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The COVID-19 pandemic and social cohesion across the globe

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The COVID-19 pandemic and social cohesion across the globe

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Editorial: The COVID-19 pandemic and social cohesion across the globe

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Editorial on the Research Topic
The COVID-19 pandemic and social cohesion across the globe

Introduction

The COVID-19 pandemic has brought about a constellation of health, social, economic, and political crises, drastically affecting the lives of people across the globe. Governments in many countries implemented dramatic public health measures in order to prevent the spread of the virus (Fong et al., 2020). Unprecedented restrictions were imposed on individual mobility which brought public life to a standstill in many places, with constraints placed on businesses, places of education, transportation, as well as on leaving one's own home. These social distancing mandates imposed by governments required the collective action of individuals to mitigate the spread of the highly infectious virus, especially prior to the availability of vaccines. "More than ever we depend[ed] on fellow citizens to behave responsibly, and on institutional actors to make the right decisions" (Delhey et al., 2021, p. 3).

Moreover, social inequalities—particularly along income, race, ethnicity, and gender lines—influenced which groups were most affected by the pandemic with regards to infection as well as the pandemic's social and economic consequences. This dramatic societal disruption resulted in initial workplace shifts and job loss, temporary disruption in financial assistance provided by social welfare institutions, and overall deterioration in wellbeing (Brodeur et al., 2021). Whoever belonged to a vulnerable group before the pandemic (e.g., the poor, the unemployed, ethnic or racial minorities), likely has fewer resources to cope with these continuing challenges, so that inequalities might even widen (Jewett et al., 2021).

For these reasons, the pandemic and its socioeconomic repercussions highlight the vital importance of social cohesion, as always in times of deep crises or great catastrophes (Townshend et al., 2015). Social cohesion is often described as the glue that holds society together, as an "attribute of a collective, indicating the quality of collective togetherness" (Schiefer and van der Noll, 2017, p. 592). Whether societies will be living with its consequences for the longer term or will soon be able to overcome them, the COVID-19 pandemic offers a unique opportunity to examine from a sociological perspective how a sudden and profound threat to existential security impacts social cohesion. Have societies

"come together" to withstand the shared threat as posited, for example, by the "rally-round-the-flag" thesis (Bol et al., 2021; Kritzinger et al., 2021)? Or are they "coming apart" (Borkowska and Laurence, 2021), as the question of how to respond to the crisis has become increasingly divisive?

In order to design long-term strategies for dealing with the social consequences of the pandemic, a strong foundation of innovative scientific knowledge covering a broad spectrum of societies and perspectives over an extended period of time is necessary. This has been the aim of the present Research Topic of *Frontiers in Sociology*. It called specifically for contributions on how the pandemic has affected various aspects of social cohesion, such as "resilient social relations, positive emotional connectedness between its members and the community, and a pronounced focus on the common good" (Dragolov et al., 2016, p. 6). Taken together, the quantitative empirical papers published here (see Table 1) contribute to the understanding of social relations, attitudes toward migration, interpersonal trust, ideological polarization, a shared understanding of reality, provision of instrumental help, compliance with containment measures, and poverty during the pandemic. An additional theoretical contribution by Posocco and Watson argues for the necessity of reimagining "a new world order based on cooperation, coordination, and solidarity between nation-states" (p. 1) in times of crisis like the pandemic. Collectively, the evidence presented in this Research Topic lays significant groundwork for a more contextualized understanding of the social impact of the pandemic across the globe.

Longitudinal and cross-sectional research

With the help of longitudinal data, many of the studies included in this Research Topic were able to illustrate how the pandemic has shifted over time since its initial waves. Particularly impressive in this regard is the Austrian Corona Panel Project (ACPP; Kittel et al., 2020), which Dochow-Sondershaus used to track attitude shifts related to COVID-19 containment measures over the course of more than a year according to individual ideological self-identification. About 1,500 respondents were surveyed a total of 24 times between March 2020 and July 2021, often on a weekly basis. This allowed Dochow-Sondershaus to place the trajectories of ideological groups in the context of key time points of the pandemic in Austria (e.g., the first lockdown, introduction of mask mandates, and so on), illustrating the dynamics of ideological divergence and convergence of attitudes regarding pandemic containment measures.

The Values in Crisis (VIC) panel survey project was fielded in Germany and the United Kingdom in order to study how citizens' moral value orientations react to the social disruption caused by the pandemic. By analyzing VIC data from nearly 1,300 respondents in Germany in the first months of the pandemic (April-May 2020) and then again in the early months of the following year (February–March 2021), Eichhorn et al. drew conclusions about whether those who supported pandemic-related conspiracy beliefs at the beginning of the pandemic were the same as those who held these beliefs later on. This enabled the authors to identify socio-demographic and attitudinal profiles where pandemic conspiracy beliefs became ingrained over time.

Three studies in this Research Topic made use of well-established longitudinal survey projects which were initiated well before Corona. Bergmann et al. analyzed two waves of the Survey of Health, Aging and Retirement in Europe (SHARE) Corona Survey (Börsch-Supan, 2022a,b) involving 45,000+ older adults. In doing so, the authors examined individual changes in providing and receiving instrumental help between the first summer of the pandemic and about 1 year later. Similarly, Petersen et al. used two waves of the Gutenberg COVID-19 Study, a population-representative, prospective cohort study, which built on the original Gutenberg Health Study in the Mainz and Mainz-Bingen areas of Germany (Wild et al., 2012). In doing so, the authors identified respondents at-risk of living in poverty and compared their outcomes at the second time point with regards to economic impacts and psychosocial stressors of the pandemic. Finally, instead of adding on pandemic-dedicated waves as the previous two studies did, Castillo et al. tracked changes in attitudes toward migrants over four waves of data collection prior to the pandemic (2016–2019) and one wave in the midst of it (2021) from the Chilean Longitudinal Social Survey (ELSOC; Reproducible Research Centre for Social, Conflict and Cohesion Studies, COES, 2022) to assess the impact of the pandemic on these attitudes.

Likewise, the cross-sectional studies featured make their own valuable contributions to the literature, such as developing an empirical typology of social milieus (Schröder et al.), being one of the first studies to examine children's relational social cohesion with large scale, multinational quantitative research (Nahkur and Kutsar), and offering insights into social relations in Russia (Tatarko et al.).

Research across the globe

One of the primary aims of the Research Topic was to highlight research from a wide range of countries, regions, and cultures in order to broaden our understanding of the effects of this truly global pandemic on social cohesion. The papers in this Research Topic contribute to this aim in a variety of manners. A number of country-specific studies offer unique national perspectives on Austria (Dochow-Sondershaus), Chile (Castillo et al.), Germany (Eichhorn et al.; Petersen et al.; Schröder et al.), and Russia (Tatarko et al.). Particularly when combined with a longitudinal study design (Castillo et al.; Dochow-Sondershaus; Eichhorn et al.; Petersen et al.), these studies offer intensive examinations of the respective country.

These national case studies are complemented by two multinational studies that add important comparative insights. Bergmann et al.'s analysis of the SHARE Corona Survey used full probability samples from 27 European countries and Israel, offering internationally comparable representative data for populations aged 50 and above; these data allowed them to take into consideration the different national contexts with regards to the varying policy responses to the pandemic, as well as levels of severity at various time points. Similarly, as part of the International Children's Worlds COVID-19 Supplement Survey,

TABLE 1 Empirical global perspectives on the COVID-19 pandemic and social cohesion.

Authors	Title	Country	Population	Research design	Topic of research
Bergmann et al.	The impact of the COVID-19 pandemic on the provision of instrumental help by older people across Europe	27 European countries and Israel	Adults, aged 50+ years	Panel survey (2020–2021); 2 waves; $N = 45{,}000+$	Provision of instrumental help
Castillo et al.	Social cohesion and attitudinal changes toward migration: A longitudinal perspective amid the COVID-19 pandemic	Chile	Adults, aged 18+ years	Panel survey (2016–2021); 5 waves; $N = 1{,}611$	Attitudes toward migration
Dochow-Sondershaus	Ideological polarization during a pandemic: Tracking the alignment of attitudes toward COVID containment policies and left-right self-identification	Austria	Adults and adolescents, aged 14+ years	Panel survey (2020–2021); 24 waves; $N = 1{,}500$	Ideological polarization
Eichhorn et al.	Reality bites: An analysis of Corona deniers in Germany over time	Germany	Adults and adolescents, aged 16+ years	Panel survey (2020–2021); 2 waves; $N = 1{,}280$	Shared understanding of reality
Nahkur and Kutsar	The change in children's subjective relational social cohesion with family and friends during the COVID-19 pandemic: A multinational analysis	Albania, Algeria, Bangladesh, Belgium, Chile, Estonia, Finland, Germany, Indonesia, Israel, Italy, Romania, Russia, South Korea, Spain, Taiwan, Turkey, and Wales	Children, primarily aged 9–13 years	Cross-sectional survey (2021); $N = 20{,}000+$	Social relations
Petersen et al.	The burdens of poverty during the COVID-19 pandemic	Germany	Adults, aged 25+ years	Prospective cohort survey (2020–2021); 2 waves; $N = 8{,}100$	Poverty
Schröder et al.	Trust and compliance: Milieu-specific differences in social cohesion during the COVID-19 pandemic in Germany	Germany	Adults and adolescents, aged 15+ years	Cross-sectional survey (2020); $N = 589$	Trust; Compliance
Tatarko et al.	Social capital and the COVID-19 pandemic threat: The Russian experience	Russia	Adults, aged 18+ years	Cross-sectional survey (2020); $N = 500$	Social relations; Institutional trust

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Nahkur and Kutsar analyzed cross-sectional data of 20,000+ children (primarily 9–13 years of age) collected in 2021 from 18 countries across Europe, Asia, and North Africa in their investigation of the impact of the pandemic on children's relational social cohesion with family and friends.

Populations and sub-populations

The majority of empirical studies included in this Research Topic target the "typical" adult population (see Table 1). Two of the papers, however, present unique generational perspectives. At the beginning of the pandemic in particular, the elderly were perceived as being in need of protection and provision of instrumental support, but Bergmann et al. take a closer look at the changing patterns of how individuals aged 50+ in Europe have provided help to others during the pandemic. Nahkur and Kutsar offer another point of view, arguing that children are both embedded in the social networks of their families and creating their own networks. Thus, given the widespread school closures and other lockdown measures across the globe, their relational patterns with friends and family were altered, with potential impact on their social development and mental health.

Social cohesion in the pandemic: substantial insights

In the remainder of this editorial, we discuss research insights along the three main components of the Bertelsmann Social Cohesion Radar (Dragolov et al., 2016) mentioned in the introduction. Several papers speak to the first component, resilient social relations, which involves the horizontal relationships of individuals, and comprises intact social networks, trust in others, and acceptance of diversity. Contributions to this Research Topic share clear indications of weakened social relations, though the picture is more complex than previously thought. Nahkur and Kutsar demonstrate that social distancing measures during the pandemic affected children differently depending on the severity of measures experienced. Across all 18 countries studied, about one in 10 reported feeling as if their social relationships had considerably decreased (and about one in four reported this in Germany, Turkey, and Bangladesh). In Russia, Tatarko et al. find evidence of weakened social ties with neighbors and fellow citizens, but unchanged or intensified ties with family, colleagues, and friends. The authors speculate that these associations are a reaction to threat and isolation, with people worrying about their next of kin and contacting them more often in isolation, while contacting weaker ties even less than before.

In order to gain a more nuanced understanding of interpersonal trust during the pandemic in Germany, Schröder et al. propose a new model of social milieus which combine socioeconomic status and basic human values of social groups. Their results from the first wave of COVID-19 indicate greater heterogeneity than would be expected based on the "rally-round-the-flag" thesis. The authors find the highest levels of trust in a milieu in the lower socioeconomic class with socially focused values, and the lowest trust in the upper-middle class milieu with personally focused values.

With regards to acceptance of diversity, Castillo et al. argue that in the past, migrants have been seen as potential carriers of disease and potential threats (Kraut, 2010), even when evidence indicated otherwise. Castillo et al. indeed demonstrate that Chileans perceive migrants more negatively after the pandemic, especially lower-educated Chileans and those who live in neighborhoods with an increasing number of migrants.

This Research Topic also aimed to highlight pandemic-induced shifts in feelings of connectedness, the second main component of social cohesion. This component taps the emotional and attitudinal attachment of citizens toward the wider institutional framework. Since government pandemic containment strategies had not previously been strongly associated with an ideological or partisan identity, Dochow-Sondershaus took advantage of the unique opportunity offered by the COVID-19 pandemic to examine polarizing trends over time in Austria according to ideological self-identity. While all of the various ideological groups generally perceived the government's policies for containing COVID-19 as appropriate at first, this shifted over time. Eventually, the positions of right-wing and left-wing identifiers solidified, with the former finding the policies "too extreme." However, toward the end of the study period (December 2020-February 2021), Dochow-Sondershaus does note a certain degree of convergence toward views of containment policies being a bit "too extreme" among all groups. During this time period, no lockdowns were taking place in Austria, and there were some signs of normalization (e.g., widely available self-tests and rising vaccination rates) that left the impression that the pandemic had become politically manageable. The study by Eichhorn et al. on Corona deniers in Germany provides evidence that considering Corona a hoax is deeply intertwined with low political trust and low trust in "mainstream" media. The authors attest to an extreme attitude profile especially to the—fortunately, not very large in Germany—camp of "consistent deniers" who held this opinion in 2020 and 2021.

Several contributions to this Research Topic also dealt with the third building block of social cohesion—the focus on the common good. This cohesion component highlights, in particular, the importance of context for respect for social rules, as well as for solidarity and helpfulness. In their examination of concerned compliance with governmental pandemic measures based on social milieus in Germany, Schröder et al. find that milieus with socially focused values demonstrate high concerned compliance, whereas those that held self-enhanced and personally focused values demonstrate low concerned compliance. In a similar vein, Eichhorn et al. provide evidence that people who endorse conformity more strongly are significantly less likely to consider the pandemic a hoax. In that sense, being "other-oriented" in a positive way contributes to societal cohesion, also under the pandemic condition. From the angle of intergenerational functional solidarity, Bergmann et al. discovered that help from adult children (aged 50+) to elderly parents strongly increased in the first phase of the pandemic, while support from elderly parents to their adult children decreased during this phase, especially in countries that faced the largest challenges in 2020 due to the pandemic. Moreover, provision of instrumental help by older adults

to people outside of the family was common at the start of the pandemic, but strongly decreased by 2021. The contribution by Petersen et al. reminds us that the pandemic led to increased risks of poverty and psychological stress, despite considerable solidarity among people. This is an example of the limits of what cohesion can achieve in times of a deep crisis.

Conclusions

The authors who contributed to this Research Topic have cumulatively begun building a foundation of innovative scientific knowledge on social cohesion in the COVID-19 pandemic. With their investigations across time and space, the contributions add a great degree of context to the current research by illustrating the ever-changing landscape of the pandemic and its impact. In short, they provide no straightforward answer to the question of whether societies are "coming together" or "coming apart." Instead, they offer a body of evidence demonstrating the necessity of considering intergenerational relationships, societal differences, and relevant phases of the pandemic and their related containment measures. Understanding this complexity appears to be the key to developing long-term strategies for dealing with the social consequences of this and future pandemics.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Ideological polarization during a pandemic: Tracking the alignment of attitudes toward COVID containment policies and left-right self-identification

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Research on opinion polarization has focused on growing divides in positions toward political issues between the more politically and ideologically engaged parts of the population. However, it is fundamentally difficult to track the alignment process between ideological group identity and issue positions because classically controversial political issues are already strongly associated with ideological or partisan identity. This study uses the COVID pandemic as an unique opportunity to investigate polarizing trends in the population. Pandemic management policies were not a politicized issue before COVID, but became strongly contested after governments all across the world initiated policies to contain the pandemic. We use data from the Austrian Corona Panel Project (ACPP) to track trajectories in attitudes toward current COVID measures over the course of more than a year of the pandemic. We differentiate individuals by their ideological self-identity as measured by left-right self-placement. Results suggest that all ideological groups viewed the containment measures as similarly appropriate in the very beginning. However, already in the first weeks, individuals who identify as right-wing increasingly viewed the policies as too extreme, whereas centrists and left-wing identifiers viewed them as appropriate. Opinion differences between left-wing and right-wing identifiers solidified over the course of the pandemic, while centrists fluctuated between left and right self-identifiers. However, at the end of our observation period, there are signs of convergence between all groups. We discuss these findings from the perspective of theoretical models of opinion polarization and suggest that polarization dynamics are likely to stop when the political context (salience of certain issues and concrete material threats) changes.

KEYWORDS

issue alignment, COVID attitudes, left-right self-identification, polarization, COVID containment policies, ideology, party sorting

Introduction

There is an ongoing debate in sociology and the political sciences about the extent and breadth of polarization in Western democratic societies (DiMaggio et al., 1996; DellaPosta and Macy, 2015; McCarty, 2019). However, when it comes to attitudinal divides between politically engaged groups that share broad ideological similarities, the evidence consistently shows polarizing trends. A prime example is partisan polarization in the US, the rising differences in policy positions and growing animosity between supporters of the Republicans and Democrats (Fiorina, 2017; McCarty, 2019). Similar arguments have been made for European countries (Westwood et al., 2018; Flores et al., 2022).

This article investigates the dynamics of ideological group polarization, the increasing differences in substantive policy attitudes between groups that ascribe to certain ideological labels, in the specific historical context of the COVID pandemic. In particular, we analyze the potential evolving alignment between left-right self-positioning and individuals' positions toward current COVID policies[1].

It seems obvious that individuals who ascribe to different ideologies have different attitudes toward the politicized aspects of social life (McCarty, 2019). Indeed, this might be considered a necessary part of a functioning pluralist democracy. However, if the politically engaged and active parts of society hold incompatible attitudes on a wide variety of issues, or one issue that is extremely politicized, the chances of political consensus might vanish. Furthermore, the existence of homogenous ideological camps might lead political actors of either camp to disengage from persuasion and start preaching to the choir because the other side is deemed unreachable (McCarty, 2019). This might lead to the solidification of already existing social bubbles. Most importantly, while these bubbles might be initially constrained to individuals engaged in politics, examples such as the USA (Iyengar et al., 2019) and Hungary (Vegetti, 2019) show that polarized elite level discourse can lead to polarized societies and worrisome consequences for social cohesion at large.

These potential threats to social cohesion are particularly apparent in times of a pandemic, where a certain normative consensus is required for both political decisions making and in interpersonal social encounters. Political decisions have to be made quickly and revised as epidemiological research progresses, requiring consensus about facts concerning the pandemic and the usefulness of certain measures among political actors. Furthermore, individuals require their neighbors' or family members' cooperation in social situations in the face of epidemiological dangers. Social situations where some individuals enforce and follow state policies, while others oppose them, will results in uncertainty and coordination dilemmas. This might be the case even if outright rejection of certain policies is only expressed by small parts of the population. In contrast to other political disputes, coordination dilemmas in pandemic situations are likely to occur in the everyday life of individuals, for example, when family members diverge in their compliance with mask mandates.

This paper contributes both to the literature on ideological group polarization and theoretical models of opinion polarization by offering a temporally fine-grained analysis of the dynamics of opinion divergence between ideological groups. The COVID pandemic presents an unique opportunity to study how political positions align with ideological self-identity because COVID entered political discourse suddenly and pandemic management was not a politicized issue before COVID. Thus, it is safe to assume that there are no prior affinities between ideological self-descriptions and attitudes toward pandemic management. Furthermore, the study is conducted in Austria, a country with a long tradition of right-wing populism (Mudde and Rovira Kaltwasser, 2013) and where right-wing actors strongly used the pandemic for political purposes. These particularities of the case, together with fine-grained longitudinal data, allow us to study an ideal case where social influence by the own ideological group should be have a major influence on individual attitudes, and thus, polarization should escalate according to most models of opinion polarization.

The topic of differences between ideological groups is strongly related to research on partisan polarization. Partisan identity is an important political group marker in the US two-party system. In European multi-party contexts, such as the Austrian context, ideological self-identification might serve a similar function as partisanship in the US. Indeed, Europeans often do not have durable party affiliations or voting behavior (van der Meer et al., 2015), whereas ideological self-identification tends to be more stable (Peterson et al., 2020). And while partyism has been observed in the European context, it is strongly conditional on the ideological distance that partisans perceive to the other party (Westwood et al., 2018).

Processes of ideological group polarization

This article views ideological group membership as an indicator of two aspects that play an active role in societal polarization dynamics. The first aspect is related to the content of the ideology, its principles and the attitudinal priors that

1 We use the term ideological *group* polarization for two reasons. First, it stresses that the causes of polarization are not only related to identity as individuals perceive it, but also about the structure of the influence networks that individuals find themselves in, i.e., the ties in the social group (see next section). Second, it stresses that this paper is interested in broad group comparisons in contrast to fleshing out the attitudinal contents of certain ideologies.

individuals derive from these principles. Thus, ideology might serve as a set of attitudinal heuristics in the face of complex social problems (Lütjen, 2020). The second aspect are the group-level social implications of affiliating with the same ideology. Individuals in the same ideological groups might share similar or related political information channels, encounter similar arguments in their interpersonal social influence networks and share a social identity (Mason, 2018). More generally, they are positioned in the same realm of social influence.

The probably most intuitive individual-level mechanism how ideological group membership affects opinion formation is that individuals process the same information differently based on their *ideological priors*, which leads them to embrace different political opinions (Newman et al., 2018). For example, Lütjen (2020) argues that polarization is a predictable outcome of individuals' need to filter information in times of increasing complexity. Positions on the left-right scale are commonly theorized to stem from political attitudes along two axes: an economic and a socio-cultural axis (Lachat, 2018). On the economic axis, the left pole stands for pro-state, progressive and interventionist positions, while the right pole stands for market-liberalism and self-responsibility. On the socio-cultural axis, the left pole stands for culturally liberal, social justice, pro-immigration positions, while the right pole stands for conservative, authoritarian, law-and-order positions (de Vries et al., 2013). Ideology might lead to initial attitudinal affinities toward COVID policies that get strengthened in the course of the pandemic *via* the social influence mechanisms outlined in the following. For example, it might be reasonable to assume that individuals who position themselves on the right might be more inclined to be in opposition to COVID policies, because they view them as an infringement of individual liberty.

Beyond the psychological content of ideology, *social influence* is the most well-studied mechanism in theoretical models of opinion polarization (DellaPosta and Macy, 2015). One widely shared assumption among these models is that individuals adopt information more readily from individuals who are like them in many respects, an assumption based on empirical evidence of ubiquitous homophily in human social networks (McPherson et al., 2001). Additionally assuming that actors distance themselves from others with dissimilar opinions (DellaPosta et al., 2015; Axelrod et al., 2021) or that actors exchange arguments with similar others, which in turn reinforces their worldview (Mäs and Flache, 2013) leads to polarized opinion landscapes: initial attitudinal affinities within groups are re-enforced by social influence and lead to escalating opinion divergence over time.

Ideological group membership likely structures social influence networks by determining the sources from which individuals obtain information on newly emerging political issues. Real-world social influence can be manifold. First, individuals might discuss political issues with persons in their personal networks, which are likely segregated by political identity (Jiang et al., 2020). Particularly when it comes to newly emerging, politically salient issues they might form their opinion in discussions with their ideologically like-minded peers. Furthermore, there is also evidence for active distancing between ideological groups in the US (Iyengar et al., 2019) and in Europe (Westwood et al., 2018).

Second, ideological groups might share similar information channels in the form of the media channels that they consume and the public figures and social media accounts that are prominent in certain ideological circles. For example, research has shown that political elite communication on COVID differed markedly between ideological groups (Green et al., 2020) and Twitter networks were highly politically polarized (Jiang et al., 2020). Thus, this article assumes that ideological groups form a realm of shared media influence. Importantly, we do not assume that each individual in each group consumes the exact same media channels, but that there is a certain affinity toward certain outlets and opinion makers (Prior, 2013; Cardenal et al., 2019), which leads to a propagation of specific ideas about COVID through these realms over time. Thus, the reasoning underlying this paper acknowledges that ideologies are best thought of as diverse coalition of individuals that do not necessarily share the same opinion on all issues (Noel, 2013, p. 19), but still are subject to the same talking points (Mäs and Flache, 2013).

Note that we stress the social influence mechanism over the ideological prior mechanism because in the presence of previously unpoliticized issues, the exact reaction on how certain ideologies incorporate their views on political issues into a consistent worldview are often unpredictable (Macy et al., 2019). Indeed, from a perspective that focuses only on the consistency of ideological content, both left and right ideological principles lend themselves to support either strict or laissez-faire COVID containment strategies. From a right-wing conservative perspective, the state could ensure law-and-order and the health of the native population by prohibiting large outbreaks. From the left, state policies against COVID outbreaks could be justified by the necessity to help vulnerable groups. On the other hand, both the right and the left could have opposed strong state interventionism by criticizing the restrictions to individual freedom that go along with containment policies, be it economic freedoms (right) or freedoms of movement and cultural expression (left).

Investigating the perception of state measures during the COVID pandemic presents a unique opportunity to study social influence in a most likely scenario. This is for two reasons. First, pandemic policies were not politicized before the pandemic, which leads to the plausible assumption that positions on pandemic management were not part of the traditional political issues that make up ideologies. As we can see in later analyzes, individuals from all over the left-right spectrum had similar attitudes toward anti-COVID measures in the very beginning of the pandemic. Indeed, COVID is an interesting case because one

could easily imagine an unpolitical, technocratic way of debating the pandemic based on established facts from epidemiological and medical research. As a contrary example, traditional left-right issues such as immigration are deeply entrenched in individuals' ideological self-perception, and social influence might already have largely played its role when researchers begin to study ideological group polarization. Thus, the pandemic allows us to follow the dynamics of polarization from the early beginning.

Second, in the very first weeks of the pandemic, pandemic management emerged as a strongly politicized issue (Hart et al., 2020; Flores et al., 2022). While political echo chambers are never perfect (Cardenal et al., 2019), there is strong reason to expect that individuals who ascribe to the left or right first seek information from ideological peers or their known information networks when an issue suddenly enters the political sphere. Research suggests that elite influence can lead to opinion differences, even for issues that were previously non-divisive (Levy Yeyati et al., 2020). This is exactly the case with COVID, an issue that was not covered largely by political actors before the pandemic, leaving amble scope for influence of opinion makers after the onset of the pandemic (Flores et al., 2022). Furthermore, the need to reduce complexity (Lütjen, 2020) works in tandem with social influence mechanisms: Particularly at the beginning of a public health crisis, a situation characterized by high uncertainty, we should expect individuals who are politically engaged to cling to their own group when forming their policy positions.

From these premises and empirical findings, we derive our first hypothesis: We expect that ideological groups should increasingly grow apart from each other in their assessment of the appropriateness of COVID measures in the course of the pandemic (Hypothesis 1: *Repelling Curves Hypothesis*). This should be primarily the case for differences between high-identifiers, and less strong for individuals who would describe themselves as centrists (Jewitt and Goren, 2016).

Note that the Repelling Curves Hypothesis is agnostic about which ideological group develops which position toward COVID measures. It just states that group differences get larger over time. However, in the Austrian context it is possible to make more precise predictions when considering the messaging of political elites. In European and US right-wing actors embraced massaging that were critical of most of the COVID containment strategies (Jungkunz, 2021; Froio, 2022). In Austria in particular, the right-wing populist party FPÖ first took a positive stance toward strict containment measures, but changed to an extremely skeptical stance within the very first weeks of the pandemic (Mellacher, 2020; Thiele, 2022). Elite messaging likely has behavioral consequences in the public. For example, in Austria, areas with high FPÖ vote shares had higher COVID deaths (Mellacher, 2020). And even in Italy, a country severely hit by the pandemic, provinces with higher right-wing vote show lower rates of compliance with social distancing orders (Barbieri and Bonini, 2021). Similarly, Jungkunz (2021) argues that affective polarization between partisans of the German right-wing populist AfD and other parties increased substantially during the pandemic. While there might be certain segments on the left that also embraced positions against current COVID measures, for example more esoteric, new age left (Frei and Nachtwey, 2022), the most pronounced institutional protest certainly came from right-wing actors.

These previous findings lead to a second, more directed hypothesis. We predict that right-wing identifiers should experience a particularly strong increase in their opposition to current COVID containment measures which sets them apart from the other groups in a distinctive way (Hypothesis 2: *Right-Wing Outliers Hypothesis*).

Data and methods

This study uses the Austrian Corona Panel (ACPP Scientific Use File, version 4, published 2021-10-08) (Kittel et al., 2020)[2]. The ACPP fielded first in March 27, 2020 (31 days after the first registered COVID patient in February 25, 2020). The ACPP is an online survey that is conducted in a sample drawn from a pre-existing online access panel run by Marketagent, Austria. Respondents were chosen based on quota sampling by age, gender, region (Bundesland), municipality size, and educational level based on official population statistics. The data have been analyzed for quality and representativity in previous publications (Aschauer et al., 2022). The Scientific Use File contains data until July 2, 2021 with 24 waves in total. Thus, respondents are surveyed frequently, often weekly, during the period of observation. Furthermore, regular refreshment samples ensure that the sample size in each wave is about 1,500. We include all respondents who were sampled before wave 11 or June 3, 2020 (see below).

Austria pursued similar COVID containment strategies to many of its neighboring countries. When the pandemic hit Austria in March 2020, Austria's government, run by Federal Chancellor Sebastian Kurz from the center right party ÖVP, mandated a short, but severe lockdown. Several municipalities, which are well-known skiing resorts, were quarantined[3]. In March and April, first mask mandates were introduced. In Spring 2020, the declining COVID cases allowed for a wide-ranging lift of many policies that limited movement and public gatherings. This phase of relatively few restrictions lasted until the autumn of 2020, when another period of state-wide

2 For detailed information, see https://viecer.univie.ac.at/coronapanel/austrian-corona-panel-data/method-report/.

3 A more detailed, but still concise, history of COVID-related events in Austria can be found at https://viecer.univie.ac.at/en/projects-and-cooperations/austrian-corona-panel-project/corona-blog/corona-blog-beitraege/blog51/, and the following blog posts.

lockdowns and other restrictions began. Throughout the winter of 2020/2021, there were multiple restrictions which were lifted when COVID cases declined in May 2021. When reviewing the main results, we will outline the broad historical events that matter for the interpretation of our results.

Using online access panels in prone to problems of representativity, which has consequences for the interpretation of the results. First, all results are only generalizable to the population of individuals with internet access. Second, even when using quota sampling to reproduce characteristics of the overall population, there might be unknown factors that influence taking part in an online survey and the outcome of interest. To take one step in the direction of decreasing bias, all analyzes are weighted by the wave-specific demographic and political survey weights. The demographic weights ensure that the sample corresponds to marginal frequencies of demographic variables in the Austrian census. The political weights are based on retrospective information from a question that asks for the party that respondents voted for in the 2019 national election to weight the sample such that the marginal distribution of voting behavior in the ACPP sample matches the official results of the 2019 national election. Weighting increases the confidence intervals substantially compared to un-weighted analyzes, but the overall conclusions are similar in both analyzes (for un-weighted analyzes, see Supplementary Figure S2 and Table S2).

Our main outcome variable is based on a survey item that asks respondents to assess the appropriateness of current COVID policies. The question reads "Do you consider the response of the Austrian government to the coronavirus to be insufficient, appropriate or too extreme?." Respondents answered on an ordinal 5-point scale with response options "not sufficient at all," "rather sufficient," "appropriate," "rather too extreme," and "too extreme." There are several particularities of this item that require elaboration. First, note that responses to this item are highly influenced by the current policies that are in place. Thus, responses should be interpreted in the specific context they were obtained, which we provide when reviewing the results. Since policies change with the pandemic situation, we should see volatility in the average responses to this item. Second, the population-wide average response to this item cannot be taken as an indication of the level of social cohesion in the population. While widespread opposition to COVID measures indicates a conflict between politicians and the public, this does not necessarily strain personal networks. Third, however, group differences in responses to this item are highly indicative of polarization. This is because one group behaving under the impression that the policies are adequate, while another group opposes the policies, exactly leads to the type of coordination dilemmas and interpersonal unease that we outlined in the introduction. Furthermore, the target of the item (current COVID measures) is salient in respondents' perception and, thus, comes close to how they see the world in the moment they took part in the survey.

Our main independent variable is ideological self-identification at the beginning of the pandemic. The variable is measured in a specific questionnaire that is provided to each new participant and asks about general socio-demographic information. The item wording is "In politics, one speaks again and again of "left" and "right." Where would you place yourself on this scale, with 0 meaning left and 10 meaning right?." We recode 0, 1, and 2 to "left"; 3 and 4 to "center left," 5 to "center," 6 and 7 to "center right" and 8, 9, and 10 to "right." This results in a categorical variable distinguishing five groups, which we treat as time-constant. We restrict our baseline sample of individuals to those whose ideological self-identification was measured before wave 11 or June 4, 2020. This step is important because early self-identification is better able to capture social influence networks and ideological priors *before* the pandemic than later measures (the next wave after wave 11 where the same item was asked is wave 20). This is because individuals might switch affiliations in the course of the pandemic, maybe even because of their newly formed attitudes toward pandemic management. This sample restriction also means that our sample of analysis only includes individuals who entered the ACPP before wave 11.

Since the meaning of left and right differs between national contexts, Figure 1 provides an overview of associations between left-right identification and responses to items asking about political positions on several issues. We can clearly see that left-right is associated the most with attitudes about law-and-order (items 6, 12, 13, 14, and 15), immigration (item 7) and honoring tradition (16, 17). Right-wing identifiers in our sample are more likely to attest a deficit in values and traditions and that immigration to Austria should be restricted. In contrast, the association between left-right self-placement and economic issue positions is small. For example, there is almost no difference between ideological groups in their response to whether politics should fight social inequality, the state should fight unemployment by increasing debt or the state should intervene less in the economy. One exception is that right-wing identifiers are more likely to state that social welfare state makes individuals lazy.

Because the development of attitudes toward COVID measures is likely to vary in a wave-like fashion with the strengthening and weakening of measures to curtail the pandemic, we use restricted cubic spline functions to model the non-linear relationship between interview date and attitudes (Durrleman and Simon, 1989). We place knots evenly at 40, 100, 200, 300, and 420 days after the first Corona infection in Austria (February 25, 2020).

For descriptive statistics at different time points, please refer to Supplementary Table S1.

Our main results (Figure 2) are based on predicted probabilities derived from ordered logistic regressions. We regress our outcome variable on the previously mentioned indicators of ideology and time, and their interaction. We

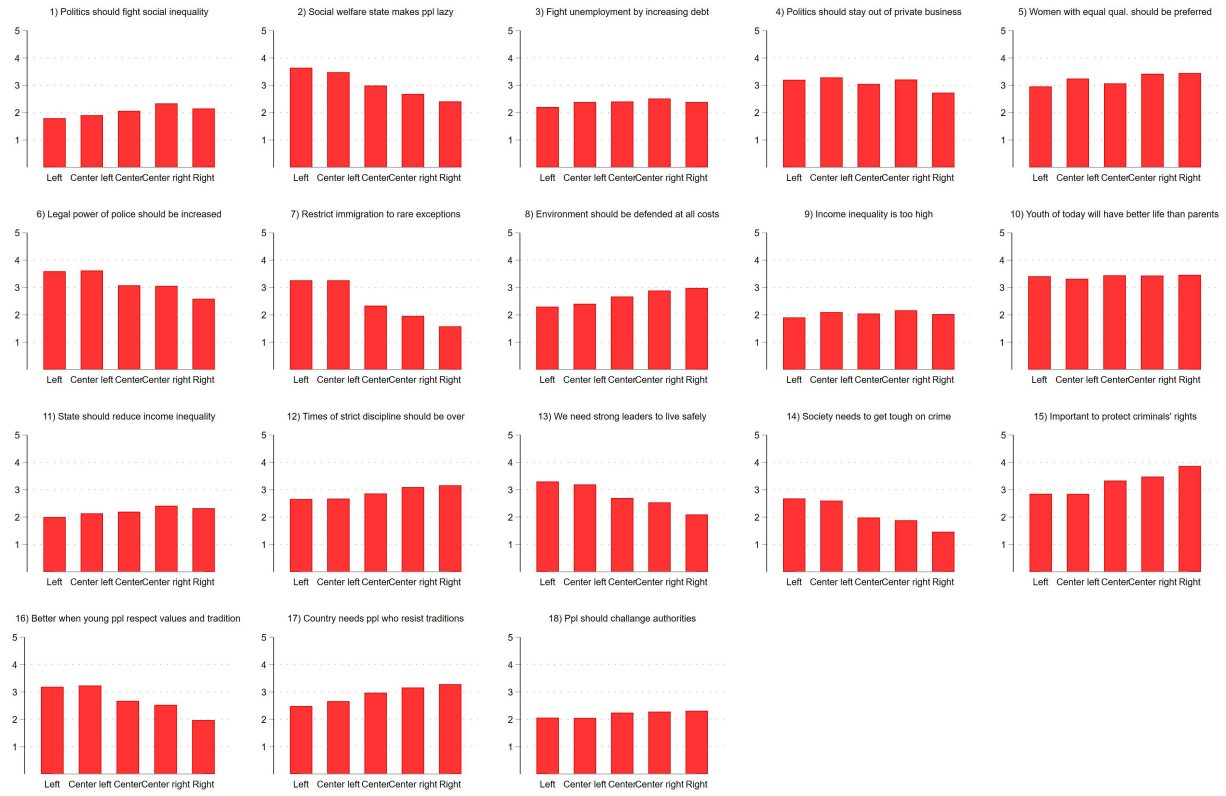

FIGURE 1
Average position on several political issues by ideological group. Average response to items that asks whether certain statements about political topics apply. Response categories range from 1 "completely applies" to 5 "does not apply at all." Items were asked in wave 5 (April 24, 2020–April 29, 2020).

also include the following socio-demographic variables: age, education, sex, regional dummies (Bundesland), whether respondents have access to a balcony or garden, and whether respondents have preconditions that make them vulnerable to COVID. These variables can also be seen in Supplementary Table S1. We also include an interaction between education and time because education is an important predictor of policy attitudes and its effect might vary with the pandemic.

Average predicted probabilities for each ideological group and time point are calculated using Stata's margins command (Stata version 17.0). We set the time and ideological group variables to their respective value of interest, while leaving the remaining covariates at their unit-specific values to derive individual outcome probabilities. We then average these individual predicted probabilities over ideological group and time (Mood, 2010).

Note that our results are robust to using model specifications without control variables (see Supplementary Figure S1) and without weights (see Supplementary Figure S2). Linear Growth Curve Models also lead to similar results (see Supplementary Figure S3). For the full regression tables of all models, please refer to Supplementary Table S2. We discuss the usage of the more flexible multinomial logistic regressions at the end of the results section.

Finally, all results below are adjusted for potential panel attrition by weighting with the inverse probability of staying in the sample (Robins et al., 2000). The probability to stay in the sample is modeled in a logistic regression model as a function of the previously measured response a respondent gave to the outcome variable (and additional time-stable demographic variables to stabilize the weights, see Robins et al., 2000). Thus, we adjust for potential drop-out in case individuals who grow wary of the COVID measures also develop a distrust toward scientists, which might affect their participation in scientific surveys.

Results

Figure 2 depicts trends in the average predicted probabilities of responding that current COVID policies are "too extreme" (5), "slightly too extreme" (4), appropriate (3), "not sufficient" (2) and "not sufficient at all" (1) by respondents' ideological

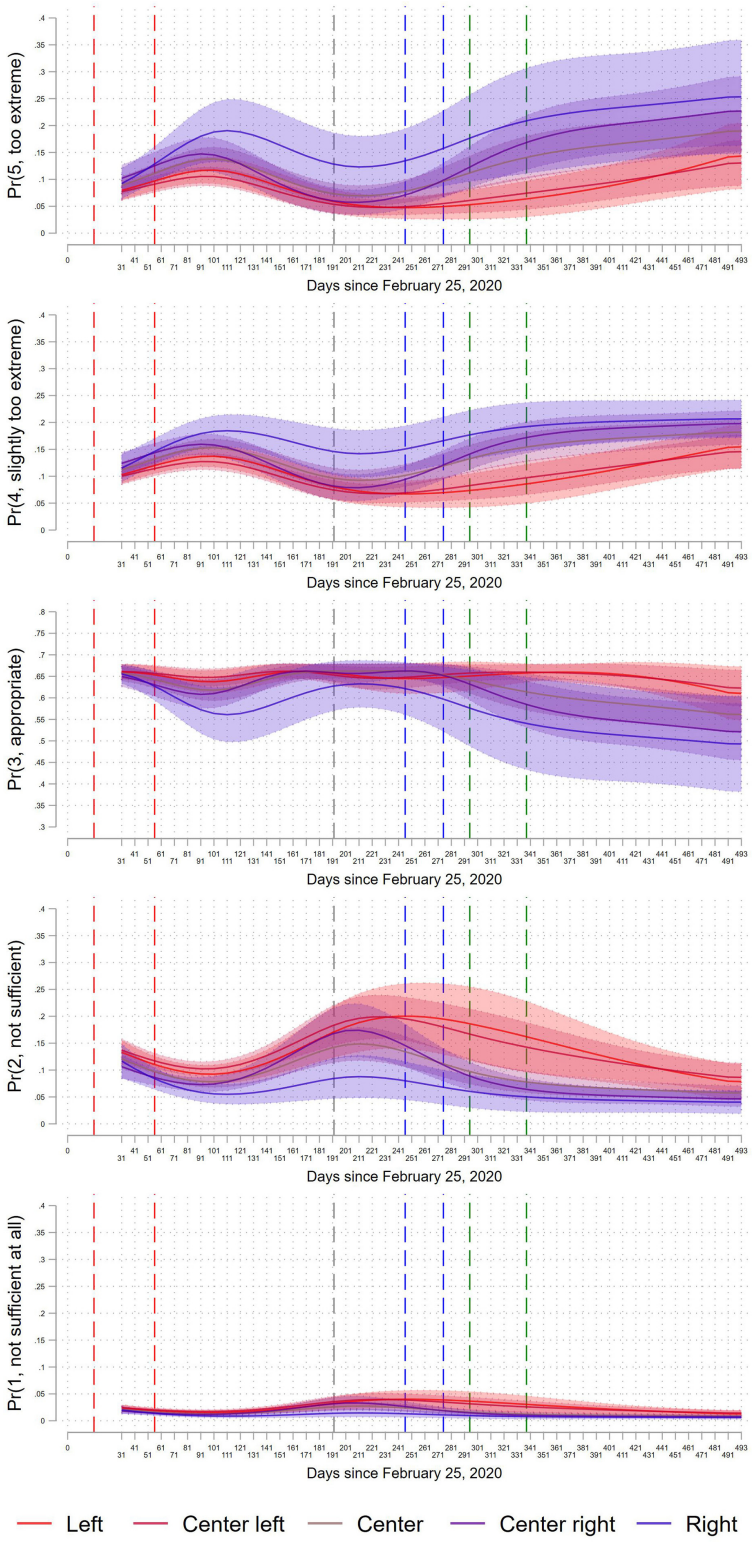

FIGURE 2
Predicted probabilities of responses to "Do you consider the response of the Austrian government to the coronavirus to be insufficient, appropriate or too extreme?" on a five-point scale. Probabilities derived from ordered logistic regression models, conditional on left-right self-placement at the beginning of the pandemic. Model adjusts for time-stable socio-demographic variables. Vertical lines show historical events: red = beginning/end of first lockdown, gray = introduction of strict mask mandates, blue = beginning/end of second lockdown, green = beginning/end of third lockdown. Areas around curves indicate 95% confidence intervals.

self-identification. The predicted probabilities are derived from an ordered logistic regression model, controlling for socio-demographic variables and weighted for both panel attrition and socio-demographic and political weights (see above).

Before turning to differences between ideological groups, it is worth mentioning that there are general results that hold across groups. Most importantly, the majority of respondents in all groups consider current COVID measures appropriate throughout the observation period (see third panel in Figure 2). This finding holds even for groups which display decreasing trends in the probability to respond "appropriate." For example, half of right-wing identifiers still respond "appropriate" at the end of the study period, despite the fact that they do so less than at the beginning of the study. Furthermore, the response category "not sufficient at all" was rarely chosen by respondents from all five ideological groups.

To discuss differences between the five ideological groups, it is helpful to decompose the overall trends into four periods. In the first weeks of the pandemic, during the first lockdown (beginning and end are depicted by vertical dashed red lines), we find a consensus among all ideological groups. The first lockdown was characterized by strict containment policies, including closing of businesses and quarantine measures in certain states. Still, all response options were chosen with similar probabilities in the five groups: "Appropriate" with about 0.65 probability and "not sufficient," "slightly too extreme" and "too extreme" each with about 0.1 probability.

The following period, from May to the summer of 2020 shows a general consensus among most groups and a take-off phase for right-wing identifiers. This period was characterized by a low number of restrictions and re-opening of many locations of social life. There are two interesting aspects in Figure 2. First, most of the political spectrum from center-right to left is in consensus, showing similar probabilities for each response category. For example, 100 days after the first COVID cases in Austria, differences between left identifiers and all groups except right identifiers in responding "too extreme" range between −1% point (center left) and 3% points (center right) and these differences are all non-significant by conventional standards. Those groups that experienced slight increases in responding "too extreme" or "slightly too extreme" during the first lockdown mostly fall back to their initial level.

Second, however, right-wing identifiers depart from this general picture by showing increased skepticism toward the COVID measures. Already shortly after the first lockdown, right-wing identifiers increasingly responded "too extreme" and "slightly too extreme" and decreasingly chose "appropriate." After the first lockdown (second dashed red line), we can see continuations of these trend (at 100 days, the difference between right and left identifiers in responding "too extreme" is 7% points, $p = 0.015$). Even more interesting is that this increasing skepticism solidifies within right identifiers: the higher probability of choosing "too extreme" among this group remains constant over the whole course of the pandemic. This solidification of opposition to COVID measures happens during a time when there was no large-scale state repression to uphold COVID requirements. This is an important finding because it shows that attitudes toward the COVID measures got divorced from material reality in parts of right-wing identifiers: even though restrictions were kept relatively minimal in the summer of 2020, opposition among right-wing identifiers remains higher than in the other groups.

The picture changes again at the beginning of the second wave in November 2020 and the introduction of stricter and encompassing mask mandates (September 14, 2020; gray dashed line) and the second lockdown (blue dashed lines) onwards into the year 2021. Whereas, right-wing identifiers were the "outliers" in the aftermath of the first lockdown, this period is characterized by solidification on the left and an intensifying "left vs. the rest" scenario. Center-right identifiers and centrists show increasing probabilities to choose "too extreme" and "slightly too extreme." In contrast, center left and left identifiers follow a different trajectory by maintaining their low probability of choosing "too extreme" and "slightly too extreme," but increasing their probability of responding "not sufficient." This leads a growing distance between, not only right-wing identifiers and (center) left identifiers, but also between (center) left identifiers and centrists. For example, at 330 days after the first case in Austria, there is no difference between left identifiers and center-left identifiers, but there are significant differences between left identifiers and center (7% point difference, $p = 0.002$), center-right (10% point difference, $p < 0.001$) and right (14% point difference, $p = 0.005$).

The final period is characterized by slow convergence in all groups. Particularly after the third lockdown (green vertical lines), which began in December 27, 2020 and lasted until February 2, 2021; centrists, center-right identifiers and right identifiers seem to experience a limit to their increasing opposition to COVID measures, whereas left and center-left identifiers show increasing trends in responding "slightly too extreme" and "too extreme," and a strong decrease in the probability to respond "not sufficient." While there were still regional lockdowns in the first half of 2021, there were also multiple signs of normalization: test kits were widely available, the rate of vaccinated Austrians rose steadily and more and more containment policies were rolled back[4].

It is important to note that choosing the parsimonious ordered logistic regression might miss some aspects of the data compared to more flexible data fitting approaches. Thus, we contrasted the results from the ordered logistic regression to results of a multinomial logistic regression (see Supplementary Figure S4). Ordered logistic regression makes the proportional odds assumption which allows to estimate

4 https://viecer.univie.ac.at/corona-blog/corona-blog-beitraege/blog112/

predicted probabilities of ordinal outcomes with relatively few parameters. In contrast, multinomial logistic regression does not make this assumption but is more data intensive and requires substantially more parameters to be estimated. Thus, there is a tradeoff between parsimony and "letting the data speak for itself." Since our data is limited with respect to case numbers, particularly in the extreme ideological groups, we chose the simpler ordered logistic regression for our main results. The results from the multinomial logistic regression in Supplementary Figure S4 lead to substantially similar conclusions about the dynamics of polarization. In particular, the early right-wing take-off phase is visible as a substantial increase in "too extreme" responses among right-wing identifiers. Furthermore, the left-vs.-the-rest phase is visible in an increasing probability to respond "not sufficient" among left and center-left identifiers. Finally, the final convergence phase is also visible in Supplementary Figure S4, albeit slightly differently than in Figure 2: At the end of the observation period, all groups together increase their probability to respond "appropriate," and left-wing identifiers increase their probability to choose "too extreme."

Discussion of results and conclusions

These results paint a complex picture about the emergence of ideological polarization. On the one hand, some periods show clearly polarizing trends. Hypothesis 2, which suggests that right-wing identifiers adopt especially critical stances toward COVID measures, is confirmed for the first part of our observation period from the first lockdown until the second lockdown. However, around the time of the introduction of the most stringent mask mandates onward (gray vertical line), centrists and center-right identifiers began to distance themselves from the left and followed right identifiers' trajectory toward more skepticism toward the COVID policies. This leads to a new constellation in the later stage of the pandemic, where left-wing identifiers are most distant to the other groups. Thus, we can discern two periods where the largest differences are driven by different groups. The first is driven by the early take-off of perceiving COVID measures as "too extreme" by right-wing identifiers, the second is driven by left-wing identifiers who deem COVID policies insufficient. A further interesting result is the behavior of centrists. In our data, centrist individuals maintain positions between the two ideological poles, but first align with the left and later follow the right by increasing their weariness of COVID policies.

These findings parallel predictions of theoretical models of polarization (and our Repelling Curves Hypothesis). Social influence processes in homophilic networks (DellaPosta and Macy, 2015) would lead to a growing divide between groups which are segregated in their social exchange and information networks. This is what we assumed for left and right identifiers, and, indeed, the results show that the divide between those two groups is largest, stays largest and increases in certain time periods These results are also in line with previous research, which found polarization in positions on COVID policies between groups that ascribe to different parties (Mellacher, 2020; Jungkunz, 2021; Flores et al., 2022). We extend these results to groups of left-right self-identifiers and provide a detailed description of opinion dynamics. Our results are also consistent with research on affective polarization (Westwood et al., 2018; Iyengar et al., 2019; Jungkunz, 2021): The fact that polarization around COVID occurred so rapidly indicates the presence of processes involving group identity and affection (Mason, 2018).

However, there are four findings that suggest that there are important limits to ideological polarization in the form of escalating divides between groups (as our Hypothesis 1 predicted). First, we can observe an increase in opposition to COVID measures on the left at the end of our study period. Second, right identifiers' opposition reaches a relatively stable level at the end of our study period. Third, the majority of respondents in each group believe that the current measures are appropriate. Fourth, all groups do only rarely respond that COVID measures are "not sufficient at all."

The first and second of those findings lead to a convergence of positions toward COVID measures between all ideological groups at the end our observation period. This suggests that polarizing social influence on policy attitudes only persists if the political context stays stable. Dynamics can change greatly when the public attention to previously salient political topics fades (Baldassarri and Bearman, 2007) or when changes in the material realities that underly opinion polarization occur. In the final period, when COVID became politically manageable, vaccines were available and individuals had come to terms with the existence of the virus, the polarizing potential of COVID seems to slowly disappear.

Another account that is in line with all four findings is that ideologues of all camps orient themselves toward a global societal consensus when forming their political attitudes. As long as a significant share of individuals in the population holds centrist views, it is unlikely that even the more ideologically consistent groups radicalize in large parts. A related argument is that social influence networks are often not segregated to an extent that suffices to cause escalating polarization (Prior, 2013; Cardenal et al., 2019). These arguments can explain why the majority of each group believes that the current measures are appropriate throughout the pandemic. In addition, even the more pro-containment left-wing identifiers only rarely respond that COVID measures are "not sufficient *at all*." This suggests that distancing from other opinions was not intense enough to lead left-wing identifiers to demand really extreme state restrictions. Orientation toward a global consensus might also explain left identifiers' slow trend toward more skepticism at the end of the study period, in which they seem to follow the center.

There are several limitations of this study. A first set of limitations concerns our use of left-right self-identification to distinguish ideological groups. These groups might not be fine-grained enough to capture the types of affinities and social influence processes that are necessary to lead to radicalization on the issue of COVID. It might be that the five broad ideological groups in this study mask extreme camps within the two poles. For example, it could be that the alternative, esoteric parts of the new left (adherents of new age spirituality or vaccine skeptics) (Frei and Nachtwey, 2022) and the alt-right parts of the right (who associate with the right-wing populist FPÖ, Mellacher, 2020) drift away from the center, while the rest of the left and right are rather moderate concerning COVID. Indeed, this could explain our finding of a limited escalation among right-wing identifiers: while FPÖ voters oppose COVID policies (Mellacher, 2020), the remaining right-wing identifiers might stay less opposed. This suggests that the radicalization potential is limited to only one subgroup in the right camp and does not spread to other subgroups. In contrast, the support for COVID policies on the left could be explained by negative influence (distancing from FPÖ supporters) and social influence among leftists. The probably most important limitation of our study is that the data come from an online access panel. Apart from the usual bias toward younger respondents, this might also bias our results if taking part in online surveys is associated with views on COVID. Our study shares this caveat with other studies on COVID related issues. Thus, there is a need for studies with common random samples in order to generalize our results to the wider population.

Overall, our study shows that ideological groups polarized in their opinion on the right policy reactions to the COVID pandemic. However, our results also show that polarization dynamics do not necessarily lead to escalating divergence of ideological groups. Rather, changing material conditions, the fading salience of political issues, and a consistently held centrist position by the majority put limits to the reinforcing polarizing processes of social influence.

Data availability statement

Publicly available datasets were analyzed in this study. The datasets analyzed for this study can be found in the Austrian Social Science Data Archive, doi: https://doi.org/10.11587/28KQNS. More information about the data set used can be obtained at https://viecer.univie.ac.at/coronapanel/. Stata code will be made available on the author's Open Science Framework homepage upon publication (doi: 10.17605/OSF.IO/TB2WX).

Author contributions

SD-S prepared the data, performed the statistical analysis, and wrote this draft of the manuscript.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fsoc.2022.958672/full#supplementary-material

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Reality bites: An analysis of corona deniers in Germany over time

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The COVID-19 pandemic resulted in unprecedented government interventions in many people's lives. Opposition to these measures was not only based on policy disagreements but for some founded in an outright denial of basic facts surrounding the pandemic, challenging social cohesion. Conspiracy beliefs have been prolific within various protest groups and require attention, as such attitudes have been shown to be associated with lower rule compliance. Several studies have shown that the characteristics linked to holding COVID-19 conspiracy beliefs are complex and manifold; however, those insights usually rest on cross-sectional studies only. We have less knowledge on whether these cross-sectional correlates also reveal which parts of the population have been newly convinced by conspiracy theories or have dropped their support for them as the pandemic evolved. Using a unique panel data set from Germany, this paper explores a wide range of characteristics and compares the insights gained from cross-sectional associations on the one hand and links to the ways in which people change their views on the other hand. The findings show that cross-sectional analyses miss out on nuanced differences between different groups of temporary and more consistent conspiracy supporters. Specifically, this paper identifies major differences in the profiles of people who have been denying COVID-19 consistently compared to those who changed their minds on the question and those who assessed the reality correctly throughout. In doing so, socio-political and perception-based dimensions are differentiated and distinctions between respondents from East and West Germany explored.

KEYWORDS

conspiracy theory, COVID-19, Germany, political attitudes, values

Introduction

In the social sciences, social cohesion is widely seen as an important resource for collectives, especially in times of crisis (Townshend et al., 2015). While being a multi-facetted concept, group members' orientation toward the common good is often considered to be one of the key ingredients of social cohesion (cf. Dragolov et al., 2016). Such a civic and solidary orientation, however, requires a basic understanding

within the citizenry about what the common good actually is and in which way it is challenged. While such a collective consciousness, at least in modern-pluralistic societies, does not necessarily extend to moral values (cf. Schiefer and van der Noll, 2017), it certainly does extend to perceptions of social realities in the sense of non-refutable facts. Without a shared understanding of reality, societies will find it more difficult to respond to crises and threats.

Without doubt, the COVID-19 pandemic constitutes a severe threat. The infectiousness and transmissibility of the virus meant that individual action was not sufficient to mitigate its proliferation. Collective action was required to reduce the amount of human interaction at a large scale while protective instruments, such as vaccines and new medicines, could be developed. The response by governments was unprecedented for most people: Extensive mandates resulted in the restriction of personal freedoms at a scale unseen in peacetime. The curtailment of businesses, education, transport, and even the option to leave one's own home and meet others in times of lockdowns represented the most extensive state intervention into people's lives, heavily disrupting life as-we-know it.

It quickly became clear that a resilient collective consciousness necessary to jointly face the pandemic existed in large parts of the population, but not in all: While some questioned the scope and nature of measures implemented, a significant minority of people rejected that the COVID-19 pandemic was actually real. These Corona skeptics or Corona deniers stipulated that the pandemic itself was fabricated. Crucially, such denial had profound behavioral consequences: People who did not believe in the scientifically established facts that a pandemic was ongoing were much less likely to adhere to the protective rules such as mask wearing and social distancing (Allington et al., 2021; Pummerer, 2021) or—once it became available—to get vaccinated (Pivetti et al., 2021). In many countries, Corona deniers joined together in social movements, which operated in Germany, our country of interest, under the name "Querdenker".

Therefore, understanding how widespread COVID-19 conspiracy theories are and who subscribes to them is important for the development of strategies to engage with people reluctant to comply with public health measures. While a number of studies have provided valuable insights on these issues (for a review, see van van Mulukom et al., 2022), most of them are cross-sectional: They can inform who is more likely to hold conspiracy beliefs at a given point in time, but not how stable corona denial is within individuals over the course of the pandemic. Were those who supported conspiracy beliefs at the start of the pandemic also the same people who held these views later on? Did their socio-political and attitudinal profile change? A *longitudinal* perspective is essential to answer questions like these—and to identify groups where pandemic conspiracy beliefs have become deeply engrained. Considering such dynamics is important: When threat perceptions of conspiracy believers and the population majority develop in an oppositional way, conspiracy beliefs may become even further entrenched (van Prooijen, 2020). Ultimately, this results in the group of conspiracy believers becoming further distanced from the rest of society.

In this paper, we analyze data from a unique panel study of the German population that allows us to investigate those questions. The data stem from an online survey conducted of a sample of people in Germany aged 16 and older that is close to representative of the German population in key demographic and socio-economic parameters. Over 2,000 respondents were interviewed at the start of the pandemic in April and May 2020 and then re-invited to participate in a follow-up survey in February and March 2021 after experiencing the first lockdown, an easing of restrictions, and entering a second lockdown. The data allow us (1) to examine how many individuals held pandemic-related conspiracy beliefs at both or either points of time, and (2) to investigate what socio-demographic and attitudinal profile characterizes temporary (both former and new) and consistent pandemic deniers.

Conceptual considerations and review of findings

According to Douglas et al. (2019, p. 4), conspiracy theories "are attempts to explain the ultimate causes of significant social and political events and circumstances with claims of secret plots by two or more powerful actors". A conspiracy belief, then, is the conviction that a *specific* conspiracy theory is true and—logically—the "officially" presented explanation intentionally wrong. In this article, the "secret plot" the citizens may or may not believe in concerns the *Corona pandemic*. As we specifically investigate the belief that the pandemic is a hoax, essentially this paper is about Corona deniers.

Conspiracy theories are not a new thing in German political discourse. Indeed, a significant minority has held beliefs that questioned the motifs of government action and suspected undisclosed forces behind actions in several contexts before (Anton et al., 2014; Freitag, 2014; Krüger and Seiffert-Brockmann, 2017). Roose (2020) finds that roughly ten percent of the German population subscribe to conspiracy theories of various kinds. This is important as some studies suggest that COVID-19 conspiracy beliefs may be linked to a general conspiracy thinking (Gemenis, 2021). In this vein, the corona pandemic may have exacerbated existing general conspiracy orientations (Schließler et al., 2020). Those who are suspicious of the government in general could thus be expected to react particularly negatively if their freedoms were curtailed to such a great extent as the pandemic required. A subscription to views perpetuating doubt about the origins of COVID-19 may therefore come easy to someone who is already leaning toward majorly distrusting government actions.

Arguably, that mechanism is enhanced when people with very closed and specific views exchange those largely with others who confirm them. Not just since lockdown measures have been implemented, but obviously increasingly since, much communication has taken place *via* electronic channels. Social media in particular was the main pathway for COVID-19 conspiracy theory claims to be distributed to a wide audience (Schüler et al., 2021). But much of the emergent exchanges *via* social media channels then occurred within isolated bubbles in which facts were typically ignored (Scharkow et al., 2020) and consequently suspicious views found a strong confirmation by others also holding them. Such isolated bubbles were thus likely to enhance the shared construction of conspiracy narratives (Goreis and Kothgassner, 2020; Rocha Dietz et al., 2021).

There is a growing body of research on which people adopt conspiracy theories and why (for a review, see Douglas et al., 2019). For the issue of the COVID-19 pandemic specifically, previous research has identified a number of individual characteristics that are associated with conspiracy thinking (van Mulukom et al., 2022). A first set of characteristics is *socio-demographic* in nature. In line with the idea of cognitive mobilization, in Germany (Schließler et al., 2020) and in Poland (Duplaga, 2020) support for pandemic-related conspiracy beliefs is more widespread among the low educated. The study by Schließler et al. (2020) also emphasizes low income as a significant determinant, which might indicate that a low social status generally makes people susceptible to corona conspiracy beliefs. For age, there is evidence that support for conspiracy thinking is stronger in younger age groups (Duplaga, 2020). Other studies point to a gender gap, with men being more likely to endorse COVID-19 conspiracy theories (Cassese et al., 2020). However, findings from these studies are not easy to compare due to differences in methodology and variables included.

