Genus

ORIGINAL ARTICLE Open Access

Does raising awareness about inequality decrease support for school closures? An information treatment survey experiment during the COVID-19 pandemic

Luna Bellani[1], Ariane Bertogg[2*], Nevena Kulic[3] and Susanne Strauss[4]

*Correspondence:
bertogg@uni-konstanz.de;
ariane.bertogg@uni-konstanz.de

[1] Department of Economics, University of Ulm, Albert-Einstein-Allee 11, 89081 Ulm, Germany
[2] Zukunftskolleg / Institute for Advanced Study, University of Konstanz, Universitätsstrasse 10, 78464 Constance, Germany
[3] Dipartimento di Scienze Politiche e Sociali, University of Pavia, C.So Strada Nuova 65, 27100 Pavia, Italy
[4] Department of History, Sociology, Sports, and Empirical Educational Sciences, University of Konstanz, Universitätsstrasse 10, 78464 Constance, Germany

Abstract

The increase in inequalities during the ongoing COVID-19 pandemic has been the topic of intense scholarly and public debate. School closures are one of the containment measures that have been debated most critically in this regard. What drives support for closures of schools and pre-school services (daycare/kindergarten) during a public health crisis such as the current COVID-19 pandemic? More specifically, does inequality awareness affect this support? Theoretically, we assume that providing information on current levels of inequality can change policy preferences, as it increases awareness of their consequences for inequality. Moreover, we assume that the strength of the association between information provision and policy support varies across individuals—depending on their exposure to these policies, and the political attitudes that they hold. To identify causal linkages between awareness of inequalities and support for school and daycare/kindergarten closures, we use a survey experiment with information treatment, in which we randomly assign information designed to prime the respondents to think about either education inequality, gender inequality, or both. The experiment, involving more than 3,000 respondents, was conducted in the spring of 2021 at the end of a prolonged lockdown in Germany when a new piece of legislation was enacted, enabling or restricting school reopenings based on local infection rates. Using Probit Regression models for dichotomous dependent variables, we show that raising awareness of education inequality and gender inequality via an information treatment is associated with decreasing support for preschool and primary school closures. We also find that past exposure to school-closure policies strengthens the effects of information treatments, whereas previous political attitudes do not moderate the association between information treatments and support for preschool and school closures.

Keywords: Childcare policy, COVID-19, School closures, Survey experiment, Information treatment, Policy support, Educational inequality, Gender inequality, Germany

JEL: D13, I24, J16, H4

Introduction

Inequality is an important concern for society, and raising awareness of its existence may impact people's perceptions and behaviours in many ways. Research shows that learning about the actual levels of inequality can increase policy support (Cruces et al., 2013; Trump, 2018) and influence preferences for educational decisions (Barone et al., 2016) as well as for redistribution (Abbiati et al., 2020; Hoy & Toth, 2019). The COVID-19 pandemic has provided a good example of whether and how swiftly public opinions towards policies can change in light of public and media debates around inequality (Pelizäus & Heinz, 2023). In particular, academic and public evaluation of the policy of school and childcare closures experienced a pronounced shift during the first year of the pandemic, from support to save lives in a health-threatening situation to critique related to inequality concerns.[1] Mainstream media often followed the discussions in the academic realm, in podcasts or on social media, increasing their outreach and potentially impacting ordinary citizens. Based on German Socio Economic Panel (SOEP) data linked with daily information on coverage in mainstream news, Diermeier et al. (2017) found that already before the pandemic, increased media coverage on inequality levels heightened individuals' worries about the overall economic situation and decreased the perception of fairness.

The present study tests the assumption that providing individuals with information about existing facets of inequality can change their policy preferences and attitudes towards policy reforms by increasing their awareness of the potentially detrimental effects of policies for equality. Research has benefited from using the COVID-19 pandemic as a case study to investigate wider processes surrounding cognitive and behavioural aspects of policy acceptance. The study by Schmelz and Bowles (2021) suggests that vaccination intentions during the COVID-19 pandemic crucially depended on whether vaccines were mandatory or voluntary. Hyland-Wood et al. (2021) indicate that government communication was critical to raising support for pandemic containment. These studies extend the findings of previous research on the determinants of policy acceptance. In the domain of family politics, an information treatment priming about the long-term financial risks associated with maternal non-employment was shown to affect ideals of sharing parental leave between mothers and fathers (Philipp et al., 2023).

In this study, we test the causal effect of information about (gender or educational) inequality related to the closure of schools, kindergartens and childcare facilities during the COVID-19 pandemic (hereafter, 'school closures') on acceptance of these closures using a survey experiment. The school and childcare closure policies implemented in 2020 and 2021 varied considerably between countries (see Hale et al., 2020, 2021), and countries' success in pandemic containment depended on how quickly they reacted

[1] This was facilitated by the active engagement of international organisations, which advocated for more transparency on the effects of COVID-19 policies for various groups of population. In particular, the United Nations (UN) recognised children and women as main victims of the pandemic. For instance, in September 2020, the head of the UN gender empowerment agency declared that 'The COVID-19 pandemic is "hitting women hard", but most nations are failing to provide sufficient social and economic protection for them' (United Nations, 2020a), while the UN Secretary-General highlighted 'the disproportionate and devastating socio-economic impact of COVID-19 on women and girls globally' (United Nations, 2020b). In parallel, the UN also acknowledged that education was in crisis due to COVID-19 closures and that the most disadvantaged children were particularly hit (United Nations, 2020c). Towards the end of the pandemic, at the end of 2021, many politicians and academics agreed that school closures should be avoided whenever possible (Fukumoto et al., 2021) as their costs outweighed their benefits (Raffetto & Di Baldassarre, 2022).

but also prior institutional characteristics (Migone, 2020). Job- and income-protection schemes during the COVID-19 pandemic, as well as family support, were shaped by the institutional legacies of employment and family policy (Clegg et al., 2023; Daly & Ryu, 2023).

We use the case of Germany, where new pandemic-containment legislation was introduced in late April 2021. It tied school and childcare closures to local incidence rates of COVID-19 infections at the county (NUTS3) level. This legislation followed 13 months of non-harmonised policies adopted by federal states, with differing regulations concerning school closures. We conducted a nationwide survey experiment in Germany shortly after the introduction of the legislation. Participants were first informed about inequalities potentially affected by the school closures: (a) the levels of female employment, (b) the proportion of disadvantaged pupils or (c) both. They were then asked about their support for the school closures resulting from the new legislation at three levels: (1) preschool, (2) primary school and (3) secondary school.

Our study makes several contributions to the literature. First, we focus on *school and childcare closures* as they were among the most critically discussed measures of pandemic containment because of their impact on both gender and educational inequality (Breznau, 2021). Ample research shows that during the pandemic, women shouldered a large share of the additional childcare demand resulting from these closures (e.g. Czymara et al., 2020; author 3; Naumann et al., 2020). Similarly, school closures caused learning losses, disproportionately affecting children and adolescents from disadvantaged families (Engzell et al., 2021; van de Werfhorst, 2021). To the best of our knowledge, this is the first study to investigate how preferences for (or against) school closures change when respondents are informed about current levels of inequality that are likely to be affected by these policies. Our research contributes to the literature on policy acceptance by uncovering *whether information about inequality matters* and *which type of inequality information matters* the most to respondents' support for school-closure policies *at different levels.*

Second, our article aims to uncover whether information about inequality *is differently received by different groups of population*. Two aspects were of interest, namely, political attitudes and local exposure to school closures. First, studies suggest that individuals' attitudes matter for acceptance of pandemic policies, for instance, school and childcare closures (Diehl & Wolter, 2021). This also applies to experimental studies, as shown by an information treatment design on racial disparities in COVID-19 risks and the acceptance of health expenditures (Harell & Lieberman, 2021). Similarly, information regarding inequality in housing was found to shift preferences towards stricter regulation of renting prices, but the strength of the treatment effect depended on respondents' prior political attitudes (Dolls et al., 2023). Following this evidence, we assume that the provision of information regarding gender and educational inequalities may also vary across individuals depending on their prior political attitudes.

