.19.

Thoemmes, F., Ong, A.D., 2016. A primer on inverse probability of treatment weighting and marginal structural models. Emerg. Adulthood 4, 40–59. https://doi.org/10.1177/2167696815621645.

Truesdale, B.C., Jencks, C., 2016. The health effects of income inequality: averages and disparities. Annu. Rev. Publ. Health 37, 413–430. https://doi.org/10.1146/annurev-publhealth-032315-021606.

Van der Meer, T., Te Grotenhuis, M., Pelzer, B., 2010. Influential cases in multilevel modeling: a methodological comment. Am. Socio. Rev. 75, 173–178. https://doi.org/10.1177/0003122409359166.

Wilkinson, R.G., Pickett, K.E., 2009a. Income inequality and social dysfunction. Annu. Rev. Sociol. 35, 493–511. https://doi.org/10.1146/annurev-soc-070308-115926.

Wilkinson, R.G., Pickett, K.E., 2009b. The Spirit Level: Why More Equal Societies Almost Always Do Better. Allen Lane, London; New York.

Wilkinson, R., Pickett, K., 2018. The Inner Level: How More Equal Societies Reduce Stress, Restore Sanity and Improve Everyone's Well-Being. Penguin.

World Bank, 2017. World Development Indicators. International Bank for Reconstruction and Development / The World Bank, Washington, DC.

World Bank, 2020. World Development Indicators 2020. World Bank, Washington, D.C.

Zhao, W., 2012. Economic inequality, status perceptions, and subjective well-being in China's transitional economy. Res. Soc. Stratif. Mobil. 30, 433–450. https://doi.org/10.1016/j.rssm.2012.07.001.