Research on participants in German anti-Corona demonstrations (a significant number of whom, albeit not all, share conspiracy views) suggests that next to socio-demographics, various political attitudes have also to be taken into account (Frei and Nachtwey, 2021; Koos, 2021). An important debate is about which *political camps* are breeding grounds for COVID conspiracy beliefs. While Schließler et al. (2020), for example, found a greater propensity to hold pandemic conspiracy views both for the far right and left, other scholars singled out the far right (Nachtwey et al., 2020; Spöri and Eichhorn, 2021), in line with findings from international research (Prichard and Christman, 2020; Frindte, 2021).

Another attitudinal dimension found to be influential in several countries is *(dis-)trust in institutions* (Đorđević et al., 2021; Stecula and Pickup, 2021). Conspiracy believers often have a very low level of trust in the government (for Germany see Hövermann, 2020), and in state institutions more widely. The distrust can stretch beyond the state and connect to a broader populist anti-elite sentiment, as Stecula and Pickup (2021) demonstrate for the USA, or to authoritative experts such as scientists (Eberl et al., 2021). There is also mounting evidence on the role of consuming a very narrow set of media (in the USA, mainly conservative media outlets), especially social media channels (Goreis and Kothgassner, 2020; Allington et al., 2021). There is one more factor: distrust in public broadcasters is not a new phenomenon in Germany (Hagen, 2015; Krüger and Seiffert-Brockmann, 2017), yet such distrust can further exacerbate the propensity for conspiracy beliefs.

Human values and anti-social orientations might also factor in (Enders et al., 2021). Conspiracy theories on the pandemic find more support amongst people who feel threatened and perceive a loss of control (Kim and Kim, 2020). Arguably, this can fuel a particularism that puts one's own personal interests and those of the like-minded ingroup above the common good. One can see that in the value profiles for COVID-19 conspiracy theory supporters and non-supporters. While the former score low on conformity, the latter score high on universalism (Spöri and Eichhorn, 2021) and collectivism (Biddlestone et al., 2020). This suggests that pandemic conspiracy believers reject value orientations that impinge on self-centered values.

What are the research gaps? For one, more research is needed in order to accumulate knowledge on the correlates of (pandemic) conspiracy beliefs. In this context, studies which include a wide range of socio-demographic, political, and attitudinal characteristics are particularly helpful. Next and most importantly, the lion's share of previous research is cross-sectional. Little is known, therefore, how stable—or malleable—COVID-19 conspiracy beliefs have been over the course of events. This is particularly important in the context of the Coronavirus pandemic, since the rising numbers of infected and dead in Germany and elsewhere in the world made it increasingly difficult to deny the obvious: that there *is* an ongoing pandemic.

Against this backdrop, the study aims to contribute to the research field in two ways. The first goal is to thoroughly examine who the conspiracy believers in Germany are, both in terms of socio-demography and political ideology (what we summarize as the socio-political profile) and in terms of attitudinal dispositions (the attitudinal profile). The second goal is to shed light on the individual-level changes in conspiracy beliefs that happened from the first (2020) to the second (2021) year of the pandemic. The panel data that we are going to use—described in detail in the next section—allow to explore such dynamics, and to identify the group of consistent COVID conspiracy believers that stick to their denial of the pandemic over time. Our main contribution, therefore, is to provide insights on which characteristics distinguish the *core group* of conspiracy believers in Germany.

Data, variables, and method

Data

The present paper draws on the German samples from the first two waves of a panel study fielded in Germany and the United Kingdom. The panel study was designed and conducted for the purposes of the "Values in Crisis" project, a joint research endeavor of the Otto von Guericke University Magdeburg (Germany), the University of Edinburgh (Scotland, UK) and Jacobs University Bremen (Germany), in cooperation with the think tank d|part (Germany), funded by the Volkswagen Stiftung. Taking the Corona pandemic as a natural experiment, the project attempts to investigate value change in times of major crises. The first wave was fielded at the beginning of the pandemic (April 24–May 19, 2020), the second wave—approximately 10 months later (February 15–March 15, 2021). The data were collected in both countries by Bilendi GmbH, a market and opinion research company specializing on online data collection among a large pool of panelists. The panel study employs quota sampling with regard to the composition of the respective national population of age 16 and above along biological sex, age, educational attainment (highest level achieved), and region (federal state in the case of Germany). The panel study further applied cross-quotas for age within a region and educational attainment within a region in order to ensure sufficient representation of the target populations within sub-strata, too. Small batches of participants were invited at regular intervals in order to ensure that the target sample characteristics would be met best: Upon detecting that certain groups were underrepresented at a certain stage, invites to these groups were increased. The samples obtained meet the target characteristics to an extent that the application of sample weights does not substantially change the results. To exemplify, the computed weights shift the frequency distributions of key socio-demographic variables by less than one percentage point. Indeed, as research has shown (Baker et al., 2010; Rada and Martín, 2014), quota samples based on large, high-quality panels allowing for detailed stratification beyond basic demographics perform very well.

Concerning the German data, the 2009 participants who took part in the first wave of data collection were invited to participate in the second wave, too. Key socio-demographic characteristics were re-collected in order to ensure that the same persons participated in both waves. Respondents for whom these characteristics could not be matched across both waves, were not included in the panel sample. The latter consists of 1,280 respondents. This results in a validated retention rate of just over 60%. Minor biases in the pattern of attrition were accounted for by longitudinal weights, adjusting thereby the panel sample to the target population parameters. The panel sample serves as the working sample for the analyses to be presented. Due to the questionnaire design (forced choice), the data were not affected by missing values.

Variables

Corona conspiracy beliefs

Respondents' belief in Corona conspiracy theories was measured with the item: "*The social media are full of stories saying that the Corona pandemic is a hoax and that all the lockdown measures are a hysteric overreaction. Do you believe in these stories?*". The question is formulated in an intentionally pointed way to ensure that respondents genuinely subscribe to an extreme position associated with the denial of the pandemic rather than merely expressing doubts about it. As such, the item is a reflection of the public debate on the issue, particularly at the onset of the pandemic. Its aim was to identify respondents who subscribed to the two dominant and related conspiracy narratives at the time: questioning the existence or nature of the virus in the first place, and, in consequence, opposing anti-COVID measures. Intentionally double-barrelled, the item sets a high bar for agreement with the statement, excluding those who only disagree with the scope of government measures (but do not reject the existence of the pandemic *per se*) or those who may generally agree with the hoax narrative without a negative view on the measures (the latter case is presumably way less frequent than the former).

Based on the responses to the question from the second wave of data collection, we consider respondents who answered "Yes" as Corona deniers and those who answered "No" as Corona realists. Beside a static account on the spread of Corona denial, we examine its change from Wave 1 to Wave 2. The joint pattern of responses across both waves produces a four-fold typology: consistent realists ("No" in both waves), former deniers ("Yes" in Wave 1, "No" in Wave 2), new deniers ("No" in Wave 1, "Yes" in Wave 2), and consistent deniers ("Yes" in both waves).

Socio-political characteristics

In order to account for respondents' socio-political profile, the analyses consider the following characteristics (categories in brackets, reference category in italics): biological sex (male, *female*); age group (16–34 years, *35–64 years*, 65 years and above); having a partner (yes—married or living together as married, *no*—divorced, separated, widowed, or single); having children (yes, *no*); education (lower, *intermediate*, high); income class[1] (low, lower-middle, *middle*, upper-middle, high); type of

1 The categorization of respondents to income classes is based on their equivalized net household income. Respondents were asked to report their net household income along 16 income brackets – weekly, monthly or yearly, as they found it more convenient. The corresponding monthly brackets were set to the average amount within a respective bracket

settlement (village, *town*, city or suburb); region of Germany (East, *West*); political views[2] (left-wing, *center*, right-wing); and whether the respondent has been affected by COVID-19[3] (yes, *no*).

Attitudinal controls

In addition to the socio-political characteristics, the analyses account for a number of attitudes and dispositions that can be plausibly assumed to relate to Corona conspiracy beliefs. First, we consider the extent of distrust in institutions. Respondents were asked to rate their confidence in the country's government, health sector, institutions as a whole, scientific experts, and public service broadcasters. Each item had a four-point answering scale, ranging from 1 (a great deal) to 4 (none at all). Thus, a higher numeric code stands for greater distrust. The five items form a unifactorial solution and have sufficiently high loadings between 0.79 (health sector) and 0.85 (institutions as a whole). Cronbach's alpha coefficient for internal consistency is at $\alpha = 0.87$. We, therefore, subsumed the items into an index of institutional distrust by taking their arithmetic mean.

Second, we look at whether a perception of social media as more credible than traditional media is associated with Corona conspiracy beliefs. The exact item wording reads: "How credible do you think are the social media, like Twitter and Facebook, compared to the traditional media, like TV and newspapers?". The original answering scale was reversed to range from 1 (traditional media are most credible) over 3 (both the same) to 5 (social media are most credible).

Third, we check whether value orientations previously shown to be associated with COVID-19 conspiracy beliefs, namely universalism and conformity (Spöri and Eichhorn, 2021), are indeed relevant in identifying Corona deniers. Both values stem from Schwartz' theory of basic human values (Schwartz, 1992). Conformity pertains to a preference to avoid actions, inclinations, and impulses that can harm others or violate social expectations and norms. Universalism pertains to a preference for tolerance and understanding as well as the protection of people's welfare and nature. Each value type was measured with the respective items from the Schwartz value inventory in the European Social Survey. Following the established methodology, respondents' ratings on the items were first ipsatized before computing the scores on the two value types. The resulting scores have been truncated to a four-point scale, with a higher number standing for a stronger preference for the respective value.

Finally, we consider specific attitudes and dispositions related to the topic. On the one hand, we account for respondents' emphasis on freedom as compared to health. The exact item wording reads: "There is much debate about what should take top priority in times of the pandemic: the freedom of citizens, or the protection of health? In your view, what should take top priority?". The original response scale was reversed to range from 1 (health) over 3 (both equally important) to 5 (freedom). On the other hand, we account for respondents' affinity for, what we call, myths about Corona. Respondents were asked to state to what extent they agree or disagree with the following items: "The virus is manmade.", "The spread of the virus is a deliberate attempt by one nation to destabilize others.", and "The spread of the virus is a deliberate attempt by a group of powerful people to make money." Each item was accompanied with a Likert scale from 1 (strongly disagree) to 5 (strongly agree). The items form a unifactorial solution and have loadings from 0.86 to 0.93. Cronbach's alpha coefficient of internal consistency was found at $\alpha = 0.87$. We, therefore, subsumed the three items into an index of affinity for Corona myths by taking their arithmetic mean.

Table A1 provides descriptive statistics for all variables used in the analyses.

Method

Starting with a brief descriptive account on the spread of Corona denial, as measured in Wave 2, and on the change in Corona conspiracy beliefs from Wave 1 to Wave 2, the paper proceeds to a series of binary logistic regressions aiming to uncover the socio-political profile of Corona deniers, as compared to Corona realists, accounting for their attitudes and dispositions in an additional step. Applying a multinomial logistic regression on the four-fold typology of change in Corona conspiracy beliefs, the paper also offers a fine-grained look into

(the lowest bracket to its upper bound, the highest bracket to its lower bound). The so-computed income of each respondent was equivalized by applying the square root of the reported household size. Adapting the approach of Krause et al. (2017) to the empirical distribution of the resulting equivalized monthly net household income, we defined the five income classes used in our analyses as follows (with respect to the sample median): low (up to 60 %), lower-middle (above 60% up to 100%), middle (above 100 % up to 130 %), upper-middle (above 130 % up to 169 %), high (above 169%).

2 Respondents' political views were measured with the item: "In political matters, people talk of "the left" and "the right." How would you place your views on this scale, generally speaking?". The answering options ranged from 1 (left) to 10 (right). Respondents who selected 1 to 4 were categorized as identifying with the 'left-wing', 5 or 6 with the 'centre', 7 to 10 with the 'right-wing'.

3 Respondents were asked a number of yes-no questions on their health situation in relation to COVID-19: "I have been tested positively", "I have or had mild symptoms", "I have or had severe symptoms", "People close to me have or had mild symptoms", "People close to me have or had severe symptoms", "People close to me have died as a result of an infection". If a respondent answered "Yes" to at least one of these questions, they are considered as having been affected by COVID-19.

this profile. The use of the logit link in the logistic regressions makes it possible, *via* exponentiation, to present the regression coefficients from the linear prediction of the log-odds in the form of odds ratios (binary scenario) or relative risk ratios (multinomial scenario), respectively. The latter two estimates can be interpreted as multiplicative factors to the odds of being a (specific type of) denier relative to the realists.

In addition, we compare the attitudinal profile of the Corona deniers using independent-samples *t*-tests and one-way analyses of variance followed by the conservative Scheffé *post-hoc* test. All analyses were performed in Stata 17 (StataCorp, 2021).

Results

Changes in Corona conspiracy beliefs, 2020–2021

Most Germans do *not* believe that Corona pandemic is a hoax. Yet, a non-negligible minority does so, albeit at a declining rate. At the onset of the pandemic around April–May 2020, 86% of the respondents aged 16 and older disagreed with the statement that the pandemic is a hoax and the government response a hysteric overreaction, whereas 14% agreed. Ten months later around February–March 2021, after two lockdowns and cumulated deaths in the order of 70,500 (March 1, 2021), the group of Corona deniers has shrunk to nine percent. This aggregate comparison, however, does not showcase the full extent of the dynamic observable at the individual level (see Figure 1). Considering the pattern of responses to the hoax item across both waves of our panel survey, we identify four groups of citizens. Eighty-three percent disagreed that the Corona pandemic is a hoax both in 2020 and in 2021, thereby constituting the large group of *consistent realists*. The remaining 17% of the respondents agreed with the hoax item in at least one of the two waves, thus forming three groups of deniers. Eight percent can be considered *former deniers* as they agreed with the hoax item in 2020, but were not any longer of this opinion by 2021. The other three percent of the respondents form the group of *new deniers*: having initially considered the Corona pandemic to be real, they denied it in 2021. Finally, those who agreed with the hoax item in both years represent six percent of all respondents and constitute the group of *consistent deniers*.

Table 1 provides an overview of the representation of the four groups in the former regions of West and East Germany. In the Western part of the country, the distribution across the four groups is almost identical to that of Germany as-a-whole (see Table 1). This is probably due to the fact that the Western population constitutes the larger share of the population with about 67 million citizens (vs. about 13 million in former East Germany), and thus dominates the all-German distribution. In the Eastern part, too, a great majority consistently accepted Corona as a fact; yet, this majority is smaller than in the Western part (75 vs. 84%, respectively). Accordingly, the three groups of Corona deniers are a bit larger in the East than in the West, especially the consistent deniers (11 vs. 5%, respectively). Given these regional differences, we supplement the main analysis with a regional analysis specifically for the East.

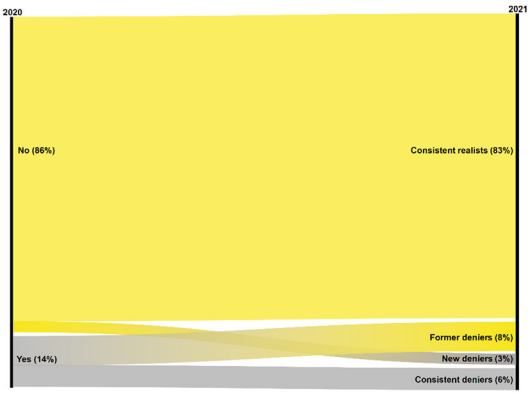

FIGURE 1
Dynamics of Corona denial: changes from 2020 to 2021. The figure presents the relative frequencies (%) of yes-no responses to the hoax item in 2020 and how these changed in 2021. See section "Variables" for the exact item wording item and an elaboration of the four-fold typology in 2021.

TABLE 1 Dynamics in Corona conspiracy beliefs in East and West Germany.

	All Germany		West Germany		East Germany	
	N	%	*N*	%	*N*	%
Consistent realists	1,064	83.1	897	84.8	167	75.2
Former deniers	95	7.4	75	7.1	20	9.0
New deniers	44	3.4	34	3.2	10	4.5
Consistent deniers	77	6.0	52	4.9	25	11.3

The socio-political profile of Corona deniers

We now proceed to a binary logistic regression of Corona denial in order to identify the basic *socio-political profile* of those thinking of the pandemic as a hoax in at least one of the two survey waves (see Table 2, Model 1). This base model accounts for about ten percent of the individual differences in the probability to deny the Corona pandemic, with a number of characteristics yielding significant effects. According to the sizes of the odds ratios, respondents' income class is the most influential characteristic. The odds to deny the pandemic are almost three times higher among respondents living on low income as compared to those with middle income ($OR = 2.718$,

TABLE 2 Binary logistic regression of Corona denial on socio-political characteristics.

	Model 1					
	All Germany		West Germany		East Germany	
Sex: male	1.145		1.099		1.282	
	(0.66)		(0.40)		(0.58)	
Age group						
16–34 years	1.988	***	2.092	**	2.408	
	(2.59)		(2.49)		(1.30)	
65+ years	0.717		0.737		0.757	
	(−1.37)		(−1.03)		(−0.58)	
Partner: yes	1.014		1.528		0.322	**
	(0.06)		(1.56)		(−2.53)	
Children: yes	1.066		0.959		1.297	
	(0.28)		(−0.15)		(0.51)	
Education						
Lower	1.676	**	1.811	**	0.909	
	(2.03)		(2.02)		(−0.17)	
High	1.157		1.369		0.571	
	(0.56)		(1.05)		(−0.87)	
Income class						
Low	2.718	***	2.167	*	12.490	**
	(2.69)		(1.90)		(2.24)	
Lower-middle	1.747		1.375		5.715	
	(1.53)		(0.80)		(1.57)	
Upper-middle	0.889		0.620		4.596	
	(−0.28)		(−1.04)		(1.31)	
High	1.803		1.490		3.056	
	(1.32)		(0.83)		(0.82)	
Settlement						
City or suburb	0.819		0.770		1.296	
	(−0.85)		(−0.93)		(0.54)	
Village	1.034		1.196		0.759	
	(0.13)		(0.60)		(−0.46)	
Germany: East	2.708	***				
	(4.24)					
Political views						
Left-wing	0.365	***	0.432	**	0.217	***
	(−3.58)		(−2.53)		(−2.67)	
Right-wing	1.965	***	1.879	**	2.463	
	(2.88)		(2.37)		(1.62)	
COVID-19 affected	1.067		1.127		0.637	
	(0.29)		(0.46)		(−0.90)	
Intercept	0.044	***	0.040	***	0.065	**
	(−7.22)		(−6.46)		(−2.29)	
Pseudo-R^2	0.103		0.092		0.191	

The table shows the results from a binary logistic regression of Corona denial on socio-political characteristics for Germany as a whole ($N_{Total} = 1{,}280$), and separately for West Germany ($N_{West} = 1{,}058$) and East Germany ($N_{East} = 222$). The presented coefficients are odds-ratios with z-scores in brackets. Significance of the estimates in two-sided tests: $^{*}p \leq 0.10$, $^{**}p \leq 0.05$, $^{***}p \leq 0.01$. Reference categories: Sex: female, Age group: 35–64 years, Partner: no, Children: no, Education: intermediate, Income class: middle, Settlement: town, Germany: West, Political views: center.

$p \leq 0.01$). Country region shapes conspiracy beliefs just as strongly as income does: Residents of former East Germany have nearly three times higher odds to deny the pandemic than those of West Germany ($OR = 2.708$, $p \leq 0.01$). Age emerges as the third most important characteristic: Compared to respondents of age 35–64 years, the youngest group has roughly double the odds to consider the pandemic a hoax ($OR = 1.988$, $p \leq 0.01$). Whereas, the odds of Corona denial tend to be roughly 30% smaller among the elderly ($OR = 0.717$), the latter group does not differ significantly from respondents of middle age. A fourth important characteristic is the respondents' political identification: in comparison to centrists. The odds of Corona denial are about 64% lower among left-wingers ($OR = 0.365$, $p \leq 0.01$) and almost twice as high among right-wingers ($OR = 1.965$, $p \leq 0.01$). The last influential characteristic is education: respondents with low education have about 1.7 times greater odds to deny the pandemic than their fellow citizens with medium-level education ($OR = 1.676$, $p \leq 0.05$). The results point to virtually no difference between respondents with medium-level education and those with higher education. None of the other characteristics considered in the base model—biological sex, having a partner, having children, size of settlement, or having been affected by COVID-19—are significantly related to (dis-)agreement with the hoax item. In a nutshell, the socio-economic profile of the "typical" Corona denier in Germany is characterized by low income, residence in former East Germany, young age (below 35), self-identification as right-winger, and low education.

In a second step, we differentiate the analysis along the four types of Corona conspiracy believers that arise in a longitudinal perspective: Are there differences among former, new, and consistent Corona deniers, as compared to the large group of consistent realists who have accepted the pandemic as a reality from the very beginning? Table 3 shows the results from a multinomial logistic regression in the form of the so-called relative risk ratios (*RRR*). Just as in the binomial logistic regression, (young) age, (low) education, (lower) income, residing in East Germany, and having a right-wing political orientation turn out to be risk factors for Corona denial in any form; yet, with a clear gradient across the three denier groups. Regarding age, the young are at a 1.7 times higher risk to be former deniers ($RRR = 1.713$, $p \leq 0.10$) and at a 3.6 times higher risk to be new deniers ($RRR = 3.581$, $p \leq 0.10$) than respondents of middle age. The elderly, in contrast, tend to be at a consistently lower risk of denying the pandemic in any form, but the protective effect of advanced age is only significant—and only marginally so—against being a former denier ($RRR = 0.407$, $p \leq 0.10$). The low educated respondents are at 1.7 times greater risk to be consistent deniers ($RRR = 1.660$, $p \leq 0.10$) than respondents with intermediate education. High education emerges as a marginally significant protective factor

against being a former denier ($RRR = 0.576$, $p \leq 0.10$). Living on low or lower-middle income is associated with a greater risk to be a consistent denier: The relative risk to end up in this group is four times higher for respondents living on low income ($RRR = 4.126$, $p \leq 0.01$) and 2.4 times higher for respondents living on lower-middle income ($RRR = 2.438$, $p \leq 0.10$). In comparison to residents of West Germany, East Germans are consistently at a greater risk of Corona denial in any form: They have a 1.7 times greater risk to be former deniers ($RRR = 1.675$, $p \leq 0.10$), 2.3 times greater risk to be new deniers ($RRR = 2.261$, $p \leq 0.05$), and 3.2 times greater risk to be consistent deniers ($RRR = 3.190$, $p \leq 0.01$). As to political views, a left-wing identification acts as a protective factor against any form of Corona denial as compared to a centrist orientation: Left-wingers are at a 35% lower risk to be former deniers ($RRR = 0.652$, $p \leq 0.10$), about 60% lower risk to be new deniers ($RRR = 0.391$, $p \leq 0.05$), and 68% lower risk to be consistent deniers ($RRR = 0.322$, $p \leq 0.01$). Respondents of a right-wing political orientation are, in contrast, at 2.3 times greater risk to be consistent deniers ($RRR = 2.343$, $p \leq 0.01$) than centrists. In a nutshell: The composition of the group of former deniers is characterized with an overrepresentation of young East Germans and an underrepresentation of the highly educated respondents and left-wingers; that of new deniers—with a stronger representation of young East Germans and a stronger underrepresentation of left-wingers; that of consistent deniers—with the strongest representation of East Germans, on top of that respondents with low education, low to lower-middle income, and right-wing political orientation as well as the strongest underrepresentation of left-wingers.

The attitudinal profile of Corona deniers

Next, we add a range of *attitudinal* characteristics to the base model, each specified in a separate model, in order to uncover attitudes and dispositions feeding into the Corona conspiracy beliefs (Table 4, Models 3–7). With the exception of Model 5 (the human values model), the pseudo-R^2 measure is more than twice as high as in the base model, which indicates that Corona denial indeed forms a tightly knit syndrome with other attitudes. Nevertheless, the socio-political variables identified as relevant in the base model are surprisingly robust, when attitudes are considered one at a time: The effects of young age, living in East Germany, and political ideology (both far right and left) are significant in all models (5/5); that of low income in all but one model (4/5); and that of low education in all but two models (3/5). When the entire set of attitudes is added to the base model in one go (results not shown), the socio-political characteristics—bar age and living in East Germany—lose power.

TABLE 3 Multinomial logistic regression of type of deniers on socio-political characteristics.

	Model 2					
	Former		**New**		**Consistent**	
Sex: male	1.238		1.218		1.179	
	(0.96)		(0.61)		(0.66)	
Age group						
16–34 years	1.713	*	3.581	***	1.343	
	(1.89)		(3.33)		(0.82)	
65+ years	0.407	***	0.515		0.704	
	(−3.24)		(−1.48)		(−1.23)	
Partner: yes	1.125		1.543		0.833	
	(0.47)		(1.18)		(−0.68)	
Children: yes	0.942		0.826		1.235	
	(−0.24)		(−0.52)		(0.73)	
Education						
Low	1.476		1.944		1.660	*
	(1.39)		(1.59)		(1.65)	
High	0.576	*	0.955		1.216	
	(−1.76)		(−0.11)		(0.60)	
Income class						
Low	1.716		1.812		4.126	***
	(1.37)		(1.12)		(2.76)	
Lower-middle	1.506		1.273		2.438	*
	(1.10)		(0.47)		(1.75)	
Upper-middle	1.662		0.617		1.297	
	(1.34)		(−0.80)		(0.46)	
High	0.456		1.337		2.155	
	(−1.17)		(0.47)		(1.25)	
Settlement						
City or suburb	0.945		0.783		0.834	
	(−0.22)		(−0.65)		(−0.63)	
Village	1.234		1.041		1.083	
	(0.74)		(0.10)		(0.25)	
Germany: East	1.675	*	2.261	**	3.190	***
	(1.85)		(2.07)		(4.13)	
Political views						
Left-wing	0.652	*	0.391	**	0.322	***
	(−1.65)		(−2.21)		(−3.09)	
Right-wing	1.210		1.473		2.343	***
	(0.64)		(1.01)		(3.02)	
COVID-19 affected	0.771		1.543		0.780	
	(−1.03)		(1.28)		(−0.85)	
Intercept	0.071	***	0.019	***	0.024	***
	(−5.88)		(−6.16)		(−6.37)	
Pseudo-R^2	0.089					

The table shows the results from a multinomial logistic regression of type of Corona deniers on socio-political characteristics ($N = 1{,}280$). The presented coefficients are relative risk ratios (in comparison to the consistent realists) with z-scores in brackets. Significance of the estimates in two-sided tests: $^{*}p \leq 0.10$, $^{**}p \leq 0.05$, $^{***}p \leq 0.01$. Reference categories: Sex::female, Age group::35–64 years, Partner::no, Children::no, Education::intermediate, Income class::middle, Settlement::town, Germany::West, Political views::center.

TABLE 4 Binary logistic regression of Corona denial on socio-political and attitudinal characteristics.

	Model 3		Model 4		Model 5		Model 6		Model 7	
Sex: male	**1.221**		**1.173**		**1.104**		**0.900**		**1.108**	
	(0.93)		(0.73)		(0.48)		(−0.47)		(0.46)	
Age group										
16–34 years	2.167	***	1.820	**	1.853	**	2.076	**	1.903	**
	(2.74)		(2.13)		(2.29)		(2.54)		(2.21)	
65+ years	0.870		0.774		0.736		0.936		0.963	
	(−0.54)		(−0.97)		(−1.24)		(−0.25)		(−0.14)	
Partner: yes	0.963		0.958		1.058		1.129		0.853	
	(−0.16)		(−0.18)		(0.25)		(0.50)		(−0.66)	
Children: yes	1.173		1.025		1.039		1.074		0.824	
	(0.65)		(0.10)		(0.16)		(0.29)		(−0.77)	
Education										
Low	1.459		1.592	*	1.754	**	1.935	**	1.116	
	(1.39)		(1.71)		(2.18)		(2.40)		(0.39)	
High	1.284		1.278		1.130		1.221		1.422	
	(0.89)		(0.87)		(0.46)		(0.70)		(1.22)	
Income class										
Low	1.976	*	1.963	*	2.551	**	2.562	**	1.754	
	(1.73)		(1.71)		(2.51)		(2.35)		(1.40)	
Lower-middle	1.551		1.503		1.682		1.726		1.539	
	(1.13)		(1.06)		(1.41)		(1.39)		(1.10)	
Upper-middle	0.867		0.843		0.827		0.891		0.924	
	(−0.33)		(−0.39)		(−0.46)		(−0.26)		(−0.18)	
High	2.167	*	1.921		1.648		2.184		1.702	
	(1.66)		(1.39)		(1.11)		(1.64)		(1.10)	
Settlement										
City or suburb	0.787		0.751		0.792		0.720		0.818	
	(−0.95)		(−1.13)		(−0.99)		(−1.30)		(−0.78)	
Village	1.066		0.975		1.024		0.853		0.934	
	(0.23)		(−0.09)		(0.09)		(−0.56)		(−0.24)	
Germany: East	2.231	***	2.281	***	2.611	***	2.635	***	2.372	***
	(3.16)		(3.22)		(4.01)		(3.78)		(3.29)	
Political views										
Left-wing	0.491	**	0.447	***	0.388	***	0.477	**	0.590	*
	(−2.43)		(−2.70)		(−3.30)		(−2.48)		(−1.74)	
Right-wing	1.624	*	2.076	***	1.834	**	1.672	**	1.705	**
	(1.92)		(2.86)		(2.54)		(2.00)		(2.04)	
COVID-19 affected	1.343		1.234		1.114		1.186		1.120	
	(1.24)		(0.87)		(0.47)		(0.70)		(0.46)	
Institutional distrust	4.533	***								
	(9.07)									
Social/trad. media			2.886	***						
			(9.51)							
Conformity					0.718	***				
					(−3.47)					
Universalism					0.857					
					(−1.53)					
Freedom/health							2.602	***		
							(9.61)			
Corona myths									2.829	***
									(10.26)	
Intercept	0.001	***	0.003	***	0.144	***	0.003	***	0.003	***
	(−10.55)		(−10.15)		(−3.68)		(−10.21)		(−10.31)	
Pseudo-R^2	0.218		0.237		0.125		0.243		0.268	

(Continued)

TABLE 4 (Continued)

The table shows the results from binary logistic regressions of Corona denial on socio-political characteristics and various attitudes ($N = 1{,}280$). The presented coefficients are odds-ratios with z-scores in brackets. Significance of the estimates in two-sided tests: $^{*}p \leq 0.10$, $^{**}p \leq 0.05$, $^{***}p \leq 0.01$. Reference categories: Sex: female, Age group: 35–64 years, Partner: no, Children: no, Education: intermediate, Income class: middle, Settlement: town, Germany: West, Political views: center.

Institutional distrust is associated with higher odds to deny the pandemic: A one-point increase in distrust in institutions raises four to five times the odds of denial ($OR = 4.533$, $p \leq 0.01$). Each of the items that flowed into the institutional distrust index has a comparable effect, when used separately (results not shown). Trusting social media more than traditional media has a similar, though slightly weaker effect (Model 4). A one-point stronger preference for social media over traditional media increases the odds of Corona denial almost three times ($OR = 2.886$, $p \leq 0.01$). The basic human values of conformity and universalism, in contrast, play only a minor role (Model 5). While universalism seems to be statistically unrelated, people who endorse conformity more strongly are significantly less likely to consider the pandemic a hoax; a one-point stronger preference for conformity reduces the odds of Corona denial by almost 30 % ($OR = 0.718$, $p \leq 0.01$). In other words, Corona deniers can be characterized as "non-conformists". Moving on to pandemic-specific attitudes, the preference for individual freedom over health concerns (Model 6) is strongly associated with Corona denial: A one-point stronger preference for freedom raises the odds of denial 2.6 times ($OR = 2.602$, $p \leq 0.01$). Admittedly, though, it is difficult to say here what is cause and what is effect. Finally, and expectedly, an inclination to believe in specific Corona myths contributes to supporting the hoax and overreaction argument (Model 7). The odds of denial are 2.8 times higher at each one-point increase in the belief in Corona myths ($OR = 2.829$, $p \leq 0.01$). In fact, a comparison of the pseudo-R^2 of each extended model with that of the base model reveals that the most influential attitudinal characteristics in determining the probability of Corona denial are (in this order): belief in Corona myths, preference for freedom over health, preference for social media over traditional media, and institutional distrust. When the entire set of attitudes is added to the base model in one go (results not shown), all attitudinal variables remain significant, except institutional

TABLE 5 Differences in attitudes across groups of Corona deniers.

Attitude/Disposition	Lowest				Highest
Institutional distrust	New	=	Former	<	Consistent
Social over traditional media	Former	<	New	=	Consistent
Conformity	Consistent	=	Former	<	New
Universalism	Consistent	=	New	=	Former
Freedom over health	Former	=	New	<	Consistent
Corona myths	Former	<	New	=	Consistent

The table summarizes the results from a series of one-way analyses of variance, each performed for a particular attitude/disposition by type of Corona deniers (see Table A2 for full results). An < or > sign indicates a statistically significant difference in the respective direction. An = sign indicates no significant difference between the respective two groups.

TABLE 6 Attitudinal profiles of Corona deniers across East and West Germany.

Attitude/Disposition	Former	New	Consistent
Institutional distrust	East = West	East = West	East = West
Social over traditional media	East = West	East = West	East = West
Conformity	East = West	East = West	East = West
Universalism	East = West	East > West	East = West
Freedom over health	East = West	East = West	East = West
Corona myths	East = West	East = West	East = West

The table summarizes the results from a series of independent-samples *t*-tests of the respective attitude/disposition, comparing respondents from West and East Germany, within a specific type of Corona deniers (full results are available upon request). A < or > sign indicates a statistically significant difference at $p \leq 0.05$ in a two-sided test. An = sign indicates no statistically significant difference.

distrust, which is cannibalized by the more powerful trust in social media variable.

Now, does the mindset of the three *groups* of deniers—former, new, and consistent—differ? A series of one-way ANOVA analyses provides the answer (see summary of findings in Table 5; full results in Table A2). There are statistically significant differences in all dispositions examined between at least two of the three groups, except for universalism. As a rule of thumb, consistent deniers have the most extreme mindset. In comparison to the other two groups, they distrust institutions most strongly; have the highest level of trust in social media (here, the new deniers are on par); endorse conformity the least (on par with former deniers); prefer freedom over health most strongly; and endorse specific Corona myths the most (here, the new denies are on par). Hence, there is quite a gradient of "extreme" thinking running from consistent over new to former Corona deniers.

A final look: East German peculiarities?

Since the data indicated a larger reservoir of Corona deniers in the Eastern part of the country, we re-estimated selected models for West and East Germany separately. As the results for West Germany and Germany as-a-whole are very similar (for the reason given above), we primarily focus on East Germany. We first revisit the socio-political profile of hoax believers (see Table 2, Model 1-East and Model 1-West). A first peculiarity concerns political ideology: Unlike in the West, right-wing identification is not a significant determinant in the East. This suggests that Corona denial is more widespread in the East even in the centrist political camp (which serves as the reference group in the regression), whereas it is confined to small pockets of right-wingers in the West. Left-wingers are significantly underrepresented among Corona deniers, even more so in the East ($OR = 0.217$) than in the West ($OR = 0.432$), probably a matter of distinction in an opinion climate in which conspiracy beliefs are more acceptable. Second, there are no age differences in the East. Instead, partner status plays a role, with those who have a partner having almost 70% lower odds in considering Corona a hoax ($OR = 0.322$, $p \leq 0.05$). Finally, denying the pandemic is clearly a low-income matter: Low-income earners have twelve times greater odds to support the hoax item ($OR = 12.490$, $p \leq 0.01$) than medium income earners. Financial dissatisfaction or feelings of relative deprivation, therefore, could motivate Corona deniers in the East.

With our final analysis, we examine whether the three East German groups of Corona deniers each differ from their West German counterparts in terms of their attitudinal profile with respect to institutional distrust, trust in social media, human values (conformity and universalism), preference for freedom, and specific Corona myths. The short answer is: "no" (see summary of results in Table 6). Neither in the group of consistent deniers nor in the group of former deniers is there any statistically significant difference between East and West Germany. For the group of new deniers, there is one single difference: East Germans endorse universalism more than West Germans [$t_{(42)} = 2.29$, $p = 0.027$]. For all other attitudes, this group is similar in the East-West comparison. This leaves us with the following conclusions on the East-West-issue. First, Corona conspiracy beliefs are more widespread among East Germans. Second, while the socio-political profile of Corona deniers shows some peculiarities, mindsets do not: East German deniers are not attitudinally "more extreme" than their West German counterparts.

Discussion

Like others before, the study at hand sought to shed light on both the extent and the socio-political and attitudinal profile of citizens who consider the Coronavirus pandemic a hoax, examining the case of Germany. Yet unlike most studies, we used two waves of panel data collected in spring 2020

and spring 2021, which allowed us to examine individual-level changes and thus to identify different types of Corona conspiracy supporters: former, new, and consistent. Considering the dynamics of COVID-19 denial and differentiating between groups is important, as their socio-political and attitudinal profiles are not uniform. We consider the following results to be most important.

First, as the pandemic unfolded, the camp of conspiracy believers—a clear minority of the German population—became smaller, as it lost more followers than it gained new ones. This development was the expected pattern for a conspiracy belief that denies an—unfortunately—powerfully unfolding medical reality, with skyrocketing numbers of COVID-19 infections and an increasing death toll. Still, a small minority of six percent considered the pandemic a hoax in 2020 *and* still in 2021, and, even more irrationally, three percent converted to that idea in 2021.

Second, our study confirms that socio-demographic characteristics such as age, education, and income as well as political ideology are associated with the propensity to believe in COVID-19 conspiracy theories (cf. the review by van Mulukom et al., 2022). In comparison to previous studies, an especially notable result concerns the role of political self-placement. While one available study had suggested that in Germany conspiracy beliefs about the pandemic are to be found at *both* edges of the political spectrum (Schließler et al., 2020), we found them only among right wingers, in line with Frei and Nachtwey's (2021) (see also Nachtwey et al., 2020) study about Corona protesters. However, our results go one step further by additionally demonstrating that left-wingers are systematically *less* prone to considering Corona a hoax than centrists. Another striking finding is the strong nexus between low income and Corona denialism (see also Schließler et al., 2020). So far, the role of financial deprivation seems to be underestimated as a motif to adopt Corona skepticism—especially in East Germany.

Third, our panel data enabled us to unearth differences in the socio-political profiles of former, new, and consistent Corona deniers. Most importantly, the latter group is the only group for whom we find an unequivocal association with right-wing self-identification, low education, and low income. These associations suggest that feelings of socioeconomic deprivation and a lack of social recognition may motivate this group, a presumption that could be examined in upcoming studies. A bit surprisingly, the group of new deniers does not differ much from the majority population in terms of the basic socio-political profile, except that they are younger and over-proportionally from the East (as Corona skeptics generally). What the new deniers and the consistent deniers unites is their strong preference for social media; quite obviously, the emergence of closed communication bubbles of like-minded poses a problem for social cohesion.

Fourth, we could confirm that various attitudes and dispositions are associated with supporting Corona skepticism, among them institutional distrust, trust in social media, political priorities (freedom rather than health), belief in specific Corona myths, and the value orientation of anti-conformity (yet not anti-universalism, as Spöri and Eichhorn, 2021 had suggested). While these findings largely support previous studies (cf. van Mulukom et al., 2022), a new finding is that the three types of former, new, and consistent corona deniers differ in their attitudinal profile: By and large, the viewpoints of the consistent deniers are the most extreme, followed by new deniers, and former deniers. Thus, the group of consistent deniers is most problematic from the perspective of social cohesion, as this group's mindset is most distant from that of the large majority.

Finally, our analysis provides valuable insights into the much-discussed East-West differences of Corona denialism in Germany. The idea that Corona is nothing but a hoax is considerably more common in the Eastern part—there, especially low-income earners and unpartnered hold this view. In contrast, political ideology (left-right self-placement) is less important for Corona denialism in the East, mainly because this view extents way into the camp of the centrists. The attitudinal profile of skeptics, however, is quite similar in East and West Germany, including for the group of consistent deniers. Put differently, Corona deniers in the East are not more extreme in their attitudes than their counterparts in the West. These findings may contribute to understanding why anti-Corona protests have been more widespread in Germany's Eastern part (though by no means confined to it): it is a matter of the *size* of the camp of Corona deniers, not a matter of its attitudinal profile. In addition, with the right-wing party AfD (Alternative for Germany/Alternative für Deutschland), which is more firmly anchored in the East, and with the anti-migration movement PEGIDA there was a denser network of political entrepreneurs in the East to mobilize Corona skeptics.

It goes without saying that our study is not without limitations. While the overall sample is of high quality and decent size, the sub-group sample sizes are limited, especially for the smallest group, the new Corona skeptics. Therefore, we may be missing certain associations that would reveal themselves as significant if the sample sizes had been larger (this may also hold for the East-West comparison). To avoid small case numbers, we could not always differentiate effects in as nuanced a way as may have been desirable. In terms of personal pandemic affectedness, for example, one might see differences in Corona denialism between those more marginally affected (e.g., becoming ill with mild symptoms) and those heavily affected (e.g., experiencing COVID-19-related deaths in the family), yet we had to collapse this information in our analysis.

Moreover, the operationalizations used for key variables are based on the public discourse at the very beginning of the pandemic. To make use of the panel structure, the item wording chosen in the first survey had to stay consistent in later waves. That, however, resulted in some wordings not being as closely aligned with how public discourses developed later. For

example, a separation of the COVID-19 hoax item in denialism and disapproval of government action would have added more nuances. While the present survey allowed us to cover a wide range of determinants, it could not address everything that may be associated with conspiracy beliefs. Therefore, next to triangulating our results with other quantitative studies, qualitative work could give deeper insights into what motivates people to support Corona skepticism.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

JE took the lead in writing the paper. TS conducted the empirical analyses and prepared the model structure. JD contributed to conceptualization and analysis and structuring of the write-up. FD co-developed the methodology and data and contributed to the analysis. GD developed the variable operationalization and full regression development and contributed to the writing. All authors contributed to the article and approved the submitted version.

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Conflict of interest

Author TS was employed by d|part. Author JE is a non-salaried director of d|part.

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fsoc.2022.974972/full#supplementary-material

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The impact of the COVID-19 pandemic on the provision of instrumental help by older people across Europe

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The outbreak of the COVID-19 pandemic in early 2020 introduced new challenges to social cohesion across Europe. Epidemiological control measures instituted in almost all European countries have impacted the possibility to provide help to others. In addition, individual characteristics contributed to whether individuals were able and willing to provide help to or receive help from others. Against this background, we focus on how private support networks of individuals aged 50 years and older across Europe were directly or indirectly affected by the COVID-19 pandemic. The focus of the paper is on the supply side. While the older population has been mainly perceived as recipients of instrumental help in the COVID-19 pandemic, the paper examines the patterns of providing instrumental help to others by the older generations and their changes during the pandemic. Has the provision of instrumental help increased or decreased in the course of the COVID-19 crisis? Have the groups of recipients changed during the pandemic? What were key determinants for helping others in 2021 as compared to the first phase of the pandemic 1 year before? And how did this differ across countries with different degrees of affectedness by COVID-19? To answer these questions, we analyzed representative data from the Survey of Health, Aging and Retirement in Europe (SHARE) and, in particular, the two waves of the SHARE Corona Survey, fielded in 27 European countries and Israel in 2020 and 2021. Results based on data from more than 45,000 respondents aged 50+ showed that help from children to parents has strongly increased in the first phase of the pandemic, while the opposite (parents helping their children) has decreased—especially in countries that have been hit hardest by the pandemic in 2020. This changed with the continuing crisis. Instrumental help provided to non-kin that was common in Western Europe in the first phase of the pandemic, yielding an optimistic view of increasing solidarity after the outbreak of COVID-19, strongly decreased 1 year later. Our findings provide a contribution to comparative research on micro- and macro-determinants that are crucial for the understanding of intergenerational support in times of crisis.

KEYWORDS

SHARE, COVID-19 pandemic, social cohesion, instrumental help, informal help, intergenerational exchange, solidarity

Introduction

The outbreak of the COVID-19 pandemic in early 2020 introduced new challenges to social cohesion across Europe. On the one hand, people had the perception of a widespread willingness to help each other and saw "a lot of the best in humanity" during the lockdown time (Schneiders et al., 2022: 7). But on the other hand, there was also a "fear of being in contact with other people [...] and feelings of distrust, judgement and tension within [...] communities" (Schneiders et al., 2022: 7). A British study found that despite the general perception that people were willing to help each other, taken together, there was a decline in helping each other compared to the pre-pandemic situation (Borkowska and Laurence, 2021). However, so far there is a lack of research analyzing determinants affecting the provision of informal help across Europe during the COVID-19 pandemic.

The COVID-19 pandemic led to the implementation of various national policies and measures aiming at halting the spread of the virus through the reduction of in-person contacts. Such unprecedented measures faced a challenge for social cohesion in general, and exchange of instrumental help in particular, as it often requires in-person contact. At the same time, the exchange of informal help (e.g., help with groceries or house repairs) became even more important in the light of pandemic-related reduced availability of formal care service providers and social isolation especially for individuals under quarantine as well as high-risk groups such as older people. Therefore, the research on social cohesion and exchange of informal help in times of the still ongoing pandemic is highly relevant, especially research focusing on vulnerable social groups. The contribution of this paper is its focus on older people who are at highest risk of a severe course of the coronavirus disease and thus are highly affected by the pandemic.

In particular, the COVID-19 pandemic has challenged the solidarity between generations resulting in intergenerational tensions due to changing mutual expectations and obligations of older and younger people (Ayalon, 2020; Ellerich-Groppe et al., 2020; Ayalon et al., 2021; Stok et al., 2021). The political discourse in Western countries was mostly dominated by encouraging age separation and self-isolation of older people. Older generations were largely perceived as a homogeneous and fragile group defined solely by age that is in need of help in the times of a major health crisis and, in the beginning of the COVID-19 pandemic, younger generations were asked to show solidarity with older generations by adopting social distancing as a preventative measure (Graefe et al., 2020; Meisner, 2021; Stok et al., 2021). That upward intergenerational solidarity in the beginning of the COVID-19 pandemic has shifted to a call for downward solidarity from older to younger generations (e.g., appeal to older population to stay at home to enable lessening of protective measures for young people) in order to reduce detrimental effects of the pandemic for young people in later stages of the pandemic (Stok et al., 2021). Increased ageism, ignoring the heterogeneity of the older population when characterizing older people as the main recipients of support during the COVID-19 pandemic and underestimating the intergenerational support provided by older people (e.g., with childcare) have been recently criticized by several scholars (e.g., Ayalon et al., 2021; Vervaecke and Meisner, 2021). To quote Vervaecke and Meisner (2021: 163): "We must recognize that older adults in many instances and cultures are net providers (rather than receivers) of help and care through various roles, such as volunteers and unpaid caregivers of peers, spouses, and grandchildren." In line with this criticism, in our study we focus on the agency and potentials of older people as providers of practical informal help to others in the times of the COVID-19 pandemic taking into consideration individual factors and the heterogeneity of the older population.

Since the beginning of the COVID-19 pandemic, researchers have been analyzing the impact of the pandemic on social cohesion and solidarity (e.g., the research initiative "Solidarity in times of a pandemic: What do people do, and why?"[1]). So far, research on social cohesion during the COVID-19 pandemic focused mainly on the United States and Great Britain (e.g., Stokes and Patterson, 2020; Borkowska and Laurence, 2021; Lalot et al., 2021; Jaspal and Breakwell, 2022; Schneiders et al., 2022). Current research on social cohesion in Germany shed light on the mental health perspective (e.g., Silveira et al., 2022), while an Austrian study investigated solidarity and social trust during the COVID-19 pandemic (Bodi-Fernandez et al., 2022). There are cross-national European studies as by Bergmann and Wagner (2021) and Tur-Sinai et al. (2021) discussing the development of care during the pandemic. While the focus of these studies is more on informal caregiving and care receiving, there is still a research gap with regard to intergenerational exchange of more common forms of (informal) help in a cross-national perspective [e.g., see Brandt et al. (2021) for Germany]. Our study aims at shedding light on this particular aspect, especially since it is closely connected to social cohesion and thus the positive effects of it (Berkman, 2000; Berger-Schmitt, 2002). The study provides a contribution to comparative research on micro- and macro-determinants that are crucial for the understanding of intergenerational support in times of health crisis. Little is known so far how usual patterns of intergenerational solidarity have changed in the context of a pandemic and restricted in-person contacts across Europe. The study takes into consideration country differences and explores cross-national variations that reflect country-specific developments of the pandemic as well as national pandemic-related policies and measures.

1 More details on this can be found here: https://digigov.univie.ac.at/solidarity-in-times-of-a-pandemic-solpan/.

We use the representative cross-national data of the Survey of Health, Aging and Retirement in Europe (SHARE; Börsch-Supan et al., 2013), which is conducted in 27 European countries and Israel among households with individuals aged 50 years or older. In particular, this paper uses the data from the first and the second wave of the SHARE Corona Survey (SCS1 in 2020 and SCS2 in 2021) to explore changes in the provision of informal help in the course of the pandemic, taking into consideration heterogeneity of the givers and the cross-national context. The paper starts with a brief overview of the relevant conceptual and empirical background followed by a methodological overview. In the analytical part of the paper, we first explore regional differences with regard to the weighted prevalence of provided help in the first phase of the pandemic in summer 2020 compared to 1 year later. Afterwards, we analyze determinants of providing help and whether there are substantial differences between the first and the second wave of the SHARE Corona Survey, i.e., between 2020 and 2021. The paper concludes with a discussion of the main findings, study limitations and suggestions for future research.

Materials and methods

Previous research and hypotheses

Provision of instrumental help and the COVID-19 pandemic

Social cohesion usually refers to the interactions among members of a society which are characterized by a set of attitudes and norms including trust, a sense of belonging and the willingness to participate and help as well as their behavioral manifestations (Berkman, 2000). It is associated with a decrease of inequalities within a society and considered as a source of wealth and economic growth and health (Berkman, 2000; Berger-Schmitt, 2002). This applies also to the COVID-19 pandemic. A recent study by Silveira et al. (2022) that investigated the correlation of psychological indicators of vulnerability, resilience and social cohesion, supports this assumption. It found, that during the German lockdown respondents with higher levels of social cohesion showed a better mental health recovery in overcoming the multiple challenges of the crisis (Silveira et al., 2022). Therefore, also beyond the pandemic, social cohesion is promoted through social policies and is desired to be fostered by regional redistribution and active citizens (Easterly et al., 2006). Social cohesion is a broad multidimensional concept with varying definitions depending on the focus of a certain conceptualization and operationalization (Berkman, 2000). In our study, we focus on a particular behavioral aspect of social cohesion, namely on the willingness to help each other in form of informal instrumental help.

Given the fast development of the COVID-19 pandemic after its outbreak in Europe in early 2020, especially informal and thus more flexible help provided by active citizens can be of great importance for a functioning society. Older people, in general, are at higher risk of social isolation and loneliness and thus poor mental health as well as physical health conditions. Therefore, their inclusion and participation in a strong social network plays a significant role in the onset of depression and anxiety in the population as a whole. During the COVID-19 pandemic, older people became an even more vulnerable group facing higher risk of severe symptoms of COVID-19 and being affected by restricted access to formal care (Bergmann and Wagner, 2021). In light of this development, intergenerational solidarity has become particularly important. At the same time, the pandemic-related policies (e.g., in-person contact restrictions and physical distancing) and the risk of infection as well as changing expectations and obligations across generations presented new challenges for intergenerational solidarity.

In general, intergenerational solidarity that distinguishes structural, associative, affectual, consensual, normative and functional solidarity (Bengtson and Roberts, 1991) refers to social cohesion between generations including formal welfare support and exchange of emotional support as well as the exchange of financial transfers and instrumental help among family members and to others (e.g., help to obtain necessities like food and medications or emergency household repairs). In this context, solidarity means providing assistance when needed as part of bonding between different generations (Bengtson and Oyama, 2010). Previous research has demonstrated that formal intergenerational solidarity (e.g., welfare support, pensions, institutionalized care) flows mainly upward to older generations, whereas informal solidarity (e.g., transfers of private money and time) are usually directed downward from older generations to younger ones (Stok et al., 2021). Exchange of resources and assistance across generations is not only characterized by solidarity but also by conflict, as there is a need to (re)negotiate and balance the expectations and the flow directions of the resources exchange (Bengtson and Oyama, 2010). In the times of a major health crisis, there is more at stake than money and time, as the exchange of help is associated with additional burdens and costs (e.g., risk of getting infected, limitation of in-person contacts) and raises the question of fair allocation of burdens and benefits of integrational solidarity (Stok et al., 2021).

In our paper, we focus on the provision of informal instrumental help as one particular aspect of functional solidarity. We assume that this form of support is especially challenged by the COVID-19 pandemic and accompanying physical distancing measures as it usually requires in-person contacts, while other types of support (e.g., emotional or financial help) still can be provided without face-to-face contact. The likelihood of providing informal instrumental help depends on a mixture of individual attributes and macro factors. Generally, it is interpreted as an interplay of the needs of the

potential recipients on the one side and resources as well as ability and willingness of the givers to provide certain type of help on the other side (Eggebeen, 1992; Vogel and Sommer, 2013). At least at the beginning of the pandemic, older people were presented in the general public discourse as a homogeneous fragile group in need of help, while individual attributes were not taken into consideration (Ayalon, 2020; Ellerich-Groppe et al., 2020; Graefe et al., 2020; Vervaecke and Meisner, 2021). Such rather paternalistic perspective can be seen as a form of "compassionate ageism" (Vervaecke and Meisner, 2021) which neglects the agency of older people to actively get engaged in the exchange of social support as providers of practical help. To shed light on the contribution of older people to the provision of instrumental help in European societies, our paper mainly focusses on providing rather than on receiving instrumental help. At the same time, we include reciprocity as an important factor for the provision of instrumental help and investigate various individual factors that might increase or decrease the likelihood of becoming a provider of instrumental help in later life during the COVID-19 pandemic.

During the pandemic, European countries were faced with completely new challenges regarding care provision for people aged 50+ (Bergmann and Wagner, 2021) and exchange of support between generations (Gilligan et al., 2020). Older people, especially those with poor health, were at high risk of experiencing a severe course of a coronavirus disease and to some extent were dependent on the help provided by others during the pandemic. Especially for older individuals who experienced restrictions to formal care and public support in the course of the pandemic intergenerational solidarity became a major resource for support during that time. Younger cohorts of a so-called "older population" (which we define here as people aged 50 years and older due to our sample), that are largely still in good health and occupationally active are expected to be providers of instrumental help during the COVID-19 pandemic. Especially in the beginning of the pandemic, younger generations were asked to show solidarity with older generations and to support them (Vervaecke and Meisner, 2021). Therefore, *a stronger provision of instrumental help can be expected in the beginning of the COVID-19 pandemic by younger cohorts of the older population (Hypothesis 1a)* to compensate for reduced access to formal care provision and to social networks outside the family due to contact restriction policies during the peaks of the pandemic.

At the same time, the adherence to lockdown restrictions and general practice of social and physical distancing to reduce the risk of infection, especially during the peaks of the pandemic, made it more challenging to provide support that requires personal interactions. The provision of help that requires personal contact had to be carefully evaluated upon the possible risk of infection vs. benefit of the received help. Especially the representatives of the middle generations were faced with competing demands and the double burden of providing support to their own children and older parents simultaneously (Gilligan et al., 2020; Stokes and Patterson, 2020). There was also a general shift in public debates calling for downward intergenerational solidarity in the later phases of the pandemic in order to reduce burdens associated with preventative measures for younger generations (Stok et al., 2021). Therefore, *less provision of instrumental help can be expected with the ongoing pandemic especially by younger cohorts of the older population (Hypothesis 1b)* if these were faced with an ongoing high (double) burden, leading to increasing difficulties in providing help the longer the pandemic and its accompanying restrictions continue. In addition, there was probably less need for help in the times of the "downtime" of the pandemic but also due to the vaccination of high-risk groups after the authorization of effective vaccines starting end of 2020.

Individual determinants regarding the exchange of instrumental help

Exchange of instrumental help is strongly associated with sociodemographic, economic, health-related and behavioral characteristics of givers and recipients like, for example, age, gender, education, income, health, social network and perceptions of reciprocity of exchange (Lowenstein and Daatland, 2006; Albertini et al., 2007; Litwin et al., 2008). Some older individuals tend to get involved in exchange of instrumental help to a higher degree than others do. To reflect this heterogeneity within the group of older individuals, our study analyzes crucial individual determinants of providing instrumental help.

With regard to socio-demographic and economic characteristics, previous research based on the cross-national SHARE data has shown that there is a general downward flow from the older to the younger generations for financial and practical assistance in European countries (Albertini et al., 2007; Litwin et al., 2008). Parents are more often the givers of help to children (even if these children are adults) than recipients. However, this only holds up to a certain age. For individuals aged 80 years and older, this pattern takes the opposite direction and this group, on average, becomes more often the net recipients of intergenerational exchange (Vogel, 2010). Furthermore, as older cohorts are more at risk to develop severe health problems in case of a COVID-19 infection, they are more in need of getting help. Several studies dealing with intergenerational exchange also have demonstrated that females are more often the givers of instrumental help than males (e.g., Steinbach, 2013). At the same time, men also receive less help from their grown-up children as compared to women (e.g., Brandt et al., 2009). A study conducted by Borkowska and Laurence (2021) demonstrates that in Great Britain less-educated individuals reported to experience less positive changes compared to pre-pandemic times with regard to social cohesion than individuals with higher education. In

terms of rural-urban divide, there is no clear-cut direction in the literature: several studies on social cohesion and volunteering have demonstrated higher levels of both in rural areas (e.g., Fortuijn and van der Meer, 2006; Svendsen and Svendsen, 2016), although the differences seem to have decreased recently (e.g., Paarlberg et al., 2022). Intergenerational contacts, on the other hand, tend to be higher if parents are living in large urban areas as they are more likely to have children living nearby given that the younger generation prefers living in cities (Daatland, 2007). As multigenerational households are also less common in urban than in rural areas (Scherger et al., 2004), more within-household exchange of instrumental help can be expected in rural areas, while the provision of instrumental help outside the own household, which is the focus of our study, might be more common in urban areas. In addition, it has been shown that individuals with a migration background and low income were less likely to participate in community activities during the pandemic and experienced a larger decline in social cohesion (Jaspal and Breakwell, 2022). This fits well with findings of a positive association between being employed and providing modest amounts of extra-resident support as having the financial resources might facilitate the provision of informal care and help (Arber and Ginn, 1992, 1995). Based on this previous research, we expect that *being older, male, less educated and having a migration background are associated with lower provision of instrumental help during the COVID-19 pandemic, while living in urban areas, having a paid work and a high income are associated with higher provision of instrumental help (Hypothesis 2).*

Regarding health-related outcomes, individuals with long-term health conditions were found to have a less strong social network in general and tended to engage less in social activities during the COVID-19 pandemic (Jaspal and Breakwell, 2022). Further, an exposure to COVID-19 might also affect the willingness and ability to provide instrumental help to others (see the argumentation in Bergmann and Wagner, 2021 regarding the provision of care). Knowing people in their own social circles who have been infected with the coronavirus might increase the likelihood of providing instrumental help, simply as there is need for it (e.g., helping with groceries for persons in quarantine). Individuals affected by COVID-19 themselves, on opposite, are possibly less likely to provide instrumental help to others, especially in case of severe or long-term symptoms of COVID-19. Therefore, we expect that *knowing people exposed to COVID-19 in their own social circles is positively associated with the provision of instrumental help, while being self-exposed to COVID-19 as well as experiencing poor health in general is negatively correlated with the provision of instrumental help during the pandemic (Hypothesis 3).*

In addition, also behavioral characteristics are linked to the provision of help. People with a higher number of (in-person) social contacts seem to have more occasions to provide instrumental help to others. Vergauwen et al. (2022) found that, despite stringent contact policies during the COVID-19 pandemic, older adults were generally not likely to experience a decrease in contacts and assumed that increased support (including digital contacts) for parents might explain this effect. Further, reciprocity is seen to play an important role in the exchange of social support. Reciprocal intergenerational exchange is related to better psychological well-being (Silverstein and Bengtson, 1991; Lowenstein et al., 2008). Various studies have shown that persons who receive help are more likely to provide help in return (Pruitt, 1968; Wilke and Lanzetta, 1970; Kahn and Tice, 1973). Reciprocity of intergenerational solidarity became especially important in the later phase of the pandemic, when younger generations appealed to older generations for their support to balance competing needs of different generations (Stok et al., 2021). Against the background of these considerations, we expect that *during the COVID-19 pandemic, having frequent social contacts and being a receiver of instrumental help are associated with a higher provision of instrumental help (Hypothesis 4).*

Cross-national differences

The ability and willingness of providing instrumental help is not only dependent on individual factors, some of which were mentioned above, but is also linked to macro factors. European countries introduced different policies as a response to the pandemic and the pandemic-related epidemiological control measures varied to a high extent with regard to their level of stringency across Europe (Hale et al., 2021). In addition, despite the fact that all European countries were affected by the pandemic, they were affected by it to a different extent and at different times. While some studies found that stricter policies (e.g., strict distancing and limitation of personal contacts as well as stay-at-home orders) were associated with less provision of formal care services (e.g., Benzeval et al., 2020; Eggert et al., 2020; Moss, 2020; Wolf-Ostermann et al., 2020), several studies show that more informal contact and support was actually provided to compensate for the greater demand by older people (Arpino et al., 2020; Bergmann and Wagner, 2021; Vergauwen et al., 2022). We therefore expect *more provision of instrumental help during the COVID-19 pandemic in countries with more strict pandemic-related policies and measures (Hypothesis 5).*

Methodology

Data and sample

In our analyses, we use data from the regular SHARE waves (Börsch-Supan, 2022a,b,c,d,e,f,g,j) and from the first and the second SHARE Corona Survey (Börsch-Supan, 2022i,l). SHARE is based on full probability samples (Bergmann et al., 2019, 2021, 2022b), providing internationally comparable representative data for the 50+ population. Both the methodological rigor

and the ex-ante cross-national harmonization of SHARE are particularly suitable to investigate the effects of a global crisis like the COVID-19 pandemic. The regular SHARE is a longitudinal survey fielded every 2 years *via* face-to-face interviews with individuals aged 50 years and older and their partners living in the same household. In our analyses, we use data from the regular SHARE waves for the information on stable respondent characteristics, such as education level and health conditions.