Another aspect is local exposure. School and childcare closures during the pandemic also varied within countries, for instance, across different stages of the pandemic or geographical regions (Parolin & Lee, 2021). Yet, studies of how such within-country variation in pandemic-related policy is associated with individuals' acceptance of school and childcare closures are scarce. This is surprising because exposure to regional

opportunities, risks and norms has been shown to shape individuals' behaviours (e.g. fertility intentions; see Hank & Huinink, 2002). Local exposure to climate change has been associated with green voting (Hoffmann et al., 2022), local infection rates with vaccine hesitancy (Steinert et al., 2022) and local economic performance with social investment policies, following a pattern of self-interest (Pinggera, 2023). We therefore test whether individuals who differ in their past exposure to school-closure policies exhibit different associations between information treatments and policy preferences.

Institutional background: the German educational system and its pandemic-related challenges

Germany is a prime example of a conservative-corporatist welfare state (Esping-Andersen, 1990). Although most children attend kindergarten after the age of 3 (with a 92% coverage rate; Destatis, 2021), this preschool institution in Germany is usually not perceived as pursuing an educational goal but rather as supporting children's socio-emotional development, following a 'social pedagogy' tradition (Tazouti et al., 2011). The educational pathway distinguishes between pre-kindergarten childcare, which comprises childcare (typically between ages 0 and 2), and kindergarten (typically attended between ages 3 and 6), before children enter compulsory schooling. In this study, we collapsed both forms of preschool education, hereafter referring to it as 'childcare' or 'preschool.'

The regular schooling system is organised in two stages. Children attend (mostly public) primary schools from ages 6 to 10 (or 12, depending on the federal state) and then enter a tracked system of secondary schools where they are taught at (two to) three requirement levels in different types of schools depending on their grades in primary school (Bittmann & Schindler, 2021). Various studies show that the German educational system involves a low level of social mobility as pupils from lower-educated or less affluent families have a lower likelihood of following the more prestigious general track (gymnasium) at the secondary level of schooling (see e.g. Dräger, 2021).

Germany is a particularly suitable case to investigate the role of information provision on citizens' support for public policies because school, daycare and kindergarten closure policies varied substantially throughout the pandemic, both over time and across regions (for a summary of school- and preschool-closure measures, see Bertogg et al. 2022). During the first lockdown in spring 2020, all schools, kindergartens and childcare centres remained closed nationwide from mid-March to mid-May. Thereafter, teaching and childcare services resumed but with a restricted offer. A so-called 'alternating' model was common, wherein children alternated (e.g. every other day or every other week) between on-site and distance learning. In November 2020, a second 'lockdown light' was implemented, where schools first remained open. However, in mid-December 2020, when the second wave of COVID-19 infections gained momentum, schools, kindergartens and childcare centres closed again while other facilities remained open. The timing of reopening then varied locally. On 23 April 2021, the so-called 'federal emergency brake' came into force, which prohibited schooling and the use of formal childcare in regions with a 7-day incidence rate above 165 COVID-19 cases per 100,000

inhabitants over 3 consecutive days.[2] This rule was applied at the county (NUTS3) level. Consequently, all regions with lower incidence rates were allowed to reopen school and childcare facilities from that date on.

Theoretical considerations

Different facets of inequalities and support for school closures

The impact of school closures during the COVID-19 pandemic on multiple aspects of inequality has been discussed, especially in relation to gender (of parents) and social background and migration status (of pupils). The sudden closure of schools challenged gender equality as mothers—who were already more involved in childcare for preschool children and supporting their school-aged children with learning and school tasks than fathers before the pandemic (Baker, 2019)—invested a disproportionately greater amount of time in home-learning support to their school-aged children (Collins et al., 2020; Petts & Carlson, 2020). At the same time, educational inequality also rose because the children of lower-class and immigrant parents were more affected by learning losses than children with a higher socio-economic or non-migrant background (Engzell et al., 2021). However, both types of inequality (gender and educational) may play out differently depending on children's age or integration at various educational levels (childcare, kindergarten, primary school, secondary school).

Gender inequality is likely to be more strongly affected by preschool and primary-school closures than by school closures at the secondary level. Older children who attend secondary schooling need less help with distance learning, representing a lighter burden for mothers than helping younger children with home-schooling (Collins et al., 2020). Following these arguments, we expected that *increasing awareness of gender inequality through an information treatment should decrease support for preschool and primary-school closures more strongly than support for secondary-school closures (H1*).

On the contrary, educational inequality may have been affected by school closures at all levels of education, including preschool. The literature demonstrates that educational returns matter for social stratification at all levels. Growing research on the cognitive returns of preschool attendance shows that early learning disadvantages are critical for children's further cognitive development (Blossfeld et al., 2017; Heckman, 2012; author 3). At the other end, secondary education is thought to be an important pillar of educational (and later-life labour-market and income) inequalities (Blossfeld & Shavit, 2010; Triventi et al., 2016). The inequality-promoting role of secondary education is particularly pronounced in contexts where early educational tracking determines later-life labour-market allocation and success (Bol & van de Werfhorst, 2013). Hence, learning losses at this stage could be particularly penalising for less advantaged groups (such as children whose parents have lower education or migrated) compared with more advantaged children because this final stage of education directly affects entry into occupational training or higher education. The literature shows that privileged parents can better support their children throughout their educational trajectories and compensate

[2] However, the law mentions exceptions for final-year classes and classes with special needs. Moreover, it also allowed 'emergency care' for children below the age of 12, which was meant to support parents who were both considered 'essential workers'.

for their learning disadvantages, in general and particularly in secondary education (Triventi et al., 2020). Thus, learning losses due to lockdown measures should be critical for inequality at all levels of schooling. Being reminded of existing inequalities in educational opportunities (i.e. mentioning the percentage of pupils from disadvantaged backgrounds) should thus decrease support for school closures. Based on these arguments, we expected *awareness of educational inequality to decrease support for school closures at all levels of schooling similarly (H2).*

By highlighting the prevalence of employed mothers in the years before the pandemic, it is possible to raise respondents' awareness of the heightened work–life balance issues related to school closures, especially for mothers. In parallel, through the provision of information about the relatively large share of pupils from educationally disadvantaged backgrounds, respondents are made aware of the social inequalities related to home-schooling.