The SHARE Corona Surveys were introduced as telephone interviews in order to enable timely data collection on pandemic-related topics. Longitudinal SHARE respondents were invited to participate in the first SHARE Corona Survey that was fielded in June and July 2020. The second SHARE Corona Survey re-interviewed respondents from the first survey in summer 2021, enabling the examination of changes between the start of the pandemic and the situation about 1 year later. The average response rate based on eligible respondents participating in the first SHARE Corona Survey was 79 percent. In the second SHARE Corona Survey, an average retention rate (excl. recovery of respondents) of 86 percent was achieved. To avoid selectivity, our analyses are based on 47,495 respondents who participated in both SHARE Corona Surveys. Among other pandemic-relevant content, both SHARE Corona Survey questionnaires contain a section on social networks that includes questions about providing and receiving instrumental help, which build the basis for our analyses. We further included country-specific information on epidemiological control measures using data from the Oxford COVID-19 Government Response Tracker (OxCGRT; Hale et al., 2021) that are available on a daily basis.

Measures

To examine the factors related to the provision and the receipt of instrumental help during the pandemic as well as the changes in exchanging instrumental help in the course of the pandemic, we used the following variables from the first and second SHARE Corona Surveys.

First SHARE Corona Survey (SCS1 in 2020):

1. Since the outbreak of Corona, did you help others outside your home to obtain necessities, e.g., food, medications or emergency household repairs? Yes/No.
2. Compared to before the outbreak of Corona, how often did you help the following people (Own children; Own parents, Other relatives; Other non-relatives like neighbors, friends or colleagues) from outside your home to obtain necessities: less often, about the same, or more often?

Second SHARE Corona Survey (SCS2 in 2021):

1. Since the outbreak of Corona, have you helped the following people (Own children; Own parents; Other relatives; Other non-relatives like neighbors, friends or colleagues) outside your home to obtain necessities, e.g., food, medications, or emergency household repairs? Please answer yes or no to each category.
2. Compared to the first wave of the pandemic, how often did you help (Own children; Own parents; Other relatives; Other non-relatives like neighbors, friends or colleagues) to obtain necessities in the last 3 months, e.g., food, medications, or emergency household repairs? Less often, about the same, or more often?

The multivariate analysis controls for a number of correlates known from previous research on intergenerational exchange mentioned above. As socio-demographic and economic characteristics, we used *respondents' age* at the respective interview in 2020 (SCS1) and 2021 (SCS2) to form three age groups (50–64 years, 65–79 years, 80 years and older) and *respondents' sex* (0: male, 1: female) from the coverscreen data of the regular SHARE interview. Further, we coded the *level of education* attained based on the Internal Standard Classification of Education 1997 (ISCED-97) by using information from the respondents' baseline interview. Respondents were then grouped into two categories: primary education (ISCED-97 score: 0–2), secondary and post-secondary education (ISCED-97 score: 3–6). We further used information on the *respondents' country of birth* from the regular SHARE interview to determine whether they were born abroad or not as well as the *type of living area* (0: rural area, 1: urban area like a large town or big city). The latter information was updated during the second SHARE Corona Survey in case of moving. We further included a measure related to whether respondents were *employed* (including self-employment) or not at the time when Corona broke out (SCS1)/at the time of the interview (SCS2). In addition, we measured *respondents' economic status* by a question that asked the degree to which they were able to make ends meet (0: with great/some difficulty, 1: fairly easily/easily) since the outbreak of Corona (SCS1)/since the last interview (SCS2)[2].

To control for *respondents' health*, we used the reversed 5-point scale on their self-rated health (0: poor, 1: fair, 2: good, 3: very good, 4: excellent) at the time of the respective SHARE Corona Survey and collapsed the categories poor and fair as well as good, very good and excellent to build a dichotomous indicator. In addition, we included a measure that indicates whether respondents were directly *affected by COVID-19* (self-exposure) by using a set of questions on (a) having experienced symptoms, (b) having been tested for COVID-19 and (c) having been hospitalized. To determine whether someone close to the respondent was affected (social exposure) by COVID-19, we used information on symptoms, tests,

2 A more objective measure, such as respondents' (household) income, could not be used due to differences in the way the income question was asked in the first and the second SHARE Corona Survey.

hospitalization and deaths due to COVID-19 with regard to the respondent's spouse/partner, parent, child, other household member, other relative outside the household, and neighbors, friend or colleague.

As behavioral measures, we used the *contact frequency* of respondents and summed up the frequency of face-to-face contacts (i.e., 4: daily, 3: several times a week, 2: about once a week, 1: less often, 0: never) with people from outside the household (i.e., own children, own parents, other relatives and other non-relatives like neighbors, friends, or colleagues). Based on this metric indicator, we applied a median-split to separate respondents with lower/higher than median contact frequency since the outbreak of Corona (SCS1)/during the last 3 months (SCS2). To measure *reciprocity of instrumental help*, we used respondents' answers on the question whether they were helped by others from outside of home to obtain necessities, e.g., food, medications or emergency household repairs or not since the outbreak of Corona. To shed light on the heterogeneity across respondents of different age groups and possible consequences thereof during the different phases of the pandemic, we included an interaction of receiving instrumental help with age (<65 vs. ≥65 years).

Finally, we used the so-called *stringency index* from the Oxford COVID-19 Government Response Tracker (OxCGRT; Hale et al., 2021) to assess differences in national policy responses toward the pandemic. The index records the strictness of "lockdown style" policies, which primarily restrict people's behavior and in particular in-person contacts that are essential for the exchange of instrumental help. In particular, it aggregates policy responses about school and workplace closings, canceling of public events, restrictions on gatherings, closure of public transports, stay at home requirements, restrictions on internal movement, international travel controls and public information campaigns. The stringency index is the average of the mentioned policy indicators on a daily basis. It ranges from 0 to 100, with greater values indicating greater strictness. By matching the Oxford data to the SHARE Corona Survey data *via* the specific interview date of all respondents (Börsch-Supan, 2022h,k) we were able to match precisely the country-specific context information on the pandemic to the respondents' answers on the day of the interview. By this, we could use the full variation inherent in the data to improve our model estimations. We followed the operationalization by Bassoli et al. (2021) and summed up, for each country, all daily values of the stringency index since the 1st of January 2020 until the respondent's individual interview date. Afterwards, we divided this value by the total number of days elapsed between January 1, 2020 and the interview date. As a result, countries that implemented lockdown policies later have a lower index. Further, if two countries had the same start date of lockdown policies, but different intensity, the country with stricter policies will have a higher stringency index value for the respective respondent.

Statistical analyses

To address our research questions, we first descriptively explored regional differences regarding the overall prevalence of providing instrumental help during the pandemic (1) as well as differentiated by type of relationship (2), considering the specific age structure of our sample. Afterwards, we investigated key determinants that were crucial for helping others during the first phase of the pandemic in 2020 compared to 1 year later to analyze substantial differences. For this, we used multivariate logistic models including a large set of individual respondent characteristics, such as respondents' age, sex, level of education, migration background, area of living (rural vs. urban), whether they were (self-) employed before the pandemic and subjective economic status. Furthermore, we analyzed respondents' self-rated health, their affectedness by COVID-19, their frequency of in-person contacts and whether they received help from others or not, which are closely linked to the provision of instrumental help. Finally, we included COVID-19-related policy measures (strictness and lengths of containing policies; linear and quadratic) at the country level, which have been transferred to the individual level by matching the stringency index to the actual date of the respondents' interview[3]. Moreover, we included country dummies to control for any additional regional differences. All variables were standardized with regard to the overall sample mean. Analyses were performed using Stata 14.1 based on robust standard errors and with calibrated cross-sectional weights as provided by the SHARE Coordination team.

Results

Prevalence of providing instrumental help across Europe

We started our analyses with reporting the overall prevalence of providing instrumental help by individuals aged 50+ across Europe during the different phases of the pandemic. While the 2020 survey found that, on average, 21.2% (n = 7,452) of all respondents gave help to others outside the own household since the outbreak of the pandemic, the prevalence increased in the 2021 survey by more than ten percentage points to 32.4% (n = 11,864). Regional variation showed the strongest relative increase in Southern Europe (Croatia, Cyprus, Greece, Israel, Italy, Malta,

3 We ran a multilevel model with country as the level-two identifier as sensitivity check and used a different operationalization of the stringency index varying only between countries. The results did not deviate substantially from the results presented here. Further, we checked for deviations with regard to the different addressees of instrumental help. However, we only found minor differences in point estimates, which do not add new information compared to the used operationalization that sums up the different recipients of instrumental help.

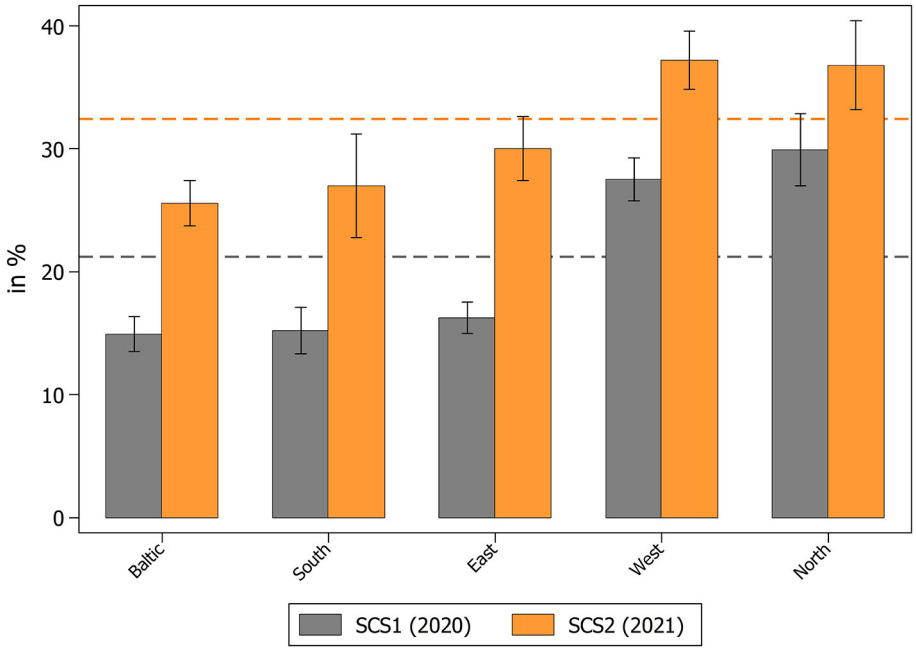

FIGURE 1
Percent of respondents providing help to others outside their own household since the outbreak of the pandemic. Data: SHARE Wave 8 COVID-19 Survey 1 and SHARE Wave 9 COVID-19 Survey 2, Release 8.0.0 (n = 47,495, respectively; weighted) with 95% confidence intervals.

Portugal, Slovenia, Spain) and Eastern Europe (Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia). However, the increase was also considerable in the Baltic States (Estonia, Latvia, Lithuania) and in Western European countries (Austria, Belgium, France, Germany, Luxembourg, Netherlands, Switzerland). The smallest relative increase was found in Northern Europe (Denmark, Finland, Sweden; see Figure 1). When further investigating the effect of age on the provision of instrumental help (see Supplementary Table A1) it came as no surprise that the absolute level of providing help was much higher for younger respondents between 50 and 64 years (29.0% in SCS1 and 42.3% in SCS2) compared to older respondents aged 65 years and above (12.6% in SCS1 and 22.4 in SCS2).

There are two interpretations for this general pattern: First, due to the vaccination campaign, which started end of 2020 in most European countries and picked up speed in spring 2021 (see European Center for Disease Prevention and Control, ECDC), restrictions could be relaxed and social contact as well as support in general was possible again easier. Also, there was possibly less fear of suffering from severe COVID-19 symptoms for vaccinated individuals. In addition, in the course of the pandemic European countries introduced different policies to provide public support to their population which were not available in the beginning. Previous studies showed that European countries, in which families were relieved by welfare support provided by the state, were more stimulated to engage in the provision of informal intergenerational support as complementary help ("crowding-in;" Künemund and Rein, 1999; Silverstein et al., 2020). In addition, while in the early phase of the COVID-19 pandemic primarily the older population was addressed as being the group in need of help, in the course of the pandemic there was a call for a shift from upward to downward intergenerational solidarity and an appeal for the reciprocity of intergenerational exchange as younger generations were presented as those carrying the double burden of the pandemic (Ellerich-Groppe et al., 2020, 2021). Therefore, it seems plausible that especially older cohorts started engaging more in the provision of instrumental help in the later phase of the COVID-19 pandemic. This can be seen when looking at the relative increase between 2020 and 2021, which was stronger for older people aged 65+ (+78%) than for younger people between 50 and 64 years (+46%). A second, methodological explanation is based on the reference point ("since the outbreak of the pandemic") that was used in both questionnaires. Respondents in the second SHARE Corona Survey hence simply had more time and opportunities to help others due to the longer reference period between the outbreak of the pandemic and the respective interview. It is thus likely that the increase of instrumental help during the pandemic that is evident from Figure 1 is an overestimation due to the questionnaire design. However, we are able to test this assumption based on a different question focusing on actual changes in the provision of help in the following section.

Changes in the provision of instrumental help since the outbreak of and during the COVID-19 pandemic

In addition to the overall prevalence of providing instrumental help across Europe, we further analyzed changes thereof by different types of relationship (see Figures 2, 3). By this, we could investigate whether respondents aged 50 years and above reported an increase or a decrease in their provision of instrumental help to others since the outbreak of COVID-19 (SCS1 in 2020) as well as compared to the first wave of the pandemic (SCS2 in 2021). Moreover, the differentiation between children and parents as providers or receivers of instrumental help allowed us to analyze age-related differences in a straightforward way as respondents in SHARE providing help to their parents (including those simultaneously providing help to their children) are usually younger than respondents providing help to their (adult) children but not to their parents.

Against this background, we first looked at the reported changes in the first SHARE Corona Survey regarding the provision of instrumental help since the outbreak of the COVID-19 pandemic as compared to the time before the outbreak. Most striking in this respect was the large increase in providing help to parents in summer 2020 as compared to the pre-pandemic time, which is visible in the upper left graph of Figure 2A. This increase was rather consistent across Europe and confirmed previous findings with regard to personal care (Bergmann and Wagner, 2021). Between 45 percent (Western Europe) and 56 percent (Southern Europe) of all respondents, who provided any sort of instrumental help, declared that they had increased the provision of help to their parents since the outbreak of the pandemic. That is, on average, more than every second respondent reported an increase. In contrast, only between 8 percent (Western Europe) and 18 percent (Southern Europe) indicated that they had decreased the help given to their parents. The rest, on average about 38 percent, had neither increased nor decreased the provision of help to parents since the outbreak of the pandemic. This finding supported previous studies showing that parents aged 80 years or above are usually the receivers of instrumental help rather than the givers (Vogel, 2010). Given that SHARE respondents are 50 years or above, their parents are often older than 80 years and thus belong to the vulnerable group strongly affected by the COVID-19 pandemic and possibly need more support from family members than in pre-pandemic times.

The picture considerably changed when looking at the other subgraphs in Figure 2. With respect to parents providing help to their children outside their own household in 2020 (Figure 2B), nearly one third of all respondents, independent of their age, declaring provision of instrumental help since the outbreak of the pandemic reported a decrease in helping their children. In contrast, only every sixth respondent reported an increase in the provision of instrumental help. Thus, with the exception of the Western and Eastern European countries, decreases in the provision of help from parents to their children significantly outweighed the increases. These descriptive findings showed the opposite direction of providing intergenerational help in Europe demonstrated in previous studies. As mentioned before, there usually is a downward flow of help provision from parents below 80 years to their adult children (Albertini et al., 2007; Litwin et al., 2008). In the times of the COVID-19 pandemic there was, however, a general decrease in providing help to adult children. One possible explanation for this finding is that, based on the SHARE Corona Survey data, there was in general less in-person contact between SHARE respondents and their non-resident children in the first phase of the pandemic in 2020 as compared to 1 year later. In-person contacts, however, are often needed for the provision of instrumental help by parents to their adult children (e.g., looking after grandchildren). Thus, contact restrictions to contain the spread of the coronavirus as well as a higher risk for a severe course of the coronavirus disease especially for older people might have affected the provision of help to adult children outside the own household especially at the beginning of the COVID-19 pandemic when vaccines were still not available. At the same time, SHARE respondents, as shown above, have increased the provision of instrumental help to their parents–frequently involving less personal contact (e.g., grocery shopping)–and hence might have prioritized supporting them over the support of their children. In this respect, further analyses showed that when looking at respondents who reported helping their parents in the first phase of the pandemic, an even higher proportion of them declared that they provided less instrumental help to their children. This finding goes in line with the public discourse at the beginning of the COVID-19 pandemic that encouraged prioritizing support of older generations over support of younger generations.

With respect to other relatives and other non-kin, findings were more balanced (see Figures 2C,D). Notably exceptions were found in Southern Europe, where help given to other relatives strongly decreased during the first phase of the pandemic in 2020, and Western Europe (as well as to a lesser extent in the Baltic States and in Eastern Europe), where the reported increase in instrumental help provided to other non-kin was much stronger than the decrease. Whereas, this can be partly interpreted as indication for a positive development of social cohesion in the beginning of the COVID-19 pandemic, it is not possible to relate this finding to the intergenerational solidarity debate as the used categories "other relatives" and "non-kin" can include persons from different generations.

When comparing these results with the findings 1 year later (see Figure 3), several things are worth mentioning: First, although the overall proportion of SHARE respondents who reported to have provided instrumental help to others outside the own household since the outbreak of the COVID-19 pandemic has increased in 2021 (see Figure 1), the reported amount of giving help to someone more

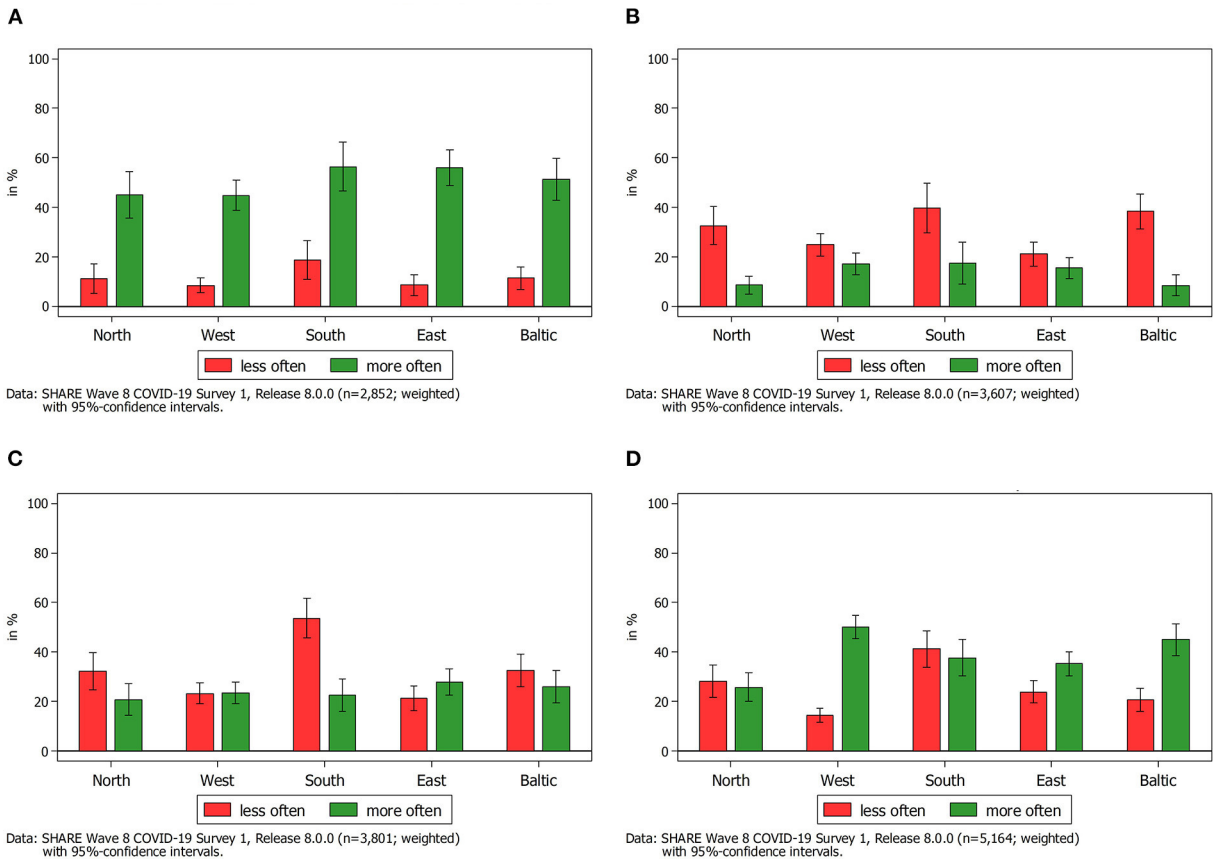

FIGURE 2
Change in frequency of providing help to someone outside the own household since the outbreak of the pandemic in 2020 by type of relationship. **(A)** Help provided to parents outside the household since the outbreak of the pandemic. **(B)** Help provided to children outside the household since the outbreak of the pandemic. **(C)** Help provided to other relatives outside the household since the outbreak of the pandemic. **(D)** Help provided to other non-kin outside the household since the outbreak of the pandemic.

often was smaller as compared to 2020. Second, and even more striking, our findings revealed very different patterns regarding the type of relationship. While increases were rather comparable to decreases in Northern, Western and Southern Europe regarding instrumental help provided to parents, children, relatives and other non-kin, respondents in the Baltic States as well as in Eastern Europe reported a strong increase of providing instrumental help to others compared to the first phase of the pandemic in 2020. A possible explanation for this finding is that the rates of COVID-19 vaccinations were much lower in Eastern European countries and also in the Baltic States as compared to the rest of Europe (Bergmann et al., 2022a) and that at the same time infection rates were relatively high (Hale et al., 2021). Possibly, in those European countries with high vaccination rates the need for instrumental help decreased in general in summer 2021, resulting in a decrease of provided instrumental help.

Determinants of providing instrumental help during the COVID-19 pandemic

Figure 4 graphically presents the coefficients of the respondent- and country-level predictors for the multivariate logistic regression model. The upper (lower) point estimate with 95% confidence intervals around represents the coefficients from the first (second) SHARE Corona Survey. Overall, the determinants explained about 11 (10) percent in the first (second) SHARE Corona Survey (the full models with all parameter estimates can be found in Supplementary Table A2). Substantially, we see that older respondents had a significantly lower probability of providing instrumental help since the outbreak of the pandemic. In addition, lower educated respondents with primary level of education had a significantly lower probability to provide instrumental help. In both cases, the differences between the first and the second SHARE Corona Survey in 2020 and 2021 were rather small and insignificant

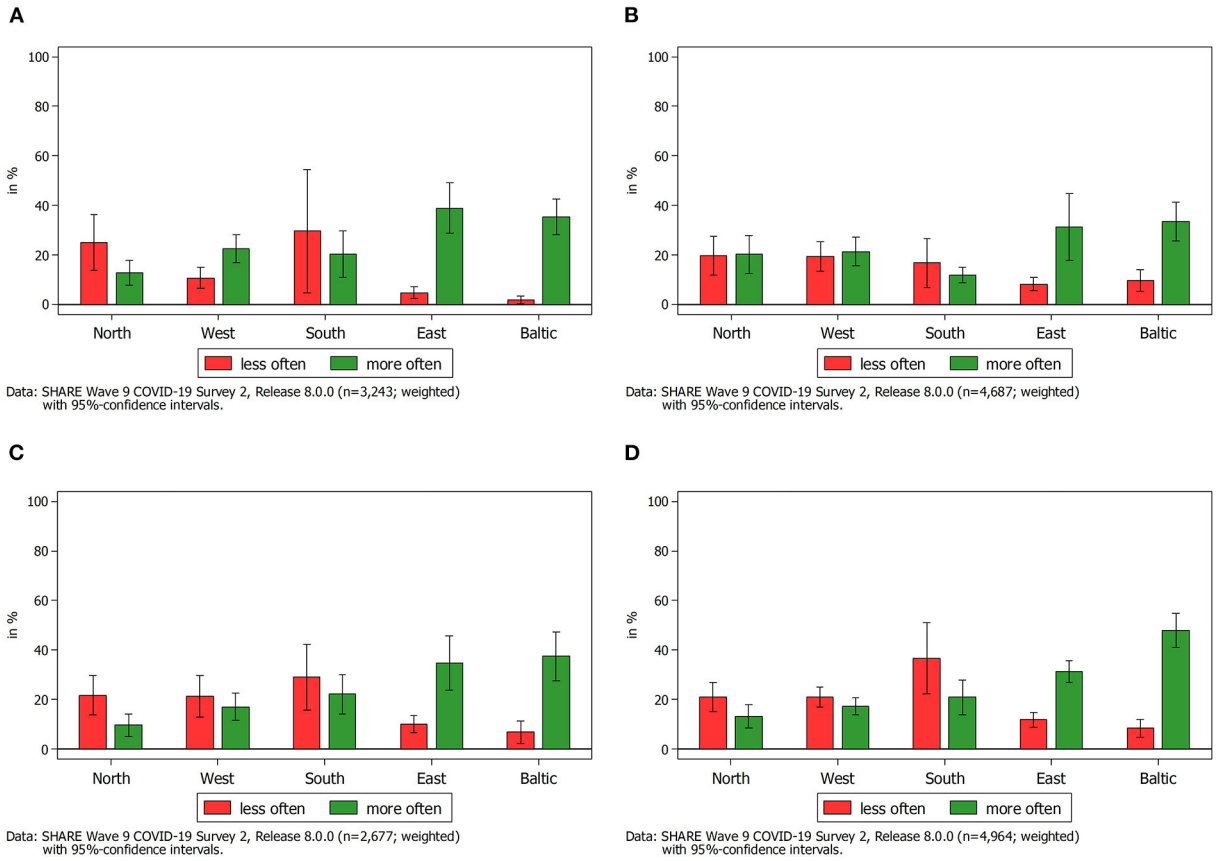

FIGURE 3
Change in frequency of providing help to someone outside the own household compared to the first wave of the pandemic by type of relationship. **(A)** Help provided to parents outside the household compared to the first wave of the pandemic. **(B)** Help provided to children outside the household compared to the first wave of the pandemic. **(C)** Help provided to other relatives outside the household compared to the first wave of the pandemic. **(D)** Help provided to other non-kin outside the household compared to the first wave of the pandemic.

when using a z-test statistic to compare the differences between the coefficients (see last column in Supplementary Table A2). This was also the case for respondents' sex. However, while male respondents (compared to females) had a significantly lower probability of providing instrumental help in the first phase of the pandemic in 2020, this was not the case anymore 1 year later. In 2021, males provided only slightly (and at an insignificant level) less instrumental help to others outside the home than females. Respondents with a migration background provided less instrumental help both in in the first phase of the pandemic as well as 1 year later. However, while in 2021 the association was significant at the 95%-level, in 2020 it was only significant at the 90%-level. With regard to urban-rural differences a similar pattern as for gender was found: Only in the first phase of the pandemic living in an urban area had a significant positive effect on the probability to provide instrumental help. This effect decreased 1 year later in summer 2021, although still significant at the 90%-level. With respect to employment status, it could be seen that employed or self-employed respondents had a significant higher probability to provide instrumental help in the first phase of the pandemic in 2020. This association turned around 1 year later. In the second SHARE Corona Survey in summer 2021, (self-) employed respondents provided less instrumental help, although at an insignificant level. Nonetheless, the difference between the coefficients in 2020 and 2021 was significant. In contrast, respondents' subjective economic situation ("make ends meet") did not exhibit a significant association with providing instrumental help.

Another rather strong effect was found with respect to respondents' self-rated health. Here, a worse physical health was associated with a significant lower probability to provide instrumental help during the course of the pandemic. As expected, affectedness by the coronavirus also played a role in explaining instrumental help: Respondents who knew someone in their social circles who was affected by COVID-19 had a higher probability to provide instrumental help in both 2020 and 2021. In addition, respondents who were directly affected themselves by a COVID-19 infection were found to provide

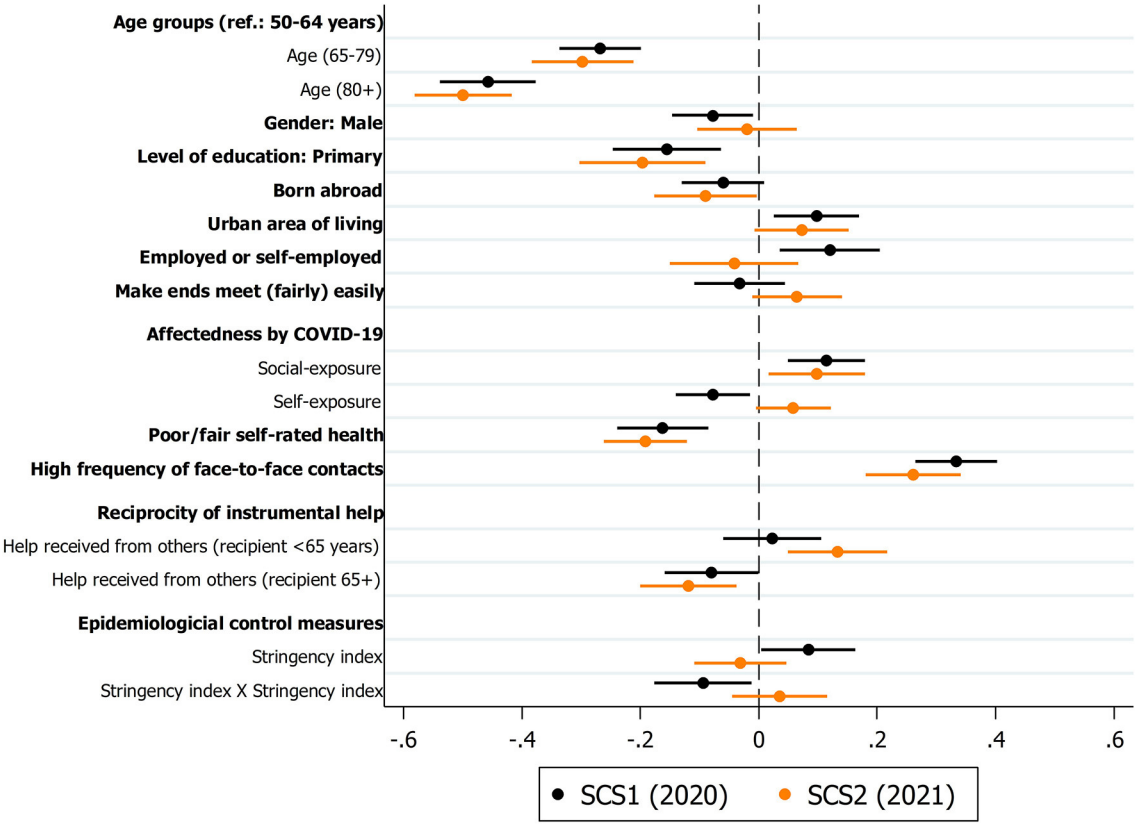

FIGURE 4
Multivariate logistic regression coefficients of respondent and country predictors on providing instrumental help to others. Data: SHARE Wave 8 COVID-19 Survey 1 and SHARE Wave 9 COVID-19 Survey 2, Release 8.0.0 (n = 42,918, respectively; weighted) with 95% confidence intervals.

less help – at least in 2020 and here also significant at the 95%-level. One year later and probably with more security by widespread vaccinations, the negative effect of self-exposure to COVID-19 disappeared completely and even turned positive, also leading to a significant difference between the coefficients in 2020 and 2021.

Regarding frequent contacts, we found a strong and positive correlation with providing instrumental help: Respondents, who reported high in-person contacts, in both surveys provided substantially more help to others since the outbreak of the pandemic. With respect to reciprocal behavior, there was evidence for a changed pattern in the course of the pandemic dependent on the age of the respondents: While a positive correlation between receiving and giving instrumental help was found for younger respondent (<65 years), the opposite was true with regard to older respondents (≥65 years). Interestingly, the positive correlation in the first phase of the pandemic for younger respondents was not statistically significant, indicating that providing help by this group was rather independent from receiving help during that time. This changed during the ongoing pandemic. Further, the found significant negative correlation for older people in 2020 and 2021 indicate that older people are more frequently the receivers (and not the providers) of instrumental help. Finally, there was some evidence that stricter control measures in the first phase of the pandemic were associated with providing more instrumental help, probably as a compensation of reduced formal help and care services. However, the negative correlation of the quadratic operationalization of the stringency index can be interpreted in the sense that very strict measures at the upper bound of the stringency index reduced the provision of help to some extent. This observation disappeared in 2021, meaning that continued control measures did not exhibit a significant effect on the provision of instrumental help anymore.

Discussion

In terms of our hypotheses, the descriptive data analyses largely supported Hypothesis 1a (*a stronger provision of instrumental help can be expected in the beginning of the COVID-19 pandemic by younger cohorts of the older population).* While this assumption seemed to hold for some specific groups of help recipients such as parents and non-relatives, the opposite

was true for other groups of receivers like children and other relatives. In a study conducted by Silverstein et al. (2020) analyzing the so-called "sandwich generation" of older adults with alive parents and children, the authors demonstrated support for the "complementary giving" hypothesis for most European countries, i.e., generations were not competing for resources. Our findings, however, rather support the tendency of "competitive giving" with exhibiting more instrumental help for the older generation that probably was more in need of help–in particular at the beginning of the pandemic. In times of crisis such as the COVID-19 pandemic, the middle generation was faced with restricted access to public resources and formal care and, simultaneously, with competing demands for support from different potential recipients. Consequently, this group had to prioritize support toward those who needed it most: the older generation. This interpretation is also supported by other authors who identified older people due to their particular vulnerability as the main receivers of help in the beginning of the COVID-19 pandemic, while in later phases of the ongoing crisis also younger people have been recognized as addressees of intergenerational solidarity (e.g., Ellerich-Groppe et al., 2020). In this respect, it is interesting to see that the found relative increase of instrumental help between 2020 and 2021 was stronger with regard to older people above 65 years than for younger people between 50 and 64 years. Probably, the latter suffered more from an ongoing or even increasing (double) burden during the pandemic and thus might have had to restrict their support at some point. Nevertheless, further in-depth analyses are needed, considering the complex interplay of intergenerational exchange of different types of instrumental help (involving varying levels of burdens and risks when it comes to personal contact) that might also be subject to change over the individual life cycle.

Against this background and explicitly considering the age of respondents, Hypothesis 1b (*less provision of instrumental help can be expected with the ongoing pandemic especially by younger cohorts of the older population)* was also supported. This change in the course of the COVID-19 pandemic demonstrate the dynamics of the intergenerational solidarity in times of crisis as well as changing patterns and dependencies that have to be carefully considered when drawing conclusions. In this respect, our findings can be seen as a starting point that need to be supplemented by other studies adding further information on younger people below 50 years. However, what should be additionally noted based on our findings is that while in some parts of Europe there was a decrease of instrumental help provided to others 1 year after the start of the pandemic, in other parts (mainly Eastern Europe and the Baltic States) there was, on contrary, an increase. This finding implies that it is not the time period per se that is relevant, but the state of the pandemic development in a given country at a certain point in time. Whereas, the pandemic was reaching another peak in Eastern Europe and the Baltic States in summer 2021 (Hale et al., 2021), there were relatively low infection rates and increasing vaccination rates in most of Western Europe, possibly lowering the need and enthusiasm for social support that was common in Western Europe at the beginning of the COVID-19 pandemic.

Hypothesis 2 (*being older, male, less educated and having a migration background are associated with lower provision of instrumental help during the COVID-19 pandemic, while living in urban areas, having a paid work and a high income are associated with higher provision of instrumental help*) was largely confirmed by our analyses. However, the associations between providing instrumental help on the one side and gender and employment status on the other side became insignificant in summer 2021, which can be interpreted as a slightly decreasing impact of socio-demographic and economic characteristics on instrumental help as well as less need for help in the course of the ongoing pandemic in general. Only respondents' subjective economic situation did not exhibit the expected association, possibly due to a less clear link of subjective assessments with providing instrumental help. Future analyses should therefore focus more on objective measures, such as respondents' (household) income, which could not be included here due to questionnaire differences. The finding that older respondents had a significantly lower probability of providing instrumental help since the outbreak of the pandemic shows once again the age-related dynamics of the pandemic. Overall, our analyses clearly demonstrate the need for a differentiated consideration of a wide range of individual attributes when studying behaviors of older people during the pandemic instead of treating them as a homogeneous group.

Hypothesis 3 (*knowing people exposed to COVID-19 in their own social circles is positively associated with the provision of instrumental help, while being self-exposed to COVID-19 as well as experiencing poor health in general is negatively correlated with the provision of instrumental help during the pandemic*) was also largely supported. Knowing someone infected by COVID-19 was positively associated with providing instrumental help in both survey waves in 2020 and 2021.This finding provides an optimistic view of the development of social cohesion in European countries in the course of pandemic: after more than 1 year of coping with the pandemic and its consequences for individuals as well as society as a whole older Europeans were still willing and able to support those in need. However, it also has to be noted that a worse (physical) health was clearly negatively associated with providing instrumental help to others. While this could be expected, being self-affected by the coronavirus, probably with negative consequences for respondents' own health, also had a negative effect on providing instrumental help to others in the first phase of the pandemic. Interestingly, this association turned around completely 1 year later, possibly due to increased protection against the coronavirus by a prior infection and/or vaccination.

Hypothesis 4 (*having frequent social contacts and being a receiver of instrumental help are associated with a higher*

provision of instrumental help during the COVID-19 pandemic) was only partly confirmed. As expected, a high number of social contacts was clearly associated with a higher probability to provide instrumental help during the pandemic, possibly due to a combination of both a higher awareness of demands for support from others and easier possibilities to help. With regard to reciprocity, the results were not as clear-cut, indicating the importance of carefully considering age-related differences as well as changing conditions over the course of the pandemic. It thus became clear that the observation of a negative correlation between receiving and giving instrumental help was only true for respondents aged 65 years and older. It seems plausible that these respondents receiving help were in a more vulnerable position due to the pandemic and hence were probably not able to provide help to others vice versa. For younger respondents between 50 and 64 years a positive correlation was found, partly supporting previous pre-pandemic research. However, this correlation was much more pronounced in the second SHARE Corona Survey in 2021, again pointing out the very specific situation in the beginning of the pandemic. In this respect, our study can add important insights regarding relevant factors that affect the interplay between receiving and providing help.

Finally, Hypothesis 5 (*more provision of instrumental help during the COVID-19 pandemic in countries with stricter pandemic-related policies and measures*) was partly supported. In the first phase of the pandemic, stricter measures were associated with more provision of instrumental help but only up to a certain degree. Very strict measures at the upper bound of the stringency index again reduced the provision of help to some extent. One year later, the continued control measures did not exhibit a significant effect on the provision of instrumental help anymore. Therefore, the cross-national differences in providing instrumental help by older people in Europe cannot be explained only by the pandemic-related policies and measures. Other macro-factors should be taken into consideration as well. Future research could look, for example, at the role of welfare systems during the pandemic. In this respect, previous pre-pandemic research has demonstrated that country-specific patterns of intergenerational solidarity are associated with welfare systems (e.g., Künemund and Vogel, 2006; Silverstein et al., 2020). It could be assumed that a lower level of social support is the result of well-functioning social policies in a specific country. However, previous pre-pandemic research has demonstrated that efficient social policies and generous welfare services rather encourage provision of informal assistance to family members (Motel-Klingebiel et al., 2005). Whether this holds true in the times of crisis, such as the COVID-19 pandemic, is a question for future research. Further, the support of older family members is seen as mixed responsibility of the family and the state (Daatland and Lowenstein, 2005). Cultural norms including filial obligations could also play a role for the intergenerational exchange during the pandemic. A study by Katz et al. (2003), for example, demonstrates that the differences in preferences for certain patterns of intergenerational solidarity across Europe are larger between countries than between different age groups.

There are several limitations to our analyses. First, SHARE is a representative cross-national survey of respondents aged 50 years and older. Although, a large fraction of the SHARE respondents is still in good health and has a sociable, active life and/or even is part of the working force (the "occupationally active"), it has to be considered that our sample might underrepresent the actual degree of provided instrumental help in Europe. Moreover, the specific age group of our sample has to be considered when drawing generalized conclusions based on our results. Second, we did not include data on the exchange of instrumental help before the pandemic in our study. Further analyses could strongly benefit from such inclusion to get a more comprehensive picture of the development in providing help to others. However, the questions in the regular SHARE waves were not directly comparable to the questions in the SHARE Corona Surveys and we were restricted to focus on data collected exclusively during the pandemic. A further restriction to the data were the lack of measures regarding composition and intensity of provided instrumental help and how these differed with regard to pre-pandemic times. Finally, our study focusses primarily on the supply side of instrumental help and the determinants of providing help as we were primarily interested in better understanding how and to what degree the COVID-19 pandemic and its accompanying epidemiological control measures affected the provision of help to others outside the own household (the help provided in the multigenerational households was not included in the analyses). Further research should also look more closely at the demand side and determinants of receiving help (for example the correlation between health status, living alone and reciprocity of the intergenerational exchange during the pandemic; see, e.g., Bertogg and Koos, 2022 for Germany). Regarding reciprocity, it could be argued that the sequence of receiving and providing help is of relevance. Based on the data in SHARE, it was, however, not possible to distinguish what came first, providing or receiving help, and whether providing instrumental help was a reaction of receiving help or not. Future research should therefore think carefully about study designs that allow disentangling the sequence of receiving and providing help, while simultaneously considering age-group-related dynamics over time.

In our paper, we mainly looked at the provision of instrumental help by older generations from the perspective of intergenerational solidarity. This becomes apparent especially when describing the changing flow patterns to different groups or recipients. Provision of instrumental help can be, however, also seen as a contribution to social cohesion in general. In the section of the paper where we looked at the determinants of provided instrumental help, engaging in "giving behavior" is analyzed in general as a contribution to social cohesion and not as providing help to a specific generation. In terms of

the social cohesion debate, our findings support the optimistic view of an increasing solidarity especially in the beginning of the COVID-19 pandemic. But also 1 year later into the pandemic, the provision of instrumental help by older people was still regular or even increased in the European countries in which the pandemic was reaching a new peak. The exchange of instrumental help is driven by needs and resources as well as by public discourse and social policies. The decrease in providing instrumental help by persons aged 50+ in Western Europe in summer 2021 as compared to summer 2020, can be interpreted as "going back to normal" and less need for this type of informal help due to the pandemic "downtime" and widespread vaccination rather than a general decreasing solidarity in the society. However, to confirm this assumption, further research comparing the pre-pandemic and post-pandemic levels of help provision is needed.

Despite these limitations, our study provides a cross-national overview of how the provision of instrumental help by older generations has changed across Europe in the course of the COVID-19 pandemic and which factors were crucial for the provision of instrumental help during the pandemic with regard to the 50+ population. The findings of our study emphasize the dynamic nature of intergenerational solidarity: the usual patterns of flow are prone to rapid changes in times of crises. The likelihood and ability to provide assistance to others depend on a number of different individual and contextual factors that were analyzed above. The balance of costs, burdens and benefits of intergenerational exchange are being constantly (re)negotiated by involved actors in times of limited resources and restricted possibilities to offer help. Against this background, our findings provide new insights to the growing comparative research literature on intergenerational solidarity during the COVID-19 pandemic.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found at: http://www.share-project.org/data-documentation/share-data-releases.html. All data used in our study are available free of charge to all scientific users world-wide after individual registration (http://www.share-project.org/data-access/user-registration.html). Each wave and each release is assigned a persistent DOI. In our manuscript we use data from SHARE Waves 1, 2, 3, 4, 5, 6, 7, 8 and 9 (DOIs: 10.6103/SHARE.w1.800, 10.6103/SHARE.w2.800, 10.6103/SHARE.w3800, 10.6103/SHARE.w4.800, 10.6103/SHARE.w5.800, 10.6103/SHARE.w6.800, 10.6103/SHARE.w7.800, 10.6103/SHARE.w8.800, 10.6103/SHARE.w8ca.800, 10.6103/SHARE.w9ca.800, 10.6103/SHARE.w8caintd.800, 10.6103/SHARE.w9caintd.800) that are fully available without restrictions.

Ethics statement

The studies involving human participants were reviewed and approved by the Ethics Committee of the University of Mannheim (Waves 1 to 4). Wave 4 of SHARE and the continuation of the project were reviewed and approved by the Ethics Council of the Max Planck Society. For more details please see: http://www.shareproject.org/fileadmin/pdf_documentation/MPG_Ethics_Council_SHARE_overall_approval_29.05.2020__en_.pdf. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fsoc.2022.1007107/full#supplementary-material

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The burdens of poverty during the COVID-19 pandemic

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Background: Individuals living at-risk-of-poverty have an increased risk of poor mental health. The pandemic and its societal impacts might have negative effects especially on this group widening the gap between rich and poor and also exacerbate gender gaps, which in turn might impact social cohesion.

Aim: The objective of this longitudinal study was to determine if people living at-risk-of-poverty were more vulnerable to economic and psychosocial impacts of the pandemic and showed poorer mental health. Moreover, gender differences were analyzed.

Method: We drew data from a sample of $N = 10{,}250$ respondents of two time points (T1 starting from October 2020, T2 starting from March 2021) of the Gutenberg COVID-19 Study. We tested for differences between people living at-risk-of-poverty and more affluent respondents regarding economic impacts, psychosocial stressors, as well as depressiveness, anxiety and loneliness, by comparing mean and distributional differences. To test for significant discrepancy, we opted for chi-square- and *t*-tests.

Results: The analysis sample compromised $N = 8{,}100$ individuals of which 4,2% could be classified as living at-risk-of-poverty. 23% of respondents living at-risk-of-poverty had a decrease in income since the beginning of the pandemic–twice as many as those not living at-risk-of-poverty, who reported more often an increase in income. Less affluent individuals reported a decrease in working hours, while more affluent people reported an increase. Between our survey time points, we found a significant decrease in these economic impacts. Gender differences for economic changes were only found for more affluent women who worked more hours with no change in income. Less affluent respondents were more impacted by psychosocial stressors, depressiveness, anxiety, and loneliness. Gender differences were found particularly with regard to care responsibilities.

Discussion: Our results indicate a widening in the gap between the rich and the poor at the beginning of the pandemic. Gender differences concerning economic changes affect more affluent women, but women in both income

groups are more burdened by care responsibilities, which might indicate a heightened resurgence of gender role in times of crisis. This increase in inequality might have impacted social cohesion.

KEYWORDS

SARS-CoV-2, COVID-19 pandemic, poverty, economic burden, psychological stress

Introduction

Although the coronavirus disease 2019 (COVID-19) pandemic constitutes a health-related crisis, it rapidly became clear that this could also dovetail with a social and economic crisis, particularly for already vulnerable individuals. Poverty is an important risk factor for poor physical and mental health. Even before the COVID-19 pandemic, people with a low income had a higher vulnerability to suffer from chronic diseases and mental health problems (Aue et al., 2016).

As the measures taken by governments around the world to combat the spread of the COVID-19 pandemic changed daily life and work tremendously, numerous jobs were lost and social welfare institutions suspended their help temporarily (Brodeur et al., 2021). The probability to become a person at-risk-of-poverty [60 % of the median net equivalized income of all households in a country (Eurostat, n.d)] grew during this time (Brodeur et al., 2021). However, previous studies mainly focused on social inequity (education, income, areas of living) as risk factor to get infected with the virus. As for mental health impacts during the pandemic, longitudinal studies using samples of the general population found mainly slight increases in depressiveness, anxiety, and loneliness during the pandemic (Peters et al., 2020; Pierce et al., 2020; Kivi et al., 2021; Kwong et al., 2021). Reviews and meta-analyses confirmed small but significant negative effects on mental health symptoms of anxiety and depression (Kunzler et al., 2021; Prati and Mancini, 2021). Effects for loneliness, general distress, negative affect, and suicide risk were not significant (Prati and Mancini, 2021; Ernst et al., 2022). Some studies identified lower socioeconomic status, unemployment, being female, pre-existing mental conditions, chronic diseases, increased exposure to infection, and being younger as risk factors for poor mental health (Daly et al., 2020; Peters et al., 2020; Santabárbara et al., 2020; Breslau et al., 2021; Fancourt et al., 2021; Kunzler et al., 2021; Kwong et al., 2021; Niedzwiedz et al., 2021; Benatov et al., 2022; Bonati et al., 2022; Saeed et al., 2022). Low education or income, female gender, young age, having a long-term medical condition, or a history of mental illness were identified as risk factors for loneliness during the pandemic (Bu et al., 2020; Varga et al., 2021; Jaspal and Breakwell, 2022). Most of those risk factors are also known as potential predictors for poverty, indicating an association between the two pandemic impacts.

Already before the pandemic, associations between inequality or poverty, social cohesion, and mental health have been found. We understand social cohesion to consist of three main dimensions: social relations, identification, and orientation toward a common good (Schiefer and van der Noll, 2017). Kawachi and Kennedy (1997) argued that an increase in income inequality leads to an increase in the concentration of poverty and affluence, which in turn might lead to population health impacts due to deteriorating social cohesion. They stated that this might be because inequality negatively impacts crime rates, economic productivity, and the functioning of a representative democracy and thus society and social cohesion themselves. Furthermore, Fone et al. (2007) provided evidence that poor mental health outcomes were associated with neighborhood income deprivation and low social cohesion, indicating a joint effect. In a later study, Fone et al. (2014) also found evidence for social cohesion acting as a mediator between living in deprived neighborhoods and change in mental health, significantly decreasing the effect of poverty on mental health if social cohesion is heightened. Hong et al. (2014) came to similar results for a Latino community. Furthermore, Chuang et al. (2013) found that respondents who lived in countries with higher social inclusion, social diversity, as well as social capital (which they argued to be aspects of social cohesion) were more likely to demonstrate good general health, with the effect of the social cohesion aspects outweighing even individual-level characteristics.

Scholars highlighted the association of social cohesion and mental health during the pandemic. Kim (2020) suggested that emotional and psychological stress due to uncertainty, not being able to participate in social life, and not being in control in times of a global pandemic might have reduced social cohesion, canceling out its protective nature. Silveira et al. (2022) also found that during the first lockdown the levels of social cohesion, as well as adaptive coping, decreased while psychological vulnerability increased, indicating a higher likelihood of negative mental health impact. Focusing on deprived and marginalized communities, studies also showed that social cohesion within these groups had been negatively impacted during the pandemic (Friedkin, 2004; Fone et al., 2007; Greene et al., 2015; Kim, 2020; Borkowska and Laurence, 2021; Silveira et al., 2022). Therefore, we suggest that growing economic inequality and a negative impact on mental health

might also indicate a decline in social cohesion during the pandemic.

This study examined whether people at-risk-of-poverty were more likely to suffer from negative economic and employment impacts of the pandemic as well as from mental health burdens regarding depressiveness, anxiety, and loneliness. The aim of this paper was to investigate possible differences in depressiveness, anxiety, and loneliness between people living at risk of poverty and those above the threshold for poverty over the span of the pandemic. Potential stressors such as job loss, loss of working hours, and loss of income are considered. We also focused on the interaction with gender differences. Respondents of a large, population-based, prospective, observational single-center cohort study were examined. This paper contributes to the important issue of how the COVID-19 pandemic affects the mental health and social and economic situation of people at-risk- of-poverty and thereby might impact social cohesion in Germany.

The following questions were addressed:

1. Are persons at-risk-of-poverty more vulnerable to
   a. negative economic and employment impacts, and
   b. poor mental health during the COVID-19 pandemic?
2. Are there differences between women and men in less and more affluent individuals?
3. Are there differences between the two survey time points regarding the wealth and mental health gap?

Methods

Study design and sample

We draw our data from the Gutenberg COVID-19 Study (GCS), a population-representative, prospective cohort study. The study sample consists of $N = 8{,}121$ individuals of the Gutenberg Health Study [GHS, (Wild et al., 2012)] and $N = 2{,}129$ newly recruited individuals. The GHS is a large-scale population-based cohort study that focuses on a multitude of diseases, such as cardiovascular diseases, cancer, ophthalmological diseases, metabolic diseases, diseases of the immune system, and mental diseases and aims to improve the individual risk predication for diseases. After the outbreak of SARS-CoV-2, the respondents of the Gutenberg Health Study were invited to participate in the Gutenberg COVID-19 Study. The overall objective of the GCS is to comprehensively and systematically investigate the epidemiology of the COVID-19 pandemic in the population.

The recruitment process of the GHS started in 2007 in the target area of Mainz/Mainz-Bingen by drawing random samples from the resident's registration office. Women and men aged between 35 and 74 were invited to participate. The sample was stratified by gender, age, and place of residence (Mainz/Mainz-Bingen). Individuals who were mentally or physically unable to visit the study center as well as individuals with low proficiency in the German language were excluded from the study. For the GCS, 2129 additional respondents aged 25–44 years were additionally recruited. In total, the GCS cohort includes 10,250 individuals aged 25 to 88 years. In the context of the GCS, two visits at the study center took place, during which a computer-assisted personal interview and sequential sampling of biomaterial were performed. Questionnaires were sent prior to the visit at the study site. The first GCS data collection took place from October 2020 to April 2021 (T1), the second from March 2021 to June 2021 (T2). For the present study, we included respondents with available data at both measurement time points and household incomes. In addition, participants who are currently pursuing education were excluded from this study since it is difficult to compare full-time students with people who are already in the working sector. This left us with a sample of $N = 8{,}100$ individuals.

The requirements of Good Clinical Practice (GCP), Good Epidemiological Practice (GEP), and the ethical standards of the Declaration of Helsinki were considered during the study's design, implementation, and analysis. Furthermore, the Federal Data Protection Act's requirements were implemented. The Ethics Committee of the Rhineland-Palatinate Medical Association, as well as the Data Protection Officer of the Johannes Gutenberg University Hospital Mainz assessed all study-relevant documentation for the Gutenberg Health Study and the Gutenberg COVID-19 Study and gave a positive vote. The data protection commissioner of Rhineland-Palatinate approved the drawing of the sample *via* the citizens' registration offices.

Measures

In order to measure mental health impacts, we used depressiveness, anxiety, loneliness, and psychosocial stress as indicators. For each time point, depressiveness was assessed using the self-administered Patient Health Questionnaire (PHQ-9) depression scale (Löwe et al., 2004). On a 4-point scale (0 = 'not at all' to 3 = 'nearly every day') respondents answered questions regarding their level of interest, eating habits, self-perception, capacity to concentrate and sleep, energy levels, feeling down or depressed, and thoughts of suicide. The items were summed up to create a composite score. Anxiety was measured using the GAD-2 questionnaire (Spitzer et al., 2006; Kroenke et al., 2007), a two-item screening instrument that asks respondents to score how much they have been impacted by uneasiness, anxiety, and the inability to stop or control their worrying on a scale of 0 ('not at all') to 3 ('nearly every day'). The two items were used as a sum score. The three-item loneliness

scale (Hughes et al., 2004), shortened from the 20-item Revised UCLA Loneliness Scale [R-UCLA, (Russell et al., 1980)], was used to measure loneliness. Respondents were asked to rate on a scale ranging from 0 ("never") to 4 ("always") how often they lacked companionship, how often felt like left out, and how often they felt isolated from others. Furthermore, we included the psychosocial stress screening instrument PHQ-Stress (Gräfe et al., 2004). PHQ-Stress was measured by asking respondents to rate how much stressors such as worrying about health and looks, financial strain, and dreams about traumatic experiences has impacted them on a scale from 0 ("not bothered at all") to 2 ("bothered a lot").

We considered gender and being at-risk-of-poverty as main predictors. Being at-risk-of-poverty was estimated using relative poverty defined by the European Union Statistics on Income and Living Conditions [EU-SILC, (Eurostat, n.d)]. According to EU-SILC, a person is at risk of poverty if their net equivalized income is under 60% of the median net equivalized income of all households. Net equivalized income was calculated by dividing the total monthly net income of a household by a weighted household size. The first adult was weighed by a factor of 1,0, every additional household member over the age of 14 years of age was weighed by adding a factor of 0,5, and every child under the age of 14 years of age was weighed by adding a factor of 0,3 to the weighing scale. Since the median in 2019 was at 1,790€, we estimated a net equivalized of under 1,074€ to be the threshold of living at-risk-of-poverty.

Additionally, we inquired about a change in a person's income (no; yes, it has increased; yes, it has decreased; no answer) and about a change in a person's occupation (no; reduction of working hours; increase of working hours; job loss) in order to estimate the economic impact. At T1, respondents were asked about changes since the beginning of the pandemic. At T2, they were asked about changes since the last time they were surveyed. All measurement instruments were collected using a computer-assisted personal interview (CAPI).

Statistical analysis

We first identified respondents who could be classified to live at-risk-of-poverty. We then performed a descriptive analysis to identify sociodemographic differences between people living at-risk-of-poverty and those who do not live at-risk-of-poverty. Secondly, we tested for further differences between the two groups and between the time points regarding economic impacts, psychosocial stressors, as well as depressiveness, anxiety and loneliness, by comparing mean and distributional differences. We opted for chi-square and *t*-tests in order to identify significant differences between the groups. A $p < 0.05$ indicated a significant discrepancy. All analyzing and testing was performed using R (Version 1.3.1093, packages: car, carData, dplyr, psych, sandwich, jtools, lm.beta).

Results

Sample characteristics

Within our sample ($N = 8{,}100$), 342 individuals were classified as individuals living at-risk-of-poverty according to the EU-SILC (see Table 1). In comparison to the rest of the participants, this population was significantly younger (more people between 25 and 34). In addition, less affluent individuals held lower education degrees, were significantly more often unemployed or worked irregularly, were more often single or lived apart from their partner, had more children under the age of 18 living in the same household, and had more frequently a migration background. We found no difference in COVID-infection between the two groups.

Economic impacts

Individual economic and employment changes since the beginning of the COVID-19 pandemic for less and more affluent women and men are shown in Table 2. For changes in income, we found that individuals that were more affluent reported significantly more often no changes or higher income while less affluent persons reported significantly more often less income during the pandemic. This was found for both measurement times. Considering changes in employment, the analysis showed for the first time point (T1) that respondents living at-risk-of-poverty reported more frequently to have had no changes in working hours or worked fewer hours since the start of the pandemic. More affluent respondents, however, reported working more hours than before the pandemic. Only the difference that less affluent individuals reported fewer working hours during the pandemic remained significant at the second measurement point (T2). At T1, less affluent respondents reported significantly more often that they have received either short-time compensation or financial aid. At T2, less affluent respondents reported more often to have started a new job. When we looked at the changes over time, we found that the reported frequencies of respondents earning less income and working less significantly decreased for all respondents (see Appendix 1). Additionally, more affluent respondents stated less frequently that they worked more and had more income since the first survey time point.

When considering the interaction between risk-at-poverty and gender, we found that there were no significant differences in any economic impact between less affluent men and women. Between more affluent men and women, we found significant differences. Women reported to work more hours since the beginning of the pandemic at T1 and T2. At T2, more affluent men reported more often an increased income since the start

TABLE 1 Socio-demographic characteristics of respondents living and not living at-risk-of-poverty.

	Sample ($N = 8,100$) *N* (%)	At-risk-of-poverty ($N = 342$) *N* (%)	Not at-risk-of-poverty ($N = 7.758$) *N* (%)	*p*
Gender				
Male	4,024 (49.7%)	154 (45.0%)	3,870 (49.9%)	0.089
Female	4,076 (50.3%)	188 (55.0%)	3,888 (50.1%)	
Age				
25–34	792 (9.8%)	52 (15.2%)	740 (9.5%)	**0.001**
35–44	1,221 (15.1%)	41 (12.0%)	1,180 (15.2%)	0.120
45–54	1,462 (18.0%)	61 (17.8%)	1,401 (18.1%)	0.974
55–64	1,868 (23.1%)	85 (24.9%)	1,783 (23.0%)	0.460
65–75	1,632 (20.1%)	63 (18.4%)	1,569 (20.2%)	0.456
75+	1,125 (13.9%)	40 (11.7%)	1,085 (14.0%)	0.263
Education				
No/ other degree	19 (0.3%)	3 (1.2%)	16 (0.3%)	**0.039**
Secondary general School	1,571 (23.8%)	109 (41.9%)	1,462 (23.1%)	**0.000**
Secondary School	1,676 (25.4%)	63 (24.2%)	1,613 (25.5%)	0.704
Academic secondary school	3,325 (50.5%)	85 (32.7%)	3,240 (51.2%)	**0.000**
Further education				
No/ other degree	225 (3.4%)	25 (9.6%)	200 (3.2%)	**0.000**
Vocational school	3,647 (55.3%)	181 (69.9%)	3,466 (54.7%)	**0.000**
University degree	2,719 (41.3%)	54 (20.8%)	2,665 (42.1%)	**0.000**
Employment status				
No current occupation	2,535 (33.2%)	127 (40.8%)	2,408 (32.8%)	**0.004**
Irregular	461 (6.0%)	56 (18.0%)	405 (5.5%)	**0.000**
Part-time	1,368 (17.9%)	64 (20.6%)	1,304 (17.8%)	0.236
Fulltime	3,280 (42.9%)	64 (20.6%)	3,216 (43.9%)	**0.000**
Partnership				
Single	1,223 (18.3%)	109 (39.1%)	1,114 (17.4%)	**0.000**
Partnership (living apart)	522 (7.8%)	58 (20.8%)	464 (7.2%)	**0.000**
Partnership (living together)	4,948 (73.9%)	112 (40.1%)	4,836 (75.4%)	**0.000**
Children under 18 in household (yes)	1,913 (23.6%)	85 (24.9%)	1,828 (23.6%)	0.628
Mean number of children under 18 in household	0.42 (0.94)	0.73 (2.12)	0.41 (0.85)	**0.000**
Migration background (yes)	1,703 (21.0%)	93 (27.4%)	1,610 (20.8%)	**0.004**
COVID-infection				
T1	293 (3.6%)	9 (2.6%)	284 (3.7%)	0.399
T2	404 (5.0%)	21 (6.1%)	383 (4.9%)	0.382

We used chi-square tests of independence to test for significant differences between the groups. Significant p-values in bold. T1 = COVID-Infection at survey time point 1. T2 = COVID-Infection at survey time point 2.

of the pandemic while more affluent women reported more frequently no changes in income, but they have started more often a new job. As for changes between the time points, we, again, observed that, less respondents stated that they worked less and had a decreased income. Here, we also found that more affluent respondents, regardless of gender, reported significantly less that they worked more and had a higher income since the beginning of the pandemic.

Psychosocial impacts

Differences in psychosocial stress (PHQ-stress) since the beginning of the COVID-19 pandemic between less and more affluent women and men are shown in Table 3. In general, people living at-risk-of-poverty reported a higher sum score of stress for both time points. On a single item level, financial, social, and traumatic concerns were higher for less affluent

TABLE 2 Changes in income and employment during the COVID-19 pandemic for men and women living and not living at-risk-of-poverty ($N = 8,100$).

At-risk-of-poverty

	T1				T2			
	Sample ($N = 8,100$) M (SD)	At-risk-of-poverty ($N = 342$) M (SD)	Not at-risk-of-poverty ($N = 7,758$) M (SD)	*p*	Sample ($N = 8,100$) M (SD)	At-risk-of-poverty ($N = 342$) M (SD)	Not at-risk-of-poverty ($N = 7,758$) M (SD)	*p*
Change in personal income during pandemic								
No	5,964 (74.7%)	233 (68.7%)	5,731 (75.0%)	**0.012**	6,135 (80.3%)	228 (73.6%)	5,907 (80.7%)	**0.003**
Yes, more	931 (11.7%)	19 (5.6%)	912 (11.9%)	**0.001**	678 (8.9%)	15 (4.8%)	663 (9.0%)	**0.014**
Yes, less	954 (11.9%)	78 (23.0%)	876 (11.5%)	**0.000**	601 (7.9%)	50 (16.1%)	551 (7.5%)	**0.000**
Change in working hours/occupation								
No	1,864 (23.0%)	102 (29.8%)	1,762 (22.7%)	**0.003**	3,484 (43.0%)	131 (38.3%)	3,353 (43.2%)	0.082
Yes, working less	553 (6.8%)	35 (10.2%)	518 (6.7%)	**0.015**	149 (1.8%)	14 (4.1%)	135 (1.7%)	**0.003**
Yes, working more	648 (8.0%)	17 (5.0%)	631 (8.1%)	**0.045**	449 (5.6%)	19 (5.6%)	430 (5.6%)	1.000
Yes, I got a new job	100 (1.2%)	4 (1.2%)	96 (1.2%)	1.000	80 (1.0%)	8 (2.3%)	72 (0.9%)	**0.021**
Yes, I lost my job	23 (0.3%)	3 (0.9%)	20 (0.3%)	0.112	10 (0.1%)	2 (0.6%)	8 (0.1%)	0.090
Yes, I received short-time compensation	123 (1.5%)	11 (3.2%)	112 (1.4%)	**0.016**	58 (0.7%)	1 (0.3%)	57 (0.7%)	0.534
Yes, I received financial aid	17 (0.2%)	3 (0.9%)	14 (0.2%)	**0.031**	8 (0.1%)	1 (0.3%)	7 (0.1%)	0.775

At-risk-of-poverty x gender

	T1						T2					
	Sample ($N = 8,100$) M (SD)	At-risk-of-poverty *Men* ($N = 154$) M (SD)	At-risk-of-poverty *Women* ($N = 188$) M (SD)	*p*	Not at-risk-of-poverty *Men* ($N = 3,870$) M (SD)	Not at-risk-of-poverty *Women* ($N = 3,888$) M (SD)	*p*	Sample $N = 8,100$ M (SD)	At-risk-of-poverty *Men* ($N = 154$) M (SD)	At-risk-of-poverty *Women* ($N = 188$) M (SD)	*p*	Not at-risk-of-poverty *Men* ($N = 3,870$) M (SD)	Not at-risk-of-poverty *Women* ($N = 3,888$) M (SD)	*p*
Change in personal income during pandemic														
No	5,964 (74.7%)	106 (68.8%)	127 (68.7%)	1.000	2,859 (74.8%)	2,872 (75.2%)	0.721	6,135 (80.3%)	106 (76.3%)	122 (71.3%)	0.397	2,914 (79.6%)	2,993 (81.7%)	**0.019**
Yes, more	931 (11.7%)	10 (6.5%)	9 (4.9%)	0.680	476 (12.5%)	436 (11.4%)	0.171	678 (8.9%)	7 (5.0%)	8 (4.7%)	1.000	392 (10.7%)	271 (7.4%)	**0.000**
Yes, less	954 (11.9%)	35 (22.7%)	43 (23.2%)	1.000	441 (11.5%)	435 (11.4%)	0.864	601 (7.9%)	21 (15.1%)	29 (17.0%)	0.775	278 (7.6%)	273 (7.5%)	0.865
Change in working hours/occupation														
No	1,864 (23.0%)	54 (35.1%)	48 (25.5%)	0.072	927 (24.0%)	835 (21.5%)	**0.010**	3,484 (43.0%)	65 (42.2%)	66 (35.1%)	0.218	1,738 (44.9%)	1,615 (41.5%)	**0.003**
Yes, working less	553 (6.8%)	16 (10.4%)	19 (10.1%)	1.000	263 (6.8%)	255 (6.6%)	0.709	149 (1.8%)	6 (3.9%)	8 (4.3%)	1.000	61 (1.6%)	74 (1.9%)	0.310
Yes, working more	648 (8.0%)	4 (2.6%)	13 (6.9%)	0.115	268 (6.9%)	363 (9.3%)	**0.000**	449 (5.6%)	6 (3.9%)	13 (6.9%)	0.329	173 (4.5%)	257 (6.6%)	**0.000**
Yes, I got a new job	100 (1.2%)	1 (0.6%)	3 (1.6%)	0.761	39 (1.0%)	57 (1.5%)	0.085	80 (1.0%)	3 (2.0%)	5 (2.7%)	0.941	26 (0.7%)	46 (1.2%)	**0.026**
Yes, I lost my job	23 (0.3%)	1 (0.6%)	2 (1.1%)	1.000	9 (0.2%)	11 (0.3%)	0.831	10 (0.1%)	1 (0.7%)	1 (0.5%)	1.000	3 (0.0%)	5 (0.1%)	0.728
Yes, I received short-time compensation	123 (1.5%)	4 (2.6%)	7 (3.7%)	0.780	59 (1.5%)	53 (1.4%)	0.617	58 (0.7%)	0 (0.0%)	1 (0.5%)	1.000	30 (0.8%)	27 (0.7%)	0.777
Yes, I received financial aid	17 (0.2%)	0 (0.0%)	3 (1.6%)	0.321	5 (0.1%)	9 (0.2%)	0.427	8 (0.1%)	1 (0.7%)	0 (0.0%)	0.920	4 (0.1%)	3 (0.1%)	0.995

We used chi-square tests of independence to test for significant differences between the groups. Significant p-values in bold. Respondents who chose to not respond to the questions and data that was otherwise missing was excluded from this table, which is why the data of the columns might not add up to 100%.

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TABLE 3 Stressors and burdens of men and women living and not living at-risk-of-poverty ($N = 8,100$).

At-risk-of-poverty

	T1				T2			
	Sample ($N = 8,100$)	**At-risk-of-poverty ($N = 342$)**	**Not at-risk-of-poverty ($N = 7,758$)**		**Sample ($N = 8,100$)**	**At-risk-of-poverty ($N = 342$)**	**Not at-risk-of-poverty ($N = 7,758$)**	
	M (SD)	**M (SD)**	**M (SD)**	***p***	**M (SD)**	**M (SD)**	**M (SD)**	***p***
Sum score PHQ stress	4.01 (3.17)	4.66 (3.47)	3.98 (3.15)	**0.000**	4.23 (3.34)	4.96 (3.58)	4.20 (3.33)	**0.000**
Concern about health	0.71 (0.65)	0.76 (0.70)	0.71 (0.65)	0.147	0.73 (0.67)	0.83 (0.68)	0.73 (0.67)	**0.008**
Concern about weight and looks	0.59 (0.67)	0.66 (0.67)	0.59 (0.67)	0.053	0.70 (0.69)	0.77 (0.71)	0.70 (0.69)	0.073
Low or no sexual desire or pleasure during intercourse	0.49 (0.65)	0.42 (0.62)	0.50 (0.65)	**0.042**	0.55 (0.67)	0.53 (0.66)	0.55 (0.67)	0.540
Problems with spouse or (life) partner	0.38 (0.59)	0.44 (0.65)	0.38 (0.59)	0.075	0.41 (0.61)	0.44 (0.60)	0.41 (0.61)	0.385
Burden of caring for children, parents or other family members	0.45 (0.66)	0.46 (0.65)	0.45 (0.66)	0.804	0.43 (0.65)	0.46 (0.67)	0.43 (0.65)	0.343
Stress at work or in school	0.59 (0.73)	0.54 (0.72)	0.59 (0.73)	0.181	0.58 (0.72)	0.54 (0.72)	0.58 (0.72)	0.293
Financial issues or concerns	0.23 (0.49)	0.66 (0.72)	0.21 (0.47)	**0.000**	0.22 (0.48)	0.65 (0.71)	0.20 (0.46)	**0.000**
Having no one to talk to about issues	0.24 (0.49)	0.34 (0.55)	0.24 (0.48)	**0.000**	0.36 (0.59)	0.47 (0.66)	0.36 (0.59)	**0.001**
Something bad that happened recently	0.26 (0.57)	0.36 (0.65)	0.26 (0.56)	**0.002**	0.26 (0.57)	0.32 (0.61)	0.26 (0.57)	0.055
Thoughts or dreams about bad events[a]	0.23 (0.50)	0.34 (0.61)	0.22 (0.50)	**0.000**	0.21 (0.48)	0.33 (0.57)	0.20 (0.48)	**0.000**

At-risk-of-poverty x gender

	T1						T2					
	Sample	**At-risk-of-poverty**			**Not at-risk-of-poverty**		**Sample**	**At-risk-of-poverty**			**Not at-risk-of-poverty**	
	($N = 8,100$)	***Men*** **($N = 154$)**	***Women*** **($N = 188$)**		***Men*** **($N = 3,870$)**	***Women*** **($N = 3,888$)**		***Men*** **($N = 154$)**	***Women*** **($N = 188$)**		***Men*** **($N = 3,870$)**	***Women*** **($N = 3,888$)**
	M (SD)	**M (SD)**	**M (SD)**	***p***	**M (SD)**	**M (SD)**	***p***	**M (SD)**	**M (SD)**	**M (SD)**	***p***	**M (SD)**	**M (SD)**	***p***
Sum score PHQ stress	4.01 (3.17)	4.27 (3.54)	4.98 (3.40)	0.061	3.59 (2.96)	4.37 (3.29)	**0.000**	4.23 (3.34)	4.58 (3.47)	5.27 (3.64)	0.077	3.70 (3.17)	4.69 (3.40)	**0.000**
Concern about health	0.71 (0.65)	0.71 (0.69)	0.80 (0.71)	0.247	0.65 (0.63)	0.77 (0.66)	**0.000**	0.73 (0.67)	0.81 (0.70)	0.84 (0.66)	0.736	0.66 (0.65)	0.80 (0.68)	**0.000**
Concern about weight and looks	0.59 (0.67)	0.51 (0.63)	0.79 (0.68)	**0.000**	0.49 (0.62)	0.70 (0.70)	**0.000**	0.70 (0.69)	0.64 (0.69)	0.87 (0.71)	**0.003**	0.57 (0.64)	0.83 (0.71)	**0.000**
Low or no sexual desire or pleasure during intercourse	0.49 (0.65)	0.50 (0.64)	0.35 (0.59)	**0.030**	0.49 (0.64)	0.51 (0.66)	0.093	0.55 (0.67)	0.56 (0.66)	0.49 (0.66)	0.368	0.53 (0.66)	0.57 (0.68)	**0.004**
Problems with spouse or (life) partner	0.38 (0.59)	0.44 (0.65)	0.44 (0.65)	0.925	0.36 (0.57)	0.40 (0.61)	**0.004**	0.41 (0.61)	0.40 (0.58)	0.48 (0.62)	0.240	0.38 (0.59)	0.44 (0.63)	**0.000**
Burden of caring for children, parents or other family members	0.45 (0.66)	0.40 (0.65)	0.51 (0.65)	0.160	0.39 (0.61)	0.52 (0.70)	**0.000**	0.43 (0.65)	0.37 (0.61)	0.55 (0.71)	**0.017**	0.36 (0.60)	0.50 (0.70)	**0.000**
Stress at work or in school	0.59 (0.73)	0.42 (0.65)	0.62 (0.76)	**0.017**	0.54 (0.69)	0.65 (0.76)	**0.000**	0.58 (0.72)	0.47 (0.69)	0.59 (0.75)	0.164	0.52 (0.69)	0.65 (0.75)	**0.000**
Financial issues or concerns	0.23 (0.49)	0.59 (0.69)	0.72 (0.74)	0.121	0.20 (0.46)	0.22 (0.48)	0.090	0.22 (0.48)	0.56 (0.64)	0.73 (0.75)	**0.026**	0.20 (0.45)	0.21 (0.47)	0.150
Having no one to talk to about issues	0.24 (0.49)	0.32 (0.52)	0.36 (0.57)	0.513	0.23 (0.47)	0.25 (0.50)	0.079	0.36 (0.59)	0.42 (0.63)	0.51 (0.68)	0.260	0.30 (0.54)	0.41 (0.63)	**0.000**
Something bad that happened recently	0.26 (0.57)	0.33 (0.61)	0.37 (0.68)	0.589	0.21 (0.51)	0.30 (0.61)	**0.000**	0.26 (0.57)	0.32 (0.61)	0.32 (0.62)	0.967	0.21 (0.51)	0.30 (0.62)	**0.000**
Thoughts or dreams about bad events[a]	0.23 (0.50)	0.37 (0.64)	0.31 (0.58)	0.333	0.17 (0.44)	0.27 (0.54)	**0.000**	0.21 (0.48)	0.27 (0.50)	0.38 (0.62)	0.088	0.17 (0.44)	0.23 (0.51)	**0.000**

We used t-tests to test for significant differences between the groups. Significant p-values in bold. [a] "Thoughts or dreams about bad events from the past, e.g., the destruction of one's own home, physical violence or a sexual act under duress."

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individuals for both time points. The only stressor that was more common amongst the more affluent respondents was a low or non-existing sexual desire at T1. Interestingly, at T1, less affluent individuals reported significantly more worrying about something bad that had happened recently, but this difference was no longer significant at T2. However, at T2, less affluent individuals reported significantly more worries about their health. When looking at significant differences between the time points, we found that while more affluent respondents reported significant increases in most items, less affluent respondents only reported increases for concerns for weight and looks as well as for lower libido and having no one to talk to (see Appendix 2).

When also considering gender, significant differences were found regarding men and women living at-risk-of-poverty at T1 with women reporting more concerns about weight and looks and more stress at work. Men reported more concerns about low sexual desire. At T2, less affluent women reported more concerns about weight and looks, the burden of caring for children, parents or other family members, and their financial situation. Amongst the more affluent respondents at T1, we found that women reported to be more bothered by almost all psychosocial stressors, except for low sexual desire, financial concerns and having no one to talk to. At the second time point, all stressors were reported as more bothersome by more affluent women compared to more affluent men, with the sole exception of financial concerns. Looking at the differences between the time points, we observed that both genders of the less affluent groups reported increases in concern about weight and looks as well as having no one to talk to, with less affluent men also reporting an increase in lower sexual desire compared to the previous time point. For more affluent men we found significant increases for concern abought weight and looks, sexual desire, problems with their partner and not having anyone to talk to and significant decreases for care burden. More affluent women reported significant increases in almost all items except care burden, worrying about financial issues and the trauma items.

Depressiveness, anxiety, and loneliness

Table 4 shows the differences in depressiveness, anxiety, and loneliness between the time points for more and less affluent men and women. We observed significant group differences between less and more affluent respondents for all outcomes at both time points with less affluent respondents reporting significantly higher scores. When tested for changes between the two time points, we found that less affluent respondents reported a significant decrease in depressiveness, no significant change in anxiety, and a significant increase in loneliness. Respondents that were more affluent did not demonstrate any significant changes between the time points for depressiveness and anxiety, but a significant increase in loneliness.

When taking the interaction of living-at-risk-of-poverty and gender into account, less affluent women only reported significantly higher scores in depressiveness at T1 than less affluent men, while more affluent women reported significantly higher scores in depressiveness, anxiety, and loneliness at both time points compared to more affluent men. Additionally, only more affluent men underwent a significant decrease in depressiveness between the time points. For loneliness, all groups reported significantly higher scores at the second time point, except for women living at-risk-of-poverty.

Discussion

In this study, we found that respondents living at-risk-of-poverty were not only more likely to experience negative changes in their income and work situation, but also reported significantly higher scores for psychosocial stress, depressiveness, anxiety, and loneliness. At the beginning of the pandemic, they more often received financial compensation than more affluent individuals. Regardless of income, women were found to be more burdened than men. For less affluent individuals, women reported more financial concerns and burdens of caring for children and significant others than men. For more affluent individuals, women reported more negative economic and employment changes during the pandemic, more concerns about numerous psychosocial stress factors, and higher symptom burden in depressiveness, anxiety, and loneliness than men. These results might imply an increase in wealth and gender inequality, which, in turn, might indicate a decline in social cohesion at the beginning of the pandemic. We also found that, between the time points, both the economic impacts as well as the mental health impacts seemed to have declines, implying an incline of social cohesion.

Economic impact

We observed that less affluent respondents reported significantly more often a reduced income and less working hours since the start of the pandemic while more affluent respondents either did not have any change in income or had an increase both in income and in working hours. Prior studies had similar findings, with Adams-Prassl et al. (2020) concluding that the reduction of working hours or even job loss was more prevalent amongst temporary workers and low-skilled workers which are generally part of the poorest population group. Martinez-Bravo and Sanz (2021) also reported a large discrepancy between the richest and the poorest quintile: The income of the poorest decreased much more than the income of the richest. Additionally, Findling et al. (2021) found that low-

TABLE 4 Depressiveness, anxiety, and loneliness of men and women living and not living at-risk-of-poverty ($N = 8{,}100$).

	T1			T2		
	At-risk-of-poverty ($N = 342$)	Not at-risk-of-poverty ($N = 7{,}758$)		At-risk-of-poverty ($N = 342$)	Not at-risk-of-poverty ($N = 7{,}758$)	
	M (SD)	M (SD)	*p*	M (SD)	M (SD)	*p*
Depressiveness	5.14 (4.45)	4.31 (3.84)	**0.000**	5.04 (4.77)	4.23 (3.94)	**0.000**
Anxiety	0.94 (1.25)	0.74 (1.06)	**0.000**	1.01 (1.28)	0.74 (1.10)	**0.000**
Loneliness	3.91 (2.71)	3.57 (2.43)	**0.012**	4.27 (2.76)	3.92 (2.55)	**0.014**

	Respondents at-risk-of-poverty over time			Respondents not at-risk-of-poverty over time		
	T1	T2		T1	T2	
	M (SD)	M (SD)	*p*	M (SD)	M (SD)	*p*
Depressiveness	5.14 (4.45)	5.04 (4.77)	**0.007**	4.31 (3.84)	4.23 (3.94)	0.580
Anxiety	0.94 (1.25)	1.01 (1.28)	0.922	0.74 (1.06)	0.74 (1.10)	0.564
Loneliness	3.91 (2.71)	4.27 (2.76)	**0.000**	3.57 (2.43)	3.92 (2.55)	**0.008**

	Respondents at-risk-of-poverty						Respondents not at-risk-of-poverty					
	T1			T2			T1			T2		
	Men ($N = 154$)	Women ($N = 188$)		Men ($N = 154$)	Women ($N = 188$)		Men ($N = 3{,}870$)	Women ($N = 3{,}888$)		Men ($N = 3{,}870$)	Women ($N = 3{,}888$)	
	M (SD)	M (SD)	*p*	M (SD)	M (SD)	*p*	M (SD)	M (SD)	*p*	M (SD)	M (SD)	*p*
Depressiveness	4.47 (4.10)	5.69 (4.66)	**0.012**	4.58 (4.13)	5.42 (5.22)	0.104	3.68 (3.55)	4.94 (4.00)	**0.000**	3.56 (3.70)	4.89 (4.05)	**0.000**
Anxiety	0.88 (1.22)	1.04 (1.28)	0.242	0.94 (1.16)	1.06 (1.38)	0.403	0.57 (0.95)	0.90 (1.13)	**0.000**	0.57 (0.96)	0.91 (1.19)	**0.000**
Loneliness	3.64 (3.86)	4.12 (2.81)	0.103	4.12 (2.67)	4.39 (2.83)	0.368	3.27 (2.30)	3.86 (2.52)	**0.000**	3.60 (2.38)	4.25 (2.66)	**0.000**

	Respondents at-risk-of-poverty						Respondents not at-risk-of-poverty					
	T1	T2		T1	T2		T1	T2		T1	T2	
	M (SD)	M (SD)	*p*	M (SD)	M (SD)	*p*	M (SD)	M (SD)	*p*	M (SD)	M (SD)	*p*
Depressiveness	4.47 (4.10)	4.58 (4.13)	0.682	5.69 (4.66)	5.42 (5.22)	0.306	3.68 (3.55)	3.56 (3.70)	**0.005**	4.94 (4.00)	4.89 (4.05)	0.245
Anxiety	0.88 (1.22)	0.94 (1.16)	0.525	1.04 (1.28)	1.06 (1.38)	0.844	0.57 (0.95)	0.57 (0.96)	0.540	0.90 (1.13)	0.91 (1.19)	0.540
Loneliness	3.64 (3.86)	4.12 (2.67)	**0.027**	4.12 (2.81)	4.39 (2.83)	0.131	3.27 (2.30)	3.60 (2.38)	**0.000**	3.86 (2.52)	4.25 (2.66)	**0.000**

We used t-tests to test for significant differences between the groups. Significant p-values in bold.

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to moderate income households suffered and continue to suffer the most financially under the pandemic. Households who had savings before the pandemic reported to have lost those. This might indicate a widening of the wealth gap. In addition to this, our analysis showed that less affluent individuals got more likely financial support only at the beginning of the pandemic and were more likely to start a new job at the four-month follow-up. This might be due to loss of income in the current employment and the wish or need to work full-time without reduced working hours or income. The same was true for more affluent women reporting more often to have started a new job at T2. Probably, they were also unsatisfied with their current work situation as they worked more without increases in income. When testing for significant differences between the time points, we also found a decrease in less affluent respondents reporting to work and earn less. We also observed a decrease in more affluent respondents working and earning more. This might indicate a slow closure of the wealth gap to pre-pandemic levels.

Interestingly we found no significant discrepancies in economic impacts between men and women living at-risk-of-poverty. However, amongst more affluent respondents, we found a gender gap with more affluent women working more hours but more affluent men earning more money. These results contradict the findings of previous studies: Women, in general but in particular mothers, were found to either work less than men or to have lost their jobs during the pandemic due to childcare responsibilities, especially during the beginning of the pandemic (Carli, 2020; Alon et al., 2021; Collins et al., 2021; Hipp and Bünning, 2021; Reichelt et al., 2021). A possible explanation for this result might be that the women in our sample were more likely to work in secure occupations that were also more compatible with childcare (e.g., home office), or that they had a social network helping with childcare. The fact that more affluent men more often reported an increase in income might indicate a widening of the gender gap. Other studies found that women had a larger decrease in income than men. They were also reported to recover much slower financially than men, which might be due to care work responsibilities at home (Martinez-Bravo and Sanz, 2021).

Psychosocial impact

We found that people living at-risk-of-poverty were generally more affected by psychosocial burdens. For less affluent people, financial, social, and traumatic concerns were of particular interest. This result was to be expected as there is growing literature on children growing up in poverty having a higher risk of being exposed to severe stressors and multiple traumatic events such as witnessing violent events, food insecurity, or maternal depression, which are additionally heightened by the dangerous living environments of urban poverty (Kiser et al., 2008; Briggs-Gowan et al., 2010; Collins et al., 2010). The heightened financial concern amongst less affluent respondents might be due to a lack of financial buffers and resources as well as the inability to cut costs in order to save up money in financially stressful times, which were found predominantly among low-income people (Gennetian and Shafir, 2015). Factors associated with urban poverty have been shown to also be associated with higher risk of family dysfunction and impacted interpersonal relationships, which might explain why less affluent respondents reported significantly more to be burdened by social concerns (Collins et al., 2010). Poverty-related stress has been reported to impact interpersonal relationships in the family (Grant et al., 2003; Conger and Donnellan, 2007). Moreover, these social concerns might also be related to the type of jobs less affluent people usually work: People working in supermarkets experienced a whole new type of stress since they were suddenly considered an "essential" worker, which might have left them with a burden of responsibility and societal stress.

Additionally, they were constantly exposed to a heightened risk of infection. Interestingly, less affluent individuals reported more health concerns at T2, suggesting a greater focus on the pandemic and its health effects with a time lag. Only at T1 did less affluent persons report that something bad happened recently which might be due to loss of income or working hours which was not significant at T2 anymore. Studies during the pandemic found that parents and their adolescent children suffered from a significant increase in psychosocial stress, which was even significantly higher amongst mothers, possibly due to care responsibilities and a generally higher vulnerability to stress disorders (Connor et al., 2020; Paschke et al., 2021). This might also explain why, in our study, less affluent women reported more frequently concerns about caring for children, parents, or other family members, as well as about financial issues at T2.

More affluent women reported more concerns than affluent men in almost all psychosocial stress factors, only did they not report financial worries. Interestingly, while all respondents demonstrated an increase in having no one to talk to during the pandemic, only more affluent women reported significantly more to be burdened with having no one to talk to at T2 compared to their male counterparts. This might indicate the impacts of contact reduction due to social distancing and pandemic measures which might have led to more loneliness. Previous studies showed that working women in particular reported significantly more often to be burdened by multiple co-existing strains such as strains within their occupation, strains in caregiving, but also household chore strains (Kramer and Kipnis, 1995) and are more affected by psychiatric morbidity because of caregiving (Covinsky et al., 2003). The COVID-19 pandemic seems to have reinforced these gender roles after the closure of schools and nurseries, which might have led to an increase in stress among women who are trying to incorporate these role traits into their self-identity (Connor et al., 2020).

Families had to take care of their children while also continuing to work. This care work, however, was largely the responsibility of women (Power, 2020).

Depressiveness, anxiety, and loneliness

We found that less affluent people, who were more affected by the abovementioned stressors, were also generally more affected by depressiveness, anxiety, and loneliness at both time points. Even before the outbreak of COVID-19, members of low-income families experienced a wide array of stressors such as crowding, noise, family turmoil, and early childhood separation, which resulted in psychological distress, impacted well-being, a self-regulation deficit, and maladaptive coping strategies (Evans and English, 2002; Grant et al., 2003; Conger and Donnellan, 2007). Additionally, studies performed during the COVID-19 pandemic highlighted a vicious circle of poverty: Stressors associated with poverty, such as food insecurity and limited access to mental health services, were found to be exacerbated by the stress resulting from the COVID-19 pandemic (Gabrielli and Lund, 2020). Also, multiple studies have identified low income to be a major risk factor for poor mental health outcomes during the pandemic (Daly et al., 2020; Peters et al., 2020; Santabárbara et al., 2020; Breslau et al., 2021; Fancourt et al., 2021; Kunzler et al., 2021; Niedzwiedz et al., 2021; Benatov et al., 2022; Bonati et al., 2022; Ernst et al., 2022). Although we found a significant decrease in depressiveness between time points among less affluent respondents, the symptom burden generally remained higher than among more affluent individuals. Additionally, more affluent men showed a significant decrease in depressiveness. Previous longitudinal research, too, has reported slight increases at the beginning of the pandemic and decreases in the course of the pandemic for anxiety and depression symptoms (Peters et al., 2020; Kivi et al., 2021; Kunzler et al., 2021; Prati and Mancini, 2021). Therefore, it is unsurprising that we found decreases in depressiveness.

We also observed significant increases in loneliness for both less and more affluent respondents over time. This might be associated with the significant increase in all respondents reporting to not having anyone to talk to. When additionally testing for gender differences, we found that all groups with the exception of women living at-risk-of-poverty reported significantly increased levels of loneliness over time. Previous research showed that loneliness was an important health factor that increased significantly during the pandemic, especially among females and people of low income (Bu et al., 2020; Varga et al., 2021; Jaspal and Breakwell, 2022). The insignificant increase in our study for less affluent women might be due to this group's low number of cases.

Implications for social cohesion

When we put these results into the framework of social cohesion, we suggest that the widening of the wealth gap and the gender gap indicate a decline in social cohesion (Kawachi and Kennedy, 1997). Additionally, as Wilkinson and Pickett (2010) argued, due to the rises in inequality, a person's status becomes an increasingly important factor of one's identity, which in turn increases status competition, social evaluation, and status anxiety. People further down the social ladder become more disadvantaged in regards to this status competition since they gathered fewer material and immaterial resources such as high income, good jobs, houses, cars, as well as social connections, which might increase their social standing. To prove this theory, the author's presented evidence from WHO data that linked anxiety to inequality. As mentioned, we were able to find a rise in inequality as well as significantly higher symptom burdens amongst less affluent respondents, which appears to confirm Wilkinson and Pickett's results.

Between the two time points, however, we found a significant decrease in less affluent respondents that stated to working less and having a reduced income. This might indicate the beginning of a decrease in the wealth gap to pre-pandemic levels and imply that social cohesion also increased back to pre-pandemic levels, while inequality decreased. To add to that, while we found initially heightened scores for depression and anxiety, we found either no significant changes or even a decline over the course of our study. This might indicate that, because social cohesion possesses a protective quality for mental health, it might have increased between the two time points (Friedkin, 2004; Fone et al., 2007; Greene et al., 2015; Borkowska and Laurence, 2021). This corroborates the findings by Silveira et al. (2022) as well as Borkowska and Laurence (2021) who found that the levels of social cohesion declined during lockdown (end of 2020), but increased after governmental measures were lifted (beginning of 2021).

Because of these results, we suggest a further reduction of the income disparities between less and more affluent people by the means government issued financial aid as well as a strengthening of social cohesion in deprived neighborhoods in order to address mental health impacts following the pandemic.

Limitations

The most important limitation is the small number of cases per group, so the effects described are probably rather small. The 4.2% proportion of people living at-risk-of-poverty within our sample is an underrepresentation of the actual percentage amongst the German population [18.7% in 2018, (Statista, 2022)]. Though is must be noted that the Federal Statistical Office took respondents of all ages into account while our sample was only compromised of individuals aged 25 to 88.

Nevertheless, those respondents within our sample that can be categorized as living at-risk-of-poverty match the characteristics found within the German population: they were mostly younger people (aged 18–24, in our sample 25–34), people living alone, working part-time, irregularly or were unemployed, as well as people with a low to moderate level of education, with a migration background and individuals who were single parents that live on the threshold of poverty (Statistisches Bundesamt, 2021). Additionally, the two survey time points might have been too close in time to one another, which might have influenced some results and rendered some otherwise significant factors insignificant. Finally, though a large body of research suggested that poverty and inequality in general have an impact on social cohesion, the direction of the causality might also be the other way around. A low social cohesion might increase inequality due to lack of trust, mutual tolerance, and discrimination, which can manifest itself in the absence of or discrimination in the distribution of governmental aid, such as welfare and subvention programs. Consequently, more longitudinal research needs to be done concerning the causal association between social cohesion, mental health, and poverty.

Data availability statement

The datasets presented in this article are not readily available because the datasets presented in this article are not allowed to be publicly shared according to regulations for data protection (EU General Data Protection Regulations). The data used during the current study are exclusively available at the local database. Requests to access the datasets should be directed to PW, Philipp.Wild@unimedizin-mainz.de.

Ethics statement

The studies involving human participants were reviewed and approved by the Ethics Committee of the Rhineland-Palatinate Medical Association as well as the Data Protection Officer of the Johannes Gutenberg University Hospital Mainz. The patients/participants provided their written informed consent to participate in this study.

Author contributions

JP: idea, statistical analysis, and manuscript. NH: manuscript and critical feedback. RB, PW, NP, TM, JK, KL, and MB: study design and critical feedback. All authors contributed to the article and approved the submitted version.

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Conflict of interest

This paper is part of the author JP's cumulative PhD.

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fsoc.2022.995318/full#supplementary-material

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The change in children's subjective relational social cohesion with family and friends during the COVID-19 pandemic: A multinational analysis

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As a response to the COVID-19 pandemic, social-distancing measures have been implemented worldwide, including school closures. Previous studies indicated that children's relational social cohesion with family (RSC-Fa) and friends (RSC-Fr) may have decreased during the pandemic, but some children described that positive experiences were gained from the confinement measures of social distancing. Mostly, these studies are qualitative or capture a single country and have an exploratory character. Using data collected in 2021 of more than 20,000 children primarily aged 9–13 years as part of the International Children's Worlds COVID-19 Supplement Survey from 18 countries (Germany, Turkey, Bangladesh, Italy, Albania, Romania, Chile, Wales, Taiwan, Belgium, Algeria, Israel, Russia, South Korea, Indonesia, Estonia, Finland, and Spain), this study aimed to examine how the COVID-19 pandemic has affected children's RSC-Fa and RSC-Fr and explore the role of relational factors. RSC-Fa and RSC-Fr are measured through satisfaction in relationships with family members and friends before and during the COVID-19 pandemic, respectively. We employed descriptive statistics, cluster analysis, and multinomial logistic regression analysis. Our analyses confirmed the decrease in RSC-Fa and RSC-Fr, with a noticeably bigger decrease in RSC-Fr. Five profiles of change in RSC emerged: (1) gainers in both RSC; (2) gainers in RSC-Fa and decliners in RSC-Fr; (3) no change in either RSC; (4) decliners in RSC-Fa and gainers in RSC-Fr; and (5) decliners in both RSC. The quantity and quality of children's relationships differ by their profiles of change in RSC. For example, it was significantly more likely that "decliners in both RSC" had to be at home all day because of COVID-19 than "gainers in both RSC" or "no changers." Mainly, the quantity of relationship factors, and among different quality factors, only autonomy perceptions, help to explain the children belonging to the "gainers in both RSC" profile compared to the "no changers." Meanwhile, almost all the quantity and quality of relationships factors help to explain children's belonging to the "decliners in both RSC" profile compared to "no changers." In conclusion, our study confirmed the importance of keeping schools open to protect the RSC of children.

KEYWORDS

relational social cohesion, social distancing, COVID-19 pandemic, quantity of relationships, quality of relationships, change profile

Introduction

Children are active agents who construct their own cultures and contribute to the production of the adult world (Corsaro, 2011). As agents, they "do things" with other people (Mayall, 2002), being self-determined and autonomous (Frønes, 2016). Thus, children need to be socially related (inter)generationally to be socially coherent. However, as a response to the COVID-19 pandemic, most countries in the world implemented social-distancing measures and ordered the lockdown of all residents, including school closures affecting more than 500 million students worldwide (Agarwal and Sunitha, 2020), to slow the rate of transmission, ease the pressure on the healthcare system, and protect at-risk populations (Armitage and Nellums, 2020). In some countries, children could leave home for sports or walks with their parents or guardians, while in other countries, these activities were prohibited (Garcia, 2020). For example, in the spring of 2020, Spain was the only European country where children were not allowed to leave their homes (Granda, 2020; Grechyna, 2020). The social-distancing measures affected children's social contact and changed their relational patterns, putting relational social cohesion—the quality and quantity of relationships—to test both inside and outside of the family group. Disconnection from social contacts curbs social development, including the social competencies of children. This may cause the deterioration of mental health revealed in many studies on pandemic outcomes (Fegert et al., 2020; Chaabane et al., 2021; Gadermann et al., 2021; O'Sullivan et al., 2021). According to a review by Loades et al. (2020), the pandemic increased children's mental health problems, especially related to loneliness and social isolation, a conclusion that highlights the importance of protecting relational social cohesion during periods of social distancing.

Social-distancing measures, including school closures, may have had different effects on children's relational social cohesion (inter)generationally, i.e., with family and friends. Measures limited in-person contact with friends and extended family while increasing it with immediate family (Chaabane et al., 2021; Kutsar and Kurvet-Käosaar, 2021; Shah et al., 2021). Online tools have been increasingly used to compensate for the lack of in-person interactions with friends and extended family. However, there is some evidence from South Korea (Choi et al., 2021) and Switzerland (Stoecklin et al., 2021) that the quality of relationships with friends decreased as an outcome of the confinement measures, while school and workplace closures meant that family members spent more time together in greater proximity, resulting in shared social isolation, anxiety, stress, and conflict (Biroli et al., 2020; Lebow, 2020). Still, sharing new circumstances could also lead to increased closeness between family members, especially in cases of high pre-pandemic intra-familial closeness (Mariani et al., 2020) or due to new shared activities (Salin et al., 2020; Kutsar and Kurvet-Käosaar, 2021; Stoecklin et al., 2021).

Previously, the effect of the COVID-19 pandemic on children's relationships with their friends and family has been explored in a single country, e.g., in South Korea (Choi et al., 2021), Germany (Vogel et al., 2021), Finland (Salin et al., 2020), Spain (Mondragon et al., 2021), and Estonia (Kutsar and Kurvet-Käosaar, 2021). There are also some multinational qualitative studies (e.g., Shah et al., 2021; Stoecklin et al., 2021). Stoecklin et al. (2021) examined children's experience of the lockdown in relation to their family life and contacts with friends in Switzerland, Canada, and Estonia. Shah et al. (2021), in their longitudinal ethnographic action research, focused on children aged 14–18 years and how their agency shaped family dynamics during the COVID-19 pandemic in Italy, Lebanon, Singapore, and the United Kingdom. However, there is no evidence that the decrease in children's relational social cohesion during the COVID-19 pandemic is a common feature across countries.

Thus, it is likely that, among children, different profiles of change in relational social cohesion with family and friends emerged, e.g., for some children, their relational social cohesion with friends decreased, while with their family, it increased, but for some other children, the decrease was evident with both family and friends. In the present study, we focused on relational social cohesion and used data collected in 2021 from more than 20,000 children primarily aged 9–13 years from 18 countries across the globe as the part of International Children's Worlds COVID-19 Supplement Survey. The aim was to examine how the COVID-19 pandemic has affected children's relational social cohesion with family and friends from their perspectives. To our knowledge, this is the first such quantitative study based on such a large-scale and multinational sample.

In this study, we first provide an overview of the construct of social cohesion and previous evidence on children's relational social cohesion with friends and family during the COVID-19 pandemic. We conclude this by describing gaps in previous studies and introducing our research questions. Second, we describe the sample and measures used for the International Children's Worlds COVID-19 Supplement Survey and the methods of data analysis. Third, we present the findings to answer the research questions. The study ends with a discussion and conclusions.

Social cohesion

Social cohesion is "a multidimensional construct consisting of phenomena on the micro (e.g., individual attitudes and orientations), meso (features of communities and groups), and macro (features of societal institutions) level" (Schiefer and van der Noll, 2017, p. 583). According to the review by Schiefer and van der Noll (2017), six dimensions of social cohesion are most common: social relations, identification, orientation toward the common good, shared values, quality of life, and (in)equality. However, according to Dragolov et al. (2016) and Schiefer

and van der Noll (2017), the essential dimensions of social cohesion are the first three: (1) the quality of social relations, (2) identification or connectedness with the social entity, and (3) orientation toward the common good. In this study, we focused on the most prominent dimension of social cohesion (Schiefer and van der Noll, 2017)—social relations, also called relational social cohesion (Moody and White, 2003; Janmaat, 2011), on the micro level, encompassing relationships between individuals.

Both Dragolov et al. (2016) and Schiefer and van der Noll (2017) consider social networks, trust in other people, and acceptance of diversity as important components of social relations. We are particularly interested in social networks—the quality and quantity of children's relationships with their family and friends. According to the Australian Bureau of Statistics (2006, p. 19), especially "[. . .] the quality and strength of people's relationships and bonds with others—their family, friends, and the wider community—are important ingredients of the level of social cohesion." Thus, in a cohesive society, children have high-quality relationships with their friends and family, as well as a sufficient quantity of them.

Social networks are important in children's lives. Children are, on the one hand, embedded in the social networks of their families and, on the other hand, create their own networks in which they spontaneously participate. According to Corsaro (1997), the "individual development of children is embedded in the collective production of a series of peer cultures which in turn contribute to reproduction and change in the wider adult society or culture" (p. 26). The latter means that children, besides their family of origin, participate in other institutional locales with other people (children and adults) who are not their family members. As Corsaro (1997) characterizes it, children "weave their webs" (p. 24). We argue that social-distancing measures during the pandemic affected these processes. More specifically, with reference to Dragolov et al. (2016) and Schiefer and van der Noll (2017), we contend that social-distancing measures reshaped the social networks of children and, thus, affected levels of social cohesion.

Besides in-person networking, children participated in internet social networks, which have become an important component of children's subculture (see, e.g., Stasova and Khynova, 2012). Does internet social networking limit the influence of physical social isolation during the pandemic and help social coherence?

All of the above creates the impression of a normative approach: every child is actively embedded in social networks (intra-familial and beyond; in-person and virtual). Being connected gives children a sense of belonging and trust in other people and develops their social and other skills. The meaning of a child who is actively embedded in different networks, i.e., is socially coherent definitely has a positive social connotation. However, not all children have good relationships with family members and not all children are actively embedded in external social networks. Moreover, some children are "self-omitters" from peer relationships (Hall et al., 2021). The latter was more often classified as being bullied in a study by Hall et al. (2021), and, at least in the classroom, their social cohesion cannot be high. In addition, studies about inclusive schools have demonstrated the low relational social cohesion of children with special needs (e.g., Locke et al., 2010; Kasari et al., 2011). Thus, there are grounds to suppose that not all children can meet the "standards of normalcy" of being socially active and highly relationally socially coherent, as adults put it. We argue that formal social isolation could be a method of escape for these children, and they could probably, subjectively, gain from the pandemic. However, this does not mean that they would gain a sense of belonging, trust other people, or develop communication skills. Those neglected by their peers or the "self-omitters," thus, could gain even more from social distancing when living with family members who are friendly and understanding. However, in the context of bad family relationships, such as children experiencing neglect or abuse, their status as "self-omitters" is evident and may even solidify during formal social isolation in their home.

Previous evidence on children's relational social cohesion with family and friends during the COVID-19 pandemic

Children interact in different life domains, including family, school, and friendship groups, in-person or through technology. The COVID-19 pandemic caused momentous changes in patterns of interaction in children's lives due to the implementation of lockdowns and policies on social distancing. There is some, primarily qualitative, evidence that children's relational social cohesion with friends and family changed during the pandemic. For example, Stoecklin et al. (2021) examined children's experience of lockdown in relation to their family life and contacts with friends in Switzerland, Canada, and Estonia. They found that lockdown influenced children's quality of relationships with their friends and family, but to a different extent. For example, in Switzerland, half of the respondents said that their social life with friends stayed more or less the same, while 79% of the respondents declared no change in their family life. Shah et al. (2021) demonstrated that, in different countries, young people living in families with close and stable relationships found it easier to cope with the pandemic circumstances; by contrast, living in close proximity exacerbated family tensions and conflicts and endangered intra-familial closeness.

Next, we describe previous evidence on changes in children's quantity and quality of relationships in families and with friends during the pandemic and outline gaps in the research.

Change in the quantity and quality of relationships in families

In the context of children's relationships with their family members, lockdown restrictions functioned mainly as drivers of physical density in their homes. The fear of getting infected or infecting others, "COVID-19 anxiety," may have amplified the social isolation of the whole family. According to children's perceptions, interaction with family members has increased in quantity. For example, in Estonia, in spring 2021 compared to spring 2020, children more often complained about having to spend time with their family members 24/7, resulting in tense family relationships and arguments and occasional conflicts with younger siblings (Kutsar and Kurvet-Käosaar, 2021). Thus, by spring 2021, the physical density in the homes had worsened the atmosphere within the families.

However, social-distancing regulations have also affected the quality of children's relationships with their family members differently (Kutsar and Kurvet-Käosaar, 2021). Some children experienced more and better time with family members; parents were seen as an important source of support during the lockdown period, and many said that this period brought them closer to their parents (Salin et al., 2020), especially during the first lockdown in spring 2020 (Stoecklin et al., 2021).

For some children, disputes and conflicts with other family members became more frequent. For example, South Korean schoolchildren reported experiencing more conflicts, worries, and scolding from their parents during the pandemic (Lee et al., 2020). In Australia, about a quarter of the adolescents surveyed reported that conflicts with their parents had increased during the lockdown period and half of the sample reported an increase in conflicts with their siblings (Magson et al., 2021). In Estonia, about a third of children reported an increase in anxiety and tension in relationships at home (Kutsar and Kurvet-Käosaar, 2021). According to Stoecklin et al. (2021), the sources of these tensions were that children felt they lacked their own space and privacy and/or experienced more intense parental control as an impediment to their autonomy.

Some children reported being left alone or being lonely, e.g., stemming from many meaningful relationships that were put on hold during the lockdown period, for example, with extended families, such as grandparents (Stoecklin et al., 2021). Missing their extended family was more frequent among younger children (Kirsch et al., 2020). In Estonia, children were most often concerned about the lives of their grandparents, who the children understood belonged to the group at-risk of fatal outcomes from contracting the virus and whom they could not visit (Stoecklin et al., 2021). In sum, the pandemic endangered children's familial relational social cohesion.

Change in the quantity and quality of relationships with friends

Keeping in-person distance from friends was the most difficult challenge during the pandemic and lockdown according to children (Ellis et al., 2020; Kutsar and Kurvet-Käosaar, 2021; Magson et al., 2021; Stoecklin et al., 2021). Confinement measures of social distancing decreased the quantity of children's in-person interactions with their friends because of temporarily losing physical access to schools, playgrounds, and recreational activities (Stoecklin et al., 2021). Thus, in the context of children's relationships with their friends, the policies of social distancing functioned as drivers of compulsory physical separation. The severity of measures differed from country to country. For example, in Spain, all children experienced extreme lockdown for up to 5 weeks in the spring of 2020 (Garcia, 2020; Granda, 2020; Grechyna, 2020), as they were forbidden from leaving their homes. Less extreme and more common was the requirement to stay at home when a child or his/her close contact (e.g., a family member, or classmate) was infected with COVID-19.

Despite the existence or non-existence of drivers of compulsory physical separation, children may have self-chosen to limit in-person contact with their friends, e.g., because of the "COVID-19 anxiety," such as the fear of being infected or infecting others. For example, in Germany, younger children were more afraid of COVID-19 and worried more about themselves, family, and friends than older children, and girls were more afraid of COVID-19 and more worried about their friends than boys (Vogel et al., 2021). However, most children and adolescents worried more about their families rather than themselves (Vogel et al., 2021). With the heightened virus risk perception, children may not feel safe during in-person interactions with friends and, thus, prefer to maintain physical distance. We consider these factors as drivers of physical self-distancing or becoming "self-omitters" (a term defined by Hall et al., 2021).

Although the quantity of children's virtual interactions with friends using smartphones (Munasinghe et al., 2020; Sañudo et al., 2020) and social media (Ellis et al., 2020) increased during the pandemic to compensate for physical distancing, for many children, virtual communication with friends could not substitute regular in-person contact (Kutsar and Kurvet-Käosaar, 2021; Stoecklin et al., 2021). However, the lockdown also led to the creation of new individual friendships, evident in "COVID-19 relationships," e.g., those formed between two to three families in the neighboring area and their children (Stoecklin et al., 2021).

There is some evidence that the quality of relationships with friends decreased during the COVID-19 pandemic. For

example, this phenomenon is documented in South Korea (Choi et al., 2021) and in Switzerland (Stoecklin et al., 2021), where four out of ten children stated that their social life with friends was getting worse. Family isolation and social distancing were felt to be the cause of the decline in the quality of friendships (Stoecklin et al., 2021). There is some evidence of other possible causes for the decline in the quality of friendships. According to Vogel et al. (2021), during the pandemic, the perceived social support from peers decreased shortly after the lockdown, and it was more pronounced for younger children and those from a medium/low socio-economic background. Older children have more availability of electronic devices and social platforms (Auhuber et al., 2019), and older children may be less compliant with social-distancing guidelines (Goldstein and Lipsitch, 2020). Thus, especially for older children, feeling unsafe during in-person interactions with their friends may be also important.

According to Kutsar and Kurvet-Käosaar (2021), by spring 2021, the quality of relationships with friends had clearly worsened. Some children explained that they do not know what to say to their friends, as they no longer share their daily lives, do not really know how to keep in touch, and miss playing in a group (Stoecklin et al., 2021). Many children felt estranged from their friends (Kutsar and Kurvet-Käosaar, 2021), although still missing them (Kutsar and Kurvet-Käosaar, 2021; Stoecklin et al., 2021; Larivière-Bastien et al., 2022). For example, in Germany, about 80% of children missed in-person contact with friends (Vogel et al., 2021). Missing their friends was more frequent among older children (Kirsch et al., 2020) and was described as a strong feeling (Stoecklin et al., 2021). Especially challenging were separations from their boyfriend or girlfriend due to confinement measures (Kutsar and Kurvet-Käosaar, 2021; Stoecklin et al., 2021). Missing friends or classmates caused children to experience feelings of loneliness (Jiao et al., 2020; Okruszek et al., 2020; Singh and Singh, 2020), and even online school did not satisfy the same needs for daily social interactions (Larivière-Bastien et al., 2022). Loneliness is an exceedingly painful experience that is the result of an unfulfilled need for closeness and social relationships that are felt to be insufficient or not entirely satisfactory (Berger and Poirie, 1995). Therefore, the emergence of this feeling indicates that, in children, disconnection from in-person contact with friends and classmates makes them feel lonely: they miss the opportunity for such interaction, or, at least, they do not have sufficient opportunities. Some children said that they had lost all their friends and were now completely alone (Kutsar and Kurvet-Käosaar, 2021), i.e., their relational social cohesion with friends had suffered. For example, in Germany, the percentage of children who had no contact with their peers (in-person or online) increased from 3% pre-COVID-19 to 14% in April, 2020 (Vogel et al., 2021).

Gaps in previous evidence and research questions

Previously, the effect of the COVID-19 pandemic on children's relationships with their friends and family has been explored in single-country studies (Salin et al., 2020; Choi et al., 2021; Kutsar and Kurvet-Käosaar, 2021; Mondragon et al., 2021; Vogel et al., 2021). There are also some multinational qualitative studies (e.g., Shah et al., 2021; Stoecklin et al., 2021). However, to our knowledge, there is no evidence of how the change in children's relational social cohesion with family and friends during the COVID-19 pandemic has varied between countries. Thus, our first research question is:

- RQ1: How has children's relational social cohesion with family and friends changed during the COVID-19 pandemic?

Inspired by the previous research evidence described in sections "Change in the quantity and quality of relationships in families" and "Change in the quantity and quality of relationships with friends," we hypothesize that children's relational social cohesion decreased more with friends than within family.

Previous studies indicated that children's relational social cohesion with friends (e.g., Choi et al., 2021; Stoecklin et al., 2021) and in families (e.g., Kutsar and Kurvet-Käosaar, 2021) may have decreased during the COVID-19 pandemic, but some children still described positive experiences gained from the confinement measures of social distancing (Salin et al., 2020). Thus, some children gained from the pandemic in terms of the quantity and quality of relationships in the family, but lost friends; some lost both in families and with friends. There is also some evidence that children's quality of relationships with their friends and family did not change much (Stoecklin et al., 2021). However, there seems to be no evidence of whether some children gained from the pandemic in terms of the quantity and quality of relationships with family and with friends or gained with friends and lost in the family. Moreover, we are not aware of any previous study determining different profiles of changes in children's subjective relational social cohesion with family and friends experienced during the COVID-19 pandemic. Thus, our second research question is:

- RQ2: What profiles of change in children's relational social cohesion have emerged during the pandemic?

We claim that it requires a "large N" sample to obtain an overview of all the possible profiles of change and consider our country-pooled sample ($N > 20{,}000$) suitable for that kind of analysis. Country differences in profiles of change are not

considered in this study due to high variation in sample sizes and small *N* values in some countries.

Exploring the quantity and quality of relationships by profiles of change, including what relational factors help to explain children's belonging to a certain profile of change in relational social cohesion, offers a new insight to better support children in such exceptional times. Our third and fourth research questions are:

- RQ3: How do the profiles of change in relational social cohesion differ by children's quantity and quality of relationships in the family and with friends?
- RQ4: What relational factors can help to explain children's belonging to a certain relational social cohesion profile?

Regarding research questions 2–4, we adopted a more exploratory approach in examining "profiles of change" without establishing extra hypotheses.

Data and methods

Data source and sample

The study gathered data from the International Children's Worlds COVID-19 Supplement Survey collected in 2021, primarily from children aged 9–13 years. The first version of the database included children's data from the following 20 countries: Germany, Turkey, Bangladesh, Italy, Albania, South Africa, Romania, Chile, Wales, Colombia, Taiwan, Belgium, Algeria, Israel, Russia, South Korea, Indonesia, Estonia, Finland, and Spain. We excluded South Africa and Colombia due to the absence of data on some measures that we considered important for our analyses. The final sample consisted of data from over 20,000 children from 18 countries (Table 1). The period of data collection varied slightly between countries (Table 1), but mostly it was collected between the peaks of the second and third waves. Turkey was one of the countries where children reported most often that there were times when they had to be in their homes all day because of COVID-19, and they could not attend school for many days. It was the opposite in Finland. Data-collection methods varied from country to country between pencil and/or web survey methods. Due to the difficulties in collecting data from children during the COVID-19 pandemic (and during the (semi) lockdown in many countries), representative samples were mostly not achieved. Different sampling methods were used, i.e., stratified (in Belgium) or cluster (in South Korea) as a representative, and convenience (e.g., in Taiwan, Bangladesh, Indonesia, Israel), purposive (in Chile), and snowball (in Germany) as non-representative, sampling methods. In some cases, only country regions were captured. In addition, sample sizes vary broadly from 590 in Germany to 2,422 in Belgium.

Measures

We measured the relational social cohesion at the micro level in families (RSC-Fa) and with friends (RSC-Fr) before the COVID-19 pandemic with children's subjective retrospective assessments—"Satisfaction before COVID-19 with the relationships I had with people I live with" and "Satisfaction before COVID-19 with the relationships I had with my friends"—and during the pandemic with "Satisfaction now during COVID-19 with the relationships I have with my friends" and "Satisfaction now during COVID-19 with the relationships I have with people I live with." An 11-point assessment scale was used, where 0 was "not at all satisfied" and 10 "totally satisfied." Changes in RSC-Fa and RSC-Fr for each child were computed as follows: "RSC now"—"RSC before the COVID-19."

In Table 2, the quantity and quality of relationship factors used as independent variables are described. In the case of all items, lower values refer to a lower quantity and quality of relationships. Some items on quantity (e.g., the experience of quarantine) and quality (e.g., having problems with siblings, missing friends, classmates, and relatives) were not used due to the absence of data in many countries.

Data analyses

In this paper, we processed data to address the research questions in four steps. As we did not expect that a child had values for all variables, *N* varies in each step of our analyses. Compared to other countries, Germany was the country where missing values were the most common problem.

First, to answer the first research question ("How have children's relational social cohesion with family and friends changed during the COVID-19 pandemic"), we examined the means and the percentages of low ("0–4") and maximum ("10") RSC-Fa and RSC-Fr values, by country and in total, (1) before and (2) during the COVID-19 pandemic. We considered values 9–10 as "very high," 8 "high," 7 "average" 6 "low," and 5, "very low." By subtracting the "before" from the "during the COVID-19 pandemic" value, each child was attributed a change in RSC-Fa and RSC-Fr values. Out of 21,827 children, for 711 and 707 we were not able to compute the change of RSC-Fa and RSC-Fr values, respectively, due to missing data. Countries were ranked based on their level of the average change in RSC-Fa and RSC-Fr. To answer the second research question ("What profiles of change in children's relational social cohesion have emerged during the pandemic?"), based on the average change in RSC-Fa and RSC-Fr during the pandemic, we conducted a cluster analysis using country-pooled data. We called the clusters "profiles of change in relational social cohesion." We used a two-step cluster analysis in SPSS 28 with Euclidean distance and without a fixed number of clusters. It requires a "large *N*" sample to obtain an overview of all the possible profiles of change, and

TABLE 1 Countries' sample representativeness, geographical coverage, data collection method (PPS-paper-pencil survey; WS-web survey), total number of children, including proportions (%) by gender, frequency of access to the Internet, not having own room, and experiences of social-distancing measures.

	Representative sample—yes or no	Geographical area covered by sampling strategy	Data collection time in 2021		Data collection method		Total number of children		Gender			Access to the internet during COVID-19	Having own room	There were times where I had to be in my home all day because of COVID-19	I could not attend school for many days
			Start	End	PPS (in person) %	WS (PC/tablet /mobile phone) %	*N*	%	Boys, %	Girls, %	Binary, %	Often always %	No, %	Yes, %	Yes, %
Albania	No	The capital of Albania, Tirana in urban and rural areas	22.06	30.07	73.2	26.8	1,034	4.7	54.5	45.5	0	82.0	29.1	76.9	84.2
Algeria	Yes	Province of Oran	2.11	16.12	100		816	3.7	52.3	47.7	0	51.4	59.2	63.5	67.3
Bangladesh	No	Mainly regions of Barishal, Moulvibazar, Rajshahi and Dhaka (capital)	10.08	31.08	78.0	22.0	1,370	6.3	50.4	49.6	0	35.3	49.6	68.7	91.6
Belgium	Yes	Whole Flemish community in Belgium (Flemish region and the Dutch speaking population in Brussels)	25.05	29.06		100	2,422	11.1	50.6	49.4	0	89.3	14.8	78.0	81.2
Chile	No	Metropolitan region of the cities of Santiago and Concepción (also Curicó, Quilpué and, Laja cities)	30.08	8.10	4.4	95.6	1,682	7.7	47.8	49.2	3.1	91.1	20.5	75.4	87.1
Estonia	No	Whole country	21.04	7.06		100	1,258	5.8	50.0	47.8	2.2	97.7	17.7	66.1	25.2
Finland	No	Southwestern Finland (Turku and Naantali)	19.04	2.06		100	1,003	4.6	47.9	51.0	1.1	93.2	17.5	34.3	29.4
Germany	No	Whole country with a focus on Frankfurt/Hessen	25.10	29.11		100	590	2.7	51.2	48.1	0.7	87.1	7.8	48.4	96.9

(Continued)

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TABLE 1 (Continued)

	Representative sample—yes or no	Geographical area covered by sampling strategy	Data collection time in 2021		Data collection method		Total number of children		Gender			Access to the Internet during COVID-19	Having own room	There were times where I had to be in my home all day because of COVID-19	I could not attend school for many days
			Start	End	PPS (in person) %	WS (PC/tablet /mobile phone) %	*N*	%	Boys, %	Girls, %	Binary, %	Often always %	No, %	Yes, %	Yes, %
Indonesia	No	West Java Province	17.07	14.09		100	2,222	10.2	53.9	46.1	0	48.5	37.6	61.9	88.5
Israel	No	Whole country	Wave1: 30.05 Wave2: 30.09	Wave1: 27.06 Wave2: 20.10	100		930	4.3	47.0	50.7	2.3	87.1	32.8	72.2	76.7
Italy	No	Whole country but mainly the cities of Genoa and Rome and southern regions of Campania, Calabria, and Puglia.	End of May	30.09		100	919	4.2	49.6	50.4	0	95.7	35.4	58.2	98.4
Romania	Yes (mix between convenience and representative sample)	Whole country	20.05	15.06	100		1,856	8.5	51.2	48.8	0	92.0	40.3	66.8	76.8
Russia	Yes	Tyumen region	10.05	25.05		100	876	4.0	50.5	49.5	0	93.7	17.5	75.6	76.8
S Korea	Yes	Whole country	22.07	20.08		100	1,497	6.9	48.9	51.1	0	91.6	5.8	58.8	26.5
Spain	No	Province of Girona	5.05	4.08	59.8	40.2	702	3.2	49.3	48.3	2.3	87.6	21.0	76.9	86.2
Taiwan	No	Whole country	26.07	10.09		100	1,155	5.3	54.4	45.5	0.2	81.4	47.9	81.0	29.8
Turkey			8.06	30.08	50.5	49.5	804	3.7	49.8	49.2	1.0	87.3	32.2	85.9	93.6
Wales	No	Rural North, Rural Heartland, Metropolitan Wales, and Valleys	5.07	15.07		100	691	3.2	45.7	50.8	3.5	96.6	11.7	79.4	78.2
Total							21,827	100	50.5	48.7	0.8	81.0	28.0	68.3	71.5

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TABLE 2 Quantity and quality of relationships factors used as possible predictors of RSC change (all measures low-> high).