The role of respondents' political orientation and exposure to school-closure policies

Political attitudes have been found to be important to individual support for redistributive policies (De Vries et al., 2013; Dolls et al., 2023) and for being informed about levels of inequality (Van Kessel et al., 2020). Left-wing or right-wing political orientations are often used to describe political preferences. Even though these labels are frequently linked to specific lifestyles and economic orientations, the difference between them has become blurred over the years in response to new challenges (De Vries et al., 2013). In summary, 'the poles of the left/right dimension pit a more progressive and redistributive view of the role of the state against a more conservative and market-oriented state outlook' (De Vries et al., 2013, p. 223). The multifaceted definition of left and right leaves room for defining their relationship to inequality preferences. Additionally, the two groups of voters are often thought to be unequally informed about current challenges, with right-wing voters often considered less informed (Van Kessel et al., 2020). This information bias has been traced to (i) a lack of information, (ii) misinformation or (iii) the absence of interest about specific information (ibid). Therefore, right-leaning political ideology can entail weaker support for redistribution as well as lower prior information, in contrast to left-leaning ideology. The information treatment concerning inequalities allows us to correct distorted perceptions of reality, known as cognitive bias (Haselton et al., 2015). According to Tversky and Kahneman (1974), cognitive bias arises from the fact that to reduce complexity, individuals make judgements based on the limited information available to them. Therefore, priming treatments may increase respondents' awareness of inequalities by outlining empirical evidence. In the case of school-closure policies, individuals become more aware of potentially problematic consequences and should therefore assess the policies that induce them more critically. Yet, depending on the individuals' political attitudes, awareness about inequalities may be higher or lower. For individuals *with higher levels of accurate information*, providing information may be *less effective* in altering the perceptions of policies than for

individuals who are less informed.[3] Building on the general idea of priming, based on Tversky and Kahneman (1974), we expected that *individuals who lean towards the right of the political spectrum are more affected by the information treatment* (H3a). However, these context-dependent treatment sensitivities likely vary according to the type of treatment received (gender, education, both) and the level of schooling that is being assessed.

Following the same theoretical stance as Tversky and Kahneman (1974), it is possible that respondents who are more affected by closure policies (i.e. respondents living in counties where schools had to remain closed when the survey was conducted) have more information about their benefits and disadvantages and are more susceptible to their inequality consequences. Furthermore, affect heuristics may play a role in reducing susceptibility to the treatment among those who already experienced a reopening of schools and childcare facilities. These individuals may tend to believe that closures will not occur in the future due to their unpopularity. For such individuals, the information treatment may seem like irrelevant information, not affecting their opinions about school closures in general. Moreover, the new legislation may seem 'fairer' than earlier regulations behind closures as it is based on purely objective calculations of incidence numbers. This may make individuals more willing to accept such closures even when they are reminded of one of the potential inequality consequences, particularly if they are currently not affected by them. Again, these context-dependent treatment sensitivities likely vary according to the type of treatment received (gender, education, both) and the level of schooling that is being assessed.

The development of local COVID-19 incidence rates was highly dynamic during the pandemic, leading to locally different opportunities regarding the timing of school reopenings but also necessities for closures. This led to substantial regional variation in the timing of school and childcare reopenings after the second 5-month lockdown. Hence, individuals' exposure to the new pandemic-containment legislation varied at the local level. By exploiting the substantial regional variation in closure policies, we are able to investigate heterogeneous associations between information treatment and policy preferences based on individuals' differential exposure to these policies. As previously mentioned, it is likely that exposure to policies increases sensitivity to specific issues. Thus, in our last hypothesis, we assume that *awareness of educational and gender inequality impacts support for school closures more strongly for individuals who live in counties where schools were closed at the time of the interview* (H3b).

Data and method

Sample

We use data collected during the third wave of the 'Living in Exceptional Circumstances' survey (Busemeyer et al. 2023),[4] which was financed and designed by the 'Politics of Inequality' Cluster of Excellence at the University of Konstanz. The online survey was

[3] Other mechanisms may be at play in relation to political attitudes and information priming. For instance, the idea of confirmation bias suggests that if individuals have a higher level of acceptance of inequality based on their ideological beliefs, they may be less affected by such information.

[4] This study uses the third wave of data collection of the survey, which can be obtained via GESIS: https://doi.org/10.7802/2456. Do-file for replication and additional data on childcare and school closures can be obtained on GitHub: https://github.com/arbe1983/CovidResearch/tree/main/Replication%20Files%20Genus%20Articles

embedded in an online access panel and conducted by a specialised agency in Germany (Kantar). The data were collected between 3 and 12 May 2021, towards the end of the third lockdown. The online survey targeted individuals aged 18 years and older living in private households. It used a quota sampling procedure to ensure that the distributions related to age, gender, federal state and education in the sample reflected the population in Germany.

Our information treatment was included in the third wave of the panel study conducted at the end of the first lockdown in May 2021 Our analytical sample comprises 3047 individuals who participated in wave 3 and indicated their attitude towards school closures in our experimental treatment.

Experimental design and identification strategy

The main aim of this paper is to understand whether awareness of inequality drives support for the closure of educational and childcare facilities at different levels and, if so, what type of inequality is more relevant to our respondents. To answer these questions, we designed a survey experiment. After a series of questions regarding respondents' socio-economic characteristics, respondents were randomly assigned to one of four groups: (1) a control group that did not receive any information and three treatment groups that received (2, 3) one of the two treatments or (4) both. The information treatments aimed at priming the respondents to think about the possible consequences of school, kindergarten and daycare centre closures on either education inequality or gender inequality. The three information treatments were phrased as follows:

Information treatment about educational inequality: 'For your information: In Germany, one in six children under the age of 18 lives in a household with educationally disadvantaged or non-German-speaking parents'.

Information treatment about gender inequality: 'For your information: In Germany, two mothers out of three are employed'.

Information treatment about both gender and educational inequality: 'For your information: In Germany, two mothers out of three are employed, and one in six children under the age of 18 lives in a household with educationally disadvantaged or non-German-speaking parents'.

The information treatment was embedded in the display of the survey question and was presented after some baseline information on the new federal emergency brake (see below). We asked our respondents whether they supported the following closure policy for daycare/kindergarten, primary schools and secondary schools. For the randomisation group, which did not receive any treatment (i.e. the control group), only the baseline information was provided, followed directly by the question regarding support for the policy. The baseline information and the question were presented as follows for all respondents:

'Since 24 April, the so-called "federal emergency brake" applies in Germany, which requires daycare centres, kindergartens and schools, among others, to remain closed if the 7-day incidence rate of COVID-19 infections in a county exceeds 165 cases per 100,000 inhabitants over a 3-day period. Given the above-mentioned incidence rates, do you support:

A) The closure of childcare services for preschool children (daycare facilities, kindergartens)?
B) The closure of primary schools?
C) The closure of secondary schools?'

For each of the three levels in the educational system (A–C), the respondents could select either 'yes' (indicating support for closures) or 'no' (indicating lack of support for closures). Hence, the respondents could express their support for the measure for each of the three levels of schooling separately. The randomised manipulation of the information provided made it possible to identify the causal impact of perceptions of different inequalities on policy acceptance.

The statistical figures for this information treatment came from two sources and refer to pre-pandemic conditions. The percentage of mothers in employment stems from the Federal Statistical Office (see Destatis, 2020) and refers to 2018, the last available pre-pandemic year. To obtain the share of minor children from disadvantaged households, we relied on microdata from the 2018 German General Social Survey (Allbus). We selected all households with minor school-age children (6–17 years) and computed the percentage of households in which neither parent had more than primary or lower-secondary education [International Standard Classification of Education (ISCED) 1 or 2] or in which both parents were not born in Germany and did not spend their childhood or youth in Germany (Allbus source: GESIS, 2019).

Additional variables

In line with our theoretical interest, we included information on respondents' political preferences by asking individuals to position themselves on a scale ranging from (politically) left to right. We included a dummy for respondents who preferred not to answer that question.[5] The survey also contained information on the 16 federal states in which the respondents resided, which we incorporated as a categorical variable.