Factors	Items	Scale
	Quantity of relationships	
	Friends + family	
Compulsory physical distancing from friends, and a high density of contacts inside the family due to the confinement measures	There were times where I had to be in my home all day (including the garden, yard, or balcony, if you have) because of the Coronavirus I could not attend school for many days	
In-person self-distancing from friends, and a high density in family due to infection or risk of infection	Me or somebody in my home got infected with Coronavirus At home, we had to be very careful because somebody was considered at high risk of getting very ill if they got infected with the Coronavirus	1-yes, 2-not sure, and 3-no
In-person self-distancing from friends, and a high density in family due to COVID-19 anxiety	I am very afraid of the Coronavirus It makes me uncomfortable to think about the Coronavirus My hands become sweaty when I think about the Coronavirus I am afraid of losing my life because of the Coronavirus When I watch news and stories about the Coronavirus on TV and social media, I become nervous or anxious I cannot sleep because I'm worrying about getting the Coronavirus My heart races (beats very fast) when I think about getting the Coronavirus	0-I totally agree, 1-I agree a lot, 2-I agree somewhat, 3-I agree a little, and 4-I do not agree Arithmetic mean of these items
	Friends	
Frequency of in-person or online interactions	Playing or hanging out outside During the Coronavirus how often spend time meeting with your friends online (e.g., on the computer, zoom, or any other way)	0-never, 1—less than once a week, 2—once or twice a week, 3—3 or 4 days a week, 4—5 or 6 days a week, and 5—every day
New online friendships	I made new friends with other children online during the Coronavirus	0—I do not agree, 1—I agree a little, 2—I agree somewhat, 3—I agree a lot, and 4—I totally agree
	Quality of relationships	
Perceptions of safety	I feel safe with my friends	0—I do not agree, 1—I agree a little, 2—I agree somewhat, 3—I agree a lot, and 4—I totally agree
	I feel safe at home	0—I totally agree, 1—I agree a lot, 2—I agree somewhat, 3—I agree a little, and 4—I do not agree
Perceptions of support	During the Coronavirus, I felt well-supported by some of my friends During the Coronavirus, I felt well-supported by some people I live with	0—extremely … 10—not at all
Perceptions of loneliness	I feel alone	0—not at all satisfied … 10—totally satisfied
Perceptions of boredom	How much you have felt this way during the last 2 weeks – bored?	0—I do not agree, 1—I agree a little, 2—I agree somewhat, 3—I agree a lot, and 4—I totally agree
Perceptions of autonomy	Satisfaction with the freedom you have	
Perceptions of "being listened to'	My opinions about the Coronavirus are taken seriously in my home	

we considered our country-pooled sample ($N > 20{,}000$) suitable for this kind of analysis. For 856 children, the profile of change was not attained due to the missing data.

To answer the third research question ("How do the profiles of change in relational social cohesion differ by children's quantity and quality of relationships in the family and with friends?"), differences in children's quantity and quality of relationships in the family and with friends between the change profiles were assessed using the Kruskal–Wallis test, which is based on analyzing the mean rank. When a significant difference was found, *post-hoc* tests were conducted using Mann–Whitney's U-test to assess the differences between each pair of the profile. The difference was considered statistically significant when $p < 0.05$. We used nonparametric tests because our variables do not meet normal distribution criteria and the size of the profiles differ markedly. The missings varied by variable, from 1,112 (perception of home safety) to 1,922 (COVID-19 anxiety).

To answer the fourth research question ("What relational factors can help to explain children's belonging to a certain relational social cohesion profile?), multinomial logistic regression analysis was used. We used the children's gender

TABLE 3 Means and % of low and high relational social cohesion with family members (RSC-Fa) by country and in total before and during the COVID-19 pandemic, and children's RSC-Fa mean change (countries listed by the change in RSC-Fa in decreasing order).

	RSC-Fa before pandemic ($N = 21,449$)			RSC-Fa during pandemic ($N = 21,389$)			Change in RSC-Fa ($N = 21,116$)
	M (SD)	Low ("0–4") RSC-Fa, %	Highest ("10") RSC-Fa, %	*M* (SD)	Low ("0–4") RSC-Fa, %	Highest ("10") RSC-Fa, %	*M* (SD)
Turkey	8.76 (1.9)	4.2	53.2	7.42 (2.9)	15.7	37.1	−1.35 (2.8)
Bangladesh	8.46 (2.6)	9.4	57.4	7.45 (3.0)	17.7	40.9	−1.01 (2.9)
Germany	8.92 (1.7)	3.0	51.3	7.83 (2.4)	10.9	33.8	−0.90 (2.9)
Albania	9.47 (1.3)	1.0	76.9	8.67 (2.2)	5.8	55.3	−0.80 (2.3)
Italy	9.19 (1.6)	2.8	65.4	8.56 (2.2)	5.7	52.2	−0.63 (2.0)
Chile	8.8 (2.2)	5.8	62.5	8.25 (2.6)	10.2	52.6	−0.56 (2.2)
Wales	8.63 (2.2)	7.3	57.1	8.07 (2.6)	11.6	45.2	−0.55 (2.3)
Taiwan	8.39 (1.9)	3.6	41.0	7.92 (2.6)	8.8	38.6	−0.47 (2.1)
S Korea	7.53 (1.4)	1.9	5.7	7.08 (1.7)	7.4	4.6	−0.45 (1.5)
Belgium	8.5 (2.4)	7.7	54.4	8.11 (2.6)	10.7	46.7	−0.40 (2.1)
Indonesia	8.86 (2.1)	5.4	60.2	8.47 (2.4)	8.4	53.0	−0.39 (2.0)
Romania	9.24 (1.8)	3.8	75.4	8.91 (2.2)	5.4	65.5	−0.37 (2.0)
Algeria	7.91 (3.2)	14.9	54.7	7.57 (3.3)	18.0	48.8	−0.34 (3.5)
Estonia	8.81 (1.9)	4.6	53.9	8.48 (2.2)	7.4	49.3	−0.34 (1.6)
Russia	8.08 (2.8)	13.7	51.6	7.77 (3.0)	16.8	47.3	−0.30 (1.8)
Finland	9.1 (1.7)	2.7	62.1	8.87 (1.9)	4.2	55.8	−0.24 (1.3)
Israel	8.62 (2.4)	8.2	60.7	8.52 (2.5)	8.9	58.5	−0.11 (2.4)
Spain	8.28 (2.5)	10.8	50.0	8.44 (2.4)	7.7	53.8	0.21 (2.5)
Total	8.65 (2.2)	5.9	55.4	8.16 (2.5)	9.8	46.9	−0.49 (2.2)

(1 = girls and 2 = boys; non-binary children were excluded due to the small group size), frequency of access to the Internet, and existence of their own room as controls. The age of the children was not included as a control as we predominantly had data for 9–13 years-old children but only 8 children aged 7 or 8 and 155 children aged 14 or 15. Children's profiles of change in relational social cohesion were used as the dependent variable in the regression model. We included "gainers in both RSC" (102 missings), "no changers" (3,592), and "decliners in both RSC" (407) profiles. "No changers" was the reference group. The other two profiles were excluded due to the small N (<100). As 11 countries out of 18 had fewer than 100 children in the "decliners in both RSC" profile (the second most populous behind "no changers'), we decided not to run regression models for each individual country.

Results

The change in children's subjective relational social cohesion with family during the COVID-19 pandemic

In total, children's subjective relational social cohesion with family members (RSC-Fa) did not change much, as it decreased by only 0.5 points on the 11-point scale, remaining at a high level (Table 3). It decreased by more than 1 point on the 0–10 scale only in Turkey and Bangladesh, where 16 and 18% of children assessed their RSC-Fa as low during the pandemic, respectively. In Spain, RSC-Fa did not decrease at all.

The change in children's subjective relational social cohesion with friends during the COVID-19 pandemic

In total, children's subjective relational social cohesion with friends (RSC-Fr) was at a high level before the pandemic but it decreased by 1.3 points on the 11-point scale, to be between the low and average levels during the pandemic (Table 4).

Country-specific analysis showed that RSC-Fr decreased in all countries. However, the starting point was different. Before the COVID-19 pandemic, the mean of RSC-Fr was very high (above 9) in Albania; in the majority of countries, it was at a high level, and only in South Korea, Algeria, Bangladesh, Russia, and Chile was it at the average level. However, during the pandemic, there remained no country with a very high level of RSC-Fr and there are only two

TABLE 4 Means and % of low and high relational social cohesion with friends (RSC-Fr) by country and in total before and during the COVID-19 pandemic, and children's RSC-Fr mean change (countries listed by the change in RSC-Fr in decreasing order).

	RSC-Fr before pandemic ($N = 21,441$)			RSC-Fr during pandemic ($N = 21,405$)			Change in RSC-Fr ($N = 21,120$)
	M (SD)	Low ("0–4") RSC-Fr, %	Highest ("10") RSC-Fr, %	*M* (SD)	Low ("0–4") RSC-Fr, %	Highest ("10") RSC-Fr, %	*M* (SD)
Germany	8.67 (2.1)	4.0	49.5	5 (3.1)	44.5	11.1	−3.4 (3.9)
Turkey	8.7 (2.0)	4.8	52.6	5.37 (3.1)	37.1	11.8	−3.3 (3.3)
Bangladesh	7.63 (3.1)	17.4	45.2	5.35 (3.5)	41.8	21.1	−2.3 (3.8)
Italy	8.73 (2.0)	4.6	54.5	6.56 (2.8)	20.9	19.6	−2.2 (3.1)
Albania	9.25 (1.5)	1.8	66.8	7.17 (2.7)	16.0	25.4	−2.1 (2.9)
Romania	8.97 (2.0)	4.9	63.9	7.4 (2.9)	16.5	32.7	−1.6 (3.1)
Chile	7.98 (2.8)	13.2	49.3	6.72 (3.3)	25.4	31.3	−1.3 (3.3)
Wales	8.43 (2.2)	6.8	48.0	7.20 (2.9)	18.4	30.6	−1.3 (2.8)
Taiwan	8.01 (2.1)	6.1	33.3	6.94 (2.7)	16.5	25.0	−1.1 (2.3)
Belgium	8.42 (2.5)	8.9	53.8	7.37 (2.9)	16.4	34.8	−1.1 (2.6)
Algeria	7.4 (3.3)	19.3	44.2	6.37 (3.6)	29.8	34.6	−1.0 (3.8)
Israel	8.35 (2.6)	10.8	54.2	7.37 (2.9)	19.2	37.2	−1.0 (3.1)
Russia	7.76 (2.9)	15.5	44.3	6.79 (3.3)	25.7	32.0	−1.0 (2.7)
South Korea	7.34 (1.5)	4.1	5.5	6.42 (1.9)	17.1	3.3	−0.9 (2.0)
Indonesia	8.31 (2.3)	7.7	43.9	7.66 (2.7)	13.6	34.9	−0.7 (2.5)
Estonia	8.68 (2.0)	5.3	51.1	8.10 (2.4)	10.1	40.3	−0.6 (2.1)
Finland	8.79 (1.9)	4.4	54.2	8.29 (2.2)	7.7	41.4	−0.5 (1.8)
Spain	8.15 (2.4)	7.7	43.4	7.82 (2.6)	12.9	37.1	−0.3 (2.8)
Total	8.3 (2.4)	8.3	47.4	6.99 (3.0)	20.3	28.7	−1.3 (3.0)

countries—Finland and Estonia—with a high level of RSC-Fr.

The RSC-Fr decreased the least—<1 point on the 0–10 scale—not only in Spain, Finland, Estonia, and Indonesia but also in South Korea and Russia. We called them countries with "almost no change." During the COVID-19 pandemic, the RSC-Fr was at a high level only in Finland and Estonia, but they were already located at the top before the pandemic. In Spain and Indonesia, although being located in the middle before the pandemic, with almost no change, they were now at the top, despite having an average level of the RSC-Fr. South Korea and Russia had one of the lowest levels of RSC-Fr before, but with only little change, they were not among the lowest group of countries during the pandemic.

Children's RSC-Fr decreased slightly—1–2 points on a 0–10 scale—in Israel, Algeria, Belgium, Taiwan, Wales, Chile, and Romania. We called them countries with a "small decrease." RSC-Fr decreased quite notably—2–3 points on a 0–10 scale—in Albania, Italy, and Bangladesh. We called them countries with a "notable decrease." Before the COVID-19 pandemic, the highest RSC was in Albania, but, following a decrease, Albania was located in the middle. In Bangladesh, the RSC level remained one of the lowest before and during the pandemic.

Children's RSC-Fr decreased significantly—3–4 points on a 0–10 scale—in Turkey and Germany. We called them countries with a "major decrease." In Turkey and Germany, the level of RSC was one of the highest before the COVID-19 pandemic, but the steepest decrease saw them located as the lowest during the pandemic.

As a robustness check, we compared the country means of two variables—"My friends are usually nice to me" and "Me and my friends get along well together"—based on data from the International Survey of Children's Well-Being 2018 and International Children's Worlds COVID-19 Supplement Survey 2021. It was possible to compare the means of Albania, Algeria, Belgium, Indonesia, Israel, Italy, Spain, and Wales. We found that, on average, the means declined 0.1–0.2 points on a 0–4 scale. In that group of countries, values declined most in Albania, corresponding to our results here.

Profiles of change in children's subjective relational social cohesion

Next, we wanted to understand in more detail how children experienced the effects of the pandemic on their relationships

TABLE 5 Profiles (clusters) of change in children's relational social cohesion [average Silhouette = 0.6 (good)].

Profiles by the change in RSC-Fr and RSC-Fa	Change in RSC-Fr		Change in RSC-Fa		*N*	%
	Mean	SD	Mean	SD		
Gainers in both RSC	3.3	3.3	6.4	2.2	318	1.5
Gainers in RSC-Fa, decliners in RSC-Fr	−6.5	2.7	5.8	2.3	109	0.5
No change in either type of RSC	−1.0	2.4	−0.1	1.1	18,644	88.9
Decliners in RSC-Fa, gainers in RSC-Fr	6.4	2.8	−4.3	3.2	132	0.6
Decliners in both RSC	−5.9	3.0	−5.4	2.4	1,768	8.4
Total	−1.3	3.0	−0.5	2.2	20,971	100

with friends and family. Based on the change in RSC-Fr and RSC-Fa during the pandemic, we conducted a cluster analysis using country-pooled data. Five profiles of change in relational social cohesion emerged: (1) gainers in both RSC; (2) gainers in RSC-Fa and decliners in RSC-Fr; (3) no change in either RSC; (4) decliners in RSC-Fa and gainers in RSC-Fr; and (5) decliners in both RSC.

For the majority of the children (88.9%), both RSC-Fr and RSC-Fa did not change much during the pandemic (Table 5). By country, among different profiles of change, the proportion of "no changers" was most notable in Finland (97%), South Korea (95%), and Estonia (94%).

The next most common cluster (8.4%) was labeled "decliners in both RSC" (both RSC types decreased during the pandemic). Among all the profiles, RSC-Fa decreased the most in the "decliners in both RSC" profile. By country, the proportion of "decliners in both RSC" was most notable in Germany (25%), Turkey (24%), and Bangladesh (18%).

The third most common cluster (1.5%) was "gainers in both RSC." Among all the profiles of change, RSC-Fa increased the most in the "gainers in both RSC" profile. By country, the proportion of "gainers in both RSC" was most notable in Algeria (7%) and Spain (6%).

There were also small proportions of children whose RSC in the family increased but with friends decreased, and *vice versa*. Among all the change profiles, mean RSC-Fr decreased the most in the "gainers in RSC-Fa, decliners in RSC-Fr" profile and increased the most in the "decliners in RSC-Fa, gainers in RSC-Fr" profile.

The quantity of children's relationships by profiles of change in relational social cohesion

In Table 6, we can see that the quantity of children's relationships differs by their profiles of change in relational social cohesion. "Gainers in both RSC" had to be at home all day because of COVID-19 significantly ($p < 0.05$) less likely and played or spent time outside more frequently than "decliners in both RSC." However, "gainers in both RSC" were significantly more likely to have stated that they or somebody in their home got infected with COVID-19, and also had higher COVID-19 anxiety than "no changers."

"Gainers in RSC-Fa, decliners in RSC-Fr" were significantly more likely to have been unable to attend school for many days than "no changers." "Decliners in RSC-Fa, gainers in RSC-Fr" were more likely to agree than "decliners in both RSC," that they made new friends with other children online but were significantly more likely to have someone at home at a high risk of getting very ill if they became infected than "no changers."

Children who declined in both RSC were significantly more likely to have to be at home all day because of COVID-19 than children who gained in both RSC and children whose RSCs did not change during the pandemic. Moreover, "decliners in both RSC" were significantly more likely to not be able to attend school for many days, have family members or themselves be infected, have someone at home at high risk of getting very ill if they get infected, and had higher COVID-19 anxiety than "no changers." "Decliners in both RSC" significantly less frequently played or hung out outside than "gainers in both RSC" and "no changers" and significantly less agreed that they made new friends with other children online during the pandemic compared to "no changers" and "decliners in RSC-Fa, gainers in RSC-Fr."

The quality of children's relationships by profiles of change in relational social cohesion

Considering the quality of children's relationships, in Table 7 we see that children's perceptions of safety, support, loneliness, boredom, autonomy, and "being listened to" differ by their profiles of change in relational social cohesion. "No changers"

TABLE 6 Children's quantity of relationships by profiles of change in relational social cohesion (in all cases lower value indicates a lower quantity of relationships and *vice versa*).

		Gainers in both RSC	Gainers in RSC-Fa, decliners in RSC-Fr	No-changers	Decliners in RSC-Fa, gainers in RSC-Fr	Decliners in both RSC	Kruskal–Wallis *H*	*N*
Compulsory physical distancing from friends and a high density of contacts inside the family due to the confinement measures								
… had to be in home all day because of COVID-19	Mean (SD)	1.71 (0.92)	1.54 (0.86)	1.59 (0.89)	1.52 (0.84)	1.50^{2G,NC} (0.85)	23.26***	20,457
	Median	1	1	1	1	1		
	yes %	60.7	70.4	68.4	70.9	72.9		
… could not attend school for many days	Mean (SD)	1.48 (0.81)	1.25^{NC} (0.63)	1.56 (0.88)	1.52 (0.84)	1.37^{NC} (0.76)	87.34***	20,615
	Median	1	1	1	1	1		
	yes %	72.0	84.9	70.2	70.2	79.9		
In-person self-distancing from friends and a high density in the family due to infection or risk of infection								
… me or somebody in my home got infected	Mean (SD)	2.47^{NC} (0.86)	2.53 (0.84)	2.64 (0.75)	2.54 (0.82)	2.58^{NC} (0.80)	26.43***	20,519
	Median	3	3	3	3	3		
	yes %	24.4	22.1	16.3	20.9	19.4		
… someone at home at high risk of getting very ill if gets infected	Mean (SD)	2.03 (0.96)	2.01 (0.96)	2.09 (0.95)	1.81^{NC} (0.93)	1.96^{NC} (0.96)	38.39***	20,349
	Median	2	2	3	1	2		
	yes %	43.9	45.5	41.2	54.3	47.8		
In-person self-distancing from friends and a high density in the family due to COVID-19 anxiety								
… COVID-19 anxiety	Mean (SD)	2.65^{NC} (1.07)	2.71 (1.08)	2.84 (1.00)	2.65 (1.13)	2.53^{NC} (1.08)	139.49***	19,905
	Median	2.86	3.00	3.00	2.71	2.71		
	<2, %	24.6	22.1	19.1	30.8	29.4		
Frequency of in-person or online interactions								
… playing or hanging out outside	Mean (SD)	2.78 (1.80)	2.38 (1.89)	2.74 (1.72)	2.49 (1.80)	2.40^{2G,NC} (1.79)	65.05***	20,455
	Median	3	2	3	3	2		
	Once/ twice a week or less, %	44.8	55.1	45.6	49.2	54.6		
… meeting with friends online	Mean (SD)	2.46 (1.91)	2.34 (1.84)	2.38 (1.83)	2.43 (1.86)	2.17^{NC} (1.86)	21.42***	20,549
	Median	3	2	2	2	2		
	Once/ twice a week or less, %	49.0	54.2	53.1	52.8	58.6		
New online friendships								
… made new friends with other children online	Mean (SD)	1.38 (1.58)	1.58 (1.65)	1.33 (1.46)	1.74 (1.66)	1.21^{NC,DG} (1.46)	23.05***	20,439
	Median	1	1	1	1	0		
	Do not agree,%	48.4	43.8	44.6	39.0	50.1		

^{2G}—significantly ($p < 0.05$; based on Mann-Whitney test) lower than gainers in both RSC; ^{NC}—significantly lower than no changers, ^{DG}—significantly lower than decliners in RSC-Fa and gainers in RSC-Fr.
***$p < 0.001$.

TABLE 7 Children's quality of relationships by profiles of change in relational social cohesion (in all cases lower value indicates a lower quality of relationships and *vice versa*).

		Gainers in both RSC	Gainers in RSC-Fa, decliners in RSC-Fr	No-changers	Decliners in RSC-Fa, gainers in RSC-Fr	Decliners in both RSC	Kruskal–Wallis *H*	*N*
Perceptions of safety								
… feeling safe with my friends	Mean (SD)	2.50 (1.48)	2.30 (1.40)	2.64 (1.30)	2.44 (1.51)	2.41^{NC} (1.39)	48.55***	20,673
	Median	3	3	3	3	3		
	I do not agree or agree a little, %	27.7	32.7	21.3	27.6	28.9		
… feeling safe in home	Mean (SD)	3.13 (1.20)	2.89^{NC} (1.25)	3.31 (0.99)	2.90^{NC} (1.33)	3.20^{NC} (1.05)	42.83***	20,715
	Median	4	3	4	3	4		
	I do not agree or agree a little, %	12.9	15.9	7.0	17.3	9.1		
Perceptions of support								
… feeling support by some of my friends	Mean (SD)	2.23 (1.38)	1.85^{NC} (1.34)	2.26 (1.25)	2.02 (1.33)	1.99^{2G,NC} (1.30)	83.15***	20,338
	Median	2	2	2	2	2		
	I do not agree or agree a little, %	33.7	43.3	28.1	36.9	37.9		
… feeling support by some people I live with	Mean (SD)	3.00 (1.28)	3.00 (1.21)	3.19 (1.05)	2.62^{NC} (1.52)	2.98^{NC} (1.14)	77.95***	20,564
	Median	4	3	4	3	3		
	I do not agree or agree a little, %	15.7	11.5	8.6	27.0	12.0		
Perceptions of loneliness								
… feeling alone	Mean (SD)	2.80 (1.46)	2.35^{2G,NC} (1.53)	2.90 (1.33)	2.57 (1.51)	2.38^{2G,NC} (1.48)	228.93***	20,484
	Median	3	3	3	3	3		
	I agree a lot or totally, %	22.9	33.0	18.7	28.3	30.9		
Perceptions of boredom								
… feeling bored during the last two weeks	Mean (SD)	4.61 (3.94)	4.33 (3.81)	4.89 (3.38)	3.74^{NC} (3.55)	4.11^{NC} (3.48)	98.76***	20,281
	Median	5	5	5	3	4		
	0–4, %	49.5	49.0	46.5	60.2	55.8		
Perceptions of autonomy								
… satisfaction with the freedom you have	Mean (SD)	7.19^{NC} (3.28)	6.64^{NC} (3.53)	8.13 (2.35)	6.58^{NC} (3.49)	7.12^{NC} (2.92)	231.77***	20,252
	Median	8	8	9	8	8		
	Low ("0–4") %	20.2	30.2	8.0	28.2	18.9		
Perceptions of "Being listened to"								
… my opinions about the COVID-19 are taken seriously in my home	Mean (SD)	2.14^{NC} (1.41)	1.93^{NC} (1.57)	2.38 (1.31)	1.96^{NC} (1.42)	2.26^{NC} (1.36)	37.22***	20,440
	Median	2	2	3	2	2		
	I do not agree or agree a little, %	33.0	47.5	26.3	41.0	30.9		

^{2G}—significantly ($p < 0.05$; based on Mann-Whitney test) lower than gainers in both RSC; ^{NC}—significantly lower than no changers.
***$p < 0.001$.

TABLE 8 Multinomial logistic regression model for predicting the likelihood (OR, odds ratio; SE, standard error) to be (1) gainer and (2) decliner in both RSC ($N = 216$ and 1,361, respectively) compared to no-changers ($N = 15{,}052$).

		Gainers in both RSC			Decliners in both RSC		
		b	OR	SE	*b*	OR	SE
Controls	Girls (ref: boys)	0.287*	1.333	0.140	0.012	1.013	0.058
	Access to the Internet	0.125	1.134	0.081	0.109***	1.115	0.033
	Not having own room (ref: having it)	0.136	1.145	0.151	0.024	1.024	0.064
Quantity: compulsory physical distancing from friends and a high density of contacts inside the family due to the confinement measures	Had to be in home all day (ref: had not to be)	−0.368*	0.692	0.155	0.112	1.118	0.070
	Not sure if had to be in home all day (ref: did not have)	0.319	1.376	0.297	0.020	1.020	0.162
	Could not attend school for many days (ref: could attend)	0.352	1.422	0.182	0.417***	1.518	0.077
	Not sure if can attend school for many days (ref: could attend)	0.864**	2.374	0.325	0.359*	1.431	0.172
Quantity: in-person self-distancing from friends and a high density in the family due to infection or risk of infection	Me or somebody in my home got infected (ref: did not)	0.677***	1.969	0.164	0.223**	1.250	0.076
	Not sure if I or somebody in my home got infected (ref: did not)	0.087	1.091	0.377	−0.113	0.893	0.162
	Had someone at home at high risk of getting very ill if got infected (ref: had not)	0.078	1.081	0.149	0.198**	1.219	0.063
	Not sure if had someone at home at high risk of getting very ill if got infected (ref: had not)	−0.468	0.626	0.299	0.114	1.121	0.112
Quantity: in-person self-distancing from friends and a high density in the family due to COVID-19 anxiety	COVID-19 anxiety	−0.157*	0.855	0.074	−0.204***	0.815	0.031
Quantity: frequency of in-person or online interactions	Playing or hanging out outside	0.042	1.043	0.042	−0.030	0.970	0.018
	Meeting with friends online	0.026	1.027	0.041	−0.012	0.988	0.018
Quantity: new online friendships	Made new friends with other children online	−0.079	0.924	0.052	−0.115***	0.891	0.022
Quality: perceptions of safety	Feeling safe with my friends	0.021	1.021	0.059	0.022	1.022	0.024
	Feeling safe at home	0.008	0.072	1.008	0.031	1.031	0.030
Quality: perceptions of support	Feeling support by some of my friends	0.046	1.047	0.063	−0.068**	0.934	0.026
	Feeling support by some people I live with	−0.006	0.994	0.071	−0.040	0.961	0.029
Quality: perceptions of loneliness	Feeling alone	0.039	1.040	0.055	−0.142***	0.868	0.022
Quality: perceptions of boredom	Feeling bored	−0.034	0.966	0.021	−0.025**	0.976	0.009
Quality: perceptions of autonomy	Satisfaction with the freedom you have	−0.104***	0.901	0.027	−0.084***	0.920	0.011
Quality: perceptions of "being listened to'	My opinions about the Coronavirus are taken seriously in my home	−0.081	0.922	0.056	−0.086***	0.918	0.024
Intercept		−3.521***		0.463	−0.819***		0.192
N		216			1,361		
Nagelkerke R^2		0.067					

*$p < 0.05$.
**$p < 0.01$.
***$p < 0.001$.

tend to have the most positive perceptions in all of these quality dimensions.

"Gainers in both RSC" were significantly more likely than "decliners in both RSC" to agree that they felt supported by some of their friends. In addition, they were less likely to agree than "gainers in RSC-Fa, decliners in RSC-Fr" and "decliners in both RSC" that they felt alone. However, "gainers in both RSC" were significantly less satisfied with the freedom they had and agreed less that their opinions about COVID-19 were taken seriously in their homes than "no changers."

"Gainers in RSC-Fa, decliners in RSC-Fr" agreed significantly less that they felt safe at home, felt supported by some of their friends, that their opinions about COVID-19 were taken seriously in their home, and were less satisfied with the freedom they had than "no changers." They also agreed

more than "gainers in both RSC" and "no changers" that they felt alone.

"Decliners in RSC-Fa, gainers in RSC-Fr" agreed significantly less that they felt safe at home, felt supported by some people they live with, that their opinions about COVID-19 were taken seriously in their home, were less satisfied with the freedom they had, and felt more bored than "no changers."

"Decliners in both RSC" agreed significantly less that they felt safe with their friends and at home, felt supported by some of their friends or by some people they live with, that their opinions about COVID-19 were taken seriously in their home, were less satisfied with the freedom they had, felt more bored, and agreed significantly more that they felt alone than "no changers." They also agreed significantly less that they felt supported by some of their friends and agreed more that they felt alone than "gainers in both RSC."

Factors of the quantity and quality of children's relationships explaining their belonging to a gainers or decliners profile

To understand which of the relational factors help to explain belonging to a certain profile of RSC change, we performed multinomial logistic regression analysis. We outlined the quantity and quality of relationship factors that help to explain children's belonging to the "gainers" or "decliners" profile compared to "no changers."

Gainers in both RSC

Mainly, the quantity-of-relationships factors help to explain children's belonging to a "gainers in both RSC" profile compared to "no changers" (Table 8). *Compulsory physical distancing from friends, and a high density of contacts inside the family due to the confinement measures* as relational factors help to explain children's belonging to the "gainers in both RSC" profile. More specifically, children who had to be at home all day were less likely "gainers in both RSC" compared to "no changers" than those who did not have to stay at home. Interestingly, children who were not sure if they "were not able to attend school for many days" were more likely "gainers in both RSC" compared to "no changers" than those who could attend school. In addition, *in-person self-distancing from friends* and *a high density in family due to infection or risk of infection* help to explain children's belonging to a "gainers in both RSC" profile. Children who were infected or if somebody in their home got infected with COVID-19 had twice higher odds than children with no infection experience to be a "gainer in both RSC" compared to "no changers." *In-person self-distancing from friends* and *a high density in family due to COVID-19 anxiety* help to explain children's belonging to the "gainers in both RSC" profile. With a lower COVID-19 anxiety score, children were less likely "gainers in both RSC" compared to "no changers." *The frequency of in-person or online interactions* and *making new friends online* did not help to explain children's belonging to the "gainers in both RSC" profile.

Among different quality factors, only *autonomy perceptions* helped to explain children's belonging to the "gainers in both RSC" profile. With higher satisfaction with the freedom they have, children were less likely to be the "gainers in both RSC" compared to "no changers."

Among controls, we found that girls were more likely than boys to be "gainers in both RSC" compared to "no changers."

Decliners in both RSC

Almost all the quantity-of-relationship factors help to explain children's belonging to the "decliners in both RSC" profile compared to "no changers." *Compulsory physical distancing from friends* and *a high density of contacts inside the family due to the confinement measures* are factors that help to explain children's belonging to the "decliners in both RSC" profile. More specifically, children who could not or were not sure if they were able to attend school for many days were more likely to be "decliners in both RSC" compared to "no changers" than children who could attend school. *In-person self-distancing from friends* and *a high density in family due to infection or risk of infection* are factors that help to explain children's belonging to the "decliners in both RSC" profile. Children who were infected or if somebody in their home got infected with COVID-19 had 1.3 times higher odds than children with no infection experience to be "decliners in both RSC" compared to "no changers." Children who had someone at home at a high risk of getting very ill if infected were more likely to be "decliners in both RSC" compared to "no changers" than children who did not have such a family member. *In-person self-distancing from friends* and *a high density in family due to COVID-19 anxiety* help to explain children's belonging to the "decliners in both RSC" profile. With a lower COVID-19 anxiety score, children were less likely to be "decliners in both RSC" compared to "no changers." *New online friendships* helped to explain children's belonging to the "decliners in both RSC" profile. Children who agreed that they made new friends with other children online were less likely to be "decliners in both RSC" compared to "no changers." *The frequency of in-person or online interactions* did not help to explain children's belonging to the "decliners in both RSC" profile.

In addition, the quality-of-relationship factors helped to explain children's belonging to the "decliners in both RSC" profile compared to "no changers." *Support perceptions* help to explain children's belonging to the "decliners in both RSC" profile. More specifically, children who agreed more that they

feel supported by some of their friends were less likely to be "decliners in both RSC" compared to "no changers." *Perceptions of "being listened to"* help to explain children's belonging to the "decliners in both RSC" profile. Children who agreed more that their opinions about COVID-19 were taken seriously in their homes were less likely to be "decliners in both RSC" compared to "no changers." *Autonomy perceptions* help to explain children's belonging to the "decliners in both RSC" profile. With higher satisfaction with the freedom they had, children were less likely to be "decliners in both RSC" compared to "no changers." *Perceptions of loneliness and boredom* help to explain children's belonging to the "decliners in both RSC" profile. Children who agreed less that they feel alone and who feel less bored were less likely to be "decliners in both RSC" compared to "no changers." *Perceptions of safety* did not help to explain children's belonging to the "decliners in both RSC" profile.

Among controls, we found that children who had more frequent access to the Internet were more likely to be "decliners in both RSC" compared to "no changers."

Discussion and conclusions

The COVID-19 pandemic caused major changes in people's everyday routines. Both adults and children had to disconnect from in-person contact because of the confinement measures. Children had to cope with school closures, adapt to distance learning, and be separated from friends; many parents stayed out of work or worked remotely. Previous studies indicated that children's relational social cohesion in the family (e.g., Kutsar and Kurvet-Käosaar, 2021) and with friends (e.g., Choi et al., 2021; Stoecklin et al., 2021) may have decreased during the pandemic, but some children still described their positive experiences gained from the confinement measures of social distancing (Salin et al., 2020). Mostly, these studies are qualitative or focus on a single country and carry an exploratory character. In this study, we aimed to examine how the COVID-19 pandemic has affected children's subjective relational social cohesion (RSC) with family and friends, including the role of the quantity and quality of their relationships based on more than 20,000 primarily 9–13-year-old children's data from 18 countries.

Our analyses confirmed the decrease in familial and external relational social cohesion (measured as satisfaction with relationships with friends before and during the pandemic). In all the sample countries, children's satisfaction with relationships with friends and family members with whom they live together changed: low assessments (0–4 points on a 10-point scale) increased while the highest assessments (10 points on the same scale) decreased. The decrease was most notable in Germany, Turkey, and Bangladesh, which require further in-depth analysis. However, it is interesting that, in these countries, children reported most often that they could not attend school for many days while in Finland and Estonia, where the decrease was one of the smallest, it was the opposite. Even when the change was of different sizes in different countries, we conclude that the relational social cohesion of children was at risk during the pandemic.

Compared to relational cohesion with friends, the decrease was noticeably smaller inside the family, confirming our hypothesis. Former qualitative studies can help to explain this difference. For example, Kutsar and Kurvet-Käosaar (2021) and Stoecklin et al. (2021) describe the pros and cons of the pandemic situation from children's perspectives. On the one hand, families had new time reserves to develop their quality time and consolidate. They started with new joint activities, such as playing games together and cooking. This evidence refers to new resources to bolster familial relational social cohesion. Still, the lasting density at home and the diverse multiple tasks that family members performed separately before the pandemic in different life domains were suddenly concentrated in the same space—the family. On the other hand, the density of interactions and time spent together started to endanger the quality of mutual relationships, e.g., it resulted in increasing conflicts and even violence (e.g., Biroli et al., 2020; Lebow, 2020; Lee et al., 2020; Kutsar and Kurvet-Käosaar, 2021; Magson et al., 2021). Moreover, family members in their mutual conversations started to blow up COVID-19 anxiety and perceived the necessity of self-distancing from fragile elderly members of the extended families (Kutsar and Kurvet-Käosaar, 2021). Living in close proximity put children at risk of losing the personal freedom and autonomy they were used to before the pandemic outbreak. The latter is a risk factor against positive family consolidation, described also, for example, in the study of Stoecklin et al. (2021), according to whom the sources of these tensions sprang from the lack of children's own space and privacy and unusual parental control as an impediment to their autonomy. In sum, there were positive and negative challenges to changing intra-family relational social cohesion; however, positive aspects neutralized some negative effects of living densely together (e.g., Mariani et al., 2020). This explains why the decrease in familial RSC was not very high.

The pandemic restrictions and especially the confinement measures disconnected people of different ages from social life and endangered their external relational social cohesion. Previous studies showed that children and youth have a strong orientation to developing their social relationships, and compulsory disconnections from friends during the pandemic became their major concern (Meuwese et al., 2017; Ellis et al., 2020; Choi et al., 2021; Kutsar and Kurvet-Käosaar, 2021; Magson et al., 2021; Stoecklin et al., 2021). This was the main reason for dreaming about going back to school as a solution (e.g., Kutsar and Kurvet-Käosaar, 2021; Stoecklin et al., 2021). Our analyses confirmed the bigger decrease in external relational social cohesion (measured as satisfaction with relationships with friends before and during the pandemic) compared to changes

in family cohesion. For example, in Germany, where children perceived the biggest decline in satisfaction with relationships with friends, 49.5% of children were totally satisfied with their friends retrospectively, but after a year of living with the pandemic, only 11.1% were totally satisfied; meanwhile, the group with low satisfaction increased during the pandemic from 4.0 to 44.5%. Still, children in Germany also went through a noticeable negative change in satisfaction with the relationships with their family members: the group with low satisfaction increased from 3% before the pandemic to 10.9% a year later; the totally satisfied group changed from 51% prior the pandemic to 33.8% during it. In sum, new circumstances reshaped the social relationships of children and disrupted their spontaneous embeddedness into adults" and peer networks, their active "knitting" of the "orb web," as Corsaro (1997) calls it.

Immediately after the onset of the pandemic and the implementation of confinement measures, several studies (e.g., Loades et al., 2020) started to document emerging mental health problems in children as a pandemic outcome. Younger children missed their friends from school, older youth felt bored and longed for romantic relationships; young people of different ages felt lonely and complained about the loss of autonomy and freedom (e.g., Stoecklin et al., 2021). In the present analyses, we were interested in the clusters of children who shared similar assessments about their confinement experiences. The cluster analysis revealed five clusters of children which we consider as their profiles of change in relational social cohesion. Most children (88.9%) belonged to the "no changers" profile, as they did not report notable changes in their relational cohesion appraisals (in Finland even 97%, 95% in South Korea, and 94% in Estonia). At first glance, the high percentage belonging to this "no changers" profile was surprising to us, especially when thinking of the patterns of evidence revealed in qualitative studies with children. Still, the homeostatic principle described by Cummins (2014) can explain it: subjective wellbeing seems to be stable unless there are lasting negative events affecting children's lives, especially when the closest family is concerned. Our analyses also demonstrated smaller changes in relational social cohesion in the family compared to external relational cohesion (satisfaction with relationships with friends). Interestingly, "no changers" tend to have more positive perceptions in all the quality-of-relationships factors, especially in the case of perceptions of autonomy and "being listened to" compared to children belonging to other profiles.

The second most common profile of change was "decliners in both RSC"—for 8.4% of children, relational social cohesion with family and friends decreased during the pandemic. Almost all the selected quantity and quality of relationships factors help to explain children's belonging to a "decliners in both RSC" profile compared to "no changers." However, our analyses revealed that, for 1.5% of children, relational social cohesion with family and friends increased during the pandemic. These children belong to the "gainers in both RSC" profile. Mainly the quantity of relationships factors, and among different quality of relationship factors, only perceptions of autonomy ("satisfaction with freedom'), help to explain children's belonging to the "gainers in both RSC" profile compared to "no changers." Being positive about the freedom they had during the pandemic seems to have helped children to follow their preferences of social interactions, especially at times of school closures during the pandemic. There are children whose "normalcy" was withdrawn (e.g., those on the autism spectrum—see Locke et al., 2010; Kasari et al., 2011) or those who do not like going to school because of bullying or learning problems (see, e.g., Hall et al., 2021). During the pandemic, they could experience social distance from classmates and teachers as a personal freedom. According to former studies, they diverted from an adultist normative approach—from children who are embedded in intra- and extra-familial networks and "weave their webs" as active social actors. Moreover, being relationally socially coherent, they develop peer cultures, a sense of belonging, trust in other people, social skills, and influence social change (Corsaro, 1997). We suppose that children who enjoyed more freedom during the pandemic may have problems with returning to school at the end of the social-distancing measure. This aspect should be taken into consideration as a risk factor, especially in the case of children with special educational needs and children who, before the pandemic, experienced neglect or being withdrawn, i.e., those with low relational social cohesion (see, e.g., Locke et al., 2010; Kasari et al., 2011; Hall et al., 2021).

Compulsory measures and/or self-distancing due to infection/risk of infection and "COVID-19 anxiety" seemed to be important factors explaining the different experiences of "gainers" and "no changers," on the one hand, and "decliners" on the other hand. Children who declined most in RSC during the pandemic had to be at home all day because of COVID-19 significantly more than "gainers" and "no changers," including significantly less frequently playing or spending time outside due to the restrictions. Moreover, "decliners in both RSC" were significantly more likely to not be able to attend school for many days, have someone at home at a high risk of getting very ill if they got infected, and have higher COVID-19 anxiety than "no changers." Those who had to stay or decided to stay at home declined in RSC because of the lack of in-person contacts outside the home. With reference to Corsaro's (1997) approach, the social-distancing measures severely disturbed children's customary way of life (their subjective normalcy) and development, i.e., their active embeddedness into social networks.

However, children whose social distancing was less strict were more likely to develop their relational social cohesion even during the pandemic: they have a higher probability of belonging to the group of "gainers in both RSC" compared to the "no changers." Compulsory social distancing from friends and the risks of decreasing mental

health are related to each other. Several studies were carried out about the importance of friends in children's social lives and personal development (e.g., Sakyi et al., 2014; Schwartz-Mette et al., 2020 for a review). Pandemic social-distancing confinement measures put active in-person friendships on hold (e.g., Stoecklin et al., 2021), thus also endangering the relational social cohesion of children beyond the family framework.

Stoecklin et al. (2021), in their study, refer to children's strategies of compensating for the lack of direct contact with friends with contact using IT devices; some children were even able to make new online friends to reshape their networking routines. We found that "decliners in both RSC" were less active in making new friends online (in contrast to the trend of increasing virtual contacts to compensate for the missing in-person communication, e.g., Ellis et al., 2020; Munasinghe et al., 2020; Sañudo et al., 2020). Our analysis showed that access to the Internet does not always mean maintaining contact with peers: children who had more frequent access to the Internet were more likely to be "decliners in both RSC" compared to "no changers." Again, previous qualitative studies (Kutsar and Kurvet-Käosaar, 2021; Stoecklin et al., 2021) can help to explain this. In previous studies, children have admitted that they spend long hours on the computer surfing or playing games alone; thus, they were diverted from their own former normalcy. The latter cannot promote either socializing with peers or doing things together with family members. Instead of maintaining relational social cohesion or compensating it by making new friends online, these children choose self-distancing. According to children, "friendships from distance" cannot compensate for real in-person communication (Stoecklin et al., 2021; Larivière-Bastien et al., 2022).

Vogel et al. (2021) documented the decrease in social support from peers shortly after the lockdown. Due to the disconnection from friends, "decliners in both RSC" also felt less support. This evidence also agrees with the findings of Jiao et al. (2020), Okruszek et al. (2020), Singh and Singh (2020), and others. Moreover, several studies (e.g., Loades et al., 2020; Kutsar and Kurvet-Käosaar, 2021) stressed that social-distancing measures negatively impacted children's friendships and caused sadness and feelings of loneliness and boredom. Our study confirmed these results, as children who agreed more that they feel alone and bored were more likely "decliners in both RSC" compared to "no changers." For "decliners in both RSC," relational social cohesion in the family also decreased due to perceptions of having less freedom and autonomy, and that their opinions about COVID-19 were taken seriously in their home. We considered whether the "decliners in both RSC" had to divert from their pre-pandemic normalcy the most. However, this needs more in-depth research.

The cluster analysis also revealed small groups of children who gained higher familial cohesion and experienced loss in connections with friends (0.5%) or, conversely, gained higher extra-familial connections and felt loss in intra-familial ones (0.6%). Interestingly, those who gained closeness in the family lost most of their satisfaction with friends, and vice versa. It seems that these findings uncover some compensatory mechanisms that need further exploration.

There are several limitations to our study. The International Children's Worlds COVID-19 Supplement Survey took place during the pandemic when confinement measures shaped children's lives. During the data collection, many children stayed at home because of school closures. On the one hand, we documented their acute perceptions about the pandemic, but the relevance of the retrospective appraisals of relationships before the pandemic can be debated. Unfortunately, we do not have so-called baseline data (the same respondents answering similar questions before the pandemic). However, we do not regard this as a serious limitation because, in our opinion, following the interpretative essence of subjective wellbeing, people act according to their perceived reality, not objective circumstances, and, consequently, should be trusted. Moreover, a quantitative approach allows the exploration of social phenomena, to a certain extent. As we started with reference to several qualitative studies about the children's experiences of the pandemic, following the present discussion, we concluded that the subjective normalcy of children can differ from adults" normative understandings of relational social cohesion and, thus, should be further studied in-depth. Second, although our analyses are based on a unique and novel multinational database with wide geographical coverage, most countries did not have representative samples, and data-collection methods varied between countries. Moreover, the sample sizes vary considerably, from 590 in Germany to 2,422 in Belgium. This must be considered when interpreting the results of country-pooled analyses. Third, we had too few children belonging to "gainers in RSC-Fa, decliners in RSC-Fr" and "decliners in RSC-Fa, gainers in RSC-Fr" profiles to explore in further detail what relational factors help to explain their belonging to these profiles. Further in-depth contextual analyses would be helpful. Fourth, due to the small N in profiles other than "no changers," it was not possible to explore the role of relational factors in belonging to a certain RSC change profile in each individual country.

To conclude, our analyses revealed that children experienced social-distancing measures during the pandemic differently. Almost one-tenth of children, as an average across the sample countries, have perceived significant loss in relational social cohesion. In some countries, such as Germany, Turkey, and Bangladesh, this percentage reaches

one-fourth of children whose mental health should be the careful focus of psychologists, mental health practitioners, and other aid professionals. Our study confirmed the importance of keeping schools open not only with the aim of better educational outcomes but especially in terms of protecting relational social cohesion and the mental wellbeing of children. This evidence is echoed among policymakers in Estonia. Any future closure of schools should be avoided to prevent an extreme emergency because the negative outcomes of school closures and the social distancing of the whole population outweigh its positive aspects.

Data availability statement

First version of Children's Worlds COVID-19 Supplement survey dataset was released in Spring 2022 and at moment it is available only for members of the countries' survey teams.

Ethics statement

Active informed consent was obtained from all subjects involved in the study. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

Author contributions

ON had a lead role in data analysis. All authors contributed equally to the drafting of the article.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Social capital and the COVID-19 pandemic threat: The Russian experience

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Social capital is an important resource for the wellbeing of both the individual and society. Since the beginning of the COVID-19 pandemic, many studies have been conducted to explore the role of social capital in coping with the negative consequences of the pandemic. However, how the pandemic itself can affect the social capital of people has yet to be studied. Try to fill this gap, we aimed at testing the association between the individually perceived coronavirus threat and such indicators of social capital as general social trust, institutional trust, and the quality of various types of people's social relationships (with family, friends, colleagues, neighbors, residents of a locality, residents of a country). Data were collected in different regions of the Russian Federation for a convenience sample of 500 respondents. The study found that the individually perceived coronavirus threat was positively associated with institutional trust, but not with general social trust. Moreover, this covariation was moderated by age: an institutional trust-threat relation emerged only in older respondents with an average age of around 60, but not in younger participants. Furthermore, the study found that perceived coronavirus threat was associated with closer relationships in the family, but simultaneously with an increased distance in relations with neighbors and residents of the respondents' locality. In summary, the study indicated that "strong" ties (i.e., with family, colleagues, and friends) either remained unchanged or were intensified in the face of the pandemic threat, whereas "weak" ties (i.e., with neighbors, residents of the same locality, and fellow citizens) tended to weaken even more.

KEYWORDS

social capital, social relationships, social cohesion, social trust, institutional trust, perceived coronavirus threat

Introduction

Government responses to the COVID-19 pandemic have involved significant restrictions in social contact as a result of externally-imposed mass quarantines and lockdowns. However, isolation has also emerged on an individual level due to fears of contracting COVID-19 (Jurcik et al., 2020; Moccia et al., 2020). The COVID-19 lockdowns have been associated with numerous financial economic stressors, physical and mental health concerns (e.g., Baker and Wilson, 2020; Jurcik et al., 2020; Pandey et al., 2020; Joffe, 2021). It has also altered the relationships with people as they become

increasingly physically, and sometimes socially, distant from each other. The current study examines the experience of living through the coronavirus pandemic as it relates to the psychosocial phenomena that form the basis of social capital at the macrolevel (i.e., social and institutional trust) as well as the microlevel (e.g., relationships with others—relatives, colleagues, neighbors). We view the perceived COVID-19 threat as a psychological indicator of the impact of the pandemic and resulting lockdowns. The perceived threat implies that the individual makes a subjective assessment of the phenomenon and the perceived likelihood that an event will occur and will have specific consequences (Agrawal, 2018; Wirtz and Rohrbeck, 2018). An understanding of how the experience of living with the threat of viral infection can be associated with the components of social capital is crucial, first, to assess the expected consequences of the current pandemic and, second, to predict the consequences of future pandemics.

Social capital

The concept of social capital is frequently discussed in the social and economic sciences (sociology, social psychology, political science, and economics) and can be defined in a variety of ways. Social capital comprises not only a cognitive component (i.e., norms of reciprocity and trust) but also a relational component (i.e., social relationships and networks). In almost all definitions and studies, social capital involves trust and social ties or social relationships (Bourdieu, 1986; Coleman, 1988; Putnam, 2000; Lin, 2001). Putnam (2000, p. 19) defines social capital as "connections among individuals–social networks and the norms of reciprocity and trustworthiness that arise from them." He argues that trust is an essential component of social capital because it modifies cooperation. This study also considers social capital with regard to trust (social and institutional) and social relationships (e.g., with relatives, friends, colleagues).

Theoretically, social capital should be considered as a micro concept whereas social cohesion, being a broader concept than social capital, is a more appropriate concept for macro analysis (Klein, 2013). Therefore, data at the individual level should be used only to analyze the relationship between the indicators of social capital and other phenomena. However, the results obtained also allow us to make inferences about what would happen to social cohesion, since the concepts of social capital and social cohesion are closely intertwined.

The well-known concept of social cohesion (Dragolov et al., 2016; Delhey et al., 2018) includes in its structure three components evaluated at the macro-level of society: *Connectedness* (identification, institutional trust, perception of fairness), *social relations* (social networks, trust in people, acceptance of diversity), and *focus on the common good* (solidarity and responsibility for others, respect for social rules, and civil participation). In our study, we measure the following indicators of social capital at the individual level: institutional trust, social trust, and perceived dynamics of social relations. Thus, the indicators of social capital that we measured are associated with indicators of social cohesion, allowing us to make some generalizations.

Social capital and health

Most studies in this field examine the relationship between social capital and economic progress (Helliwell and Putnam, 1995; Knack and Keefer, 1997; Fukuyama, 2002). However, numerous studies strongly indicate that social capital is positively associated with human health (Kawachi et al., 1997, 1999; Macinko and Starfield, 2001). Social capital is linked to health through several different causal pathways, for example through a rapid circulation of health information, healthy norms, access to material resources, lower crime rates, and emotional support in networks (Rönnerstrand, 2013).

Social capital and COVID-19

Social capital is a resource that can help prevent the spread of COVID-19. Based on US data, it was found that individuals reduced their mobility earlier and to a higher degree in counties with high levels of social capital than in counties with low levels of social capital (Borgonovi and Andrieu, 2020). Thus, in counties with high social capital, people more effectively shared information about the perceived danger of the virus, trusted this information and reduced their mobility, thereby preventing infections.

According to empirical research conducted in various European countries (in independent analyses for Austria, Germany, Italy, the Netherlands, Sweden, Switzerland and the UK) between March and May 2020, higher social capital accounted for a 12–32% reduction in the incidence of COVID-19. Moreover, in Italy, areas with higher social capital exhibited a lower mortality from COVID-19 (Bartscher et al., 2020). This can primarily be attributed to the fact that high social capital increases social responsibility: people maintain social distancing, observe lockdowns, wear protective equipment, and follow the recommendations of the government, public health officials, and physicians. Relatedly, people in such areas may generally be more supportive of others (e.g., checking in on ill neighbors).

Of course, whether some of these interventions, including mass quarantines, are necessarily in the best interest of the public is hotly contended by laypeople and scientists alike (Bavli et al., 2020; Jurcik et al., 2020; Reiss and Bhakdi, 2020). The lockdowns and mass vaccination campaigns themselves were controversial and have been associated with various negative outcomes (e.g., Joffe, 2021), and thus there is reason for people to

be discerning with respect to trusting the advice of government authorities. Lockdowns that were organized in many countries of the world after the outbreak of the pandemic restrained its spread. On the other hand, public health interventions also had numerous negative consequences for the economy and also on the unwanted physical and mental health impacts on the population at large (Bavli et al., 2020). For instance, some people may have developed symptoms of depression and anxiety from the social isolation, while others may have delayed needed medical care for chronic illnesses such as cancer or cardiovascular diseases due to the fear of contracting the virus (e.g., Bavli et al., 2020; Jurcik et al., 2020). In this regard, the pandemic situation may negatively affect various components of social capital. For example, focusing on others as potential sources of viral transmission and the ensuing and enforced social distancing may lead to the weakening of affective bonds within a community.

In other words, social capital can be used effectively for the public good and even misused by authorities. Thus, studying the impact of the pandemic threat on social capital may provide us with insights into how and which types of individual and public health interventions are accepted by the community, which interventions may increase social capital and which types may erode it.

Aims and research questions of the present study

The purpose of our study was to understand how the perceived threat of the coronavirus can be associated with various aspects of social capital at the individual level.

Accordingly, we can formulate two main research questions.

RQ1. How (positively or negatively) is the perceived threat of the coronavirus related to (general and institutional) trust?

RQ2. How is the perceived threat of the coronavirus related to various types of social relationships (with relatives, neighbors, colleagues, etc.)? Are people beginning to distance from each other or not?

Impact of the COVID-19 pandemic on social capital

The available body of survey evidence demonstrates that national disasters, including epidemics adversely influence social capital (Albrecht, 2017). Concerns have already been expressed that the COVID-19 pandemic can have negative consequences for social capital (Pitas and Ehmer, 2020). Measures such as isolation and social distancing taken to contain the virus can contribute to the destruction of social capital. The daily interaction with different people that takes place in everyday life at work, school and in public places was stopped or minimized during the pandemic. Past pandemics of a similar nature have had negative implications for social capital. Having studied the effects of the pandemics from the Spanish flu of 1918 to COVID-19, some authors have argued that the Spanish Flu pandemic had negative consequences on social trust (Aassve et al., 2020). Moreover, a low level of social trust was inherited by the descendants, which only exacerbated and slowed economic development for many decades (Aassve et al., 2020). The decline in trust was the result of the measures taken to combat the pandemic: social isolation, closure of public places, a ban on mass meetings, and a request by the authorities to avoid interpersonal contacts. Similar restrictive measures were taken during the COVID-19 pandemic, so we can generally expect a negative effect of the pandemic on people's trust.

In response to the COVID-19 pandemic, rumors have circulated regarding the alleged man-made nature of COVID-19 (Shukhratovna et al., 2021). These theories about how the pandemic emerged contributed to the growth of xenophobia and fears of a digital dictatorship, which took the form of protests on social networks against applications of monitoring the population's compliance with social isolation (Shukhratovna et al., 2021). These "conspiracy theories" may not always be unfounded; for instance, the Chinese government reportedly had used their COVID tracking app to disperse potential protesters in early 2022 who had aspects of their bank deposits frozen (Jung, 2022). Ultimately these beliefs and actions can also have an adverse effect on institutional and social trust and they can contribute to feelings of alienation as well. In other words, the more the COVID-19 pandemic is perceived as dangerous and threatening, and the more severe and extensive the lockdowns, the less social capital we would expect there to be. However, even more complex is the relationship between the perceived coronavirus threat and the dimensions of social capital at the individual level: different types of trust, such as general trust and institutional trust, as well as attitudes concerning specific social contacts. One large international study indicated that confinement during the pandemic triggered reductions in social activity with neighbors, friends, and family, which in turn was associated with reduced life satisfaction (Ammar et al., 2020). Thus, we expect that a perceived coronavirus threat and the associated restriction of social contacts may have negative consequences for social capital. In particular, social ties between people and institutions will not be maintained and will become weaker, as a result of the above-mentioned fears, people's trust may decrease. Based on this reasoning, we can formulate our first hypothesis:

H1: The perceived threat of coronavirus will be negatively associated with social capital (social and institutional trust, social relationships with others).

On the other hand, it is important to note that the COVID-19 pandemic is different from pandemics in the past: we now

have advanced communication and information technologies available at our fingertips. Staying at home no longer means near complete isolation. We can work, study, even see family and friends as well as our physicians and therapists online, which became commonplace during the pandemic (Jurcik et al., 2020).

Nevertheless, does this alternative digital form of communication negate or buffer the threat to social capital? Scientists argue that today there are many ambiguities regarding the use of digital technology in new realities, as people may be uncertain about how to use them appropriately and effectively. Moreover, digital communication is not an equivalent substitute for personal interaction (Claridge, 2020; Pitas and Ehmer, 2020). However, it is reasonable to expect that the use of Information and Communication Technology (ICT) can mitigate the decline in social capital. Analogously, there is evidence that long-distance psychotherapies can be as effective as therapies that are delivered face-to-face (Carlbring et al., 2018), even though digitally guided expert treatments may not be the preferred modality by the public (Renn et al., 2019). Such findings beg the question as to whether being able to communicate *via* social media, email, text, and online platforms such as Zoom or Skype, can afford a level of social capital that can be as effective as communicating in person, at least for some people.

Moreover, there is the evidence that disasters can, perhaps paradoxically, strengthen social capital (Dussaillant and Guzman, 2015). Dussaillant and Guzman (2015) found that in some cases trust increased after an earthquake and tsunami; disasters influence people's attitudes, behavior and social norms, and thus provide an opportunity to strengthen their social ties. Boehnke et al. (1989) found that higher fear of nuclear war among West German adolescents covaried positively with self-reported wellbeing. Similarly, the pandemic has led to new opportunities for social connections and collaboration, where some people may make an extra effort to connect with colleagues on projects online, even across multiple continents (see Jurcik et al., 2020). Indeed, despite some of the negative effects on socialization during the mass quarantines there was a significant increase in social contacts through digital technology according to one large scale international study (Ammar et al., 2020). The authors suggested wide scale interventions would promote social inclusion through technology. Thus, the question about how the pandemic affects social capital remains open and the present study contributes to empirically addressing this issue.

Accordingly, an alternative hypothesis can also be proposed that posits that the perception of the coronavirus threat does not reduce social capital but even increases it, because ICT opens up new opportunities for people to contact and interact with each other. In addition, in lockdown conditions, contacts with significant others, for example, with some family members and close friends, can become even more intense and frequent.

H2: The perceived threat of the coronavirus will be positively associated with social relationships with others.

Consequently, we are faced with contradicting suppositions regarding the relationship between the perceived threat of the coronavirus and social capital. This study aims to resolve this contradiction. Moreover, previous studies examining the relationship between the COVID-19 pandemic and social capital have been focused on how social capital helps combat the spread of the pandemic. This study examines the opposite side of the issue—namely, how the pandemic might influence social capital. Additionally, while previous studies have examined the pandemic in connection with social capital at the macrolevel, the current study emphasizes social capital at the individual level.

Methods

Procedure

The empirical study was conducted at the height of the COVID-19 pandemic, in May 2020, when the lockdown (first officially introduced in Russia on March 25, 2020) was extended by the Russian government until early June 2020 and the restrictions on movement had not yet been lifted. The study was conducted online through a paid online survey service called "Anketolog" (https://anketolog.ru).

Participants

Five hundred participants took part in the study in exchange for compensation (about 6 USD per respondent). The sample included 32.8% men and 67.2% women. The characteristics of the respondents' age are as follows: $M_{age} = 38.5$, $SD_{age} = 10.66$, $Min_{age} = 18$, $Max_{age} = 70$. The full age distribution of respondents is shown in the histogram in Appendix. Most of the respondents (72%) reported having a higher education, 5.4% had secondary education, and 19% had secondary special education (vocational schools, colleges). As for material status, 7% of respondents live on their income without experiencing material difficulties; 45.2% said that their income is quite enough for them; 32.6% said that it was difficult for them to live on their income; 14% reported financial difficulties, i.e., that it was very difficult for them to live on their income; 1.2% of respondents found it difficult to assess their material status. Twenty-four percent of respondents resided in Moscow and the Moscow region, and the remaining 76% respondents resided in other regions of the Russian Federation.

Materials

All measures were administered in Russian. The questionnaire contained the translated measures shaped by

back-translation and cognitive interviews with the think-aloud technique (Willis, 2004).

Perceived coronavirus threat

We used the Perceived Coronavirus Threat Questionnaire (PCTQ) (Conway et al., 2020). The questionnaire contains 6 items, such as "Thinking about the coronavirus (COVID-19) makes me feel threatened," "I am worried that I or people I love will get sick from the coronavirus (COVID-19)." We used the following responses on a 5-point Likert scale: (1) completely disagree; (2) disagree; (3) not sure/neutral; (4) somewhat agree; (5) completely agree. The Cronbach alpha of the Russian version of the questionnaire was 0.87.