Additionally, experiencing the implementation of the federal emergency brake policy in one's residential area could have a differentiated direct impact on support. More specifically, we assumed that those who experienced a prolongation of school and childcare closures would be more strongly affected by the information treatments received. We merged our data with information on the effective status of the school and childcare closure policy in place on the day of the interview. This information was collected at the county level (NUTS-3). We measured the effective status of school closures via two separate categorical variables for closures at the school (primary and secondary) and childcare (kindergarten and pre-kindergarten daycare) levels. The categorical variables capture whether schools or childcare facilities were closed (0), partially open (1), including alternating schooling in half-classes, or fully open (2) in the given region on the day

[5] Political attitudes were assessed at a later stage in the survey, after the experiment had been conducted. Between the survey experiment and the measurement of political attitudes on the left-to-right scale, 35 questions were asked pertaining to perceptions of and trust in the health care system, respondents' health risks and COVID-19 infections as well as their vaccination status and willingness to get vaccinated. Theoretically, we cannot rule out the possibility that the treatment may have affected individuals' reporting of their political attitudes. However, our randomisation checks (see Additional file 1: Table A.1) suggest that no significant association between the type of treatment received and political attitudes reported can be found.

of the interview. After carefully testing for potential differential effects of full or partial closures at these two levels, we combined them into a dichotomous joint variable reflecting whether schools and childcare facilities were still closed (0) or at least one of them was (partially) open (1).

Finally, we collected information regarding respondents' characteristics, which we used as additional explanatory variables for policy support. The respondent's gender was measured as a dichotomous variable (1 = female). The respondent's age was provided in the data in three categories: 18–39 years, 40–59 years and 60 years or older. The respondent's highest level of education attained was measured with three groups corresponding to ISCED levels 1 and 2 ('low education'), 3 and 4 ('medium education') and 5 and 6 ('higher education'). Household income was measured as a categorical variable, comprising the following six income groups: less than 900 euros per month, 900–1499 euros per month, 1500–2599 euros per month, 2600–3999 euros per month, 4000–5999 euros per month and more than 6000 euros per month. A residual category captured all respondents who did not want to disclose their income. We further controlled for partnership status (married or cohabiting with a partner, living in a registered partnership, married but not living with the partner, single, divorced and widowed) and current employment status: employed full time (minimum 35 h per week), employed part time (15–34 h per week), marginally employed (less than 15 h per week), on parental leave, apprentice, student, in voluntary service, unemployed, housewife/husband, retired or other. Additionally, we included a categorical variable indicating whether the respondent was childless, lived with one or more children with the youngest aged 0–5 years, lived with one or more children with the youngest aged 6–16 years or lived with older children or had children who did not live in the same household. Additional file 1: Table A.2 presents the descriptive statistics.

Analytical strategy

In a first step after randomisation checks (see Additional file 1: Table A.1), we computed bivariate associations between our information treatment and the outcome variable, namely, policy acceptance at three levels. The second step repeated these analyses including the control variables described above and in Section "Political attitudes and policy environments" using probit regression models for dichotomous dependent variables. Although control variables are not per se necessary to identify the causal effects of randomised information treatments, they are important as confounders when analysing heterogeneous associations of information treatments with respondents with different political attitudes or exposure to the school-closure policies under study. The third step addressed these heterogeneous associations by estimating models with two-way interaction terms between political attitudes and information treatments (see Fig. 2) and between local exposure to school closures and information treatments (Fig. 3).

Our analyses were unweighted and used Stata, Version 18.

Main results

Descriptive results

Figure 1 presents the average share of respondents who support school closures for each of the four experimental groups. Average shares are displayed separately for the three

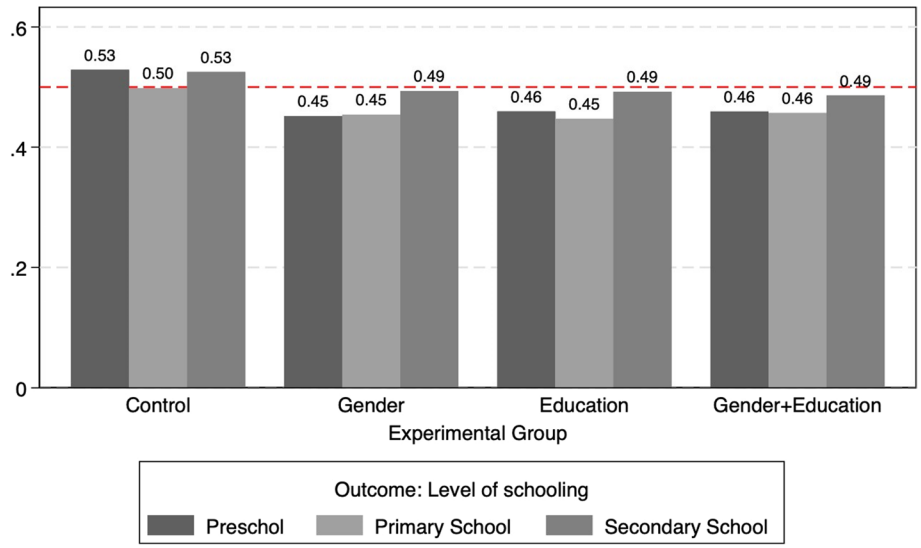

Fig. 1 Support for school and preschool closures. Source: 'Living in Exceptional Circumstances', wave 3, May 2021. Wording: 'Given the above-mentioned incidence rates, do you support: the closure of daycare/kindergarten/primary schools/secondary schools?' Bivariate frequencies (per cent), unweighted results. $N = 3322$. The red dashed line represents the majority threshold (50%). Mean acceptance of closures is 50% for daycare/kindergarten, 49% for primary school and 53% for high school (differences across school levels n.s.)

different school levels (represented with bars in different nuances of grey). Around 55% of the respondents who were not primed about education or gender inequality (the control group) supported the above-mentioned school-closure policies. Interestingly, we found no significant difference in support for closures at different levels of the educational system (preschool, primary school and secondary school) in this group.

Among the respondents who received information about gender and educational inequality, support for closures was lower. This is especially true for the levels of preschool (where introducing an information treatment decreased support from 53% to 45–46%) and primary school (a decrease from 50% to 45–46%). Concerning support for closures at the secondary level of schooling, support reduced from 53 to 49%, regardless of the type of treatment administered. On average, the type of inequality that was targeted by the priming intervention (gender, education or both) did not seem to affect support differently or at a different magnitude for all three levels of education as acceptance rates were very similar across the three treatment groups (45–46% for preschool and primary schools and 49% for secondary schools). In all, the introduction of the information treatments led to a decrease in the agreement rate by at least four percentage points (for secondary-school closures and a single gender or educational inequality treatment) and up to nine percentage points (for preschool and the gender inequality treatment). This indicates that the treatment worked well and in the expected direction.

Multivariate results

More formally, using the exogeneity of the treatments that were randomly assigned to the respondents, we estimated the impact of priming about education inequality, gender

Table 1 Impact of the treatments on support for school and preschool closures (unweighted)

	(1)	(2)	(3)	(4)	(5)	(6)
Type of school	**Daycare/kindergarten**		**Primary school**		**Secondary school**	
Gender	− 0.095***	− 0.100***	− 0.062*	− 0.066**	− 0.038	− 0.040
inequality	[− 0.146, − 0.045]	[− 0.149, − 0.051]	[− 0.112, − 0.012]	[− 0.115, − 0.017]	[− 0.088, 0.013]	[− 0.088, 0.009]
Education	− 0.085***	− 0.089***	− 0.065*	− 0.069**	− 0.043	− 0.042
inequality	[− 0.136, − 0.035]	[− 0.138, − 0.040]	[− 0.116, − 0.015]	[− 0.118, − 0.020]	[− 0.094, 0.008]	[− 0.091, 0.007]
Gender +	− 0.076**	− 0.078**	− 0.053*	− 0.057*	− 0.036	− 0.038
Education inequality	[− 0.126, − 0.026]	[− 0.127, − 0.030]	[− 0.104, − 0.003]	[− 0.105, − 0.009]	[− 0.086, 0.014]	[− 0.086, 0.010]
Control variables included	No	Yes	No	Yes	No	Yes
Observations	3044	3044	3036	3036	3042	3042

Marginal effects from unweighted probit estimates. The control variables include respondents' gender, age and highest educational level (measured in three groups), partnership/marital status, parental status by age of children, employment status, income categories, left/right political inclination, information about the current school-closure policy in the location at the county level on the day of survey participation and federal state. 95% confidence intervals in brackets. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. Source: Survey 'Living in Exceptional Circumstances', wave 3, May 2021

inequality or both[6] on support for closures at each of the three educational levels. We estimated probit models for dichotomous dependent variables, one for each level of schooling. In Table 1, we present the marginal effects of the treatments based on estimations with and without control variables. The estimations were also performed using logistic regression as a model comparison. The models confirm the results and can be consulted in Additional file 1: Table A.3.

As a first finding, these multivariate models confirm our descriptive results from the sample averages: awareness of education and gender inequality both impacted respondents' support for preschool and primary-school closures. Being primed about the potential consequences of school and preschool closures for education or gender inequality decreased the average support for *preschool closures* by 10–12 percentage points (models 1 and 2). This represents a decrease in support for preschool closures of approximately 20% relative to respondents who were not primed. Additional analyses showed that the magnitude of this decrease was not significantly different across the three treatments. A similar pattern, albeit with lower effect sizes, was found for *primary-school closures* (models 3 and 4). Here, we observed a decrease in agreement to closures of 8–9 percentage points when respondents were informed about gender or education inequality. This amounts to a decrease of approximately 15% compared to the average support in the control group.

Unlike the other two educational stages, support for secondary-school closures (models 5 and 6) did not seem to be affected significantly by the increasing awareness of gender and educational inequality induced by the information treatment. This non-significant result was partly expected regarding gender inequality because teenagers attending secondary education require less parental support with home-schooling

[6] Refer to Additional file 1: Table A.1 for the results of the randomisation checks.

(Collins et al., 2020) and are also more independent in their daily needs. This should make it easier for mothers to work even while these children are at home. These results therefore support the first hypothesis (H1), according to which information treatment regarding gender inequality would decrease support for school closures particularly for children in preschool and elementary school, and less so for teenagers. Our second hypothesis assumed that information treatment about educational inequality would reduce support for school closures similarly at all three educational levels because learning losses at each level of education are important for subsequent steps in educational careers (Heckman, 2012; Werner & Woessman, 2021). However, this hypothesis is not supported by our findings. A possible explanation for the lack of effect of priming at the level of secondary education may be found in the specificities of the German educational system: because of early tracking, the future of young children may be considered difficult to change once they are in secondary education.

In a nutshell, awareness of gender and educational inequality was most effective in changing policy preferences regarding school closures for children in younger age groups, from daycare to primary school. There is no indication that the type of inequality matters for support for closures; inequality in itself is an important driver of people's policy preferences. This result might be driven by the overarching importance of awareness of inequality that goes beyond specific issues of gender and education (Zucker & Bay-Cheng, 2021). Moreover, as we argued above, the various inequality-increasing risks associated with COVID-19-related containment measures were discussed by international organisations and in the German media, both mainstream and specialised, digital and traditional. These discussions often grouped the two issues of gender and educational inequality. Our information treatment could thus have served as a reminder of these debates or provided novel information depending on the prior level of information of the participants.

Political attitudes and policy environments

As we argued, the power of information treatments about the levels of inequality may not be uniform across population groups. We tested this assumption in two different population groups, which likely differ in awareness of inequality: individuals with different political attitudes and those directly affected by the policies of school closures. In the last step, we thus asked how individuals' political attitudes and local school and childcare closure policies may moderate the impact of our treatments.

Figures 2 and 3 present the average marginal effect of each experimental treatment (education, gender, both) on the likelihood of accepting preschool, primary-school and secondary-school closures among individuals holding different political attitudes or living in counties with different closure statuses (closed vs. partially open) at the time of the interview. These estimates are derived from interaction terms between individual or local characteristics and our treatment variable, whereby the non-treated serve as the control group. Additional file 1: Table A.4 presents the marginal effects of the treatments for the two groups.

In our third hypothesis, H3a, we assumed that the information treatments worked more effectively for individuals who identify as leaning towards the right on the political spectrum. Our rationale was that those who lean towards the left side of the political

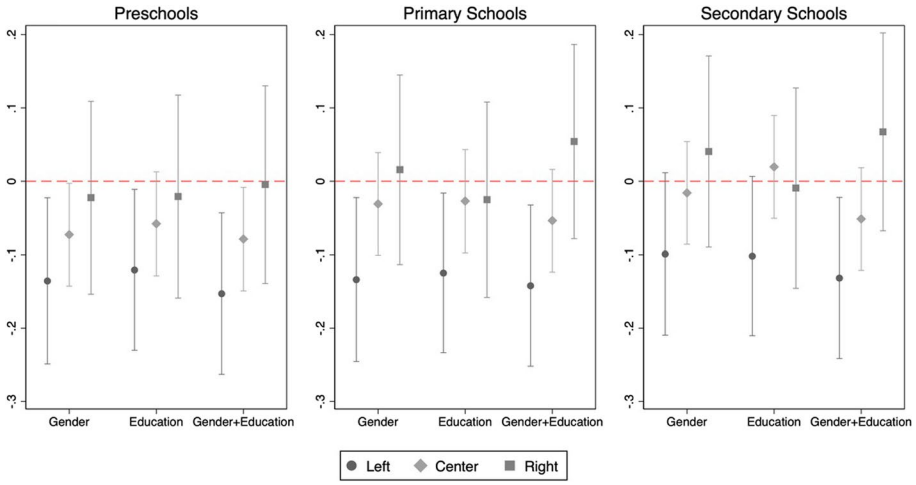

Fig. 2 Effects of information treatment on support for preschool and school closures by political ideology. Marginal effects from unweighted probit models including an interaction term between respondents' political ideology and information treatment, all control variables included. Average marginal effects with 95% confidence intervals. Source: 'Living in Exceptional Circumstances', wave 3, May 2021. $N = 2450–2456$ depending on the treatment

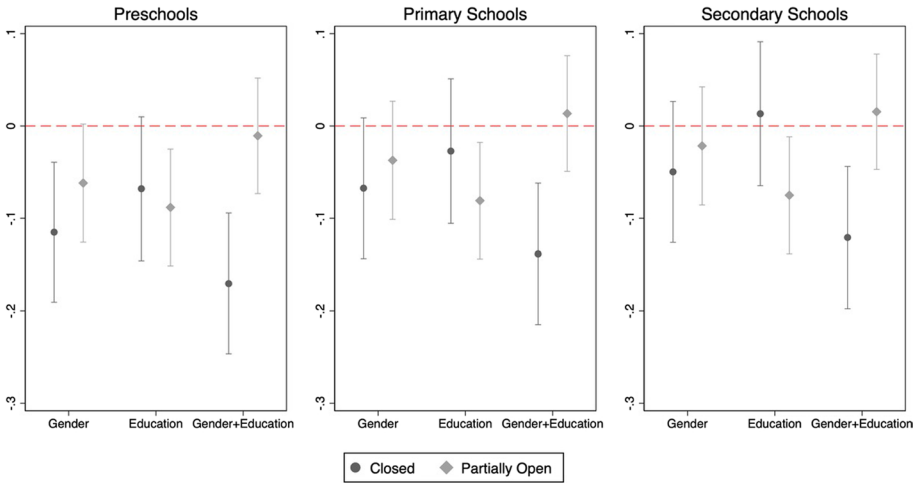

Fig. 3 Effect of information treatments on support for preschool and school closures by exposure to school-closure policies. Marginal effects from unweighted probit models including an interaction term between local school closures and information treatments, all control variables included. Average marginal effects with 95% confidence intervals. Source: 'Living in Exceptional Circumstances', wave 3, May 2021. $N = 3036–3044$ depending on the treatment

spectrum may be more aware of current levels of inequality, and the treatment may thus be less effective at raising awareness. Nonetheless, we found that participants who reported leaning towards the political left were more strongly affected by the treatments than those who identified with the centre or right end of the political spectrum. These associations hold for all three treatments but are stronger for acceptance of preschool (left panel in Fig. 2) and primary-school closures (middle panel in Fig. 2) than for secondary-school closures (right panel in Fig. 2). As Fig. 2 shows, the differences between treatment groups were not significant as confidence intervals largely overlapped.