Social trust

We assessed social trust using 4 statements. Three of them are taken from the World Values Survey questionnaire: "Most people can be trusted," "I trust my neighbors," "I trust people of other nationalities" (Inglehart et al., 2014). The forth was developed by the authors ("I trust my colleagues at work"). The 5-point Likert scale had the following response options: (1) completely disagree; (2) disagree; (3) not sure/neutral; (4) somewhat agree; (5) completely agree. The Cronbach's alpha for this scale was 0.83.

Institutional trust

We assessed institutional trust using four statements, developed by the authors: "I trust the federal authorities," "I trust the regional authorities," "I trust the authorities of the city/district in which I live," "I trust the mass media." We used the following responses on a 5-point scale: (1) completely disagree; (2) disagree; (3) not sure/neutral; (4) somewhat agree; (5) completely agree. Cronbach alpha was 0.91.

Social relationships

We evaluated the respondents' social relationships with various groups of individuals: family members, friends, colleagues, neighbors, residents of the same locality (city, town, village) and Russian population (as a whole). Respondents were asked: "How did the COVID-19 situation affect your relationship with...?" The sentence was completed with the list of representatives of the above-mentioned social categories from family members to residents of the same state. Respondents were offered a 5-point Likert-type scale, to evaluate whether there was a distancing in the relationship or a greater closeness: (1) Has certainly contributed to distancing, (2) probably contributed to distancing, (3) the relationship has not changed, (4) likely contributed to the greater closeness, (5) definitely contributed to greater closeness. The six targets of social relationships were treated separately in the subsequent analyses.

Control variables

We used five additional control variables. Three were demographics: education, age and gender. The variable "education" included 11 levels in accordance with the increase in the degree of education. These stages corresponded to the official Russian classification of education stages from 1 - Basic secondary education to 11 - Academic degree stage II – PhD. The variable "age" was continuous. Respondents had to indicate their age, measured by the number of full years. The variable "gender" was categorical and coded as follows: 1 – male; 2 – female.

Given the topic of the current research, we also asked participants to document their personal experiences with COVID-19. Firstly, we asked the respondents: "Have you ever had a coronavirus infection?" (Response options: 1 = yes, 0 = no). We further asked the respondents whether people they knew had experienced the infection: "Do you have any friends or relatives who have been or are currently suffering from a coronavirus infection?" (Response options: 1 = yes, 0 = no).

Data processing

For data processing, we first constructed an intercorrelation matrix (Spearman coefficient) and calculated the descriptive statistics. To assess the relationship between perceived coronavirus threat, trust, and social relationships, we used linear regression analysis controlling for socio-demographic characteristics, as well the respondents' own experiences with the coronavirus. Linear regression analysis was performed in the SPSS program, reporting standardized regression coefficients. Additionally, we performed a moderation analysis using PROCESS (Hayes, 2013) in SPSS to determine whether there are interactions with age for some of the relations we identified. Age was used a moderator given that older age groups are at a greater mortality risk (Mishra et al., 2020).

Results

Table 1 presents descriptive statistics and a correlation matrix. To comment briefly on the resulting correlations, it should be noted that the perceived COVID-19 threat is positively associated with institutional trust, closer relationships with family members, and more distant relationships with

TABLE 1 Descriptive statistics and correlations between variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Virus threat	3.26	0.98	1	0.00	0.17***	0.13**	−0.03	−0.08	−0.12**	−0.14**	−0.06
2. Social trust	2.90	0.81		1	0.41***	0.05	0.079	0.08	0.14**	0.12**	0.11*
3. Institutional trust	2.24	0.94			1	0.13**	0.15***	0.10*	0.02	0.07	0.06
4. Family	3.27	0.91				1	0.27***	0.09*	0.14**	0.16***	0.14***
5. Friends	2.78	0.79					1	0.50***	0.51***	0.48***	0.37***
6. Colleagues	2.74	0.74						1	0.47***	0.38***	0.31***
7. Neighbors	2.81	0.62							1	0.58***	0.40***
8. Residents of the town/village	2.70	0.72								1	0.71***
9. Russian population (as a whole)	2.70	0.78									1

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

TABLE 2 Relation among perceived coronavirus threat, social and institutional trust (simple linear regression with control of demographic variables, $N = 500$).

Predictor and controls	Social trust (Model 1)				Institutional trust (Model 2)			
	β	t	SE	95% CI	β	t	SE	95% CI
Virus threat (predictor)	0.01	0.03	0.04	−0.06–0.08	0.17***	3.72	0.04	0.08–0.25
Education	0.00	0.04	0.06	−0.11–0.12	−0.02	−0.49	0.07	−0.17–0.10
Low material status	−0.11*	−2.32	0.04	−0.18 to −0.01	−0.17***	−3.71	0.05	−0.28 to −0.09
Age	0.23***	5.09	0.00	0.01–0.02	0.10*	2.03	0.00	0.00–0.02
Sex	−0.04	−0.88	0.08	−0.22–0.08	0.07	1.59	0.09	−0.03–0.33
Sick personally	−0.03	−0.63	0.16	−0.42–0.22	−0.10*	−2.25	0.19	−0.79 to −0.05
Friends/relatives sick	0.09	1.89	0.08	−0.01–0.31	0.11*	2.48	0.09	0.04–0.41

Model 1: $F = 5.18$, $df = 5$, $p < 0.00$; $R^2 = 0.07$; Effect sizes (Cohen's f^2) is 0.08.
Model 2: $F = 5.63$, $df = 5$, $p < 0.001$; $R^2 = 0.08$; Effect sizes (Cohen's f^2) is 0.09.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

neighbors and other local residents. Social trust is positively associated with institutional trust as well as closer relationships with neighbors and other local residents. In addition to being positively associated with the perceived threat of the coronavirus and social trust, institutional trust is also positively associated with closer relationships with family members, friends, and colleagues. Furthermore, all types of social relations were found to be more or less related to each other.

Table 2 presents the results of a multiple regression analysis of the correlation between the perceived threat of the coronavirus and social and institutional trust with controlled sociodemographic variables. In addition, there were two other important control variables that might affect the components of social capital: the presence/absence of COVID-19 patients among the acquaintances and relatives of the respondents and whether or not the respondents themselves had contracted the virus. Standardized β coefficients are presented in the following tables.

The perceived threat of the coronavirus was not associated with social trust but was positively associated with institutional trust: the greater the perceived threat of the coronavirus in the eyes of the respondents, the greater their reported trust in the various levels of basic governmental institutions and the media. Among the reference variables, both types of trust are negatively associated with low material status and positively associated with the age of the respondents. With regard to institutional trust, there was also significance in whether or not respondents had acquaintances or relatives with COVID-19 (positive correlations) and whether respondents themselves had reported having been infected (negative relation).

Similarly, Table 3 presents models for relations (degree of closeness or distance since the beginning of the pandemic) with family members and friends.

The perceived threat of the coronavirus was unrelated to the perceived closeness with friends but was positively related to the perception of closer relationships with family members. Among the reference variables, only a negative correlation between low material status and the perception of closer relationships with family and friends was found.

TABLE 3 Relation between perceived coronavirus threat and perceived closeness with family and friends (simple linear regression with control of demographic variables, $N = 500$).

Predictor and controls	Family (Model 3)				Friends (Model 4)			
	β	t	SE	95% CI	β	t	SE	95% CI
Virus threat (predictor)	0.13**	2.73	0.03	0.03–0.20	−0.02	−0.48	0.04	−0.09–0.06
Education	0.06	1.40	0.07	−0.04–0.23	−0.06	−1.20	0.06	−0.19–0.05
Low material status	−0.12*	−2.53	0.05	−0.22 to −0.03	−0.10*	−2.21	0.04	−0.18 to −0.01
Age	0.01	0.22	0.01	−0.00–0.01	0.08	1.69	0.01	−0.01–0.013
Sex	0.02	0.61	0.09	−0.12–0.24	0.01	0.27	0.08	−0.14–0.18
Sick personally	−0.04	−0.91	0.19	−0.54–0.19	−0.05	−1.17	0.16	−0.51–0.13
Friends/relatives sick	−0.06	−1.46	0.09	−0.33–0.05	0.08	1.64	0.08	−0.03–0.29

Model 3: F = 2.62, df = 5, $p = 0.002$; $R^2 = 0.05$; Effect sizes (Cohen's f^2) is 0.05.
Model 4: F = 1.59, df = 5, $p = 0.14$; $R^2 = 0.02$ Effect sizes (Cohen's) is 0.02.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

TABLE 4 Relation between perceived coronavirus threat and perceived closeness with colleagues and neighbors (simple linear regression with control of demographic variables, $N = 500$).

Predictor and controls	Colleagues (Model 5)				Neighbors (Model 6)			
	β	t	SE	95% CI	β	t	SE	95% CI
Virus threat (predictor)	−0.06	−1.36	0.04	−0.12–0.02	−0.12**	−2.64	0.03	−0.13 to −0.02
Education	−0.04	−0.82	0.05	−0.16–0.07	−0.06	−1.38	0.05	−0.16–0.03
Low material status	−0.06	−1.31	0.04	−0.13–0.03	−0.07	−1.60	0.03	−0.12–0.01
Age	0.05	1.02	0.01	−0.01–0.01	0.11*	2.38	0.01	0.01–0.02
Sex	0.02	0.39	0.08	−0.12–0.18	−0.01	−0.10	0.06	−0.13–0.12
Sick personally	−0.02	−0.48	0.16	−0.38–0.23	−0.10*	−2.21	0.13	−0.53 to −0.03
Friends/relatives sick	0.005	0.10	0.08	−0.14–0.16	0.08	1.69	0.06	−0.02–0.23

Model 5: F = 0.73, df = 5, $p = 0.64$; $R^2 = 0.01$; Effect sizes (Cohen's f^2) is 0.01.
Model 6: F = 3.34, df = 5, $p = 0.002$; $R^2 = 0.05$; Effect sizes (Cohen's f^2) is 0.05.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 4 reveals that there is no relation between the perceived COVID-19 threat and the perceived closeness in relationships with colleagues, but there is a negative relation with the perception of relationships with neighbors.

Additionally, in Model 6 (neighbors), statistically significant relations with the dependent variable have two reference variables: the age of respondents was positively associated with the perception of closeness with neighbors, and having ever personally contracted the disease was negatively associated with this dependent variable.

Table 5 indicates that the perceived threat of the coronavirus was in no way associated with the perception of relationship closeness with the population of the country at large (model 8).

However, we obtained a negative correlation between the perceived threat of the coronavirus and the perception of closeness in relationships with other residents of the locality in which the respondents live. In other words, the higher the threat of the coronavirus, the more the respondents report being alienated from other local residents. Moreover, among the control variables, only low material status was negatively associated with the participants' town/village and Russian population (as a whole). This indicates that the higher the material status of the respondents, the stronger the feeling of closeness with residents of the same locality as well as the country as a whole.

Given that age is a risk factor for coronavirus infection and also proved to be associated with the dependent variable in several cases (Models 1, 2, and 6), we evaluated the moderating role of age with regard to the relationship between the threat of the coronavirus and social capital indicators. A moderating effect was only discovered in relation to one case: the association between institutional trust and coronavirus threat (model 2). The moderating effect had the following characteristics: effect = 0.11, $p < 0.05$; 95 CI = 0.02 to 0.20; $F(3, 495) = 7.42$, $p < 0.001$.

Figure 1 provides a visual representation of this interaction effect.

Thus, institutional trust is low when the threat is low, regardless of age. When the threat is high, the level

TABLE 5 Relation between perceived coronavirus threat and perceived closeness with the participants' town/village and Russian population (as a whole) (simple linear regression with control of demographic variables, $N = 500$).

Predictor and controls	Participants' town/village (Model 7)				Russian population (as a whole) (Model 8)			
	β	t	SE	95% CI	β	t	SE	95%F CI
Virus threat (predictor)	−0.13**	−2.82	0.03	−0.16 to −0.03	−0.04	−0.93	0.04	−0.10–0.04
Education	−0.07	−1.65	0.06	−0.20–0.02	−0.04	−0.80	0.06	−0.17–0.07
Low material status	−0.11*	−2.40	0.04	−0.17 to −0.02	−0.12*	−2.50	0.04	−0.19 to −0.02
Age	0.03	0.57	0.01	−0.01–0.01	0.01	0.15	0.03	−0.01–0.01
Sex	−0.02	−0.38	0.07	−0.17–0.11	−0.05	−0.99	0.08	−0.23–0.08
Sick personally	−0.03	−0.59	0.15	−0.38–0.20	−0.01	−0.31	0.16	−0.37–0.27
Friends/relatives sick	0.08	1.61	0.07	−0.03–0.26	0.01	0.28	0.08	−0.13–0.18

Model 7: F = 3.09, df = 5, $p = 0.006$; $R^2 = 0.04$; Effect sizes (Cohen's f^2) is 0.04.
Model 8: F = 0.82, df = 5, $p = 0.52$; $R^2 = 0.01$; Effect sizes (Cohen's f^2) is 0.01.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

of institutional trust among younger respondents remains practically unchanged, while the slope was steeper among older respondents. We thus analyzed conditional effects of the focal predictor at values of the moderator. We found that for the group of young people (16th percentile, 29 years old), the effect of perceived coronavirus threat on institutional trust failed to reach significance (Effect = 0.07, ns; SE = 0.06; $t = 1.92$; 95 CI: = −0.04 to 0.19). In contrast, for the group of older participants (84th percentile, 50 years old) the effect of perceived coronavirus threat on institutional trust was significant (Effect = 0.28, $p < 0.001$; SE = 0.06; $t = 4.31$; 95 CI: = 0.15 to 0.40).

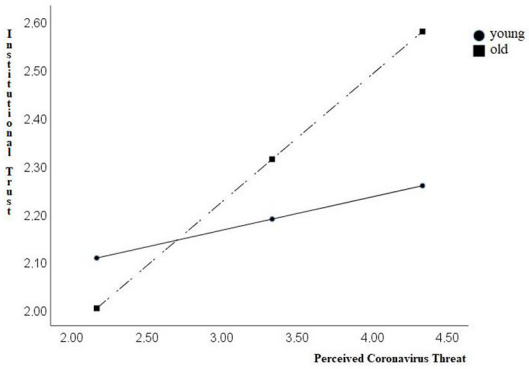

FIGURE 1
Graphical depiction of the interaction effect between perceived coronavirus threat (X) and age for institutional trust (Y) ($N = 500$).

Discussion

In this study, we examined the effect of the perceived coronavirus threat on various aspects of social capital at the individual level. We suggested two competing hypotheses, given some of the mixed anecdotal and empirical evidence. The first was that the perceived threat of coronavirus would be negatively associated with social capital (social and institutional trust, social relationships with others). The second, was that the perceived threat of the coronavirus would be positively associated with social relationships with others.

However, as with most research studies, reality proved more complex: negative relations between COVID-19 threat and social capital were found for relationships with neighbors and local residents. In contrast, positive relations were obtained between the perceived coronavirus threat and institutional trust and relationships with relatives. However, there were no associations with other indicators, including social trust, relationships with friends, colleagues, or closeness with fellow citizens.

Social capital is strengthened/accumulated in certain spheres from which people can receive support in the face of the viral threat: family and the state. That is, participants with higher levels of perceived threat reported greater closeness with family (which might also be a consequence of lockdowns and constant cohabitation) and a higher level of loyalty to the state (through institutional trust). However, greater institutional trust was only observed in the group most vulnerable to COVID-19—namely, respondents around 60 years of age.

With regard to social ties, we see a general process of disintegration. Respondents endorsed a greater closeness within the family but simultaneously more distancing from members of other social categories (neighbors, residents of the same locality), while relationships with colleagues and friends, as with fellow citizens, reportedly remained unchanged. However, the social category of "fellow citizens" (i.e., the Russian population at large) may be too abstract, and, perhaps, respondents are simply unable to assess their own relationships with members of this category. Overall, we see that so-called "strong" ties (with family, friends, and colleagues) or relationships with those with

whom the respondents are in close contact remain unchanged or became stronger. Meanwhile, "weak" ties (with neighbors or residents of the same locality) or ties with those with whom the respondents may on average have less contact with have become reportedly even weaker. From our point of view, all these effects are precisely a reaction to threat and isolation. Family ties become stronger because people worry about their next of kin and contact them more often in isolation. As for weak ties, people begin to contact them less due to the COVID-19 threat and isolation, so these ties become weaker.

If we consider the results of our study from the broader macro perspective of social cohesion (Dragolov et al., 2016, 2018), it is likely that the impact of the pandemic on social cohesion will be uneven. If trust is not particularly affected by the pandemic, then certain aspects of social relations may suffer and people may move away from each other.

Findings that clarify the link between fear of COVID-19 and social capital are extremely important as numerous studies conducted since the onset of the COVID-19 pandemic have indicated that social capital itself is an important resource for overcoming the disease (Bian et al., 2020; Barrios et al., 2021; Makridis and Wu, 2021). Notably, the findings also demonstrated that those who reported having been infected with the virus also endorsed less institutional trust. The reason for this finding is unclear, but for most people (especially those without underlying health conditions) a course of COVID-19 does not lead to severe complications, which may contrast with some of the messages from public health authorities and the media; these have often focused on statistical models with overly negative population outcomes, or on salient outlying cases, generating considerable controversy in the public and scientific circles alike (see Reiss and Bhakdi, 2020). This begs the question as to whether such messaging may sometimes be counter-productive. More research needs to be done on public health campaigns and perceptions of the virus in those that have been infected compared to those who have not.

Strengths and limitations

This is the first empirical study that attempts to consider the effects of the perceived coronavirus threat on social capital. We analyzed the relationship between the perceived coronavirus threat and social capital at two levels. First, at the individual level, the psychological phenomena that form social capital at the macro-level (institutional and social trust) were considered. Second, we considered the respondent's subjective assessment of changes in relationships with others (relatives, colleagues, neighbors, etc.), which constitutes social capital at the individual- or at the micro-level.

However, the peculiarities of the relationship between the perceived threat of the coronavirus and social capital may depend on the prevailing situation in the country and, primarily, on the effectiveness of the state's efforts in overcoming the pandemic. For example, if these efforts are ineffective, the substantial threat posed by the pandemic may adversely affect institutional trust. Therefore, to further appreciate the role of contextual elements, this study could be conducted in other countries and cultural settings. Replication studies will facilitate an understanding of the universality of the relationship between integration and disintegration processes in various societies amidst the pandemic.

At a basic diagnostic level, when we asked respondents whether they or their acquaintances had experienced a coronavirus infection or not, we did not require that the disease or its absence be necessarily documented with a positive or negative test result, respectively. Therefore, we can assume that the sample may include a certain number of people who answered these questions in the affirmative, based on their impressions, which may be incorrect (i.e., false positives) given symptom overlap with other viral infections such as the flu (see Kaye et al., 2020). Alternatively, some respondents may have answered these questions in the negative, the disease could have still progressed in an asymptomatic or mild form (i.e., false negative). Indeed, asymptomatic cases may be fairly common according to an epidemiological study (Kim et al., 2020). What complicates this diagnostic picture further is that the medical tests themselves (e.g., PCR tests) have limitations in sensitivity and specificity (Jarrom et al., 2022).

Additionally, our study does not have a longitudinal design; although we asked about perceived changes in retrospect, respondents' impressions may be susceptible to various recall biases and cognitive heuristics. Accordingly, we cannot assume causality or even the direction of causal relationships. In some cases, the reverse logic of explaining the connection may also be plausible. For example, greater perceived coronavirus threat may be a consequence of the respondents' inherently high institutional trust, but the reverse may also be true: health anxious individuals may look for answers in authoritative-sounding sources of reassurance and guidance. Bidirectional or looping effects are also possible: those who trust institutions may trust the official state reports about the coronavirus danger and experience a higher perceived threat, which in turn may make them more dependent on and trusting of the government authorities to solve the pandemic. Similarly, those who reported having been infected with the virus also reported less institutional trust, but it is unclear which variable caused the other, or if a third variable was involved in affecting this relation.

Another limitation of our study was that the effect sizes in only two regression models out of eight is close to the average. The effect sizes in our models are mostly low. Nevertheless, the effect of the coronavirus threat on social capital exists and should not be underestimated.

Finally, the data collected for this study arises from a convenience sample. Therefore, it may help us gain insights into

the considered phenomena, but we are not able to generalize this data to the Russian population as a whole.

Conclusion

The vast majority of available research on social capital in the context of COVID-19 shows that social capital is a good resource for mitigating the rise in morbidity and preventing the spread of infection (see the research review by Wu, 2021). However, researchers overlook the fact that the pandemic itself can be associated with psychosocial phenomena underlying social capital (i.e., various types of trust and social relationships). This study intended to fill this particular gap.

The results of the study demonstrate that greater perceived coronavirus threat was linked to higher institutional trust in older participants. This pattern can be interpreted as the activation of psychological defense mechanisms. This effect was not observed among young people, for whom the infection is less dangerous (Bonanad et al., 2020). In contrast, the perceived threat of the coronavirus was not related to social trust. As for social ties, our study indicated that "strong" ties (with family, colleagues, and friends) either remained unchanged or were intensified in the face of the epidemiological threat. "Weak ties" (with neighbors, residents of the same locality, and fellow citizens) have tended to weaken even more. Accordingly, the possible effects of the pandemic on social capital are ambiguous and may impact various parameters of social capital in differential ways. We observed social disintegration combined with a growth in paternalism and increased ties with the immediate social environment. Therefore, some might conclude that the social cohesion of Russian society has suffered somewhat as a result of the pandemic. Overall, our findings suggest more of a negative effect on social cohesion than a neutral one, even if not all ties were adversely affected. In addition to replication studies, future research needs to examine the relations between public health and media messaging, numerous pandemic related health indicators in society (other than COVID outcomes per se), and institutional trust.

Data availability statement

The original contributions presented in the study are publicly available. This data can be found here: AT. (2021). Social capital and COVID [Data set]. Zenodo. http://doi.org/10.5281/zenodo.4814352.

Ethics statement

All procedures performed in the studies involving human participants were in accordance with the ethical standards of the Commission Ethical Assessment of Empirical Research Projects at HSE Department of Psychology and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Author contributions

AT designed the study, collected, and processed the data. AT, TJ, and KB were involved in the process of writing the paper. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Appendix

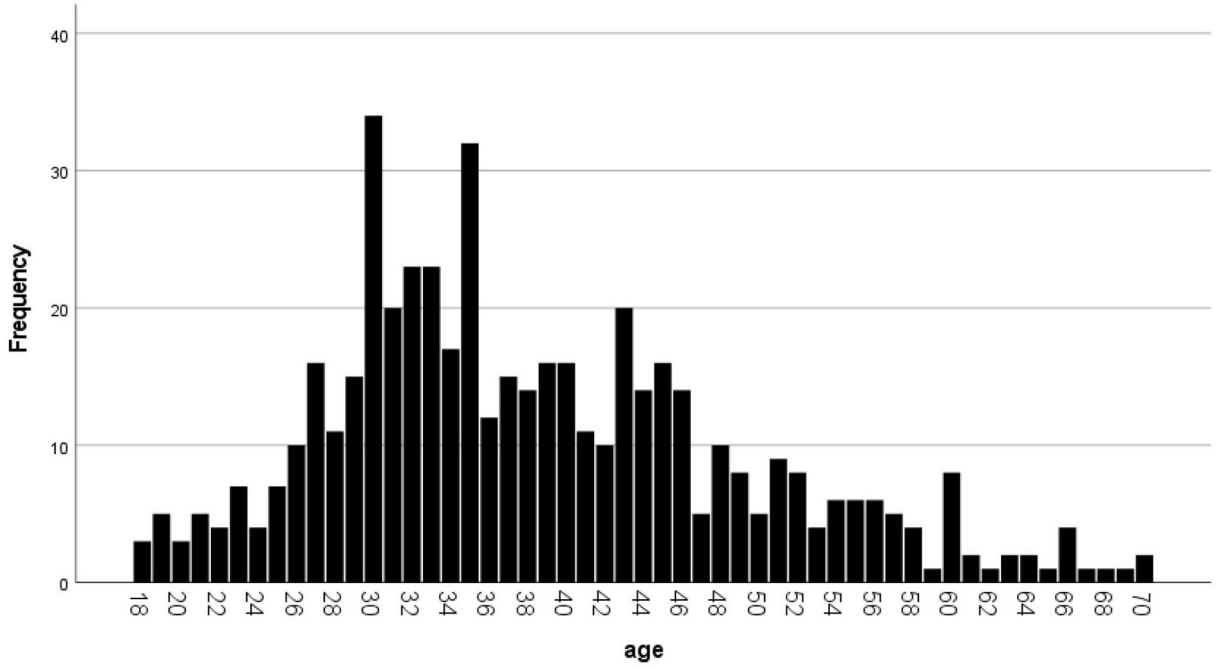

FIGURE A1
Age distribution of the sample ($N = 500$).

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Trust and compliance: Milieu-specific differences in social cohesion during the COVID-19 pandemic in Germany

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As a response to the COVID-19 pandemic, an increase in social cohesion was observed during the first wave and its aftermath. A closer look reveals heterogeneous responses regarding aspects of cohesion—such as trust in others and compliance with containment measures—that differ by individual socioeconomic and cultural characteristics. How these characteristics affect social cohesion in combination is rarely investigated. Therefore, we introduce the concept of social milieus, which addresses the interrelation of socioeconomic and cultural characteristics on the level of social groups, into the international debate. While previous studies have applied this concept to the analysis of social cohesion during the pandemic, they exhibit theoretical and empirical shortcomings. Hence, we develop a new theoretical model of social milieus and an empirical typology using the German sample of the European Social Survey. This typology is matched with data from the Research Institute Social Cohesion (RISC) for a milieu-specific analysis of social cohesion. Results show considerable heterogeneity in social cohesion during the first wave of the pandemic in Germany. Three social milieus with potentially conflicting modes of social cohesion regarding trust and compliance stand out while other milieus are less diverging as presumed in the literature. These modes can be interpreted as emerging from a combination of the milieus' socioeconomic position and basic human values. Thus, the new theoretical model and empirical typology of social milieus contribute to the understanding of how social cohesion has been contested between social milieus early in the pandemic.

KEYWORDS

social milieus, social cohesion, social integration, trust, conformity, COVID-19, socioeconomic status, basic human values

Introduction

After the outbreak of the COVID-19 pandemic and the issuing of the first lockdown measures in Germany, appeals to social cohesion and solidarity were frequent. Initially, between the first two waves of the COVID-19 pandemic in Germany, which peaked in April and November 2020, perceived social cohesion and interpersonal trust increased. This finding has been interpreted as an emotionally driven "rally-round-the-flag," a short-term response of closing ranks in the face of an external threat (Bol et al., 2021). As the crisis progressed, however, analyses focusing on the over-time trend of responses to the COVID-19 pandemic showed that both institutional trust in the government and public health services as well as compliance with governmental recommendations (e.g., social distancing) decreased. In turn, concerns about social cohesion and the long-term consequences of restrictions, and the willingness among the non-vaccinated to participate in protests have increased (Frei et al., 2021; Grande et al., 2021)[1]. A closer look at the "rally" phase reveals that heterogeneity in institutional trust, attitudes toward political containment measures, and health concerns were already observed back then. Therefore, we suppose it is crucial to go beyond the prevailing focus on general trends within the German population and scrutinize group-specific heterogeneity in the perceptions of and responses to the pandemic and its political consequences in greater detail.

We suggest that a perspective focusing on "social milieus" holds promising insights for such a subgroup analysis. Social milieus can be defined as large latent groups sharing basic socioeconomic and cultural characteristics that are meaningful to their members, thereby shaping attitudes and (inter-)actions. We assume that the constitutive features of social milieus shape social cohesion in the face of the pandemic. Recently, various typologies of social milieus have been employed to analyze group differences in social cohesion during the COVID-19 pandemic (Sinus® Institute., 2020; Beckmann and Schönauer, 2021; El-Menouar, 2021). However, all typologies have considerable limitations regarding conceptualizing cultural values, treatment of socioeconomic characteristics, or overall replicability (Sachweh, 2021). Moreover, the theoretical understanding of social cohesion in relation to social milieus is limited. While extant analyses point out heterogeneity in cohesion between milieus, they do not specify which (latent) social conflicts might emerge from milieu-specific differences in socioeconomic positions and cultural values. A theoretically founded and replicable typology of social milieus is needed to appropriately analyze social cohesion during the COVID-19 pandemic from the perspective of social milieus.

In this paper, we first discuss and define the concepts of social cohesion and social milieus. We then review recent findings on social cohesion during the first wave of the COVID-19 pandemic and its aftermath in general and between social milieus in particular, as revealed in previous typologies. Next, we propose a novel typology of nine social milieus in Germany based on Latent Class Analysis and data from the German sample of the European Social Survey (ESS) 2016 (n = 2,852). This typology overcomes the drawbacks of previous approaches as it is theoretically founded and replicable with publicly accessible large-scale survey data. We apply this typology of social milieus to explore intergroup differences in two relevant aspects of social cohesion during the first wave of the COVID-19 pandemic and its aftermath: trust in social cohesion and concerned compliance with restrictions. The empirical analysis is based on the German pilot study of the Research Institute Social Cohesion (RISC), which was conducted from April to September 2020 and can be matched with the ESS data (n = 589). Our typology of social milieus allows a closer assessment of different modes of social cohesion during the COVID-19 pandemic and the potentially conflictual relations between milieus along the lines of stratification and values.

Theoretical background

The concept of social cohesion

The meaning of the concept of social cohesion differs considerably within the scientific literature (Chan et al., 2006; Schiefer and van der Noll, 2017)[2]. Moreover, social cohesion is used vaguely in ordinary language, and broader "conceptions" according to the idea of a "good society" are attached to this term in public opinion and scientific discourse—putting the term in danger of becoming an "empty signifier" with a normative character (Deitelhoff et al., 2020, p. 13). The presence of different conceptions highlights that social cohesion occurs in various forms that may differ between social groups. Therefore, the task is to find an analytical definition of social cohesion on the societal level close to everyday use, minimal in scope, and at the same time suited to analyze different group-specific conceptions.

Within the past years, different concepts of social cohesion on the societal level have been developed, that aim to address the above features. Chan and Goldthorpe (2004, p. 290) define cohesion as "a state of affairs concerning [...] interactions among members of society as characterized by a set of attitudes

1 The development of these indicators is documented by the WSI (2020), Busemeyer et al. (2021a,b), the "Mannheim Corona Study" (https://www.uni-mannheim.de/gip/corona-studie/) and, on a weekly basis, the COSMO–COVID-19 Snapshot Monitoring (https://projekte.uni-erfurt.de/cosmo2020/web/).

2 Technically, when speaking of social cohesion at the societal level, the term "societal cohesion"—similar to the German term "gesellschaftlicher Zusammenhalt"—would be more appropriate. We nevertheless use "social cohesion" as it is implemented in the literature.

and norms that includes trust, a sense of belonging and the willingness to participate and help, as well as their behavioral manifestations." This concept is designed for cross-cultural and historical comparison, reducing social cohesion to its supposed smallest common denominator and a gradational "more-or-less" logic. However, a gradational understanding of cohesion is ill-suited to capture qualitatively different forms of cohesion. Furthermore, a focus on interactions or a sense of belonging risks inserting a bias toward a specific "communal" ("gemeinschaftlich") form of cohesion at the group level (Stanley, 2003, p. 10). Other definitions are oriented toward the macro-level and expand the cohesion concept by a "modern," pluralistic type, thereby deliberately following a normative interpretation. For example, the "Social Cohesion Radar" defines a "cohesive society" by three domains: (a) "resilient social relations" (including interpersonal trust and acceptance of diversity), (b) "a positive emotional connectedness between the community and its members" (e.g., identification) and (c) "a pronounced focus on the common good" (e.g., civic participation) (Dragolov et al., 2016, p. 1). This approach, again, follows a gradational logic by building a single formative index score. Hence, different types of social cohesion are not distinguished.

Grunow et al. (2022) have proposed using the concept of "social integration", which is similar to cohesion but systematically rooted in theoretical debates in sociology. While cohesion refers to a group property, Grunow et al. conceptualize integration as a multi-level concept referring to the "inclusion" of actors into social orders from interactions to social groups to societal subsystems (Luhmann, 1997, p. 619). The social integration of individuals into society at large results from their multiple inclusions into various nested, neighboring, or intersecting social orders below the societal level. Grunow et al. (2022) identify four basic ingredients of social integration: (1) *Consensus* as shared conceptions of the given, desirable, or normatively required; (2) *Trust* in fellow citizens to adhere to rules; (3) *Conformity* with various kinds of norms, customs or traditions; (4) *Cooperation* with others. Social integration is not conceptualized as the maximization of all ingredients within a more-or-less logic but as a well-balanced mid-point on a continuum ranging from disintegration on the one hand to over-integration on the other hand. Importantly, it is not the addition but the interplay of the four ingredients that generates social integration. This inherent multi-dimensionality allows for group-specific, substantially different conceptions of social cohesion as a group property to emerge from various combinations of the ingredients. This reflects Durkheim (1897[2002]) central insight that social integration is not a matter of degree but types. Conflicts between groups about the desirable mode of social cohesion play a significant role in pluralistic democracies, connecting antagonistic groups (e.g., parties in collective bargaining) instead of segregating them (Coser, 1956[1964]; Lipset and Rokkan, 1967).

In light of the above discussion, we suggest using the term "social integration" as an overarching multi-level concept, whereas "social cohesion" refers to the internal integration of social groups through specific constellations of consensus, trust, conformity, and cooperation. This distinction allows us to identify social groups and their differences, to relate them on the societal level, and thus assess potential social conflicts.

The COVID-19 pandemic poses a particular context in which issues of group-specific social cohesion are contested with regard to overall social integration on the societal level. Governments impose measures, and people depend more than before on the actions of others. This makes compliance and trust very salient issues. Compliance with measures can be seen as a manifestation of the conformity ingredient of social cohesion. Trust that others comply and trust in society's capability to handle the virus reflect a manifestation of the trust ingredient. Thus, in this paper, we focus on trust in social cohesion and concerned compliance with governmental measures—short: trust and concerned compliance—as two highly relevant contextual manifestations of social cohesion during the first phase of the COVID-19 pandemic.

The concept of social milieus

Durkheim (1895[1982], 1897[2002]), introduced the notion of "social milieus" into sociology for capturing emergent, intermediate, and large social groups that contribute to the integration of individuals into society. Yet, except for France and Germany, the term "social milieu" has not become well-established in the international sociological debate[3]. Instead, "social class" prevails, with social stratification as its main characteristic. However, this concept is ambiguous and contested. The debate, for example, if occupational class schemes can still explain political behavior, is ongoing (Dalton and Klingemann, 2013; Evans and Langsæther, 2021). Undisputed is the observation that cultural issues beyond socioeconomic interests, like post-materialistic values, have become more salient. *Cultural class analysis* has emerged as a new perspective on classes in the tradition of Bourdieu, acknowledging the importance of socioeconomic inequality *and* culture (Vester, 2013; Savage, 2021). *To avoid the ambiguity of the "cultural class" terminology and address the interrelation of socioeconomic and cultural aspects in constituting large social groups with specific modes of social cohesion, we use the term "social milieus."*

3 Unfortunately, the French term "milieu" is mostly translated as "environment" (e.g., Durkheim, 1897[2002], p. 135ff) and thus loses part of its meaning, e.g., as a medium relating social actors. In German, the word "Milieu" is almost always used in a sociological or historical context, while "Umwelt" more generally designates the environment.

In the past couple of years, theoretical milieu conceptions and empirical milieu studies have been developed to analyze social cohesion. The most elaborate theorization of social milieus has been developed by Vester et al. (1993[2001]). Empirically, it was based on the widely used Sinus® milieus (for a more comprehensive overview, see Groh-Samberg (forthcoming)). The Sinus® milieu typology, established in the 1970s, serves to map relevant patterns of the social structure" and also of society-wide "cleavages" (Flaig et al., 1994, p. 43f). Hence, milieus are interpreted as (real) lifeworlds of large groups of individuals. Originally grounded in qualitative explorations (Flaig et al., 1994), the typology was validated quantitatively through cluster analyses of indicators measuring value orientations and life goals. *Post-hoc*, it was revealed that they also "produced" vertical stratification by education and income (Flaig et al., 1994, p. 49, 70). Eventually, the milieu typology was depicted on two axes: a vertical axis is divided into lower-, middle-, and upper-class strata. A horizontal axis ranges from traditional values of conservation, security, and conformity to reorientation values oriented toward openness to change and exploration of new lifestyles. The latest version identifies ten milieus in Germany (see Figure 1). The usefulness of the Sinus® milieu typology has been demonstrated in various fields in the social sciences, such as political culture (Flaig et al., 1994).

Vester et al. (1993[2001]) deliver a theoretical interpretation of the Sinus® milieu typology based on Bourdieu (1979[1984]), which they explicitly developed for the analysis of social integration. Social milieus are characterized in terms of a specific "habitus": the attitude pattern of an individual, expressed in taste, mentality, and a particular ethic of the conduct of everyday life (Vester et al., 1993[2001], p. 25). Milieus are thus defined as "groups with similar habitus, coming together through kinship or neighborhood, work or education and develop a similar everyday culture. They are connected through social cohesion or only through similar orientation of habitus" (Vester et al., 1993[2001], p. 24f, own translation). Following Bourdieu, the importance of the socioeconomic status axis of the Sinus® milieu typology is particularly emphasized. Between the three strata, two dividing lines are identified: The boundary of "respectability" separates the "decent" middle class from the "undeserving" lower class, and a boundary of (cultural) "distinction" separates the upper class from the middle and lower classes (Vester et al., 1993[2001], p. 26ff, own translation). Finally, Vester et al. (1993[2001], p. 427ff) also provide a detailed empirical account of various modes of social cohesion. In particular, the theoretical foundation of the socioeconomic axis allows for the integration of potential conflicts over resources into the milieu approach—a feature currently pronounced in the face of the perceived threats to social cohesion (Hradil, 2022).

Yet, the socioeconomic dimension is not a constitutive part of the empirical Sinus® milieu typology, and the conceptualization of cultural values follows a unidimensional logic, as it only contains a modernization axis. Current value theories identify at least one more value dimension (Inglehart and Welzel, 2005). Schwartz's (2012) comprehensive approach to values identified a second value dimension ranging from self-enhancement (power and achievement) to self-transcendence (universalism and benevolence) values (see Miles, 2015). This dimension is of considerable importance in contemporary debate. For example, Reckwitz (2019) identifies an "old middle class" composed of intermediate education and supporting self-enhancement values, opposing a "new middle class" with higher education and self-transcendence values in Germany. Moreover, he supports a milieu differentiation of the middle class according to the Sinus® typology, even though it does not account for self-enhancement and self-transcendence values. In the context of the COVID-19 pandemic, the importance of these values is especially pronounced as it can be expected that governmental measures to contain the virus go against motives of self-enhancement. Another disadvantage of the Sinus® typology is that the Sinus® institute does not reveal the clustering algorithm of the milieus, making proper scientific research difficult (Sachweh, 2021). A replicable empirical milieu typology with a comprehensive conceptualization of cultural values and an appropriate consideration of socioeconomic characteristics is still lacking. This paper's empirical part builds on a new milieu model that fits these criteria.

The definition of social milieus by Vester et al. has two implications: first, the socioeconomic and cultural dimensions are equally important. Second, a common habitus is sufficient for milieus to exist; a milieu consciousness is not a necessary characteristic. We follow these considerations and take up the concepts of cohesion and integration defined above. We define *social milieus as large, latent social groups composed of socioeconomic and cultural components. Their specific compositions result in respective modes of social cohesion. These modes integrate individuals into society differently and stand in (potential) conflict with each other. Thus, social milieus serve as a touchstone for social integration and social cohesion during a crisis like the COVID-19 pandemic.* Before turning to our milieu model, we first document empirical findings on social cohesion during the COVID-19 pandemic and how these relate to existing milieus approaches.

State of research

Social cohesion during the COVID-19 pandemic

In the first two waves of the pandemic, which peaked around April and November 2020, respectively, perceived social cohesion and institutional trust within the German population have increased compared to the times before the pandemic (Kühne et al., 2020; Delhey et al., 2021). This finding is consistent with the "rally-around-the-flag" thesis. The levels

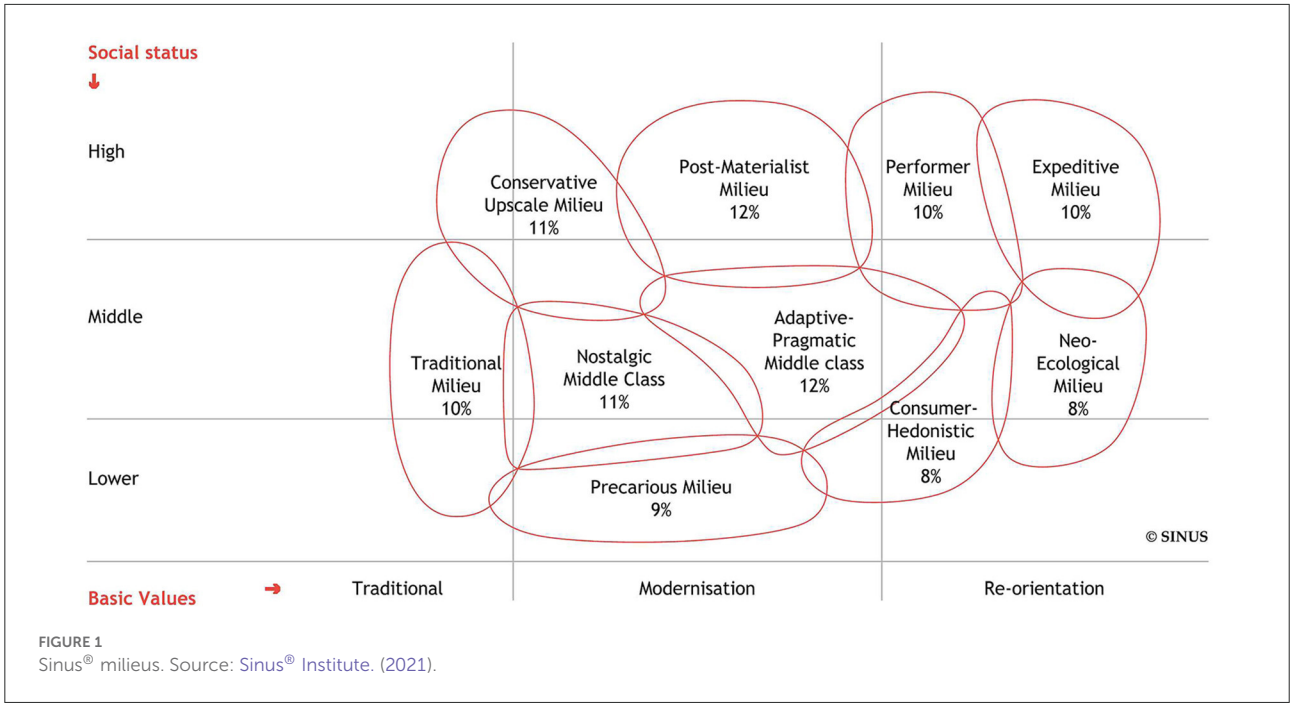

FIGURE 1
Sinus® milieus. Source: Sinus® Institute. (2021).

of interpersonal trust during the first wave of the pandemic were shown to remain stable (Delhey et al., 2021) or increase (Adriaans et al., 2021) compared to before the pandemic. Moreover, trust in the government's ability to avoid unequal treatment of different social groups was high (Busemeyer, 2020, p. 1). Trust, in turn, served as a precondition for compliance with measures (Bargain and Aminjonov, 2020).

Compliance with protective recommendations has slightly decreased between the first two waves (Adriaans et al., 2021). During this period, the willingness to get vaccinated if vaccination would be enforced by law was relatively low and further decreased over time (Schmelz and Bowles, 2021). Early in the pandemic, several political measures like social distancing rules, compulsory masks, and cancellation of events were widely supported. In contrast, the attitudes toward other actions, like the shutdown of public institutions (e.g., daycare facilities) or a possible mandatory vaccination, were polarized (Beckmann and Schönauer, 2021).

When looking beyond population averages, heterogeneity is revealed. For compliance with measures, a stable center of the population and no polarization between large groups could be observed. Instead, the margins were somewhat eroding as skeptics became more radicalized (Busemeyer et al., 2021b), eventually turning into a social movement of Corona protesters, the so-called "Querdenker" (see also Frei et al., 2021; Grande et al., 2021). While these protesters over-proportionally voted for the Greens and the Left party in the past, during the pandemic, many switched to the COVID-19 protest party "die Basis" or the right-wing populist AfD ("Alternative for Germany").

Heterogeneity also shows when social groups are differentiated by socioeconomic and cultural dimensions. For instance, those with low education or low incomes suffered not only additional income losses (WSI, 2020) but also perceived social cohesion to be more endangered (Brand et al., 2021) and were more prone to endorse conspiracy beliefs regarding vaccination (Jensen et al., 2021). In the cultural dimension of attitudes, values, and social identities, "initial national or global unity" turned into "rivalrous cohesion" between groups in later stages (Abrams et al., 2021, p. 201, 205). These conflicts revolve around the free riding of groups who do not adhere to measures but benefit from public spending and collective compliance. They also involve moralism and strengthening the social identity of groups who do adhere to measures (Abrams et al., 2021, p. 204). Moreover, social cohesion is compatible with demarcation from or discrimination of ethnic groups due to the allegedly spreading of the virus (Dollmann and Kogan, 2020). Hence, it is crucial to identify heterogeneity: dominating and marginalized, vulnerable or radicalized social groups within society. What is still missing is an overall picture of these groups in relation to each other regarding social cohesion. Recently, three empirical milieu approaches aimed to carry out this task and analyze group-specific social cohesion during the COVID-19 pandemic.

Social milieus and social cohesion during the COVID-19 pandemic

El-Menouar (2021) identifies seven "value milieus" through principal component and cluster analyses of Schwartz (1992) basic human values. Overall, during the second pandemic wave,

there is considerable approval of the importance of protecting lives and, consequently, the requirement of policy measures that restrict liberty rights. The majority (80%) of the respondents approve of prioritizing the protection of life (El-Menouar, 2021, p. 25). However, mainly the individualistic materialist milieu, with a large proportion of older, self-employed individuals with higher incomes, points to the economically detrimental effects, thereby strongly disagreeing with the humble humanist milieu, which is academic and exhibits universalistic values. While the achievement-oriented milieu (also with high incomes) has a more conservative background than the individualistic materialists, for both milieus self-enhancement values are predominant. Consequently, they endorse the individual freedom of choice and oppose vaccination—thereby strongly differing from the humanist and (older) safety-oriented conservative milieus. In contrast to the rally thesis or, at least, in anticipation of future developments, a majority of 69% expect that the COVID-19 pandemic would polarize society. Here, too, considerable milieu heterogeneity is shown. For example, the achievement-oriented milieu expects a positive impact on social cohesion and has faith in overcoming the COVID-19 crisis. The materialists, in turn, disagree strongly but, at the same time, find that a profound societal change in the face of the pandemic is unnecessary. These milieu differences might result from different positions on the conservation vs. openness axis.

Beckmann and Schönauer (2021) use cluster analyses with data from an online survey collected in August and September 2020. They detect four social milieus composed of two factors extracted by factor analyses: (1) a factor comprising materialistic values and right-wing political orientation as opposed to post-materialistic values and left orientation, and (2) a socioeconomic factor composed of income, education, and class self-placement. The resulting left-liberal intellectual milieu and the (right-wing) conservative-established milieu have high positions on the socioeconomic dimension. In contrast, the (materialistic-right) traditional and the (postmaterialistic-left) alternative milieu are placed at the lower end. While more than 80% of the conservative milieu assessed the fight against the coronavirus positively, this applies to only 63% of the alternative milieu, the two other milieus lying in between. Concerning attitudes toward other issues, the restriction of migration, climate protection, and the reduction of social inequality, however, the left-liberal and alternative milieus resemble one another.

Finally, a third study conducted in May 2020 employs the Sinus® milieus to analyze social cohesion (Sinus® Institute., 2020). The liberal-intellectual or post-materialist milieu as the "guiding milieu" ("Leitmilieu") with the highest amount of resources and moderate modernization orientation take the threat posed by the coronavirus seriously and was satisfied with the (extent of) governmental actions. This milieu is, to a relatively low extent, concerned about the effects of the pandemic on democracy and personal freedom and instead expects a positive impact. The precarious milieu stands in stark contrast to this milieu: the governmental actions are evaluated negatively and as too far-reaching, and the members of the milieu feel irritated and are worried about the negative impact of the pandemic on democracy and personal freedom. Other milieus stand between the liberal-intellectual/post-materialist and the precarious milieu regarding specific indicators. For example, the traditional and adaptive-pragmatic middle-class milieus do not consider the coronavirus as threatening. The latter assesses mandatory face masks negatively. The nostalgic middle class assesses the governmental measures as too far-reaching but prefers health over the economy when asked about the duration of measures, while the performer and the expeditive milieus put the economy first.

The three milieu approaches detect heterogeneity between groups and find certain milieus that oppose each other (conservative vs. alternative, liberal vs. precarious). However, every conceptualization has its theoretical or empirical deficits: El-Menouar (2021) value milieus do not contain a stratification dimension, and the value dimension used by Beckmann and Schönauer (2021) is unidimensional and mixes up general values with particular political attitudes. The inadequacies of the Sinus® milieus have already been addressed in section "The concept of social milieus" Overall, all conceptions miss a closer assessment of the different modes of cohesion and the potentially conflictual relations between milieus along socio-economic or cultural lines.

A new model of social milieus

We developed a theoretical model of social milieus as an attempt to overcome these shortcomings (Groh-Samberg (forthcoming)). The model carries forward the conceptual work of Vester et al. and is empirically replicable with publicly accessible large-scale data. Above all, a socioeconomic and a cultural dimension are distinguished. These dimensions are assumed to produce potentially conflicting modes of social cohesion and related practices.

We conceptualize the socioeconomic dimension as involving resources, which shape life chances and are recognized as such. As a first empirically tractable approximation, we include the level of formal education and household income as central indicators of socioeconomic status (Ganzeboom et al., 1992). In addressing the cultural dimension, we build on the concept of values, which has been revived in sociology and recognizes the role of actors as well as conflictual relations between social groups (Miles, 2015). Values are considered to be part of an individual's socially shaped "mentality" (Geiger, 1932) or "habitus" (Vester et al., 1993[2001]; Longest et al., 2013) and guide social evaluations and actions. Similar value profiles across individuals can thus be seen as part of social milieus. We go beyond unidimensional conceptions of values and build on basic human values as theorized and tested by

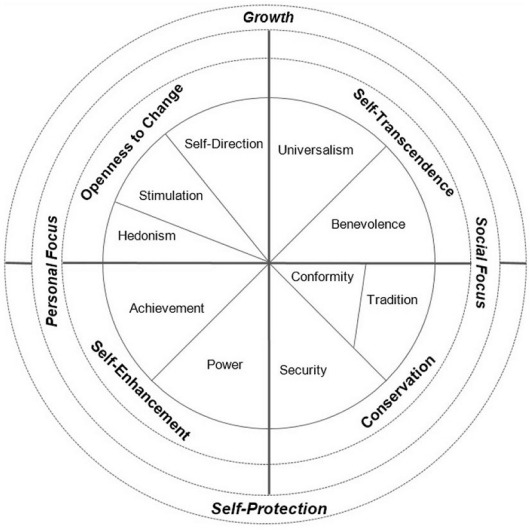

FIGURE 2
Schwartz's basic human values. Source: Magun et al. (2016).

Schwartz (1992, 2012). Schwartz identifies ten basic human values that can be arranged in a circumplex structure in which adjacent values are compatible with each other, and opposite values stand in (potential) conflict (see Figure 2). These values can be condensed to four higher-order values that can be organized along two axes ranging from self-transcendence (e.g., universalism) to self-enhancement (e.g., achievement) and from openness (e.g., self-direction) to conservation (e.g., tradition). Finally, based on the endorsement of each of two adjacent higher-order values, four value foci can be identified: a growth focus (openness and self-transcendence), a social focus (self-transcendence and conservation), a self-protection focus (conservation and self-enhancement), and a personal focus (self-enhancement and openness).

As has been said, the literature is ambivalent about the interrelation of the two milieu dimensions of socioeconomic position and culture. A major advantage of the concept of social milieus is that the role of stratification and culture in shaping large latent groups can be assessed empirically (Chan and Goldthorpe, 2004; Vester, 2013). Some milieus might be determined by very specific value profiles, thereby spanning over a broader range of socioeconomic positions, while other milieus might be more strongly characterized by their socioeconomic position. The only assumption we make is that values and socioeconomic indicators are not scattered freely over the entire range of the two-dimensional space but rather clustered in specific formations, resulting in a small number of large latent social groups of different sizes within society, i.e., social milieus. Empirically, in Germany, education and income are positively correlated with self-transcendence- and self-enhancement values (Meuleman et al., 2012). Education was furthermore positively correlated with openness and negatively correlated with conservation.

How do social milieus differ concerning social cohesion? As social milieus are defined by their socioeconomic position and cultural values, a brief look at the relationship between these indicators and trust and compliance as highly relevant aspects of social cohesion during the COVID-19 pandemic is worthwhile. The socioeconomic position is found positively related to interpersonal and institutional trust in general (Kim et al., 2022) and an increase in general trust, specifically during the COVID-19 pandemic (Wu et al., 2022). Findings on the relation of socioeconomic status with compliance are rather mixed: positive and negative associations were found (Nivette et al., 2021; Lee et al., 2022). Regarding values, self-transcendence is positively related to generalized interpersonal trust (Michalski, 2019) and compliance with governmental measures during the pandemic (Lake et al., 2021), and conservation (openness) values are positively (negatively) related to institutional trust and compliance (Pavlović Vinogradac et al., 2020; Bonetto et al., 2021; Cajner Mraović et al., 2021). While these bivariate associations are informative, our multidimensional milieu typology allows us to analyze trust and compliance for groups with certain combinations of socioeconomic positions and cultural values.

Considering the theoretical milieu accounts (section "The concept of social milieus") and previous empirical findings (sections "Social cohesion during the COVID-19 pandemic", "Social milieus and social cohesion during the COVID-19 pandemic", and the preceding paragraph), some general expectations for our milieu model can be derived. In accordance with the "rally" thesis, we expect most milieus to show high levels of trust and compliance. Yet, some milieus should deviate from this homogeneity in the early stage of the pandemic. We expect to find milieus similar to the established conservatives (Beckmann and Schönauer, 2021) and safety-oriented conservatives (El-Menouar, 2021). This means, in line with the bivariate findings reported above, that throughout all socioeconomic positions milieus with a conservative or social (conservation and self-transcendence) value focus have high levels of trust and compliance. Furthermore, we expect that milieus with a growth focus (self-transcendence and openness values) show high trust and compliance only when they also hold higher socioeconomic positions. Such milieus are part of Reckwitz (2019) "new middle class": the liberal intellectual, performer, and expeditive milieus (Sinus® Institute., 2020) and the humble humanists (El-Menouar, 2021). In contrast, milieus that combine lower resources and high openness values should be associated with low trust and compliance, similar to the alternative milieu (Beckmann and Schönauer, 2021). In accordance with El-Menouar (2021) individualistic materialists, we expect to find at least one milieu with intermediate to

higher socioeconomic status and a personal value focus (self-enhancement and openness values) that shows low levels of trust and compliance. Moreover, we expect to find at least one milieu that belongs to the "old middle class" and, according to Reckwitz (2019) has intermediate education, higher incomes, holds a protection value focus (self-enhancement and conservation), and thus resembles El-Menouar (2021) achievement-oriented milieu. For this (these) milieu(s) no consistent expectations about the mode of social cohesion can be derived. The protection value focus comprises two value dimensions with opposing associations with cohesion which may cancel out. Following Reckwitz's milieu differentiation, the old middle class should be approximately located on the socioeconomic and value dimensions near four Sinus® Institute. (2020) milieus that were identified as differing in attitudes toward social cohesion: the established conservatives, the traditional milieu, the nostalgic middle class, and the adaptive-pragmatic middle class. Finally, we expect to find a precarious milieu (Sinus® Institute., 2020) with no clear value focus but low socioeconomic resources and low levels of trust and compliance.

We emphasize that our milieu model goes beyond a variable-based analysis and captures whole value profiles of social milieus in combination with their socioeconomic positions. The model is suited, for instance, to uncover what El-Menouar (2021) could only suspect: that two milieus with similar value profiles have different modes of social cohesion due to different socioeconomic positions. Thus, our milieu approach allows for new comprehensive accounts of how value profiles and socioeconomic positions relate to social cohesion in the context of the COVID-19 pandemic.

Materials and methods

In the empirical part of this paper, we first develop an empirical model of social milieus. In the next step, we analyze milieu differences in the two cohesion factors during the first wave of the COVID-19 pandemic and its aftermath: trust in social cohesion and concerned compliance with measures to contain the virus.

Materials

We use the German subsample of the European Social Survey (ESS) Round 8 in 2016 (n = 2,852) to identify social milieus and handle missing values in the milieu indicators by listwise deletion (n= 2,470). To account for sample selection bias, nonresponse, noncoverage, and sampling error, we apply the ESS's post-stratification weight (including the design weight). To explore milieu-specific differences in manifestations of social cohesion during the COVID-19 pandemic, we use the RISC pilot study 2020. The RISC pilot study was designed as a pretest for the first wave of the RISC cohesion panel and conducted from April to September 2020, the peak of the first wave of the pandemic and its aftermath. It is a subsample of the German sample of the ESS 2016 and includes respondents who consented to participate in the RISC pilot study and also agreed to match their RISC data with the ESS8 (n = 589). The matching of the ESS8 with the RISC data allows linking social milieu membership with measures of trust in social cohesion and concerned compliance as responses to the COVID-19 pandemic. In the RISC data, respondents from East Germany and those with high education are overrepresented (see Supplementary Table S1). However, we refrain from using RISC sample weights to correct this bias. The weights are based on the full RISC sample (n = 868), a different sample that includes participants who did not agree to a matching with their ESS data and the participant's household members. Also, the standard errors of the weighted sample would be underestimated. Either way, the direction and significance of the effects do not change when weights are applied.

Identification of social milieus

As argued above, we conceptualize social milieus as constituted by a socioeconomic and a cultural dimension[4]. The socioeconomic dimension comprises income and education. Income was measured as total net household income quintiles. To make income comparable across households, it was equalized by dividing it by the square root of household size (OECD, 2020) and then categorized into five groups. Education was categorized into three groups: low (no degree, or lower secondary school, i.e. "Hauptschule"), intermediate (intermediate secondary school, i.e. "Realschule"), and high (upper secondary school, i.e. "Abitur" or "Fachhochschulreife").

The cultural dimension of basic human values was measured by the 21-items *Portrait Value Questionnaire* (PVQ-21) (Schwartz et al., 2015). Here, descriptions of a fictional person were presented, and participants were asked to assess to what degree the fictional person is like them on a 6-point scale ranging from "very much like me" to "not like me at all." An example item for self-transcendence is: "It is important to her/him to listen to people who are different from her/him. Even when she/he disagrees with them, she/he still wants to understand them." As recommended by Schwartz (2020), the participant's responses to the 21 value items were person-centered (i.e., ipsatized: the within-person mean of all 21 items was subtracted from each value item) to deal with response bias and obtain the relative value priorities for each participant.

4 We use the identical procedure as in Groh-Samberg (forthcoming).

Trust in social cohesion and concerned compliance

Social cohesion during the COVID-19 pandemic was measured by seven statements and assessed on a 5-point scale ranging from "strongly disagree" to "strongly agree." These items were selected on the grounds of face validity, and perceived relevance as no prior measure of such attitudes existed. Exploratory factor analysis with rotated and oblique factors (quartimin method in Stata® 15) revealed two meaningful factors (see Supplementary Table S2). One factor can be denoted as "*trust in social cohesion*" (in short, "*trust*") in the face of the COVID-19 pandemic. An item loading high on this factor (0.69) is: "The handling of the coronavirus shows that we can rely on "*gesellschaftlicher Zusammenhalt*" in our society." The term "gesellschaftlicher Zusammenhalt" literally translates as societal holding together" and roughly as "social cohesion." A second item is a negative rewording of this item (factor loading: −0.63). The third item (factor loading: 0.62) is worded: "I trust that the fellow citizens accept measures to contribute to containing the virus." Although two items may involve institutions or collective actors as they are directed at the society at large, we rather interpret the factor as a measure of generalized interpersonal trust. The second factor was designated "*concerned compliance with measures*" (in short, "*concerned compliance*"). One item was worded, "I accept the restrictions to contribute my share to contain the virus" (loading: 0.56), and conveys compliance. While the second item ("I think that the measures to contain the coronavirus are excessive") with a negative loading (−0.64) also refers to restrictions, the third item expresses concerns ("I am concerned about the spreading of the coronavirus," loading: 0.52). Finally, one item loaded moderately on both the "trust" (.47) and "concerned compliance" (0.3) factors and captured institutional trust ("I trust that necessary measures are taken to contain the coronavirus"). The two factors were moderately correlated ($r = 0.37$). The factor scores for each respondent were predicted and saved for further analyses.

Methods

Typology of social milieus

As has been elaborated in section The concept of social milieus, we follow the long-standing tradition of cultural class and milieu analysis that refers to "networks of statistical relations" (Bourdieu, 1979[1984]:103) and is based on the conviction that describing and comparing types is not a mundane task but a valid argument in its own right (Gerring, 2012). We use Latent Class Analysis (LCA) in Latent GOLD® 6.0 (Vermunt and Magidson, 2021) to identify social milieus as a small number of large classes of individuals with similar characteristics on the two theoretically derived dimensions. LCA is an advancement of cluster analysis that is model-based (in the tradition of structural equation modeling) and allows for a probabilistic assignment of individuals to classes (Masyn, 2013; Savage et al., 2013). It is suited as a tool to identify large classes or milieus without excluding the empirical possibility of a gradational social structure (Grusky and Weeden, 2008). Moreover, it allows capturing both the socioeconomic positions and complete value profiles of social milieus simultaneously. This is a substantial advantage for the comprehensive analysis of values since the Schwartz values share meaningful variance. In variable-based regression analysis, adding two or more values would suppress the meaningful common variance of the values. Therefore, regression analysis is not able to adequately capture complete value profiles. Moreover, using regression analysis in an exploratory way, i.e., regressing all milieu indicators and their interactions on the outcomes introduces low statistical power due to the small sample size, an inflated chance of type-I errors, and considerable complexity. We thus used LCA as a powerful method to comprehensively capture milieu characteristics and reduce complexity by developing a theoretically informed multidimensional typology.