Moreover, we observed a tendency whereby the more a participant's political attitude was oriented towards the right end of the political spectrum, the less effective the treatment became at reducing acceptance of school closures; eventually, the treatment may even reverse the effect (even though none of the positive effects was significant at the conventional level of $p < 0.05$). One explanation for this finding could be the presence of confirmation biases. Individuals tend to overlook evidence that contradicts their own opinions and beliefs. This may explain why, among those indicating that they leaned right on the political spectrum, the information treatments significantly reduced acceptance of school closures. Yet, the differences between groups with different political orientations are not statistically significant, which makes it difficult to generalise the results beyond the sample. Consequently, H3a is not supported in our study.

Finally, we argued that awareness of inequalities may depend on actual exposure to school closures, assuming that individuals living in a county where schools and childcare were closed at the time of the interview would be more affected by the information treatment (H3b). For this reason, we coded all individuals according to the county in which they lived into a dichotomous variable indicating whether schools and childcare facilities were closed (0) or had been (partly) reopened (1) at the time of the interview. Figure 3 depicts the average marginal effects of each treatment group on acceptance of school closures for individuals living in counties where schools and childcare were closed at the time of the interview (left side of the x-axes) and in counties where schools and childcare were (partially) open at the time of the interview (right side of the x-axes). As in Fig. 2, the average marginal effects are presented with reference to the control group (represented by the line at the 0 value of the y-axis) and separately for the three levels of schooling (left: preschool; centre: primary; right: secondary).

Our results show that for individuals living in counties where schools and childcare institutions were closed at the time of the interview, the treatments seemed to be more effective at reducing acceptance of school closures than for those living in areas where schools were open. This holds for closures at all three levels of schooling. However, the differences between the two groups of regions were small and only significant for the combined treatment (which contains information about both gender and educational inequality) at all three levels of schooling. Moreover, at the three levels, the combined treatment exhibited the strongest negative (i.e. acceptance-reducing) effect among the three treatments. For instance, respondents who received this information priming were 21 percentage points less likely to support preschool closures, whereas individuals who received the same treatment but lived in a county where schools and childcare were (partially) open only reduced their acceptance by 1.6 percentage points. Moreover, information priming about educational inequality also significantly lowered support for primary-school closures among participants living in counties where schools and childcare facilities were closed at the time of the interview. Therefore, while the combined treatment was the most effective at reducing acceptance of closures among individuals in counties where schools were closed, other treatments also lowered acceptance of closures significantly, but only at non-secondary levels of schooling and education.

These findings yield partial support for hypothesis H3b: while we found clear differences in the effect of the combined treatment on acceptance, the gender- and education-related information treatments seemed to work differently at various levels of schooling,

and the gender treatment also reduced acceptance among those living in contexts with (partially) open schools.

Conclusions

Policy support matters for governments and policymakers because it provides a basis for action. In the later stages of the pandemic, public debates and research documented increasing dissatisfaction with pandemic governance, which, in extreme cases, gave rise to protest rallies that united scientific scepticism with right-wing ideology (Volk, 2021). School closures were a particularly unpopular measure. Indeed, childcare- and school-related demands were a major cause for concern among German women during the first phase of the pandemic (Czymara et al., 2020). Moreover, distance learning in the spring and summer of 2020 created disruptions in educational achievement and was associated with high levels of concern about children's educational progress (Booth et al., 2021). Our study examined the link between awareness of gender and educational inequality and support for school closures in Germany based on a survey experiment with three information treatments. Theoretically, we assumed that providing individuals with information on current levels of inequality could change their policy preferences and attitudes towards policy reforms as it increases awareness of the potentially detrimental effects of policies on equality. We considered how several aspects of inequality may matter differently across stages of the life course by looking at support for school closures at three levels: preschool, primary and secondary school. By conducting a survey experiment in an online survey shortly after the introduction of the so-called federal emergency brake, which came into force in Germany on 23 April 2021, we were able to exploit support for a policy change that had a high media salience following temporal and spatial variation in school-closure policies in the past. The COVID-19 crisis and its related containment measures offered us particular circumstances for investigating the broader question of the extent to which information about inequality contributes to policy acceptance. Because this mechanism is rooted in cognitive processes, it likely extends beyond pandemic-containment measures such as school closures and may also apply to future policy reforms tackling disasters, societal crises or family policies targeted at reducing inequality.

We found that providing information about inequality impacts policy preferences by decreasing support for school closures, with a stronger effect regarding preschool and elementary-school closures than secondary-school closures. Our findings suggest no difference in effectiveness between treatments raising awareness of gender inequality and education inequality. When individuals were primed about inequality per se, they were less likely to support school closures. The findings of this article also highlight that preschool and primary-school children are considered a more sensitive group to inequality accumulation during school closures than secondary-school pupils. The broader implications of these findings are that information about how policies are related to inequality outcomes can be effective tools for changing public opinion about such policies. The main result of the paper therefore goes beyond its relevance to the COVID-19 pandemic and shows that making people more accurately informed about inequality in their country makes them less likely to support legislation that may harm it.

We also assumed that the provision of information on inequality may vary across individuals depending on their political attitudes and how strongly they were affected by the closure policies previously in place. However, our analyses indicate that political attitudes conceptualised as left or right orientations did not significantly influence the effect of information provision. We do not find support for our hypothesis that information treatment particularly affects citizens leaning towards the right on the political spectrum. Moreover, respondents who lived in areas where schools were closed at the time of the interview were more sensitive to combined information on both types of inequalities, which lowered their support for preschool closures to a stronger degree than for respondents in regions with open schools. This was in line with our expectation that a lower initial level of awareness about the benefits and disadvantages of school closures may make the citizens who live in areas where schools were closed more responsive to the information priming, following the idea of a heuristic bias. Yet, the strength of the treatment effect in the context of regional policies seemed to depend on its content: if the treatment reminded the participants of not just one but several dimensions of inequality, willingness to accept school closures decreased for all levels of schooling (preschool, primary and effectiveness). This is a novel and interesting finding that may imply a threshold-dependent effect relationship between the intensity of the treatment and its effect on policy preferences.

These contributions are of interest to education and family scholars as well as policymakers. Our findings have important policy relevance given that informed citizens are more critical of policies that may induce or increase inequalities than non-informed citizens. Additionally, because citizens' awareness of these inequalities may have real-life short- and longer-term consequences, policymaking should consider their effect on trust in public administration and the state as well as policy acceptance. As regards family politics, our results suggest that pointing out inequalities in the domains of both gender and educational opportunities raises awareness of the importance of (pre)school education. This complements previous findings on how information about the longer-term costs of maternal childcare (Philipp et al., 2023) promotes more equal sharing of parental leave and increases early childcare take-up.