As described in detail in section "Identification of social milieus," we use income, education, and the 21 person-centered basic human value items as indicators of the LCA[5]. We furthermore use four Bayesian priors that prevent model nonidentification without significantly changing the results (Vermunt and Magidson, 2016, p. 50). As an implication of this procedure, Posterior Mode estimation is applied instead of Maximum Likelihood. We use the Latent GOLD® 6.0 default algorithms (Expectation Maximation in combination with Newton-Raphson) for maximizing the Log-Posterior function and run the model with 400 starting values to reach the global maximum with high certainty (see the Latent GOLD® 6.0 syntax in the Supplementary material).

For deciding on the number of classes, we consult several information criteria and finally assess the candidates with a good fit based on theoretical grounds, as recommended by Nylund-Gibson and Choi (2018). According to our definition of social milieus, we inspect several solutions with an acceptable fit. The information criteria inform about the goodness of fit and are based on the Log-Posterior of the specific class solutions (Supplementary Table S3). The lower these information criteria, the better the model. The AIC and AIC3 penalize for the number of parameters and often produce solutions with a large number of classes in large samples. Since our sample is relatively large, we prefer the CAIC, BIC, and SABIC that additionally penalize for sample size (Vermunt and Magidson, 2016). The SABIC, however, penalizes sample size only to a very low extent and therefore did not reach a minimum within the class solutions up to 15 classes which we consider meaningfully interpretable. The CAIC and BIC reach a minimum at 13 and

5 Technically, we conduct a mix of LCA (for the categorical socioeconomic indicators) and Latent Profile Analysis (for the person-centered and thus quasi-metric value indicators).

14 classes, respectively[6]. Hence, we first inspect the 13-class and 14-class solutions closer, find that they are highly similar, and hence prefer the more parsimonious model. The relative fit improvement can additionally be consulted for finding the best class solution (Nylund-Gibson and Choi, 2018). It is high for 3, 6, 9, and 13 classes for all information criteria. Thus, we compare the 13-class to the 9-class solution. Overall, similar milieus are identified. The 13-class solution provides a more nuanced differentiation of the milieus. On the one hand, this reveals some heterogeneity in the upper and lower classes which is not visible in the 9-class solution. On the other hand, some smaller milieus within the middle class strongly resemble each other within the 13-class solution in terms of their socioeconomic and cultural characteristics. We finally choose the 9-class solution as the more parsimonious model, suited for analyzing the general milieu landscape. The 13-class solution might be consulted for more specific milieu differentiations in future research (see Supplementary Figure S1).

Beyond the chosen milieu model, we conducted robustness checks regarding validity and sensitivity[7]. Results only differed significantly when no person-centering was applied or when the person-centered values were further divided by the individual's standard deviation. We refrained from using these transformations. The former does not consider individual response styles, while the latter neglects meaningful individual differences in variances of value ratings (Schwartz, 2020). We also did not reduce the relatively high impact of the 21 value indicators on the milieu solution by using variable weights (Vermunt and Magidson, 2021). This procedure produced considerable side effects which have not been investigated well yet. Furthermore, the LCA was not based on factor or index scores of the value indicators (e.g., for the 10 value dimensions, see Schmidt et al., 2021) to reduce their impact, because reliability was low, factor analytic fit in the German sample of the ESS was insufficient, and because these procedures did not result in a considerably lower relative impact of the values on the milieu solution.

Social cohesion across social milieus

To investigate differences in the "trust" and "concerned compliance" factor scores across social milieus we use the "Bakk-Kuha" method (Bakk and Kuha, 2018, 2021). This method accounts for measurement error in the latent milieu variable in two steps: First, an LCA is conducted as described in section "Typology of social milieus." Second, a structural model adding outcomes is calculated. Here, the parameters of the measurement model obtained in the first step are fixed so that the milieu estimation stays the same. The Bakk-Kuha method is especially helpful when the sample sizes between the LCA and the structural model differ, as in our case. In Latent GOLD® 6.0, a user-friendly version of the two-step method has been implemented that saves individuals' milieu-specific probability densities in the first step for their use in the second step (Vermunt and Magidson, 2021). We estimate (a) a two-step model that regresses the milieus on the cohesion factors as outcomes and (b) a model that additionally includes the effect of sociodemographic covariates (sex, age, and region) on the cohesion factors (see the Latent GOLD® 6.0 syntax in the Supplementary material).

Results

A Latent Class Analysis of social milieus

The LCA, described in section "Typology of social milieus", provides three types of output: (1) the *sizes or percentage shares of the social milieus* and (2) *milieu-specific estimates of the indicators:* (a) estimated proportions of education and income as categorical indicators and (b) means of the 21 person-centered value items. (3) Additionally, *coefficients of covariates and outcomes* can be estimated using the Bakk-Kuha method (see section Social cohesion across social milieus). The nine sociodemographic milieus can be described based on these outputs. In addition to the milieu indicators we report socio-demographic information on age, sex, and region—which do not affect milieu composition (see Table 1, where the value items are condensed into the four higher-order value dimensions, and Supplementary Table S4 including all 21 value items).

For the purpose of presentation, similar to Magun et al. (2016), we plot the milieus' socioeconomic positions (*y*-axes) against their positions on each of the two value dimensions (*x*-axes) in two bubble charts (see Figure 3). The sizes of the bubbles correspond to the sizes of the social milieus. For presenting the milieus' socioeconomic position, income and education are treated as continuous variables so that the milieu-specific means can be calculated, transformed onto a common scale with a minimum of 0 and a maximum of 1, and then averaged. A value of "1" ("0") indicates the highest (lowest) average score of the milieu members, that is the 5th (1.) income quintile and upper (lower) secondary school. The status axis is additionally divided into three strata corresponding to the lower, middle, and upper third of the analytically possible range. The social milieus' value positions are presented on two axes, one ranging from conservation to openness and the other from self-transcendence to self-enhancement. To identify the milieus' positions on these axes, the milieus' averages of the 21 person-centered value items are first aggregated to the four higher-order value dimensions by calculating means. These dimensions are

6 The Vuong-Lo-Mendell-Rubin adjusted likelihood ratio test (VLMR-LRT), which compares the fit improvement between two adjacent class solutions, was not further consulted because it did not get insignificant for any considered class solution.

7 The results of these additional analyses can be provided on request.

TABLE 1 A model of social milieus: Latent Class Analysis of socioeconomic position and basic human values.

Milieus	1	2	3	4	5	6	7	8	9	Overall
Size (in %)	17.0	7.2	7.8	9.9	4.2	10.4	8.4	16.6	18.6	100.0
Size (case numbers)	435	192	190	230	110	261	219	332	501	2,470
Socioeconomic dimension										
Equalized household income, quintile groups (in %)										
1	7.1	13.1	10.6	17.5	14.3	23.2	27.0	27.3	27.3	19.6
2	12.9	18.7	16.6	21.9	19.6	25.0	26.6	26.7	26.7	22.0
3	17.7	20.1	19.5	20.6	20.3	20.3	19.7	19.7	19.7	19.6
4	22.7	20.3	21.4	18.2	19.8	15.5	13.7	13.6	13.6	17.2
5	39.6	27.7	31.9	21.9	26.0	15.9	12.9	12.7	12.7	21.7
Highest educational degree (in %)										
Low	7.6	11.1	20.5	25.2	39.6	40.8	40.5	44.5	57.7	33.6
Intermed.	26.9	30.7	36.0	37.2	36.9	36.6	36.7	35.8	30.9	33.4
High	65.5	58.2	43.5	37.6	23.5	22.6	22.8	19.7	11.4	33.1
Cultural dimension: Higher-order values*										
Openness	−0.26	0.72	0.67	−0.3	0.05	0.55	−1	−0	−0.3	−0.04
Conservation	−0.14	−1.1	−1	−0	0.2	−0.4	0.71	0.01	0.55	−0.05
Self-transcendence	0.85	1.34	0.52	1.44	0.02	0.93	1.07	0.33	0.83	0.82
Self-enhancement	−0.47	−1.1	−0.2	−1.4	−0.4	−1.4	−1	−0.4	−1.4	−0.88
Sociodemographic characteristics										
Sex: Women (in %)	50.2	49.0	34.7	64.3	39.7	62.4	61.2	32.9	58.4	50.7
Age (in years)	44.7	41.9	31.5	53.2	55.9	45.9	54.2	43.1	63.3	48.9
Region: East Germany (in %)	14.1	9.8	12.0	8.0	14.6	20.5	25.2	16.9	27.0	17.5

Source: ESS8, 2016, n = 2,470, own calculations.
*The averages of the 21 person-centered value items are aggregated to the four higher-order value dimensions by calculating means.

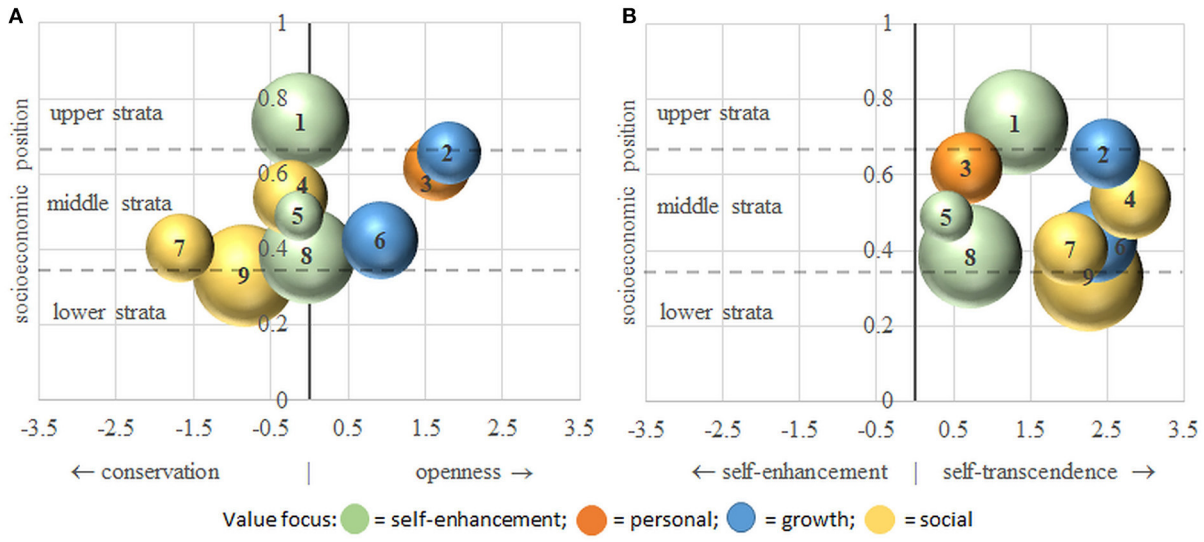

FIGURE 3
A new model of social milieus: Latent Class Analysis of socioeconomic position and basic human values. Source: ESS8, 2016, *n* = 2,470, own calculations. The social milieus' socioeconomic positions are plotted against the value axis from conservation to openness **(panel A)**, and the value axis from self-enhancement to self-transcendence **(panel B)**. Milieus with similar value foci are assigned the same color.

then further condensed into the two value axes by subtracting (1) conservation from openness and (2) self-enhancement from self-transcendence. For better interpretation, each milieu is assigned a color indicating its value focus, i.e., its position on both value axes relative to the other milieus. For example, we assign a personal value focus to a milieu that endorses openness values (panel A of Figure 3) and self-enhancement values (panel B of Figure 3) more strongly than other milieus. If a milieu holds average values on one value dimension, we name its focus after the higher-order value it tends to on the other value dimension (e.g., self-enhancement focus).

At this point, we refrain from giving concrete names to each milieu. This procedure requires comprehensive analyses in terms of criterion validity, i.e., systematic milieu differences in sociodemographic characteristics, attitudes, and practices. This is in line with other milieu approaches, notably the Sinus® milieus, for which naming is the result of a process of extensive research (Flaig et al., 1994). Instead, we number the milieus according to their socioeconomic status, classify them into lower, middle, and upper socioeconomic strata, and finally color and designate them according to their value foci.

Figure 3 shows that, overall, considerable heterogeneity concerning milieu differentiation along the stratification and value axes can be observed. The milieus are clearly stratified by socioeconomic position (income and education). Although the boundaries are somewhat arbitrary, roughly, one upper-class milieu (1), two upper-middle-class milieus (2, 3), two middle-class milieus (4, 5), three lower-middle-class milieus (6, 7, 8), and one lower-class milieu (9) can be identified[8].

Social milieus are also differentiated according to their positions on the two value axes. In every socioeconomic stratum milieus with different value profiles are observed. In line with the literature, there is an overall tendency for milieus in higher socioeconomic positions (compared to lower positions) to endorse openness values more and conservation values less strongly. The value axis from self-transcendence to self-enhancement, in turn, is relatively independent of the socioeconomic position. Furthermore, all milieus tend more toward self-transcendence than self-enhancement, but there are considerable differences in the extent of this tendency.

Milieus 1, 5, and 8 (green) from the upper-, middle-, and lower-middle-class hold relatively high self-enhancement values and average values on the axis from conservation to openness. While there is no milieu with a clear protection focus, milieu 5 (size: 4%) resembles Reckwitz (2019) "old" middle class most as it shows relatively high incomes and intermediate education. However, this milieu is much smaller than presumed by Reckwitz. It is also smaller than the Sinus® milieu of the bourgeois or nostalgic middle class (11%) which has been identified as the core milieu of the old middle class. Furthermore, Milieu 5 is similar in its socioeconomic and value profile to the achievement-oriented milieu (El-Menouar, 2021). The milieus 1 and 8, in turn, are not captured by previous milieu typologies. Milieu 1 (17%) is less conservative than the conservative upscale Sinus® milieu and much older than the achievement-oriented milieu of El-Menouar (2021). Milieu 8 (17%) is located somewhere between the lower ranks of the nostalgic and adaptive-pragmatic middle class of the Sinus® typology, which are classified as part of the old middle class by Reckwitz (2019). However, the low average of socioeconomic positions marks it as a separate milieu.

The upper-middle-class milieu 3 (8%) holds a person focus as openness and self-enhancement values are endorsed (orange). The milieu only weakly resembles the performer milieu of the Sinus® typology or the individualistic materialist milieu of El-Menouar (2021) typology as its members are much younger on average.

Milieus 2 and 6 from the upper-middle and lower-middle class (blue) hold a growth value focus (high self-transcendence and openness). This focus is stronger in milieu 2 (7%) which resembles the expeditive Sinus® milieu as part of Reckwitz (2019) "new" middle class. Milieu 6 (10%) endorses strong hedonism values and some aspects of tradition and security values. In this respect, milieu 6 resembles both the adaptive-pragmatic middle class of the Sinus® milieus and the humble humanists of El-Menouar (2021) typology. Its lower socioeconomic position (especially in education) disqualifies it as a "new" middle-class milieu.

Finally, the milieus 4, 7, and 9 hold a social value focus (yellow), albeit with varying positions on the two value axes. All of these milieus have a large proportion of older or female members. Middle-class milieu 4 (10%) is the least conservative of these three milieus, self-transcendence values are predominant. Insofar as its relatively central position on the conservation-vs.-openness axis is due to high modesty and humbleness as well as low conformity and hedonism, this milieu resembles El-Menouar (2021) humble humanists. Regarding its values, milieu 4 thus resembles Reckwitz (2019) "new" middle class, but due to its only average education, it is not considered as such. The lower-middle-class milieu 7 (8%) is the most conservative. The lower-class milieu 9 (19%) lies in-between milieus 4 and 7 on the conservation-vs.-openness axis. The characterization of milieus 7 and 9 as traditional (Sinus® Institute., 2020; Beckmann and Schönauer, 2021) or safety-oriented conservatives (El-Menouar, 2021) fails to recognize the high endorsement of self-transcendence values.

Within the lower classes, our milieu typology could neither detect a precarious milieu with a rather average value focus (Sinus®) nor a hedonistic (Sinus®) nor alternative milieu (Beckmann and Schönauer, 2021) with low socioeconomic positions and high openness values. If any milieu has an average

8 It is important to note that we speak of an "upper class" only in terms of education and income. A "proper" upper class, who makes a living solely from capital assets, cannot be identified and is underrepresented in our sample (see Reckwitz, 2019).

value focus, it is the upper-class milieu 1, and openness values are stronger in the upper-middle-classes. Apart from these exceptions, the social milieus we expected to exist in our general expectations deduced from the literature (see section "A new model of social milieus") emerged in our analyses.

Milieu differences in social cohesion

Having described our milieu typology, we now turn to the investigation of milieu differences in "trust" and "concerned compliance." We regressed the "trust" and "concerned compliance" factors on the nine milieus using the Bakk-Kuha method described in section Social cohesion across social milieus. Additionally, we ran a model that also controls for the effect of age, sex, and region (East Germany) on the cohesion factors. These covariates decrease the sizes of the milieu coefficients, but only to a small degree, and do not change their direction or significance (the results of this analysis are presented in Supplementary Table S5). Here, we focus on the model without covariates as we are primarily interested in overall milieus differences.

At first, a look at the single items comprising the two cohesion factors reveals an only intermediate level of "trust" in social cohesion regarding item-specific approval rates ("agree"/"strongly agree") which range from 54 to 63%. These rates are much higher for the concerned compliance factor (68% to 96%). This finding is not in line with the thesis of a rally effect that postulates strong homogeneity and strong overall social cohesion.

Bivariate correlations between the milieu components and the social cohesion factors show that higher trust is weakly associated with a higher socioeconomic position and higher self-transcendence values (Table 2). Concerned compliance is positively associated with conservation and self-transcendence and negatively associated with openness and self-enhancement, and tends to be negatively associated with education. This is in line with earlier findings. However, these correlations only inform about general associations between variables. They do not reveal heterogeneity between social groups, i.e., they neither inform about group size, nor which group takes which position in the social space comprised of the socioeconomic and cultural dimensions, nor show the strength of the opposition between groups.

Hence, we use the milieu model to analyze group differences in the social cohesion factors, thereby going beyond what can be shown by variable-based analysis. Considerable heterogeneity between social milieus regarding both cohesion factors can be observed. Figure 4 presents a bar chart of the endorsement of "trust" (panel A) and "concerned compliance" (panel B) across social milieus. The milieu-specific factor scores can be interpreted as deviations from the overall mean which is zero. The milieus are again numbered by their level of socioeconomic status and colored by their value foci.

In accordance with our expectations, and not surprisingly given the bivariate correlations, milieus with a social value focus (milieus 4, 7, and 9) show high concerned compliance, and two milieus that hold self-enhancement (milieu 8) and personal values (milieu 3) show low concerned compliance. Turning to the socioeconomic position, it is noticeable that despite the positive correlation between trust and socioeconomic position, a milieu with one of the highest levels of trust (milieu 9) is to be found in the lower class, and the milieu with the lowest trust (milieu 3) in the upper-middle-class. Furthermore, it can be seen that concerned compliance tended to be closer to the average among the higher socioeconomic positions with milieu 3 as a great exception.

Considering the different modes of social cohesion in terms of constellations of trust and concerned compliance, one central finding stands out. The upper-middle class milieu 3 and the lower-middle-class milieu 8 have a similar mode of social cohesion with low trust and low concerned compliance. While milieu 3 stands out as the only milieu with a personal value focus, milieu 8 holds self-enhancement values but is located in the middle of the openness vs. conservation axis. In contrast to these milieus, the lower-class social value milieu 9 exhibits a diametrical mode of cohesion with high trust and high concerned compliance.

Similar value foci do not always bring about similar modes of social cohesion across all socioeconomic positions. For example, the upper-middle-class milieu 2 and the lower-middle-class milieu 6 both have a growth focus, but the latter has a lower socioeconomic position as well as lower levels of trust. Milieu 6 thereby rather resembles the indifferent adaptive-pragmatic milieu (Sinus® Institute., 2020) than the trusting humble humanists (El-Menouar, 2021). Milieu 2, in turn, resembles upper-class milieu 1 in showing average levels of concerned compliance despite the different value focus. Possibly, these milieus are less concerned about the pandemic due to their high socioeconomic position. It is furthermore noticeable that the lower-middle-class milieu 8 on the one hand and milieus 1 and 5 on the other hand differ greatly in their attitudes toward cohesion, especially concerning trust—although all of these milieus have a self-enhancement value focus. The higher social standing and relative economic security might lead the latter two milieus to trust in social cohesion. These results show that the specific combinations of socioeconomic positions and value profiles are highly relevant for milieus' modes of social cohesion.

Regarding Reckwitz (2019) distinction between the 'old' middle class (milieu 5 in our model) and the "new" middle class (milieu 2 in our model), both classes show relatively high trust and average levels of concerned compliance. Thus, they resemble each other in their modes of cohesion and are not central conflicting social groups as presumed by Reckwitz—at least concerning social cohesion. Instead, the small upper-class

TABLE 2 Bivariate correlations between the milieu components and the social cohesion factors.

	Trust	Compliance	Income	Education	Openness	Conservation	Self-Transcendence
Compliance	0.373***						
Income	0.101***	0.017					
Education	0.052	−0.077***	0.319***				
Openness	−0.050	−0.129***	0.050***	0.044***			
Conservation	0.037	0.138***	−0.139***	−0.220***	−0.731***		
Self-Transc.	0.086***	0.150	0.038***	0.127***	−0.164***	−0.150***	
Self-Enhanc.	−0.060	−0.150	0.095***	0.134***	−0.086***	−0.337***	−0.482***

Source: RISC pilot study (2020), matched with the ESS8 (2016), n = 526, own calculations.
The 21 value items are condensed to the four higher-order value dimensions for the ease of interpretation.
***p ≤ 0.1.

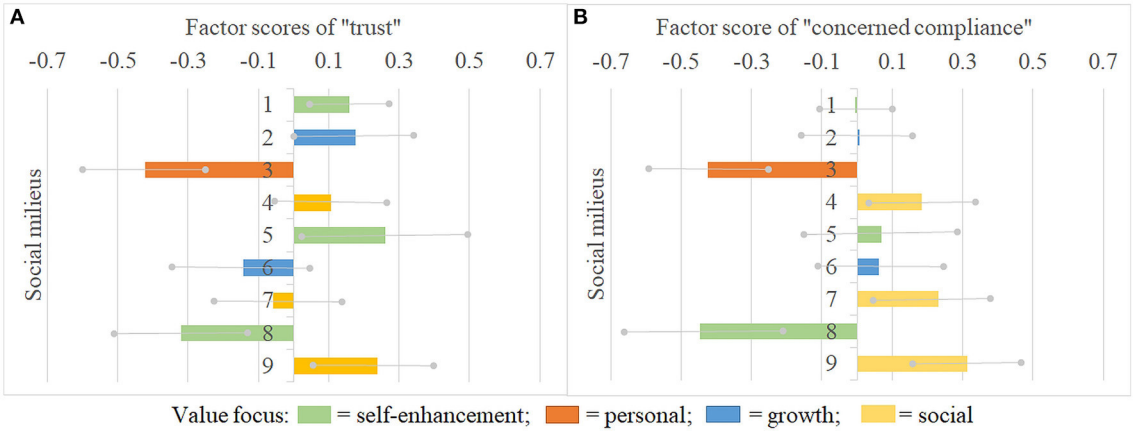

FIGURE 4
Factor scores of "trust" **(panel A)** and "concerned compliance" **(panel B)** by social milieus. Source: RISC pilot study 2020, merged with ESS8, 2016, *n* = 526, own calculations. Note: The milieu-specific factor scores represent deviations from the mean factor score. Gray lines indicate 90% confidence intervals (We think, these rather broad intervals are justified because of the small case numbers per milieu.). Milieus are numbered by level of socioeconomic status and colored by value focus (see Figure 3).

milieu 3 with a person focus and the large lower-middle-class milieu 8 with a self-enhancement focus (adding up to 25%) are on the lower extreme ends of both cohesion factors. They oppose milieus with a social focus (milieu 4, 7, and 9; adding up to 47%) on matters of concerned compliance, and they confront milieus with a rather high socioeconomic position (especially milieus 1, 2, 5; adding up to 28%) and milieu 9 (19%) in their trust in social cohesion.

Discussion

The aim of this paper was to uncover heterogeneity and potential conflicts within the German population about social cohesion during the COVID-19 pandemic by analyzing large subgroups within the society. The concept of social milieus—similar to "cultural class analysis" but without the ambiguity of the class term—lends itself to such a subgroup analysis. It addresses the interrelation of socioeconomic stratification and cultural aspects in constituting large latent social groups. The concept has been introduced particularly for the analysis of social cohesion as a group-specific form of social integration. We assume that social milieus develop specific modes of social cohesion and that different modes express conflicting viewpoints which are the base of potential social conflicts. The concept of social milieus is thus particularly suited to analyze the social integration of conflicting groups on the societal level during a crisis like the COVID-19 pandemic.

Extant milieu approaches, however, suffer from theoretical and empirical deficiencies. El-Menouar (2021) typology misses a stratification dimension, and it is unclear how this dimension differentiates the Sinus® Institute. (2020) typology. Furthermore, both the Sinus® and Beckmann and Schönauer (2021) milieu typologies are composed of a one-dimensional value axis. To overcome these limitations, we use a new model of social milieus. Milieus are constituted by a socioeconomic

dimension, composed of education and household income, and a cultural dimension, operationalized through the multidimensional approach of Schwartz (1992) basic human values. This model differs from the previous approaches in three ways: first, it directly considers socioeconomic stratification in the milieu composition. Second, values are captured comprehensively and in their potentially conflictual relation toward each other. Importantly, in addition to the conservative vs. openness axis, an axis ranging from self-enhancement to self-transcendence allows for a finer breakdown of value constellations. Third, the typology can be readily operationalized and replicated with publicly available large-scale survey data. We use this milieu typology to empirically investigate expectations concerning milieu-specific modes of social cohesion during the COVID-19 pandemic, derived from previous milieu analyses. Trust in social cohesion and concerned compliance with measures, reflecting trust and conformity as ingredients of social cohesion, are analyzed. We use the European Social Survey (ESS) Round 8 (2016) for the identification of social milieus and the RISC pilot study (2020), which can be merged with the ESS data, for the analysis of social cohesion.

Our analyses reveal more heterogeneity in the first wave of the COVID-19 pandemic and its aftermath than the "rally-round-the-flag" effect presumes. The findings on milieu differences support some expectations we have formulated based on previous literature but also provide new insights that could not be captured by extant milieu typologies. As expected, a milieu with higher socioeconomic status and a personal value focus was identified that deviates from the "rally-around-the-flag" response by showing particularly low levels of trust and compliance. A similar mode of social cohesion prevails in a lower-middle-class milieu with a self-enhancement value focus. This rather large milieu could not be detected by previous typologies due to missing dimensions in the operationalization. As expected, especially compliance, and to a lower extent trust, is high in milieus with a social value focus, no matter what their socioeconomic position is. In contrast to previous studies, however, trust and compliance are exceptionally strong in the lower-class social value milieu. Thus, the finding of the Sinus® Institute. (2020) typology of a distrustful and non-compliant precarious social milieu should be differentiated: Within the lower socioeconomic ranks, two social milieus with different modes of social cohesion due to different compositions in the value dimension can be identified. Hence, the highest potential for conflict with respect to modes of social cohesion can be observed between the social value-focused lower-class milieu and the self-enhancement and personal value-focused lower- and upper-middle-class milieus. This potential conflict seems to be more about basic human values than socioeconomic resources. Beyond this general conflict line, non-negligible heterogeneity in modes of cohesion and associations with milieu-defining characteristics exists. For example, we clearly identified a "new" middle class milieu (Reckwitz, 2019) with a high socioeconomic position and a growth value focus, showing above-average levels of trust and average levels of compliance. However, no particular conflict between the "new" and "old" middle classes (Reckwitz, 2019) could be observed concerning trust and compliance.

Our research is not without limitations. Regarding the empirical analysis, first, due to data limitations, we only address two ingredients of social integration: trust and conformity. Future research looking into all four ingredients might be able to detect a wider variety of modes of social cohesion. Second, the small sample size of the RISC pilot study restricts generalizability and the potential to detect milieu differences. Third, the operationalization of the milieu concept presented here is the first step toward a full account of our theoretical model. Hence, future research might further improve the milieu typology. Especially, sub-milieus below the general milieus presented here may be analyzed as is milieu segmentation due to sociodemographic characteristics. For example, investigating age differences might better approximate individual lifeworlds and specific modes of social cohesion. Fourth, the current typology has to be further validated. For example, cross-country comparisons would allow us to go beyond country-specific peculiarities. Finally, the quantitative milieu analyses should be complemented with qualitative data to bring subjective meaning into milieu analysis. We already made use of partial information from the qualitative RISC panel, but this perspective has to be developed systematically.

At the same time, the present research overcomes several current limitations. First, we use a milieu typology for our analyses that is replicable with large-scale survey data and appropriately considers socioeconomic stratification and multidimensional cultural values. Second, building on theoretical considerations connecting social cohesion and social milieus, we were able to empirically discover milieu differences in the endorsement of two ingredients of social integration in the context of the COVID-19 pandemic, reflecting milieu-specific modes of social cohesion. The RISC pilot study allows us to assess the specific situation during the first wave of the pandemic and its aftermath. A future analysis of the ESS10 (2020) might be worthwhile as it includes a module on cohesion during the COVID-19 pandemic (Hanson et al., 2021). Yet, the module is restricted to institutional trust and does not directly assess the acceptance of restrictions. Moreover, our previous analyses can later be continued with the first wave of the RISC panel conducted in 2021. The extension of the analyses particularly allows for the inclusion of later waves of the pandemic as well as longitudinal analyses—but it does not capture the early phase of the pandemic. In sum, our milieu approach enriches current debates about social integration and cohesion during the COVID-19 pandemic by providing a group perspective on which later analyses can build.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found at: https://ess-search.nsd.no/.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

Author contributions

AS wrote chapter 4 and performed the Latent Class Analysis of the final model and implemented the Bakk-Kuha method for associating cohesion factors and social milieus. TS wrote the first draft of chapters 1, 2, 3, 5, and 6 and performed the final analysis, including the factor analysis and the Bakk-Kuha method. AS and TS conducted several robustness checks and sensitivity analyses. All authors contributed to conception and design of the study, manuscript revision, read, and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fsoc.2022.989831/full#supplementary-material

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Social cohesion and attitudinal changes toward migration: A longitudinal perspective amid the COVID-19 pandemic

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The COVID-19 pandemic has impacted social interactions and coexistence around the globe in dimensions that go far beyond health issues. In the case of the Global South, the pandemic has developed along with growing South-South migratory movements, becoming another key factor that might reinforce social conflict in increasingly multicultural areas as migrants have historically served as "scapegoats" for unexpected crises as a way to control and manage diversity. Chile is one of the main destination countries for migrants from the Latin American and Caribbean region, and COVID-19 outbreaks in migrant housing have intensified discrimination. In such a context, there is a need for understanding how the pandemic has potentially changed the way non-migrants perceive and interact with migrant neighbors. Drawing on the national social cohesion panel survey study ELSOC (2016–2021, $N = 2{,}927$) the aim is to analyze the changes in non-migrants' attitudes toward migrants—related to dimensions of social cohesion—over the last years and their relation with individual status and territorial factors. We argue that social cohesion in increasingly multicultural societies is partially threatened in times of crisis. The results indicate that after the pandemic, convivial attitudes toward Latin American migrants decreased. Chileans started perceiving them more negatively, particularly those respondents with lower educational levels and who live in increasingly multicultural neighborhoods with higher rates of migrant residents.

KEYWORDS

migration, social cohesion, conviviality, threat, identity, Chile, COVID-19, South-South migration

Introduction

The sanitary and economic crises produced by the COVID-19 pandemic have generated radical changes in different dimensions of society. Given that the pandemic has occurred along with several migratory movements around the world, one question that emerges is to what extent these mobilities have impacted social cohesion since the outbreak of COVID-19. One aspect to consider is that there is a complex historical relationship between

migration, ethnicity/"race," and contagious diseases (Briggs, 2005; Ahmad and Bradby, 2007; Kraut, 2010; Cecchi, 2019; von Unger et al., 2019), as there has been an association between vulnerable social groups and the way they inhabit urban spaces in times of epidemics (see Craddock, 1995; Sawchuk and Burke, 1998). Several pandemics have been blamed on underprivileged groups (Sennett, 1997; Meza, 1999), such as migratory, ethnic minorities and even low-income national groups (the urban "poor") in the context of growing urbanization (Connolly et al., 2020), who are either perceived or fabricated as the "other" and potentially associated with contagious diseases. In the context of growing migratory movements, countries historically have used migrant communities as tools to enable their own political agenda in the face of health or economic crises (Cecchi, 2019). Constructing scapegoats in an "other" becomes a way societies control and manage what they consider "diverse" (Ahmad and Bradby, 2007; Cecchi, 2019). For instance, epidemiologists associated the spread of the SARS virus with the cultural practices of southern Chinese people (Mason, 2015, p. 507), which were deeply racialized.

Amid the ongoing COVID-19 sanitary crises, Chile[1], as one of the countries with major migratory flows from the Latin American and the Caribbean (LAC) region (OIM, 2018), becomes a relevant case study to understand the impact of this pandemic in the Global South concerning the coexistence between Chileans and migrants in increasingly multicultural neighborhoods. Over the past decades, the number of migrants in Chile has risen significantly. While in 2002, migrants residing in Chile comprised only 1.3% of the total population (INE, 2018), by the end of 2020 they accounted for more than 8%, according to the latest estimates (INE and DEM, 2021). These migrations fluxes have been predominately South-South: mainly from Venezuela (30.7%), followed by Peru (16.3%), Haiti (12.5%), Colombia (11.4%), and Bolivia (8.5%), among other countries (INE and DEM, 2021). The vast majority of migrants arrived between 2010 and 2017 (66.7%), which constitutes an unprecedented migration compared to previous years (INE, 2017) and with growing irregular mobilities (SJM, 2022). In Chile's capital, most migrants live in low-income and segregated areas, inhabiting collective housing or *campamentos* (squatter settlements) (Pérez and Palma, 2021) that are characterized by the precarious and overcrowded living conditions due to the excessive profiteering from Chileans and long-time migrants (Bonhomme, 2021). These issues that stem from major political, economic, and social processes have led to social conflict, reinforcing racism, especially in low-income neighborhoods (Bonhomme, 2021).

While some studies have analyzed Chileans' perceptions toward migration and intercultural relations (see González et al., 2010; Thayer et al., 2013; Bonhomme, 2021, 2022), little research has focused on the ways in which these perceptions and interactions might have changed in times of crises. Nor has it looked at the entangled relationship between the COVID-19 pandemic, migration, and social cohesion. The aim of this paper is to assess Chileans' attitudes toward South-South migration in order to understand how this aspect of social cohesion has been impacted due to the pandemic COVID-19 and its aftermath. Social cohesion has been defined as a multidimensional concept that usually includes aspects such as common goals and values, a sense of belonging and identity, tolerance and respect for diversity, interpersonal and institutional trust, civic cooperation, active participation, and law-abiding behavior (Green and Janmaat, 2011). In the present study, we focus on particular aspects of social cohesion that is more closely related to our research problem which deals with migration in the pandemic context: conviviality, identity and perceived threat. Conviviality refers to the process of multi-ethnic cohabitation and interaction in a territory (Gilroy, 2004), and it is understood here as a friendly coexistence with neighbors. Identity deals with the perception of moral differences (or similarities), values, customs, beliefs, or cultural practices (Stephan et al., 2000), whereas the perceived threat is understood as non-migrants' worries about the potential impact on unemployment due to migration. Within this framework, this article aims to contribute to the understanding of the attitudinal changes in non-migrants toward the most prominent Latin American and Caribbean migratory groups living in Chile in the context of major economic, social, health, and political crises between 2016 and 2021.

Attitudes toward migration in pandemic contexts

Migrants have been historically seen as a potential threat and stigmatized as "disease carriers" despite evidence to the

1 Latin American countries gave rise to new republics based on the former colonial "whiteness" hierarchies (Loveman, 2009). Like other countries of the Southern cone, Chile's nation state has taken whiteness for granted, upon the narrative of *mestizaje* that understand Chilean national identity as constituted solely by European-Spanish and indigenous ancestries (*mestizo)*, yet rejecting any African ancestry. This is due in part to the scant African presence as compared to other countries of the region, but foremost, to the historical rejection of the presence of Afro-Chileans, who still are not counted in the national Census. According to the first survey that characterized the Afro-descendant population in northern Chile, Arica (INE, 2015), 8,415 people self-identified as Afro-descendants, which would constitute a 0.05% of the total Chilean population if we consider the last Census. The state's *mestizaje* racial project meant a progressive whitening, assuming that such an intense racial mixture would dissolve the non-white ancestries (Goldberg, 2001; Bonhomme, 2022). Until these days, most Chileans, like their counterparts in other Southern cone countries (like Argentina), by self-identifying as *mestizos* they also feel "white" or at least "whiter" than other Latin Americans who are perceived as having more prevalent indigenous and/or African physical features.

contrary (Kraut, 2010). One example is the influenza pandemic of 1918–1919 in the US, which coincided with the increased mobility of migrants (Southern Italians and Eastern European Jews), who were seen as a threat to society. Kraut (2010) unveils that though there was no general association of migrants as the cause of the pandemic, they did face prejudice regarding health. Because of cultural differences and the rural origins of most, as well as their overcrowded dwelling places, they were identified as facilitators of contagion. However, poverty was a key factor, since the congested living conditions, long working hours, and malnourishment of newcomer migrants made them more vulnerable (2010, p. 127). In addition, the linguistic barrier (for some migrants) encumbered their compliance with state-mandated measures regarding the pandemic (2010). In the collective imaginaries, however, people's values, behaviors, and customs that differ from mainstream society's morals have been associated with susceptibility to infectious diseases. In that sense, since infectious disease outbreaks constitute threatening events, people usually require "collective symbolic coping" (Eicher and Bangerter, 2015), which means representing the outgroup's practices as immoral.

Analyses suggest that contemporary processes of urbanization may increase vulnerability to the spread of infectious diseases (Ali and Keil, 2006; Roberts, 2009; Connolly et al., 2020). Ali and Keil (2006), regarding the SARS outbreak in Toronto, reveal how spatial factors have historically impacted negatively racialized communities. Deprived neighborhoods have a direct effect on people's opportunities and can reinforce social exclusion (Atkinson and Kintrea, 2001; Harvey, 2008), not only in terms of access to resources but also in terms of the stigmatized perceptions regarding residents, that affect the quality of life and especially employment and health (Atkinson and Kintrea, 2001; Buck, 2001). Other studies show that in the context of pandemics, non-migrants discriminate against (perceived) non-white communities, perpetuating a discourse of inferiority that translated into a perception of weaker health (Roberts, 2009). In this line, recent evidence confirms that the COVID-19 outbreak, once again, boosted anti-immigrant sentiment against Chinese residents around the globe (Chan and Montt, 2020; Tessler et al., 2020). In the case of Chile, the pandemic has reinforced stereotypes of migrant communities, especially Afro-descendant migrants who were targeted as threats. For instance, in digital spaces Chileans portrayed Haitian migrants as "filthy" and disease carriers, reproducing anti-black racism and reinforcing an anti-immigrant sentiment that aimed to control migratory mobilities into Chile (Bonhomme and Alfaro, 2022).

Conviviality, identity and threat in the context of growing migration

In order to grasp social cohesion and the way it might have changed over the years, we focused on three dimensions: conviviality, identity, and threat. Following Gilroy (2004, p. 11), we use the term conviviality to refer to the process of multi-ethnic cohabitation and interaction in a territory. Gilroy's theorization of conviviality, from a postcolonial perspective, allows challenging the notion of integration and its normative canons of nationally-based identities and culturalism, to embrace contemporary forms of multiculturalism (Valluvan, 2016). Gilroy (2004, p. 105) calls for an interaction whereby the difference among identities becomes "politically unremarkable" and where perceived "racial" differences are not feared. In that sense, it implies that people need to have the capacity to be at ease with the presence of diversity (Valluvan, 2016). However, Redclift et al. (2022, p. 14) argue that the people who actually do convivial work on a daily basis are those considered to be inferior within a white normativity. This is what the authors (2022, p. 2) call the "burden of conviviality". This study in the UK shows that negatively racialized migrants navigate the fact of being "Othered" through different ways of putting at ease those who are not racialized as "different" so that surviving this unevenly distributed burden of conviviality meant "disappearing into normative whiteness" (Redclift et al., 2022, p. 14). In that sense, a convivial culture does not mean tolerance or the end of racism in multicultural neighborhoods. Conviviality is in effect contiguous to processes of ethnic conflict (Valluvan, 2016). In the case of Chile, similar to other Latin American countries (Loveman, 2009), measuring this concept is particularly interesting as it has historically taken whiteness for granted and Chileans tend to negatively racialize LAC migrants and perceive them as "inferior" based on racist logics (Bonhomme, 2022). Even though we acknowledge the complexities behind the term conviviality, considering that this study's survey data only focuses on Chilean citizens, we will measure it as an attitude toward a constructed "other". In this case, toward LAC migrants. This will allow us to measure at least one side of this process of multi-ethnic cohabitation, that is, from the non-migrants' perspective. Therefore, a convivial attitude will be understood here as the individuals' ability to interact and have a friendly coexistence with those they consider ethnically different from themselves.

Besides conviviality, the literature on the development of social cohesion attitudes in migratory contexts has focused on other essential aspects to understand the phenomenon. Two of them are threat and the identity processes involved with migration. Regarding threat, it is proposed that this may occur due to the competition generated in the labor market by the arrival of people and potential changes in wages or the availability of jobs resulting from their presence. Attitudes toward threat can vary significantly according to social position as migrants tend to take jobs that require lower skills and/or qualifications. In that sense, unskilled non-migrant workers can compete for the same jobs (Givens, 2007; Orrenius and Zavodny, 2009). A second explanation refers to the fiscal impact and the competition for benefits and social services that migration may generate. Once again, social position conditions this competition

for access to health, education, or other relevant social assistance (Jaime-Castillo et al., 2016). The threat manifests itself in different ways, mainly as negative feelings or emotions in the interaction or the development of certain stereotypes about migrants (Croucher, 2017).

The notion of identity in the context of migration refers to the perception of moral differences (or similarities), values, customs, beliefs, or cultural practices (Stephan et al., 2000), considered central aspects of identity construction according to psychological perspectives. This notion has been part of the debate in migration and diaspora studies. As Hall (1990) argues, no identity exists without relations of difference, so the multicultural encounter that migration brings allows individuals' identity formation. Identity is not only a private psychological process but also a public matter, as it molds a "shared and communal sense of belonging with others and against Others" (Georgiou, 2006, p. 45). The notion that Benedict Anderson (2006) has of the nation, as a political "imagined community" and what Balibar (1991) calls a "fictive ethnicity"—which refers to the lack of ethnic basis of any nation-state—is key for understanding this sense of identity and the perceived threat represented by growing migration. According to Anderson (2013, p. 2), any modern state portrays itself as a "community of value", whereby people share (non-arbitrary) values and patterns of behavior expressed by their culture, ethnicity (although fictitious), religion, and/or language. Valued as such, the community of "good citizens" requires protection from "outsiders" (2013, p. 3). As Goldberg (2001, p. 16) suggests, the state articulates itself nationally as racial and culturally homogeneous in order to create and maintain a unified national community. In that sense, the emergence of migratory movements and the production of heterogeneous societies have challenged nation-states, and the perception of migration as a threat usually elicits feelings of national identity (Goldberg, 2001).

Empirical approaches to the study of attitudes toward migration

The study of the migratory phenomenon and the understanding of how people perceive it and behave accordingly has been approached from multiple methodological and disciplinary perspectives. From a qualitative approach, a vast production of studies emphasizes how perceptions about the migration phenomenon are constructed (see Zapata-Barrero and Yalaz, 2022). In contrast, despite the growing availability of comparative studies of public opinion with some focus on migration (i.e., ESS, ISSP, and WVS), the use of survey-quantitative data for studying attitudes toward migration is still less common than the qualitative approach, let alone the use of panel-type data even in Global North countries [Salamońska, 2022; see Eisnecker's (2019) analysis based on a longitudinal study in Germany].

Regarding the study of attitudes toward groups of migrants in survey research, it is possible to distinguish between the focus on negative or positive attitudes. Negative attitudes toward migrants deal with concepts such as prejudice, attitudes toward ethnic minorities, xenophobia, and threat or discrimination toward particular groups. As far as the study of positive attitudes is concerned, it can be traced back to research that evaluates people's opinions about developing a friendship or expressing positive feelings toward others (Bergamaschi and Santagati, 2019; Baldner et al., 2020). It is possible to link these types of studies with the idea of friendly coexistence as it captures the extent to which people are more willing to coexist with others who are perceived as different from them. In this sense, aspects such as the development of an intergroup friendship or positive emotions in coexistence can be considered as feeling "at ease" in the interaction. Another important source of the study of positive attitudes comes from research that evaluates support for multiculturalism or the willingness to support the maintenance of identities or cultural practices of others (Berry, 2001; Goodman and Alarian, 2021). Here, attitudes linked to intergroup identity are evaluated to the extent that they capture the willingness of non-migrants to live with others who maintain their cultural characteristics as long as they do not threaten local identity.

Measuring positive and negative attitudes toward migration offers a wide variety of concepts and measurement instruments in quantitative studies. First, the general study of the opposition to migration seeks to understand the opinion of non-migrant citizens about more closed or open migration policies or to receive migrants. It is typically evaluated in representative opinion surveys using a general question or a set of indicators treated as a composite index. For instance, the World Values Survey assesses opposition by using a series of questions to measure people's willingness to accept people from low-income countries or other ethnicities into "their" countries, prejudice toward migrants, perceived threat, support for maintenance of cultural practices or positive emotions, such as sympathy, trust or lack of anxiety (Meuleman et al., 2009). Second, prejudice is commonly assessed using multi-item scales that measure people's disposition toward particular groups of migrants. However, it is possible to find studies using prejudice measurements as opposed to migration (Pettigrew et al., 2007), sometimes used as interchangeable indicators. Third, the perception of threat addresses the effect that competition would have on certain resources or the distribution of goods that may be perceived as threatened in migratory contexts. Specifically, the measurements aim to assess to what extent non-migrants perceive that the arrival of migrants can impact educational provision, the labor market, or threaten national identity. Although it is used as an antecedent of the development of attitudes such as prejudice, it is also used as a dependent variable

(Meuleman et al., 2009; Davidov et al., 2018). Finally, positive attitudes are evaluated using multiple items to measure people's willingness to support the maintenance of cultural practices, the degree of identity similarity, or the positive emotions that interaction with others can generate, such as sympathy, trust, or lack of anxiety. In all cases, the concepts are measured using items answered on a Likert-type scale that allows measuring the disposition of people to each concept.

Factors associated with attitudes toward migration

Regarding the antecedents that have been used in the literature to explain the attitudinal differences, it is possible to classify them into individual and contextual theories of the development of attitudes toward migrants and migration (Quillian, 1995; Ceobanu and Escandell, 2010). On the one hand, at the individual level, two of the most relevant theories refer to socioeconomic resources and levels of intergroup contact. In terms of resources, multiple studies consistently show that people with lower educational levels or in lower social positions tend to develop more unfavorable attitudes toward migrants. This would also be particularly relevant in critical economic conditions (Ceobanu and Escandell, 2010; Meuleman et al., 2020; Bonhomme, 2021, 2022), while people with more resources tend to support greater equality of rights or positive attitudes toward migration (Miranda et al., 2018). The explanations for the effect of resources, particularly education, can be understood from the perspective of competence or enlightenment. The "labor market competition model" or "threat to status model" (Côté and Erickson, 2009; Jaime-Castillo et al., 2016) suggests that competition for scarce resources can vary depending on the social position of people. In lower socioeconomic levels, there is a tendency for more hostile attitudes given the greater competition for job or educational opportunities, which conditions the development of attitudes (Kunovich, 2004; Caro and Schulz, 2012). Furthermore, the evidence suggests that more educated people internalize democratic norms and principles to a greater extent (Lipset, 1960; Jackman and Muha, 1984), leading to a more positive attitudinal development.

A complementary alternative explanation to attitudes toward migrants comes from contact theory. This theory suggests that intergroup contact, from mere knowledge to the development of friendships, would allow non-migrants to establish daily relationships with migrants. The evidence tends to support that people who develop higher levels of contact with migrants—especially the best forms of contact, such as friendship—would improve their attitudes (by lessening the prejudice and perception of threat) toward them (Tropp and Pettigrew, 2005; Pettigrew and Tropp, 2008; Paluck et al., 2019).

Finally, at the contextual level, the focus has mostly been on structural socioeconomic conditions. For example, extending the concept of threat to a contextual level, it is argued that migration would generate intergroup competition for available resources (Ceobanu and Escandell, 2010; Jaime-Castillo et al., 2016). Therefore, a higher rate of migrants in a particular territory could condition attitudinal development, an impact that would increase in contexts with a growing migration rate, as is the Chilean case.

Following the previous literature, it is possible to propose the following hypotheses:

H1: non-migrants would show an increase in negative attitudes toward migrants over time (in terms of conviviality, identity, and perception of threat), particularly after the outbreak of COVID-19.

H2: the increase in negative attitudes toward migrants (in terms of conviviality, identity, and perception of threat) would be stronger for those with lower status.

H3: the increase in negative attitudes toward migrants (in terms of conviviality, identity, and perception of threat) would be stronger for those living in territories with a high rate of migrant residents.

H4: non-migrants with lower status and more interaction with migrants would increase their negative attitudes toward migration over time (in terms of conviviality, identity, and perception of threat).

The pre-registration of the hypothesis of the study can be found in the following link: https://osf.io/2npuq/?view_only=fe51f22a4d2340c1a0463d0ebca4b076.

Data, variables, and methods

Data

The main data source is the Chilean Longitudinal Social Survey (ELSOC) 2016–2021. ELSOC has been designed to evaluate yearly the way in which individuals think, feel and behave regarding a set of social issues related to conflict and social cohesion in Chile. The sampling design is probabilistic, stratified, clustered, and multistage. It provides adequate coverage of the country's largest cities (Metropolitan Area of Santiago, Valparaíso, and Concepción) and smaller cities comprising a total of 2,927 participants aged between 18 and 75 years on wave 1. It is representative of people in the north and south of the country. In addition, the sample has representativeness of 77% of the country's total population and 93% of the urban population, with a response rate of 62.4% (Centre for Social Conflict and Cohesion Studies, 2022).

The survey has been conducted yearly since 2016, with the exception of the year 2020, when it was suspended due to the pandemic. The administration of the questionnaire is face-to-face, but in the last wave (2021), it was conducted entirely over

the phone. In 2018, wave 3 included a refreshment sample in order to counter survey attrition. The same sampling strategy of wave 1 was implemented for selecting the new cases. As a result, the total sample of wave 3 included 3,748 cases, of which 2,229 are part of the original sample, and 1,519 are from the refreshment sample. The data from the refreshment sample is not included in this article because we wanted to analyze a longer trend, thus, only cases from the original sample are employed in the analytical sample. Regarding the original sample, the response rate was 62.4% in wave 1, achieving $N =$ 2,927 participants. The attrition in subsequent waves was 15.5% in wave 2 ($N = 2{,}473$), 9.9% in wave 3 ($N = 2{,}229$), 3.4% in wave 4 ($N = 2{,}153$), and 19.2% in wave 5 ($N = 1{,}739$). In broader terms, the accumulated attrition between wave 1 and wave 5 is 40.5%. A limitation of this study is that sampling weights unfortunately were not available in the dataset for longitudinal analysis. For a more detailed analysis of responses and attrition, visit https://coes.cl/encuesta-panel/.

Regarding the questions about migrants, the first three waves referred only to Peruvians, and from wave 4th (2019) onwards, the sample was split: one half included questions about Peruvians and the other half about Venezuelans, as they both became one of the largest migratory groups in Chile. For the analysis, both groups are combined in one general category of "migrants", but there will be a dummy variable controlling for this difference in the models (Venezuelans = 1, Peruvians = 0). The detail for each wave is depicted in Table 1.

Table 1 summarizes each wave's total number of cases and the data processing rationale. First, the sample is fixed to the number of cases present on the last wave ($N = 1{,}739$). Second, we applied a listwise deletion that keeps all the cases with complete information in the variables of interest. Finally, after missing data cleaning, the final dataset comprises 1,611 individuals, corresponding to 6,344 observations over the five waves nested within 93 municipalities. No data imputation methods were used in the final analytical sample.

For the contextual data at the municipality level, we use data from the National Socio-Economic Characterization Survey (CASEN) for the years 2017 ($N = 216{,}439$) and 2020 ($N = 185{,}437$) (Ministerio de Desarrolllo Social y Familia, 2017, 2021). CASEN is a national probabilistic, stratified, two-stage household survey representative of the overall urban and rural population of Chile with 18 years of age or older achieving a response rate of 75.5%. In 2017 the survey was conducted using face-to-face CAPI interviews with the head of household. Because of the pandemic, in 2020, the survey switched from single-mode face-to-face to mixed telephone mode with limited face-to-face interviews. Nevertheless, the sampling design remained stable, achieving a response rate of 63.1%. The computation for the variables at the municipality level is described in the next section. The data is available at: http://observatorio.ministeriodesarrollosocial.gob.cl/encuesta-casen. The last procedure was merging the individual-level panel data with the CASEN survey information for the 93 municipalities using the unique administrative identification number available in both datasets. No missing data were reported regarding the variables of interest at the municipality level.

TABLE 1 Summary of the original sample.

Target migratory group	Wave					Total
	2016	2017	2018	2019	2021	
Peruvians	2.927	2.473	2.229	1.100	846	9.575
Venezuelans	0	0	0	1.053	893	1.946
Total	2.927	2.473	2.229	2.153	1.739	11.521
Data procedures						
1. Fix to wave 5	1.739	1.739	1.739	1.739	1.739	8.695
2. Listwise deletion	1.173	1.208	1.261	1.286	1.416	6.344
Missing (%)	32.55	30.53	27.49	26.05	18.57	27.04

Target migratory group means that the questions on attitudes toward migration are asked specifically about these groups. For example, in waves 1–5, the statement says, my family values that I have "Peruvians" friends. From 2019 onwards, a part of the sample was asked for "Venezuelans" instead of "Peruvians".

Variables

The main dependent measures refer to three aspects of social cohesion related to non-migrants' attitudes toward migrants: *Convivial/Conviviality*, *Identity,* and *Threat.* The first variable corresponds to the average of five statements measured by Likert scales that captures the extent to which people agree with different aspects of conviviality ($\alpha = 0.75$). The second variable is the average of four Likert scales that seek to capture non-migrants' attitudes toward migrants regarding national identity and costumes ($\alpha = 0.54$). Finally, we use a single-item question to capture the agreement with the idea that migrants constitute a threat in terms of the increase in unemployment. For details of each item, see Table 2.

For measuring social status, we use educational level, household income quintiles, and subjective social status. In order to better reflect the attitudes of lower-status individuals in the models, we set the highest educational level and income quintile as reference categories. Regarding subjective social status, we use a reverse coded measure, in which each increase in the scale represents a lower individual status perception.

To capture the influence of interaction and friendship with migrants on social cohesion attitudes, we use two variables that have been measured in wave 1 (2016) and wave 4 (2019): *number of known migrants* and *number of migrant friends.* The dummy coded variables were 0 = no known/friends and 1 =

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TABLE 2 Items for perceptions and attitudes toward migrants.

Concept	ID	Item	Question	Categories
Conviviality	c01	Interaction anxiety with (PER/VEN)	If you had to talk with a group of (Peruvians/Venezuelans) who live in Chile and that you don't know, how would you feel?	1. Very uncomfortable
				5. Very comfortable
	c02	Sympathy for (PER/VEN) living in Chile	How much do you like the (Peruvians/Venezuelans) living in Chile?	1. Very little or not at all
				5. A lot
	c03	Family value of migrant friends (PER/VEN)	My family values that I have (Peruvians/Venezuelans) friends.	1. Strongly agree
				5. Strongly disagree
	c04	Friends value of migrant friends (PER/VEN)	My friends value that I have (Peruvians/Venezuelans) friends.	1. Strongly agree
				5. Strongly disagree
	c05	Migrants (PER/VEN) have Chilean friends	How much do you agree or disagree with that (Peruvians/Venezuelans) living in Chile have Chilean friends?	1. Strongly agree
				5. Strongly disagree
Identity	i01	Similarity between Chileans and (PER//VEN)	How similar among them are Chileans and (Peruvians/Venezuelans) living in Chile?	1. Not similar
				5. Very similar
	i02	Loose of identity because of migrants	With the arrival of so many (Peruvians/Venezuelans), Chile is losing its identity.	1. Strongly agree
				5. Strongly disagree
	i03	Migrant keeping their customs	How much do you agree or disagree with (Peruvians/Venezuelans) living in Chile keeping their customs and traditions?	1. Strongly agree
				5. Strongly disagree
	i04	Adoption of Chilean customs	How much do you agree or disagree with (Peruvians/Venezuelans) living in Chile adopting Chilean customs and traditions?	1. Strongly agree
				5. Strongly disagree
Threat	t01	Unemployment increases	With the arrival of so many (Peruvians/Venezuelans) Chile is increasing unemployment.	1. Strongly agree
				5. Strongly disagree

one or more. The changes between waves are coded in four groups: (1) Stable, do not know/do not have friends; (2) Stable, know/have friends; (3) Now know/have friends, and; (4) No longer know/have friends. The control variables gender, age, and nationality are included in the estimations.

The descriptives of the individual-level variables are presented in Table 3.

The variables for the municipality level are shown in Table 4. For the variable *Percentage of migrants at the municipality level,* we use the question about the country where the mother of the respondent was living at the moment of his/her/their birth; the computation is based on the proportion of individuals that declare to be born outside Chile over the total population of the municipality using populations weights at this administrative level that are provided by the data.

For the computation of this measurement, we considered the large two migratory groups in Chile in the last 5 years: Venezuela (30.7%), and Peru (16.3%). Second, the variable *Change in the percentage of migrants at the municipality level* aims to measure the temporal changes within the municipality. Therefore, the variable was computed as the difference between the percentage of migrants between 2017 and 2020.

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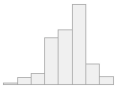
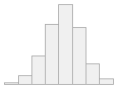
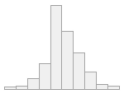
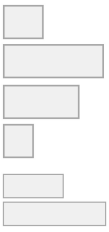
TABLE 3 Descriptive statistics of individual data.

Variable	Stats/values	Freqs (% of valid)	Graph
Convivial/Conviviality	Mean (sd): 3.4 (0.6)	21 distinct values	
	min ≤ med ≤ max: 1 ≤ 3.4 ≤ 5		
Identity	Mean (sd): 3.3 (0.7)	17 distinct values	
	min ≤ med ≤ max: 1 ≤ 3.2 ≤ 5		
Threat (unemployment increases)	1. Strongly disagree	447 (7.0%)	
	2. Disagree	1,889 (29.8%)	
	3. Neither disagree nor agree	760 (12.0%)	
	4. Agree	2,504 (39.5%)	
	5. Strongly agree	744 (11.7%)	
Education	1. Universitary	1,262 (19.9%)	
	2. Technical	1,069 (16.9%)	
	3. High school	2,769 (43.6%)	
	4. Primary	1,244 (19.6%)	
Household income quintile per capita (NA)	1. Q5	1,174 (18.5%)	
	2. Q4	1,193 (18.8%)	
	3. Q3	1,258 (19.8%)	
	4. Q2	1,221 (19.2%)	
	5. Q1	1,226 (19.3%)	
	6. QNA	272 (4.3%)	
Subjective social status: individual (reverse)	Mean (sd): 5.6 (1.5)	11 distinct values	
	min ≤ med ≤ max: 0 ≤ 5 ≤ 10		
Know migrants (diff. t4–t1)	1. Stable, do not know	3,337 (52.6%)	
	2. Stable, know	905 (14.3%)	
	3. Now know	871 (13.7%)	
	4. No longer know	1,231 (19.4%)	
Have migrant friends (diff. t4–t1)	1. Stable, do not have friends	4,201 (66.2%)	
	2. Stable, have friends	523 (8.2%)	
	3. Now have friends	735 (11.6%)	
	4. No longer have friends	885 (14.0%)	
Age groups	1. 18–29	1,023 (16.1%)	
	2. 30–49	2,586 (40.8%)	
	3. 50–64	1,956 (30.8%)	
	4. 65 or more	779 (12.3%)	
Gender	1: Male	2,334 (36.8%)	
	2: Female	4,010 (63.2%)	

Own elaboration based on ELSOC Survey. $N = 6{,}334$ (all waves).

Methods

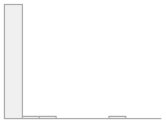
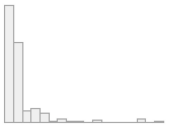
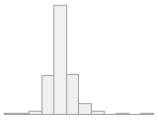
Given the hierarchical structure of the data (observations nested in surveys nested in municipalities), we applied a longitudinal multilevel strategy (Singer and Willett, 2003). Longitudinal multilevel models are suited to account for the shared variance among units in the data for better estimation of standard errors. Given that individuals over time share variance within themselves, if the error structure is not taken into account, then it would be as if they were considered different individuals. Multilevel models allow a solution in regression estimation by adding a random term that represents the variance associated with the nesting of the data (random effects). The linear multilevel models are estimated using the R library "lme4" (Bates et al., 2015, p. 4).