Our empirical study comes with some limitations that we would like to discuss. In our analyses of the heterogeneous effects of the experimental treatment, we rely on the political orientation of individuals and their county in terms of currently implemented school-closure policies. Both measurements can be considered flawed. First, we are aware of the difficulty of conceptualising and measuring political orientation. 'Left' and 'right' are broad terms in self-reported political positioning that are in flux and can have different connections with religion, attitude towards gender roles and preferences for redistribution or inequality. This should be considered when interpreting the results.

Second, when using the currently implemented school-closure policies at the county level, we cannot exclude the possibility that individuals did not internalise other kinds of policies or were not subject to repeated policies including school closures—that is, they had not experienced several reopenings and closures of schools and childcare at different time points—which may affect their assessments of the new legislation. In the same vein but more broadly, we cannot exclude the influences of the specific history or path dependency in the family and educational policies of each county. To test this, multilevel

models with counties as a higher level and quantified indicators of the relevant contextual characteristics would have to be estimated. Such an analysis is, however, not feasible with the data at hand due to the low number of cases at the county level.

Finally, we acknowledge that schools around the world were initially closed to stop the negative consequences of a deadly virus, which caused high death rates globally as schools and daycare centres were originally thought to be at the centre of the spread of the virus. Although public acceptance of closure policies was rather high in Germany and elsewhere at the beginning of the pandemic (Lazarus et al., 2020), the situation changed throughout the pandemic. Today, evidence suggests that in-person learning did not substantially increase the incidence of COVID-19 (Fukumoto et al., 2021; Raffetti & Di Baldassarre, 2022), but the lack of information at the onset of the pandemic required a more restrictive approach to save lives.

In summary, this study contributes to the understanding of the role of information provision in acceptance of inequalities during a crisis and beyond by highlighting the content of the information and the role of prior awareness. It emphasises that information makes a difference in people's attitudes and, potentially, their behaviours.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s41118-024-00212-5.

Additional file 1: Appendix.

Acknowledgements
We are grateful to Thomas Wöhler for coordinating the data collection. We would also like to thank Silva Schilling for her excellent research assistance.

Author contributions
All authors contributed to the manuscript equally. Author presentation is in alphabetical order.

Funding
Open Access funding enabled and organized by Projekt DEAL. This project is funded by the Deutsche Forschungsgemeinschaft (DFG—German Research Foundation) under Germany's Excellence Strategy EXC-2035/1—390681379. The authors have no relevant financial or non-financial interests to disclose. The authors confirm that study participants' consent was obtained as part of the data collection process.

Availability of data and materials
The data used in this article will be made available for scientific use after an embargo period.

Declarations

Competing interests
The authors state no competing interests.

Received: 20 August 2023 Accepted: 6 February 2024
Published online: 28 May 2024

References

Abbiati, L., Antinyan, A., & Corazzini, L. (2020). A survey experiment on information, taxpayer preferences, and perceived adequacy of the tax burden. *Heliyon, 6*(3), e03576. https://doi.org/10.1016/j.heliyon.2020.e03576

Baker, E. E. (2019). Motherhood, homeschooling, and mental health. *Sociological Compass, 13*(9), e12725. https://doi.org/10.1111/soc4.12725

Barone, C., Schizzerotto, A., Abbiati, G., & Argentin, G. (2016). Information barriers, social inequality, and plans for higher education: Evidence from a field experiment. *European Sociological Review*. https://doi.org/10.1093/esr/jcw050

Bertogg, A., Kulic, N., & Strauss, S. (2022). Protected through part-time employment? Labor Market Status, domestic responsibilities, and the life satisfaction of German women during the COVID-19 pandemic. *Social Politics: International Studies in Gender, State & Society*, *29*(4), 1236–1260.

Bittmann, F., & Schindler, S. (2021). Analysing Diversion Processes in German Secondary Education: School-Track Effects on Educational Aspirations. *Kölner Zeitschrift Für Soziologie Und Sozialpsychologie, 73*, 231–257. https://doi.org/10.1007/s11577-021-00789-1

Blossfeld, H. P., Kulic, N., Skopek, J., & Triventi, M. (2017). In H. P. Blossfeld, N. Kulic, J. Skopek, & M. Triventi (Eds.), *Childcare, early education and social inequality: An international perspective*. Edward Elgar Publishing.

Blossfeld, H.P. & Shavit, Y. (2010). Persisting barriers. The Structure of Schooling. *Readings in the Sociology of Education*, *214*.

Bol, T., & van de Werfhorst, H. G. (2013). Educational systems and the trade-off between labor market allocation and equality of educational opportunity. *Comparative Education Review, 57*, 285–308.

Booth, C., Villadsen, A., Goodman, A., & Fitzsimons, E. (2021). Parental perceptions of learning loss during Covid-10 SCHOOL CLOSUREs in 2020. *British Journal of Educational Studies, 69*(6), 657–673. https://doi.org/10.1080/00071005.2021.1984390

Breznau, N. (2021). The welfare state and risk perceptions: The Novel Coronavirus Pandemic and public concern in 70 countries. *European Societies, 23*(1), 33–46. https://doi.org/10.1080/14616696.2020.1793215

Busemeyer, M. R., Diehl, C., Bellani, L., Koos, S., Schmelz, K., Selb, P., & Hinz, T. (2023). *COVID-19 and Social Inequality – A (Welle 3). Exzellenzcluster "The Politics of Inequality" (Konstanz)*. Datenfile Version 1.0.0. https://doi.org/10.7802/2456.

Clegg, D., Durazzi, N., Heins, E., & Robertson, E. (2023). Policy, power and pandemic: Varieties of job and income protection responses to Covid-19 in Western Europe. *Journal of European Public Policy*. https://doi.org/10.1080/13501763.2023.2242907

Collins, C., Landivar, L. C., Ruppanner, L. R., & Scarborough, W. J. (2020). COVID-19 and the gender gap in work hours. *Gender, Work and Organization, 28*(1), 101–112. https://doi.org/10.1111/gwao.12506

Cruces, G., Perez-Truglia, R., & Tetaz, M. (2013). Biased perceptions of income distribution and preferences for redistribution: Evidence from a survey experiment. *Journal of Public Economics, 98*(1), 100–112.

Czymara, C. S., Langenkamp, A., & Cano, T. (2020). Cause for concerns: Gender inequality in experiencing the COVID-19 lockdown in Germany. *European Societies, 23*(sup1), S68–S81. https://doi.org/10.1080/14616696.2020.1808692

Daly, M., & Ryu, S. (2023). Child-related Social Policies in Europe during the COVID-19 Pandemic. *Journal of Social Policy*. https://doi.org/10.1017/S0047279423000351

De Vries, C. E., Hakhverdian, A., & Lancee, B. (2013). The dynamics of voters' left/right identification: The role of economic and cultural attitudes. *Political Science Research and Methods, 1*(2), 223–238.

Destatis. (2021). *Kindertagesbetreuung*. Retrieved 15.12.2021 from https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Soziales/Kindertagesbetreuung/_inhalt.html

Destatis. (2020). *Pressemitteilung Nr. N 023 vom 7. Mai 2020*. Retrieved on 12.04.2021 from:m https://www.destatis.de/DE/Presse/Pressemitteilungen/2020/05/PD20_N023_132.html#:~:text=Knapp%20ein%20Viertel%20(23%20%25),vollzeiterwerbst%C3%A4tig%20(2008%3A%2018%20%25)

Diehl, C., & Wolter, F. (2021). Attitudes about containment measures during the 2020/2021 coronavirus pandemic: self-interest, or broader political orientations? *Research and Politics*. https://doi.org/10.1177/20531680211035319

Diermeier, M., Goecke, H., Niehues, J., & Thomas, T. (2017). Impact of inequality-related media coverage on the concerns of the citzens, *DICE Discussion Paper*, No. 258, ISBN 978-3-86304-257-8, Heinrich Heine University Düsseldorf: Düsseldorf Institute for Competition Economics (DICE). https://ideas.repec.org/p/zbw/dicedp/258.html

Dräger, J. (2021). The Role of Parental Wealth in Children's Educational Pathways in Germany. *European Sociological Review*. https://doi.org/10.1093/esr/jcab027

Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning loss due to school closures during the COVID-19 pandemic. *Proc Natl Acad Sci U S A*. https://doi.org/10.1073/pnas.2022376118

Esping-Andersen, G. (1990). *The Three Worlds of Welfare Capitalism*. Pinceton University Press.

Fukumoto, K., McClean, C. T., & Nakagawa, K. (2021). No causal effect of school closures in Japan on the spread of COVID-19 in spring 2020. *Nature Medicine, 27*, 2111–2119. https://doi.org/10.1038/s41591-021-01571-8

GESIS—Leibniz-Institut für Sozialwissenschaften. (2019). *ALLBUS/GGSS 2018* (Allgemeine Bevölkerungsumfrage der Sozialwissenschaften/German General Social Survey 2018). GESIS Data Archive, Cologne. ZA5270 Data file Version 2.0.0, https://doi.org/10.4232/1.13250

Hale, T., Angrist, N., Goldszmidt, R., Kira, B., Petherick, A., Phillips, T., Webster, S., Cameron-Blake, E., Hallas, L., Majumdar, S., & Tatlow, H. (2021). A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker). *Nature Human Behavior, 5*(4), 529–538. https://doi.org/10.1038/s41562-021-01079-8

Hale, T., Webster, S., Petherick, A., Phillips, T. & Kira, B. (2020). *Oxford COVID-19 Government Response Tracker*. Blavatnik School of Government. https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker

Hank, K. (2002). Regional Social Contexts and Individual Fertility Decisions: A Multilevel Analysis of First and Second Births in Western Germany. *European Journal of Population / Revue Européenne de Démographie*, 18(3), 281–299. http://www.jstor.org/stable/20164192

Harell, A., & Lieberman, E. (2021). How information about race-based health disparities affects policy preferences: Evidence from a survey experiment about the COVID-19 pandemic in the United States. *Social Science and Medicine, 277*, 113884. https://doi.org/10.1016/j.socscimed.2021.113884

Haselton, M.G., Nettle, D. & Murray, D. R. (2015). The evolution of cognitive bias. In M.G. Haselton, D. Nettle, & D. R. Murray (Eds.), *The handbook of evolutionary psychology* (pp. 1–20).

Heckman, J. J. (2012). Invest in early childhood development: Reduce deficits, strengthen the economy. *The Heckman Equation, 7*, 1–2.

Hoffmann, R., Muttarak, R., Peisker, J., et al. (2022). Climate change experiences raise environmental concerns and promote Green voting. *Nature Clinical Practice Endocrinology & Metabolism, 12*, 148–155. https://doi.org/10.1038/s41558-021-01263-8

Hoy, C. & Toth, R. (2019). Aligning preferences for redistribution of right and left wing voters by correcting their beliefs about inequality. *Working Papers 494, ECINEQ, Society for the Study of Economic Inequality*. https://ideas.repec.org/p/inq/inqwps/ecineq2019-494.html

Migone, A. R. (2020). The influence of national policy characteristics on COVID-19 containment policies: A comparative analysis. *Policy Design and Practice, 3*(3), 259–276. https://doi.org/10.1080/25741292.2020.1804660
Naumann, E., Möhring, K., Reifenscheid, M., Wenz, A., Rettig, T., Lehrer, R., Krieger, U., Juhl, S., Friedel, S., Fikel, M., Cornesse, C., & Blom, A. G. (2020). COVID-19 policies in Germany and their social, political, and psychological consequences. *European Policy Analysis, 6*(2), 191–202. https://doi.org/10.1002/epa2.1091
Parolin, Z., & Lee, E. K. (2021). Large socio-economic, geographic and demographic disparities exist in exposure to school closures. *Nature Human Behaviour, 5*(4), 522–528. https://doi.org/10.1038/s41562-021-01087-8
Pinggera, M. (2023). Place and Policy Preferences—Spatial Divides in Attitudes towards Social Policies in Germany. *Swiss Political Science Review, 29*, 1–20. https://doi.org/10.1111/spsr.12546
Raffetti, E., & Di Baldassarre, G. (2022). Do the Benefits of School Closure Outweigh Its Costs? *International Journal of Environmental Research and Public Health, 19*(5), 2500. https://doi.org/10.3390/ijerph19052500
Steinert, J. I., Sternberg, H., Prince, H., Fasolo, B., Galizzi, M., Büthe, T., & Veltri, G. A. (2022). COVID-19 vaccine hesitancy in eight European countries: Prevalence, determinants, and heterogeneity. *Science Advances, 8*, eabm9825. https://doi.org/10.1126/sciadv.abm9825
Tazouti, Y., Viriot-Goeldel, C., Matter, C., et al. (2011). French nursery schools and German kindergartens: Effects of individual and contextual variables on early learning. *European Journal of the Psychology of Education, 26*, 199–213. https://doi.org/10.1007/s10212-010-0043-4
Triventi, M., Kulic, N., Skopek, J. & Blossfeld, H.P. (2016). Secondary school systems and inequality of educational opportunity in contemporary societies. In *Models of Secondary Education and Social Inequality*. Edward Elgar Publishing
Triventi, M., Skopek, J., Kulic, N., Buchholz, S., & Blossfeld, H. P. (2020). Advantage 'finds its way': How privileged families exploit opportunities in different systems of secondary education. *Sociology, 54*(2), 237–257.
Trump, K. S. (2018). Income inequality influences perceptions of legitimate income differences. *British Journal of Political Science, 48*(4), 929–952.
Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*, 1121–1131.
United Nations. (2020a). Most countries failing to protect women from COVID-19 economic and social fallout. *UN News / Global Perspective Human Stories,* published 19 September 2020, https://news.un.org/en/story/2020/09/1073982 (last accessed 3 November 2023)
United Nations. (2020b). Generations of progress for women and girls could be lost to COVID pandemic, UN chief warns. *UN News / Global Perspective Human Stories,* published 31 August 2020, https://news.un.org/en/story/2020/08/1071372 (last accessed 3 November 2023)
United Nations. (2020c). The virus that shut down the world: Education in crisis. *UN News / Global Perspective Human Stories,* published 28 December 2020, https://news.un.org/en/story/2020/12/1080732
van de Werfhorst, H. G. (2021). Inequality in learning is a major concern after school closures. *Proc Natl Acad Sci U S A*. https://doi.org/10.1073/pnas.2105243118
Van Kessel, S., Sajuria, J., & Van Hauwaert, S. M. (2020). Informed, uninformed or misinformed? A cross-national analysis of populist party supporters across European democracies. *West European Politics, 44*(3), 585–610.
Volk, S. (2021). Political performances of control during COVID-19: Controlling and contesting democracy in Germany. *Frontiers in Political Science, 3*, 38.
Werner, K. & Woessman, L. (2021). *The Legacy of COVID-19 in Education* (CESifo Working Paper Series, Paper No. 9358. https://www.cesifo.org/de/publikationen/2021/working-paper/legacy-covid-19-education
Zucker, A. N., & Bay-Cheng, L. Y. (2021). Me first: The relation between neoliberal beliefs and sexual attitudes. *Sexuality Research and Social Policy, 18*, 390–396. https://doi.org/10.1007/s13178-020-00466-6

Publisher's Note