The estimated multilevel model can be formalized as follows:

$$y_{tjk} = \gamma_{000} + Wave_{jk} + Status_{jk} + Know_{jk} + Friend_{jk} + PropMig_k + ChangeMig_k + \mu_{00k} + r_{0jk} + e_{tjk}$$

Where,

TABLE 4 Descriptive statistics of municipality data.

Variable	Stats/values	Graph
Proportion of migrant population (weighted)–CASEN 2017–Municipality	Mean (sd): 2.2 (5.1) min ≤ med ≤ max: 0 ≤ 1.1 ≤ 42.4	
Proportion of migrant population (weighted)—CASEN 2020—Municipality	Mean (sd): 3.6 (5.2) min ≤ med ≤ max: 0 ≤ 2.1 ≤ 35.3	
Change in the proportion of the migrant population between 2017 and 2020—CASEN	Mean (sd): 1.3 (2.1) min ≤ med ≤ max: −7.1 ≤ 0.9 ≤ 14	

Own elaboration based on CASEN Survey. $N = 93$ (municipalities).

- y_{tjk}: is the value of the repeated measures on attitudes toward migration.
- *Wave*: is the measurement of time.
- *Status*: is the socioeconomic status of the individual.
- *Know*: indicates if the respondent knows (or knew) at least one migrant.
- *Friend*: indicates if the respondent has (or had) at least one migrant friend.
- *PropMig*: is the proportion of the migrant population at the municipality level.
- *ChangeMig*: is the change, between 2017 and 2020, in the proportion of the migrant population at the municipality level.
- μ_{00k}, r_{0jk}, and e_{tjk} are the error terms at the municipality, individual, and observation levels, respectively.

And adding interactions with time (wave) for assessing longitudinal changes:

$$y_{tjk} = \gamma_{000} + Wave_{jk} + Status_{jk} \times Wave_{jk} + Know_{jk} \times Wave_{jk} + Friend_{jk} \times Wave_{jk} + ChangeMg_{k} \times Wave_{jk} + \mu_{00k} + r_{0jk} \times Wave_{jk} + e_{tjk}$$

Where,

- $Status_{jk} \times Wave_{jk}$ is the interaction effect of time with *Status* (the same as with *Know*, *Friend,* and *ChangeMig*)
- $r_{0jk} \times Wave_{jk}$ is the random slope variation for the slope of *Wave*.

Results

Descriptives

Figure 1 shows the univariate descriptives for the items that will be later used in the multilevel regression models as indexed dependent variables. For the items of the conviviality dimension, we observe that almost half feel comfortable in their interaction with migrants, and more than a third feel sympathy for them. Less than half of the respondents' friends and family value friendship with migrants, whereas a great majority agree that migrants can have Chilean friends, meaning this is seen as something positive. This is interesting as it seems more valuable that LAC migrants have Chilean friends than Chileans people having LAC migrant friends. Regarding the items on the identity dimension, a minority (20%) find similarities between migrants and non-migrants, pointing to a large recognition of differences. Almost 40% are concerned about the potential identity loss due to migration, whereas more than two-thirds agrees on the relevance of maintaining their own culture as well as incorporating the national one. Finally, half of the respondents show concerns about the impact of migration on unemployment.

First, we will analyze the correlation matrix of the items that make up the different dimensions of the dependent variable, which are presented in Figure 2, using the data from all survey waves.

As we can see, the correlations generally have values between moderate and high, which indicates a certain level of association between the indicators and dimensions. The correlations in

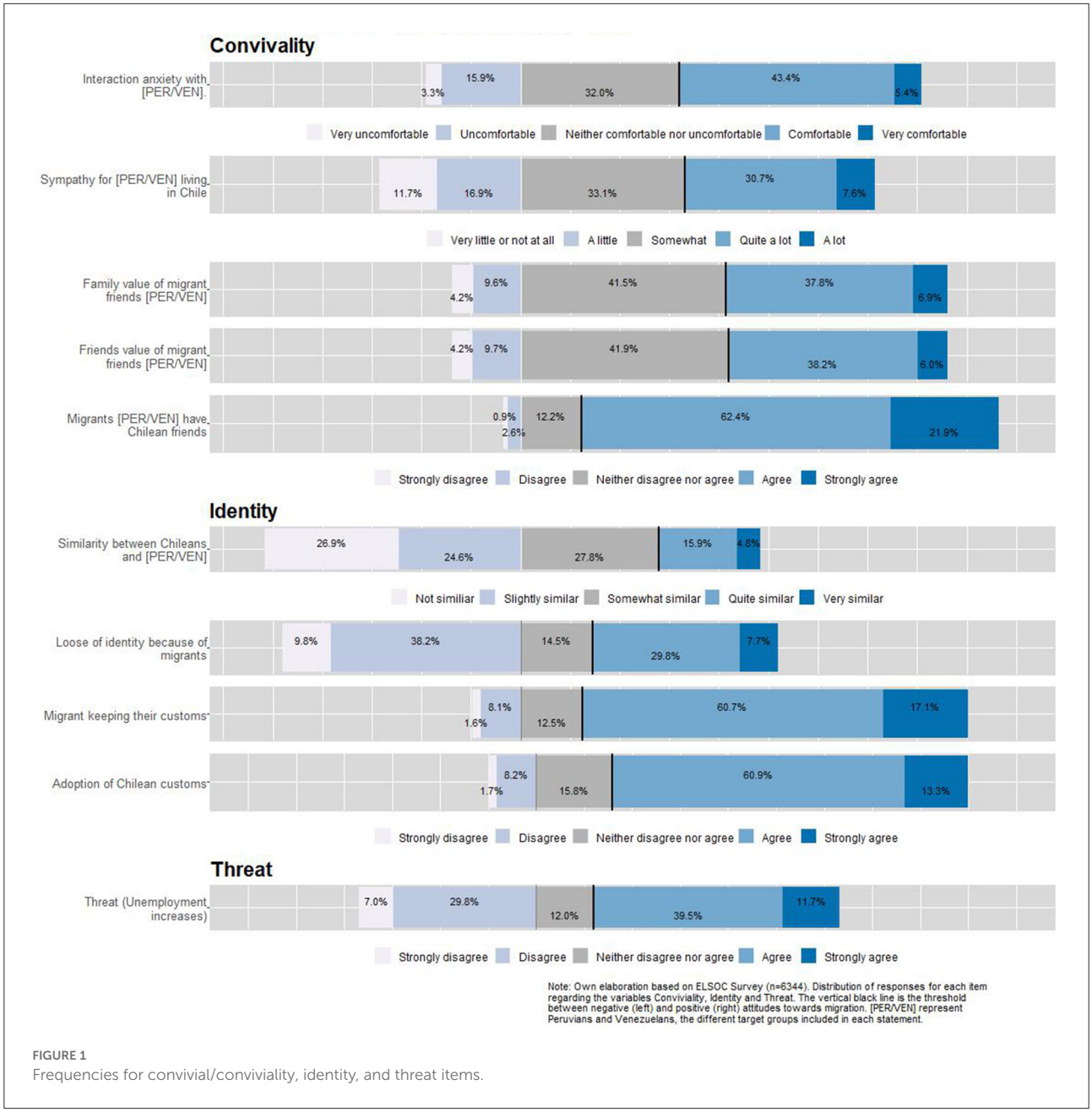


FIGURE 1
Frequencies for convivial/conviviality, identity, and threat items.

the dimension of conviviality (items A–E) move in the range between 0.33 and 0.86, while those of identity (F–I) have somewhat lower values (0.12–0.55). The perception of threat (J), which represents the third dimension, has a negative relationship with all the indicators. This was expected as the other variables are coded in the positive sense of social cohesion.

Multilevel regression models

In the following we present the results of the estimation of the multilevel regression models for each of our three dependent variables, beginning with Table 5 which shows the results of the estimation for conviviality. The first variable in Model 1 is wave, which depicts a general perspective of the variations of the dependent variable over time. We observe that in relation to the reference category (wave 1) conviviality is significantly higher in waves 2, 3, and 4, but then it becomes even negative in the last wave (2021). This result is noteworthy as the last wave was carried out in times of the coronavirus pandemic.

Model 2 incorporates socioeconomic status variables. Starting with education, we observe a negative association with conviviality (as university education is the reference category). In addition, the effect size increases as the educational level

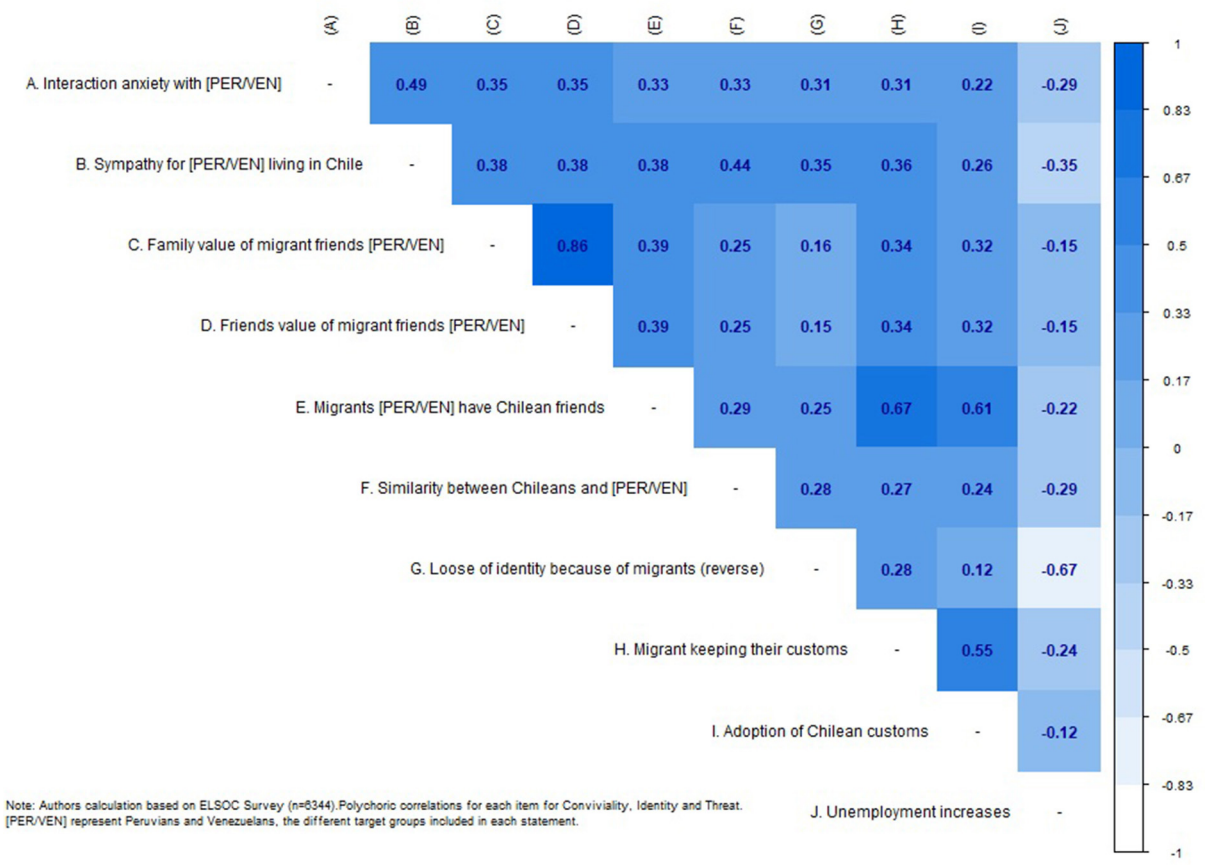


FIGURE 2
Polychoric correlation matrix for convivial/conviviality, identity, and threat items.

decreases, with those who reached primary education displaying the lowest level of convivial attitudes. Regarding the income quintiles, it is also possible to appreciate lower conviviality in the lower levels, although this result is weaker when compared to that of the educational level. The third status variable that is incorporated into the models is subjective social status, which does not show significant effects here and in any of the following models.

Model 3 presents variables covering relationships with migrants and their change over time, having as a reference category those who have not been related to migrants in all waves. In general, there are no consistent effects, although the only category that is positively related to greater conviviality is that of those who have increased their relationship with migrants over time. Regarding friendships, non-migrants who maintain friendships as well as those who decrease their friendships, show a higher level of conviviality. It could be concluded that those who at some point have been friends with migrants show greater conviviality (since the reference category is those who have never had migrant friends).

The contextual variables enter in Model 4, where we can observe that the net presence of migrants at the commune level does not have an effect on conviviality, but its increase over time does, leading to a decrease in conviviality. Even though the effect is small, it is consistent across models.

Table 6 shows the results for the models on our second dependent variable: identity. Model 1 shows the effect of time, with an increase in the first waves and then a decrease in the last, a similar pattern to what happened with convivial/conviviality but with a non-significant decrease in the 2020's wave. Consistent with the models for conviviality, in Model 2 the groups with the lowest educational level show the most negative attitudes. Regarding relationships with migrants, Model 3 shows that those who have increased their knowledge of migrants have more positive attitudes in the identity dimension, as do those who have stable friendship relationships. The contextual variables (Model 4) in this case do not render significant effects.

Regarding our third dependent variable of perceived threats to employment due to the presence of migrants, Model 1 in Table 7 shows that it seems to be decreasing over time.

TABLE 5 Multilevel linear regression models for conviviality.

	Model 1	Model 2	Model 3	Model 4
Wave (ref: wave 2016)				
Wave 2017	0.07 (0.02)**	0.07 (0.02)**	0.07 (0.02)***	0.07 (0.02)***
Wave 2018	0.11 (0.02)***	0.11 (0.02)***	0.11 (0.02)***	0.11 (0.02)***
Wave 2019	0.07 (0.02)**	0.07 (0.02)**	0.07 (0.02)**	0.07 (0.02)**
Wave 2020	−0.05 (0.02)*	−0.05 (0.02)*	−0.05 (0.02)*	−0.05 (0.02)*
Education (ref: Universitary)				
Technical		−0.16 (0.04)***	−0.15 (0.04)***	−0.15 (0.04)***
High school		−0.26 (0.03)***	−0.24 (0.03)***	−0.24 (0.03)***
Primary		−0.39 (0.04)***	−0.38 (0.04)***	−0.38 (0.04)***
Household income (ref: quintile 5)				
Quintile 4		−0.09 (0.04)*	−0.08 (0.04)*	−0.08 (0.04)*
Quintile 3		−0.08 (0.04)*	−0.08 (0.04)*	−0.08 (0.04)*
Quintile 2		−0.10 (0.04)*	−0.09 (0.04)*	−0.09 (0.04)*
Quintile 1		−0.12 (0.04)**	−0.10 (0.04)*	−0.11 (0.04)**
Subjective social status		−0.00 (0.01)	−0.00 (0.01)	−0.00 (0.01)
Woman (ref: man)		0.00 (0.02)	0.01 (0.02)	0.01 (0.02)
Know migrant (ref: stable, do not know)				
Stable, know			0.06 (0.04)	0.07 (0.04)
Now know			0.08 (0.04)*	0.09 (0.04)*
No longer know			0.04 (0.03)	0.06 (0.03)
Migrant friend (ref: stable, do not have friends)				
Stable, have friends			0.28 (0.05)***	0.29 (0.05)***
Now have friends			0.09 (0.04)*	0.08 (0.04)*
No longer have friends			0.09 (0.04)*	0.10 (0.04)**
Municipality characteristics				
Proportion of migrants				−0.01 (0.00)
Change in the proportion of migrants				−0.02 (0.01)*
AIC	11,338.60	11,260.69	11,235.70	11,245.00
BIC	11,473.71	11,463.35	11,478.88	11,501.70
Log likelihood	−5,649.30	−5,600.35	−5,581.85	−5,584.50
Likelihood-ratio test		152.3 (10)***	66.6 (6)***	13.3 (2)**
Num. obs.	6,344	6,344	6,344	6,344
L1: num. individual	1,611	1,611	1,611	1,611
L2: num. municipality	93	93	93	93
Var: individual (intercept)	0.14	0.13	0.12	0.12
Var: municipality (intercept)	0.01	0.00	0.01	0.00
Var: residual	0.26	0.26	0.26	0.26

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

Standard error in parenthesis. Model 1 shows the estimation for the average change between waves.

Models 2 y 3 show the estimations of the random intercept multilevel models of the individual social status and changes in contact and friendship with migrants.

The estimation considers the following nesting structure of the data: Observations, within Individuals which are also nested within Municipalities.

Consistent with previous models, those with a lower educational level are more threatened by unemployment (Model 2), contrary to those who have stable migrant friends (Model 3). As in the case of the identity variable, there are no effects at the contextual level.

Finally, Table 8 shows the results of the interactions for the three dependent variables. These models attempt to explore to what extent some of the effects of previous models change significantly over time. Therefore, these interactions are part of the estimation with all the independent variables (Model 4 of the previous tables), but only the coefficients of the interactions are presented for the sake of space. In the model for conviviality (Model 1), in education, it is observed that it is the level of primary education—which maintained the most negative attitudes in the previous models—the one that would also show a decrease in conviviality over time. Regarding the relationships with migrants, those who increase their knowledge over time also increase in convivial attitudes, and the opposite happens for those who decrease their relationships with migrants, which is also replicated in the case of friendships. In the case of the identity variable (Model 2), the interactions show that attitudes on this realm become more negative over time for those with a lower educational level and for those whose knowledge of and/or friendship with migrants has decreased. Finally, the feeling of the threat of unemployment (Model 3) increases for those who have diminished their relationships with migrants over time.

Discussion

Chileans' attitudes toward migrants from Venezuela and Peru have significantly changed in the last years in different ways. The results show that, contrary to our first hypothesis, negative attitudes toward migrants actually decreased over time since 2016. Yet in early 2020 in Chile, this attitudinal improvement of non-migrants toward migrants was disrupted

TABLE 6 Multilevel linear regression models for identity.

	Model 1	Model 2	Model 3	Model 4
Wave (ref: wave 2016)				
Wave 2017	0.10 (0.02)***	0.10 (0.02)***	0.10 (0.02)***	0.10 (0.02)***
Wave 2018	0.11 (0.02)***	0.11 (0.02)***	0.11 (0.02)***	0.11 (0.02)***
Wave 2019	0.15 (0.02)***	0.15 (0.02)***	0.15 (0.02)***	0.15 (0.02)***
Wave 2020	0.01 (0.02)	0.01 (0.02)	0.02 (0.02)	0.01 (0.02)
Education (ref: Universitary)				
Technical		−0.20 (0.04)***	−0.19 (0.04)***	−0.19 (0.04)***
High school		−0.37 (0.03)***	−0.36 (0.03)***	−0.36 (0.03)***
Primary		−0.50 (0.04)***	−0.50 (0.04)***	−0.50 (0.04)***
Household income (ref: quintile 5)				
Quintile 4		−0.09 (0.04)*	−0.09 (0.04)*	−0.09 (0.04)*
Quintile 3		−0.06 (0.04)	−0.06 (0.04)	−0.06 (0.04)
Quintile 2		−0.06 (0.04)	−0.06 (0.04)	−0.06 (0.04)
Quintile 1		−0.08 (0.04)	−0.07 (0.04)	−0.07 (0.04)
Subjective social status		−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)
Woman (ref: man)		−0.05 (0.02)*	−0.05 (0.02)*	−0.05 (0.02)*
Know migrant (ref: stable, do not know)				
Stable, know			0.05 (0.04)	0.06 (0.04)
Now know			0.07 (0.04)*	0.08 (0.04)*
No longer know			0.01 (0.03)	0.01 (0.03)
Migrant friend (ref: stable, do not have friends)				
Stable, have friends			0.19 (0.05)***	0.19 (0.05)***
Now have friends			−0.01 (0.04)	−0.01 (0.04)
No longer have friends			−0.01 (0.04)	−0.01 (0.04)
Municipality characteristics				
Proportion of migrants				−0.01 (0.00)
Change in the proportion of migrants				−0.01 (0.01)
AIC	11,498.72	11,332.58	11,341.71	11,358.37
BIC	11,633.82	11,535.23	11,584.90	11,615.07
Log likelihood	−5,729.36	−5,636.29	−5,634.86	−5,641.19
Likelihood-ratio test		241.5 (10)***	32.1 (6)***	5.3 (2)
Num. obs.	6,344	6,344	6,344	6,344
L1: num. individual	1,611	1,611	1,611	1,611
L2: num. municipality	93	93	93	93
Var: individual (intercept)	0.14	0.11	0.11	0.11
Var: municipality (intercept)	0.02	0.01	0.01	0.01
Var: residual	0.26	0.26	0.26	0.26

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

Standard error in parenthesis. Model 1 shows the estimation for the average change between waves.

Models 2 y 3 show the estimations of the random intercept multilevel models of the individual social status and changes in contact and friendship with migrants.

The estimation considers the following nesting structure of the data: Observations, within Individuals which are also nested within Municipalities.

somehow, and convivial attitudes significantly decreased. At the same time, the perceptions of threat regarding Chileans' identity and customs and the potential job loss increased and returned to the previous levels of 2016. Thus, our predictions are only partially supported as the pandemic seems to have worked against the more positive trends we identified since 2016 regarding Chileans' perceptions toward Peruvian and Venezuelan migrants.

This study also shows that negative attitudes toward migrants are stronger in Chileans that have a lower status in society, in line with our second hypothesis. A key aspect to highlight is that, among the status variables, education shows a consistent effect in predicting the three aspects of social cohesion considered. Income nonetheless is only related to conviviality, while subjective social status is not related to any of the aspects of social cohesion. It seems that the objective dimensions of status, such as education, are more relevant than the subjective ones when it comes to explaining non-migrants' attitudes toward migration. Similar to other studies (Eisnecker, 2019), higher educational levels mean more positive attitudes toward migrants.

Therefore, the educational level becomes a vital aspect to consider as higher levels of education mean higher levels of conviviality, and thus, mitigates the levels of threat perceived with the presence of migrants. In other words, better education might allow making such (perceived) differences unremarkable—what Gilroy (2004) calls for when he refers to a convivial culture. However, in highly unequal segregated cities like Santiago, which has a greater concentration of migrants, income and educational levels go hand in hand, and thus we cannot know for certain if someone who has a higher educational level necessarily would be more convivial if they reside in multicultural neighborhoods, and where the presence of migrants is unavoidable. Furthermore, we need to acknowledge the fact that even achieving such ability to be convivial, from a nationally-based perspective implies that those

TABLE 7 Multilevel linear regression models for threat.

	Model 1	Model 2	Model 3	Model 4
Wave (ref: wave 2016)				
Wave 2017	−0.17 (0.04)***	−0.17 (0.04)***	−0.17 (0.04)***	−0.17 (0.04)***
Wave 2018	−0.19 (0.04)***	−0.19 (0.04)***	−0.19 (0.04)***	−0.19 (0.04)***
Wave 2019	−0.16 (0.04)***	−0.16 (0.04)***	−0.16 (0.04)***	−0.16 (0.04)***
Wave 2020	−0.11 (0.04)*	−0.11 (0.04)**	−0.11 (0.04)**	−0.11 (0.04)**
Education (ref: Universitary)				
Technical		0.37 (0.07)***	0.36 (0.07)***	0.36 (0.07)***
High school		0.66 (0.06)***	0.65 (0.06)***	0.65 (0.06)***
Primary		0.83 (0.07)***	0.82 (0.07)***	0.82 (0.07)***
Household income (ref: quintile 5)				
Quintile 4		0.09 (0.07)	0.08 (0.07)	0.09 (0.07)
Quintile 3		0.02 (0.07)	0.02 (0.07)	0.03 (0.07)
Quintile 2		0.05 (0.07)	0.04 (0.07)	0.05 (0.07)
Quintile 1		0.08 (0.07)	0.06 (0.07)	0.07 (0.07)
Subjective social status		0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
Woman (ref: man)		0.04 (0.04)	0.04 (0.04)	0.04 (0.04)
Know migrant (ref: stable, do not know)				
Stable, know			−0.02 (0.08)	−0.04 (0.08)
Now know			−0.02 (0.07)	−0.03 (0.07)
No longer know			−0.04 (0.06)	−0.05 (0.06)
Migrant friend (ref: stable, do not have friends)				
Stable, have friends			−0.27 (0.09)**	−0.28 (0.09)**
Now have friends			−0.13 (0.07)	−0.13 (0.07)
No longer have friends			0.02 (0.07)	0.02 (0.07)
Municipality characteristics				
Proportion of migrants				0.01 (0.00)
Change in the proportion of migrants				0.00 (0.01)
AIC	19,128.30	19,000.78	19,017.57	19,035.33
BIC	19,263.41	19,203.44	19,260.76	19,292.03
Log likelihood	−9,544.15	−9,470.39	−9,472.79	−9,479.67
Likelihood-ratio test		190.7(10)***	17.1(6)**	2.3(2)
Num. obs.	6,344	6,344	6,344	6,344
L1: num. individual	1,611	1,611	1,611	1,611
L2: num. municipality	93	93	93	93
Var: individual (intercept)	0.45	0.38	0.38	0.38
Var: municipality (intercept)	0.02	0.01	0.01	0.01
Var: residual	0.89	0.89	0.89	0.89

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

Standard error in parenthesis. Model 1 shows the estimation for the average change between waves.

Models 2 y 3 show the estimations of the random intercept multilevel models of the individual social status and changes in contact and friendship with migrants.

The estimation considers the following nesting structure of the data: Observations, within Individuals which are also nested within Municipalities.

who are "Othered" based on a *mestizo* normativity, in this case, are the ones who might carry the burden of conviviality (for instance, by suppressing their cultural norms, customs and habits) (see Redclift et al., 2022).

Regarding our contextual hypothesis (H3), while the proportion of migrants does not play a relevant role in the attitudes that were evaluated, changes in migration rates within territories can worsen the levels of conviviality. It is remarkable that greater increases in the migration rates mostly affect non-migrants' attitudes related to ensuring a *good coexistence* (conviviality) compared to the perception of threats related to identity and potential job loss. While the perception of international migrants as a threat in most national communities is not new, especially those in which national identity is a key part of people's identity formation, it is noteworthy that in times of crises, convivial attitudes tend to decrease in people who live in neighborhoods that have experienced major changes in migration rates.

Finally, we found partial evidence supporting our fourth hypothesis, which proposed that those non-migrants with lower status and who interact more with migrants would also tend to increase their negative attitudes toward them. Coincidently to these results, other studies have shown that working-class Chileans reproduce, foremost, anti-indigenous and, secondly anti-black racism through everyday practices and interactions in order to claim a white or whiter racial identity compared to LAC migrants (Bonhomme, 2022) and that the pandemic has reinforced an anti-immigrant sentiment, whereby Chileans perceive migrants' everyday practices as a threat to Chilean identity and customs (Bonhomme and Alfaro, 2022). Such negative perceptions do not take into account that what non-migrants conceive as migrants' cultural practices, which shape their forms of inhabiting, are only the inevitable outcome of the precarious housing conditions in which they are forced to live (Bonhomme, 2021). These negative perceptions of Peruvian and Venezuelan migrants seem to allow low-income Chileans

TABLE 8 Multilevel linear regression models with interactions.

	Model 1 (conviviality)	Model 2 (identity)	Model 3 (threat)
Wave	0.00 (0.02)	0.02 (0.02)	−0.08 (0.03)**
Technical (ref: Universitary)	−0.14 (0.06)*	−0.13 (0.06)*	0.20 (0.11)
High school	−0.21 (0.05)***	−0.28 (0.06)***	0.46 (0.10)***
Primary	−0.18 (0.07)**	−0.32 (0.07)***	0.53 (0.12)***
Quintile 4 (ref: quintile 5)	−0.11 (0.06)	−0.17 (0.06)**	0.20 (0.11)
Quintile 3	−0.11 (0.06)	−0.16 (0.06)*	0.07 (0.11)
Quintile 2	−0.12 (0.07)	−0.11 (0.07)	0.15 (0.12)
Quintile 1	−0.12 (0.07)	−0.13 (0.07)	0.15 (0.12)
Stable, know (ref: stable, do not know)	0.09 (0.07)	0.06 (0.07)	−0.05 (0.12)
Now know	0.05 (0.06)	0.13 (0.06)*	−0.12 (0.12)
No longer know	0.14 (0.06)**	0.06 (0.06)	−0.21 (0.10)*
Stable, have friends (ref: stable, do not have friends)	0.24 (0.08)**	0.21 (0.08)*	−0.26 (0.15)
Now have friends	−0.11 (0.07)	−0.10 (0.07)	−0.12 (0.12)
No longer have friends	0.17 (0.06)**	0.07 (0.06)	−0.02 (0.11)
Change in the proportion of migrants	−0.02 (0.01)	−0.00 (0.01)	−0.02 (0.02)
Education × wave	−0.00 (0.02)	−0.02 (0.02)	0.06 (0.03)
Technical × wave			
High school × wave	−0.01 (0.01)	−0.03 (0.01)	0.06 (0.03)*
Primary × wave	−0.06 (0.02)***	−0.06 (0.02)***	0.10 (0.03)**
Quintile × wave	0.01 (0.02)	0.02 (0.02)	−0.04 (0.03)
Quintile 4 × wave			
Quintile 3 × wave	0.01 (0.02)	0.03 (0.02)*	−0.02 (0.03)
Quintile 2 × wave	0.01 (0.02)	0.02 (0.02)	−0.03 (0.03)
Quintile 1 × wave	0.00 (0.02)	0.02 (0.02)	−0.03 (0.03)
Know migrant × wave	−0.00 (0.02)	0.00 (0.02)	0.00 (0.03)
Stable, know × wave			
Now know × wave	0.01 (0.02)	−0.02 (0.02)	0.03 (0.03)
No longer know × wave	−0.03 (0.02)*	−0.02 (0.01)	0.05 (0.03)*
Migrant friend × wave	0.01 (0.02)	−0.00 (0.02)	−0.01 (0.04)
Stable, have friends × wave			
Now have friends × wave	0.06 (0.02)***	0.03 (0.02)	−0.00 (0.03)
No longer have friends × wave	−0.02 (0.02)	−0.03 (0.02)	0.01 (0.03)
Migrant population × wave	−0.00 (0.00)	−0.00 (0.00)	0.01 (0.00)
Change in the proportion of migrants × wave			
AIC	11,315.15	11,491.05	19,123.35
BIC	11,666.43	11,842.33	19,474.63
Log likelihood	−5,605.58	−5,693.53	−9,509.68
Num. obs.	6,344	6,344	6,344
L1: num. individual	1,611	1,611	1,611
L2: num. municipality	93	93	93
Var: individual (intercept)	0.19	0.18	0.48
Var: individual wave	0.01	0.01	0.02
Cov: individual (intercept) wave	−0.03	−0.02	−0.04
Var: municipality (intercept)	0.00	0.01	0.01
Var: residual	0.23	0.25	0.86

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

Standard error in parenthesis. Model 1–3 shows the results of the interaction effects of time with socioeconomic status, know migrants, has migrant friend and change on migrant population. The time is specified as a random slope.

to claim a higher social position in the social spectrum and assert racial superiority, especially due to the anti-indigenous racism that prevails against migrants from South American countries (Bonhomme, 2022). Similar to other ethnographic studies (2022), these results show that the need to mark a difference from other migrants with whom Chileans share similar ancestries (particularly the indigenous ancestry that is mostly acknowledged in the Chilean national identity, yet neglected by many as in the case of African ancestry), such as Peruvians and Venezuelans, becomes key for those Chileans with lower status, and who reside in low-income neighborhoods. Furthermore, as this study suggests, and in line with other research around the globe (Ahmad and Bradby, 2007; Cecchi, 2019), negative perceptions and stereotypes against migrants take greater force in times of disease outbreaks, putting social cohesion at risk. However, our results also reveal that the more contact and interaction non-migrants have with migrants is positively related with conviviality, so the fourth hypothesis is partially challenged. These results are aligned to other studies that show that intergroup friendship has a positive impact on attitudinal development (Davies et al., 2011; Hässler et al., 2019).

Conclusions

This study attempted to be the first approach to the longitudinal changes in attitudes toward migration and their impact on different dimensions of social cohesion amid the COVID-19 pandemic in Chile. We were able to observe significant changes in different attitudinal dimensions, as

an improvement in attitudes toward migrants in terms of conviviality and identity, and lower levels of threat during 2017 and 2018 (in reference to 2016) but with a prominent decay in conviviality and threat in the last survey wave (2021). These results are aligned with international and national studies that have shown that when societies face crises, people (and sometimes governments) tend to find scapegoats to blame, who are constructed as an "other" (Ahmad and Bradby, 2007; Cecchi, 2019; Bonhomme and Alfaro, 2022); in this case, LAC migrants. In that sense, Chileans would find it more difficult to live side by side with LAC migrants after times of crisis. The results give evidence about the increase of negative attitudes mostly by those with lower educational levels and with less contact with migrants, especially since 2020, which tend to be boosted by a larger proportion of LAC migrants in cities (see SJM, 2022).

It is interesting to note that the COVID-19 crisis mainly coincides with changes in attitudinal levels. We observed that the changes in Chileans' attitudes toward Peruvian and Venezuelan migrants over time had mainly to do with the fear of losing their jobs, and the threat to a constructed national identity and customs, and that it seems that the COVID-19 pandemic has worsened these negative perceptions. Nevertheless, although it would be tempting to attribute this phenomenon only to the COVID sanitary crisis and its implications on the economy, society, and culture over the globe, we are aware of several other processes that occur parallelly and that hinder the possibility to rule out different alternative explanations, such as the political turmoil in 2019 with the social outbreak ("*estallido social*") and the consecutive changing scenarios. Some of these alternative explanations would be inflation, unemployment, and political instability, among others. Nonetheless, as some of these changes observed in 2020 were, at least in part, due to the sanitary crises, it makes it one of the key factors that allow us to better understand the radical changes we observed in this longitudinal study, many of which disrupted the improvements we saw over the years regarding the decrease of Chileans' negative attitudes toward the two migratory groups that were considered in the sample: Peruvians and Venezuelans. More research is needed in this regard, particularly the analysis of the changes in attitudes toward different migratory groups in subsequent waves of the survey panel data analyzed in this study.

It is vital to acknowledge that irregular migration grew significantly since 2018, which coincides with the significant changes in the migration policies that year. From a relatively increasing trend since 2012, the number of migrants crossing into Chile through irregular paths suddenly grew from 2,905 to 6,310 migrants by 2018 in a year and up to 8,048 in 2019. And when the pandemic hits, this number significantly increased to 16,848 in 2020 and then rose to 56,586 migrants in 2021, mainly coming from Venezuela (SJM, 2022). This opens up new debates on Chileans' attitudinal changes toward migrants and must be studied in detail in further research since it might influence more negative perceptions toward migrants (especially Venezuelans) from Chileans residing in increasingly multicultural neighborhoods.

Finally, while we acknowledge the theoretical discussions regarding the concept of conviviality and the need to approach it from all perspectives, we believe that in case studies where multiculturalism is still incipient yet steadily increasing in the Global South, a way to begin understanding these processes of multi-ethnic cohabitation using national surveys is from a nationally-based framework, since these samples are constituted by non-migrants. We understand however that the notion of conviviality needs to acknowledge the different processes that converge when approaching what would be a *friendly coexistence* or convivial multiculture (Back and Sinha, 2016), which, if achieved, might be usually at the expense of the constructed "other" within, in this case, a *mestizo* normativity and in a country that presumes a "raceless" character and has historically disavowed racism (Moreno Figueroa and Saldívar Tanaka, 2016; Bonhomme, 2022). In that sense, the research agenda, based on both quantitative and qualitative studies, should aim for understanding social cohesion and forms of multicultural coexistence over time, considering migrants' attitudes and perceptions of these processes of multi-ethnic cohabitation. Moreover, such research agenda should inform public policies about the consequences for social cohesion of high segregation and the lack of appropriate legal regulation of migration processes.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found here: Panel survey study ELSOC, from the Centre for Social Conflict and Cohesion Studies https://coes.cl/encuesta-panel-manuales-metodologico-espanol/.

Ethics statement

The studies involving human participants were reviewed and approved by the Scientific Ethics Committee of Social Sciences, Arts and Humanities of Pontificia Universidad Católica de Chile, June 8, 2016. The participants provided their written informed consent to participate in this study.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Conflict of interest

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Re-imagining the nation-state: An impetus from the pandemic

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In this article the positive lessons from the coronavirus pandemic are examined, focusing on the intensive activities of solidarity at the local, national, and transnational levels, the increase in scientific cooperation, the implementation of assistance policies by states, and the various endeavors of NGOs, religious communities, private organizations, wealthy and less wealthy donors, and charities to support individuals and groups affected by it. It is argued that the pandemic is not only a tragedy that revealed some of the disintegrative processes of global risk society but is also a matchless opportunity for acknowledging what can be (and is) done in the globalized world when guided by positives such as cooperation, coordination, and solidarity. Discussing the theories of globalization, nationalism, and cosmopolitanism, with special attention to Ulrich Beck's theory of reflexive society, the core point of this article is that, considering upcoming global threats of even greater magnitude, such as climate change, potentially deadlier pandemics, and nuclear conflicts, a new world order based on cooperation, coordination and solidarity between nation-states is not only desirable but necessary for survival.

KEYWORDS

nation-state, nationalism, cosmopolitanism, COVID−19, cosmopolitanism and cosmopolitics

Introduction

> The future cannot be a continuation of the past [...] we have reached a point of historic crisis. The forces generated by the techno-scientific economy are now great enough to destroy the environment, that is to say, the material foundation of human life. The structures of human society themselves, including even some of the social foundations of the capitalist economy, are on the point of being destroyed by the erosion of what we have inherited from the human past. Our world risks both explosion and implosion. It must change (Hobsbawm, 1994, p. 584–585).

The extract from Hobsbawm brings us to the very heart of this article on the post-pandemic society, whose goal is to develop the claim that the world he described in the 1990s has not only changed, but has reached a momentum of potentially radical transformations. The starting point is the current pandemic, a more acute global threat that differs significantly from other more chronic threats, such as global warming, poverty or water deficit, which are slower and less noticeable phenomena. On the contrary, the coronavirus prompted a landscape shock (Schot and Kanger, 2018) that spread worldwide, faster than any other global threat before, bringing consequences barely imaginable in pre-pandemic society, so much so that several scientists and heads of state initially downsized its proportions, some even ridiculing those who warned against it, at least until the virus hit their countries.

The virus forced people into their homes, threatening their lives both physiologically and psychologically by turning their routines upside down, and forcing them to walk around wearing masks, something recently only seen in dystopian novels and films. At the same time, the pandemic exacerbated social inequalities with respect to housing (housing being

an asset as well as a place of work and entertainment) and employment (dividing workers between essential workers and remote workers). The latter issue also magnified the problem of precarious employment. Moreover, in the period of a few weeks it brought superpowers like China, the United States of America and Europe into economic recessions, and has had an enormous impact on the global financial market, halving the price of oil worldwide, forcing transport fleets to the ground and increasing the price of basic foodstuffs such as flour and bread. Considering these effects, this article attempts to contrast evidence from a pre-pandemic world, where global risks were a matter for the "future," with how this global shock forced all nation-states to consider global risks a priority in the "present," and widely acknowledge that we aren't ready to deal with them.

At the same time, there is an unprecedented number of initiatives of solidarity, at the local, national and international level, within political and civil society to support those in need. These initiatives of solidarity are evidence that the twenty-first century inherited "antibodies" from previous global cataclysms such as WW2. They are manifested today in the form of intergovernmental organizations such as WHO, UN, UNICEF, but also NGOs such as Action Against Hunger, Amref, and Save the Children, whose work was crucial for coping with the effects of the pandemic. In support of this thesis, the response of civil society to the pandemic will be considered in the paper, arguing that solidarity did not come from nothing, but was based on pre-existing organizations (some that emerged post-WW2) that are changing the world for the better. Pointing to these initiatives, we will put forward the claim that an important effect of the pandemic is that it showed everybody what the world can do when highly motivated. In fact, NGOs and intergovernmental organizations weren't the only ones acting in solidarity. Numerous spontaneous transnational, bottom-up, and horizontal initiatives represent the further evidence of a world that doesn't wait for official institutions to mobilize but take the lead, motivated to help others beyond skin color and nationality.

All this doesn't translate automatically into immediate and effective positive change. In fact, if responses to the crisis reinforce—rather than change—the existing system, "its incompatibility with the natural world and its propensity to increase inequity and conflict will likely increase fragility and lead to another version of the present calamity" (Walker et al., 2020, p. 1). And yet, it would be wrong not to acknowledge that many events—including the pandemic—have increased the attention paid to global commons. Within scholarly studies, attention to global risks is a phenomenon that has existed since the 1980s and 1990s, in the works of Ulrich Beck, Craig Calhoun, Eric Hobsbawm, and others who expressed their doubts about the future of the human species. The pandemic meteorically increased this attention. Also among people at large, the role of social media has increased awareness of how interconnected and interdependent our societies are, and the necessity to take united action to prevent global disasters. Social media is at the basis of how landscape shocks such as pandemics become, to use an expression by Beck (2011), "cosmopolitan events" with a potentially explosive global reach.

The point is that the pandemic accelerated an already ongoing process of cosmopolitanization—the internalization (or embodiment) of globalization (Beck, 2011)—which in turn involves what Jurgen Habermas called "post-national consciousness" (Habermas, 2001). Post-national consciousness favors the wider acceptance that unity, solidarity, and cooperation are phenomena that go well beyond the borders of any nation-state. To paraphrase Jeffrey Alexander, the pandemic could expand the circle of the "we" (Alexander, 2016), potentially turning into an opportunity for rethinking well-established political, economic, and social models that proved inadequate to handle global threats. This would bring new original evidence supporting Beck's thesis that "the endemic nature of global risks creates a new 'cosmopolitan civilizational shared destiny' or a new global civility" (Beck, 2011, p. 1,349).

In addition, increasing awareness urges people to exhort governments to act accordingly. This leads to the analysis of the response of politics vis-à-vis global risks. In particular, a goal in this paper is to investigate political reaction to the pandemic. The hypothesis is that some state reactions we have witnessed are a reflection of the need for a change in the direction of policies of assistance and solidarity, in clear contrast to the neoliberal economic model that has dominated the global political arena in recent times or even the liberal capitalist idea of laissez-faire. Should these experiments in social policy continue it would represent a change that, if sustained over time, could decrease the pressure of far right nationalisms whose resurgence, especially in the last two decades, must be seen through the lens of a renewed necessity of state intervention that far right parties exploited, advertising themselves as the champions of the people.

Beside looking at the reaction of politics, this paper acknowledges the existence of a body of literature supporting the thesis that the lack of international cooperation and coordination between countries is still the biggest problem hindering the development of successful solutions to global risks. This leads to the assumption that unlike civil solidarity, state solidarity is happening mostly (although not completely) within national borders, and not much at the international level, where it is left to international organizations, charities, NGOs, and wealthy (or less wealthy) private donors. Hence the necessity of rethinking the very foundations of the nation-state on the basis of a political system that must be more cooperative, coordinated, and committed to solidarity. Failing to reform the nation-state system would have a catastrophic impact, in particular vis-à-vis global warming and other ecological disasters, deadlier pandemics, but also potentially calamitous wars.[1]

Analyzing the existing literature on the issue and investigating political responses to the pandemic, it will be suggested in this paper that international coordination and cooperation are not only desirable but critical factors for avoiding bigger-scale disasters. Without such cooperation Hobsbawm's fear of world risks leading to both explosion and implosion become more likely. With this in mind, we will frame the discourse around Ulrich Beck's cosmopolitan imperative "cooperate or fail!" (Beck, 2011, p. 1,349), which the pandemic made even more urgent. Raising awareness about the priority of a radical change toward

1 This article was first drafted before the ongoing Ukraine-Russian conflict, in the context of which clear references to the potential use of nuclear weapons were made. This is one manifestation of what the article was attempting to warn about.

cooperation, coordination, and solidarity means acknowledging that such a step isn't just relevant for humans living in the twenty-first century but is also relevant for those in the centuries to come. In this view, the pandemic takes the shape of a modern Janus, the anthropomorphic two-faced Roman god of duality, transition, and change: an unexpected trigger for a new post-pandemic society that we'll attempt to imagine.

Finally, in the section "imagining the post-pandemic society," the goal is to make use of the tool of sociological imagination and apply creative thinking to asking and answering questions regarding the post-pandemic society. Pointing to four key elements characterizing said society—(1) Cosmopolitan constitutionalism, (2) Cosmopolitan parties, (3) Cosmopolitan education, and (4) Methodological cosmopolitanism—the article will ask and attempt to answer these questions: Is the world moving toward the oneness of humanity, not in the sense of a centralized uniformity but of one cosmopolitan reflexive society that acts globally for the welfare of all? Wouldn't such a world be more equal, sustainable, and united? And wouldn't it be better fitted to handle global threats? How do we develop it?

Nationalism, nation-state, globalization and the coronavirus pandemic

Originating in the Chinese region of Wuhan, the SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) resulted in the spread of the disease COVID-19 across the world, facilitated by globalization, in particular by the continuous global flow of people (and goods) that is one of its main characteristics. Over a few months, the coronavirus turned into a pandemic, bringing previously inconceivable consequences. It became an effect of what Ulrich Beck called "global risk society," which is a society where risks—ecological, financial, military, terrorist, biochemical, and informational—are as boundless as their effects (Beck, 2012). Climate change, deforestation, water deficit, wars, toxic disposal, and pandemics are just some of the risks that borders are unable to stop and that nation-states proved, so far, to be inadequate to handle (Held, 2010).

They are inadequate because, as Conversi (2020) recently stated, national interest and divisions seem to hinder international coordination, cooperation, and solidarity, which are key elements for coping with global threats. Even a superficial look at the behavior of nation-states during the pandemic confirms his thesis. They could hardly come to an agreement about how to deal with the new virus, coordinate to limit its spread, help each other, and cooperate to find global solutions. The limits of politics in tackling global risks were well-known before the pandemic. McNeill and Engelke (2016) who defined our era as the Anthropocene—in which humans are the most powerful influence on global ecology—acknowledged several years ago that the attitudes and policies of societies toward global risks such as climate change remain doubly inconsistent, often dependent on political winds. In this view, it is not surprising that, after 6 months from the first reports of COVID-19 clusters in China, the World Health Organization (WHO) acknowledged that, although some signs of solidarity were encouraging, there have also been concerning signs of stigma, misinformation and politicization of the pandemic (WHO, 2020). Most of the events corroborating this point have been covered by the media, which broadcast speeches of powerful state leaders, like Donald Trump bickering with China, allegedly the virus super-spreader, threatening economic sanctions on those countries that shut down borders with the US, accusing WHO of being China's political marionette, and threatening to cut US funds to it.

Similar non-cooperative conduct occurred in the EU when, in the initial phases of the pandemic, the virus hit Italy, labeling the country as the virus spreader in Europe. Rather than solidarity, remarks came on 11 March 2020, from President Emmanuel Macron's spokesperson, Sibeth Ndiaye, who said that Italy didn't take the right measures that could have contained the virus. The same day, Dr. Anders Tegnell, spokesman for the Swedish Ministry of Health, flaunted the glories of Sweden stating that "the Swedish health care system is definitely much better than the Italian one in managing the contagion" (Italian Embassy in Stockholm, 2020). Italian Ambassador in Sweden, Mario Cospito, yielded to the urge to remind Dr. Tegnell that the fight against the virus is not a football game nor should EU member states chant their glories at the expense of other members, especially in a time of crisis such as the one Italy was going through. This was at a time when, in the initial phase of contagion, Italy lacked protective masks and the Italian government asked other EU members to prioritize their export to Italy. None of the EU countries answered the call, while both France and Germany temporarily blocked the exports of masks, keeping them for their national use (Repubblica, 2020). The lack of solidarity, one of the founding principles of the union, has been emphasized by its President Ursula von der Leyen, who extended a heartfelt apology to Italy, the first country hit in the EU, 'on behalf of Europe, admitting that it had not been by its side since the beginning of the crisis' (Euronews, 2020).

In China, the dynamics around the explosion of the pandemic have raised concerns about how the lack of coordination between nation-states is detrimental to all. In particular, it is still uncertain how much time passed between the identification of the virus in China and the official warning launched by the Chinese authorities. It isn't clear why Li Wenliang, the doctor who first identified the virus and warned about its danger, was forced to sign a statement denouncing his warning as an unfounded and illegal rumor, giving more time for the spread of the virus, and why the Chinese authorities initially omitted around 50% of deaths by coronavirus (The Guardian, 2020).

Delays, oversights, and mistakes also occurred in other countries that, unlike China, weren't the first to be hit by the virus. The governments of USA, UK, Sweden, and Brazil, to mention a few noteworthy examples, came to the forefront of the media for not capitalizing on other states' experiences, scaling down the magnitude of the threat, at times ridiculing those who took strong countermeasures, advertising the positives of their national health care and belittling others'. One example among many, Prime Minister Boris Johnson stated that the UK would let the virus infect 60% of the population in order to reach herd immunity, and told the British public to prepare to "lose loved ones before their time" (CGTN, 2020). Johnson's shocking words, broadcast worldwide, did not stop countries like the USA, Sweden, and Brazil from following the same strategy. It seems fair to suggest

that political failure in managing the pandemic, in particular lack of coordination, cooperation, and solidarity, had significant consequences worldwide.

In 2020, Schot et al. (2020) posited that the pandemic was functioning as a "landscape shock:" a sudden and traumatic event that affects the world at all levels, involving the social, technical and ecological environment spheres (Schot et al., 2020). This event is, among others, revealing the deep fragilities of our world of nation-states, widening cracks, and fissures of what Scambler called the "fractured society" (Scambler, 2020). Less than cooperative nation-states unprepared to deal with global risks have facilitated the spread of the virus, and intensified the landscape shock. Worse came from the weakness of those institutions that, like WHO, do not have much power to enforce countermeasures that would be beneficial for all. That power remains in the hands of nation-states: building blocks of the political world on this planet. Nation-states are sovereign, their sovereignty granted by international law, and breaking sovereignty, as seen in the ongoing Russian-Ukrainian conflict, bears consequences. Indeed, the problems of cooperation and coordination that are structural to our world of nation-states need solutions that are as urgent as they appear distant.

That being said, nation-states did not act only negatively. Beside some noteworthy cases of mismanagement, the World Health Organization reported that "many countries have implemented unprecedented measures to suppress transmission and save lives" and that "These measures have been successful in slowing the spread of the virus" (WHO, 2021). In particular, the nation-state system facilitated a quick call for national unity and solidarity that started to dominate the mass media and social media, preparing people for exceptional efforts (Malesevic, 2020). National governments used their power to close borders, shut schools and universities, ban movement, and assembly of people, which are considered by epidemiologists as fundamental countermeasures to slow down the virus (Ferguson et al., 2020). In the name of the nation, most states implemented radical measures like lockdowns and curfews, and in some cases, those who failed to comply were arrested or fined for harming public health. In many cases, exceptional funding was provided for increasing the number of intensive care beds, hiring medical personnel, buying the necessary medical equipment, building new medical facilities, and funding research to save lives. At the social and economic level, governments also enacted unprecedented assistance policies, rushing to pour money into the economy with the goal of sustaining both national business and the population at large. This is even true for unbending capitalist economies like the USA, which passed a $1 trillion stimulus proposal, half to send checks to individuals, half to backstop ailing businesses (Politico, 2020).

Similar decisions were taken by many countries in the world, suggesting that after decades of state withdrawal—a phenomenon identified, among others, by Michel Foucault and Pierre Bourdieu who wrote of "state involution" and "conservative revolution" favored by liberal capitalism (Laval, 2018)—there are signs of a renewed presence of the state in the social and economic sphere. Also at the EU level, thus at the supranational level, for the first time in history, states agreed to a common debt to tackle the crisis.

Perhaps it is too early to talk about a "pandemic revolution," given that, for instance, a thorough look at the NextGenerationEU (the EU recovery fund) demonstrates that the EU continues to operate as a vehicle for market reforms and perceived the pandemic as an opportunity to further liberalize the market through grants and loans. However, it must be acknowledged that a EU recovery fund would have been unthinkable before, thus without, the pandemic. That said, there is enough evidence that changes are occurring, unprecedentedly, on a global scale, and that the trigger is the emergency into which the world was dragged. The pandemic put political institutions worldwide to the test, for the first time after WW2, demanding that they take action, provide answers, make projections, and give reassurance rapidly. The pandemic forced politics, in a period of a few months, to rethink well-established trends such as the capitalist idea of laissez-faire, which dominated the global political arena for decades, and to intervene strongly in the economies of states. In addition, it is questioning the privatization of health care, examining the human manipulation of nature, obliging governments to focus, more than ever, on ecological issues and potential natural disasters. It is of utmost importance that the pandemic has proven, even to traditional deniers like the USA, China, or India—which together make more than 50 percent of CO_2 emissions in the world (Wang et al., 2019)—that global risks exist, that they are undeniably real and can potentially and fatally harm our societies. It is evident that these discourses are much more prevalent in the public debates and policies of states worldwide than they were one, ten, twenty, or 30 years ago.

In this view, the pandemic could function as a watershed in the way politics considers global risks, pressuring it to acknowledge them not as matters of a hypothetical future, but phenomena that need a solution now. As the solution to global risks lies in cooperation, coordination, and solidarity between nation-states, the pandemic could function as a force pushing politics to acknowledge the negative backdrop of existing divisions and reroute government efforts toward funding new solutions to these problems.

The pandemic's lessons: Solidarity and cooperation at work

The social effects of the pandemic are many and interconnected. One that will have repercussions for years is the economic downturn, which already resulted in job losses and a massive increase in poverty. In the EU, Oliver Röpke—president of the Workers' Group at the European Economic and Social Committee (EESC, 2020)—stated that "If the European Central Bank's estimates are correct, the depression will mean a loss of 15% of Europe's GDP, three times the magnitude of the 2008 crisis." "It is safe to assume that the number of jobs lost worldwide is more than 100 million" (Pizam, 2021, p. 2) Similar projections are true for other countries. Studies evidenced global losses of $600 trillion and economic growth to −6.1% (Mahapatra and Bhorekar, 2021). The global decline is the worst since the great depression.

Beside job losses and poverty, the pandemic also has other effects. Psychological stress is one of them. Fear of falling sick, losing loved ones, employment, support, and experiencing loneliness and nervousness due to social distancing and lockdown are just some of the problems. Although these effects strike all

FIGURE 1
Website of the Organization for Economic Co-operation and Development (OECD), whose goal is to increase cooperation and solidarity between countries. http://oecd.org/coronavirus/en/.

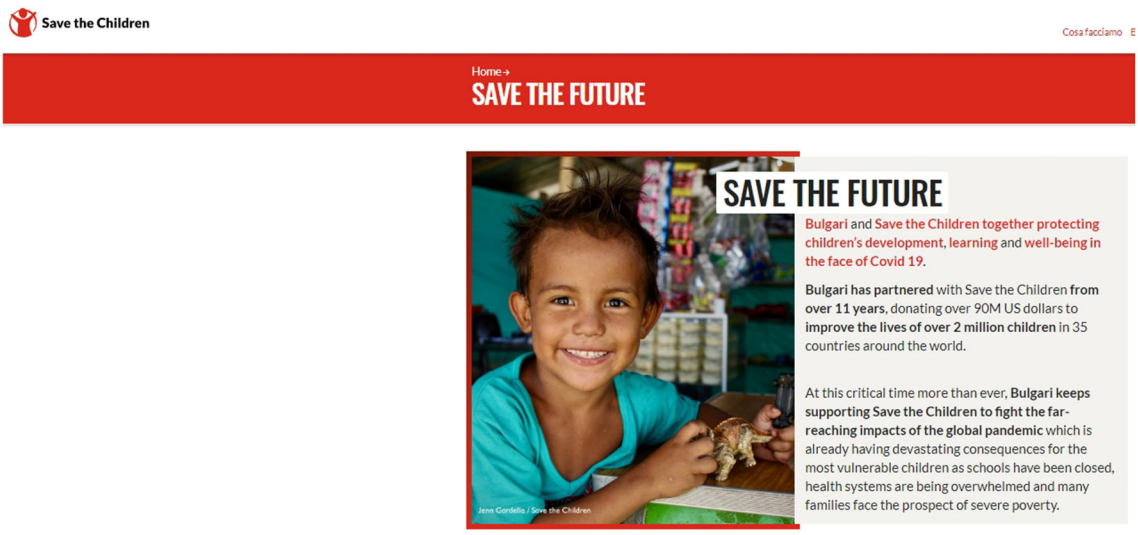

FIGURE 2
UNICEF's website addresses the fight against COVID-19 in disadvantaged areas. https://www.unicef.org/coronavirus/covid-19.

social classes without distinction, it is unquestionable that some people pay the highest price: the poor, vulnerable, children, elderly, disabled, homeless, and women (Bonaccorsi et al., 2020; Buheji et al., 2020; Van Lancker and Parolin, 2020). In many cases the pandemic worsens already problematic situations. In particular, there is special concern for the regions of the global south, where inequality is greater, people count on their daily efforts to put food on the table and cannot rely on any social safety net.

It is in this context of worldwide fear and concern that an unprecedented number of solidarity initiatives originated, within civil society, to help those in need. Initiatives involving religious and non-religious charities, non-governmental institutions, micro-initiatives at the family or individual level, professional associations, sport associations, foundations, social movement associations, activist groups, trade unions, etc. Non-governmental organizations such as the World Economic Forum acknowledged that incredible efforts have been made to raise unprecedented amounts of money (WEF, 2020). The same is true for the World Health Organizations, which launched the COVID-19 Solidarity Response Fund to raise money from individuals, the private sector, as well as financial and other foundations. "10 days after its March 13 launch, it had raised US$71 million from 170,000 individuals and organizations, including Facebook, Google, and FIFA" (The Lancet, 2020). It was the first time that WHO attempted to raise funding from private people, which denotes the gravity of the situation and the special measures undertaken to face a special emergency. Following WHO, UN, UNDP, OECD (see Figure 1), all the larger humanitarian organizations that were already in operation and could count on an extensive network of agencies worldwide—UNICEF (see Figure 2), Action Against Hunger,

FIGURE 3
Save the Children's website calling for funding against COVID-19. https://www.savethechildren.it/save-the-future.

FIGURE 4
Clip 1, Interacademies call for solidarity, 2020. Click on the following link for full video https://www.youtube.com/watch?v=8loi5JECDNk.

Amref, Health Communications Resources, ActionAid, Kaarvan Crafts Foundation, Phase Worldwide, Relief International, The Freedom Fund, Save the Children (see Figure 3), etc.—amplified their solidarity efforts during the pandemic. All of them started specific fundraising for tackling the consequences of the pandemic, and they did it beyond nationality, gender, language, or ethnicity. This is in line with the Habermassian idea of "postnational" or Beck's "cosmopolitanization," potentially enlarging that "circle of we" Alexander (2012) wrote about. Indeed, the fact that the efforts of these organizations resonated through social media, journals, and televisions, increased the message of a world that needs to come together and overcome all barriers, including national and ethnic ones.

NGOs such as the Focolare Movement, a Catholic-born cross-religious, cross-cultural, and international association, is another example of an organization that prioritized the groups most affected by the pandemic, namely the poor, the "different," and the immigrant. Founded in 1943, after the tragedies of WW2, and being present in 180 countries, it facilitated a prompt and effective action to fight the many side effects of the pandemic. Silvina Chemen, the director of Bet El, an Argentinian NGO devoted to help the poor and needy, summarized well the general sentiment among people around grassroot solidarity:

These small gestures of humanity give me hope that once the pandemic is over not only those of us who are actively engaged, but also many others, will understand how interdependent we all are. The longer we are at home alone, the more we realize we cannot do without each other [...] I renew my commitment to continue building a healed community where caring for others is our first commandment (Focolare, 2020).

Another show of solidarity that was widely broadcast by the media, but took place within the borders of a country, is the one that saw 750,000 people answering the call by the National Health System in the UK. Volunteers would undertake tasks such as delivering medication from pharmacies, driving patients to appointments, or making regular phone calls to isolated individuals (Tierney and Mahtani, 2020). According to Tierney and Mahtani's study, similar expressions of solidarity increase people's sense that they matter and their sense of participation, and have been recorded in most countries hit by the pandemic.

Also the phenomenon of private donors, wealthy philanthropists who donated to alleviate the suffering caused by the pandemic, came to the forefront of the media. The list of benefactors is long and includes, among others, celebrities such as Twitter CEO Jack Dorsey who put almost a third of his 3.6 billion dollar fortune into a fund that will tackle coronavirus relief, Bill and Melinda Gates donated $100 million through their foundation for what they defined a "once in a century pandemic," Facebook's founder Mark Zuckerberg donated $25 million, and Ali Baba founder Jack Ma donated $14 million to develop a vaccine against the COVID-19.

Besides donors and NGOs, science came to the rescue with academies and research centers in search of a treatment and a vaccine against COVID-19. Scientists from all disciplines came together to tackle the consequences of the pandemic, and carry out research aimed to prevent it from happening again. The Solidarity Clinical Trial, the largest international clinical study to find an effective COVID-19 disease treatment, is one example of cooperation and coordination at the global level that is making a difference. The necessity of this study came from the lack of coordination between scientists in different countries, which led them to experiment with many individual treatments rather than join forces and come up with one valid for all. Instead, the Solidarity Clinical Trial enrolled patients in one single randomized trial that generated the strong evidence needed to determine the relative effectiveness of potential treatments (WHO Clinical Trial, 2020). A great number of medical facilities and research centers from all over the world took part in the study, and a recent investigation by Bondio and Marloth (2020) proves that this was highly beneficial, in particular by cutting the time for critical trials by 80% and providing open access data to scientists worldwide. On the wave of the Clinical Trial, many other institutions joined forces. The InterAcademy Partnership (see Figure 4) is another example, including 140 medical, scientific and engineering academies from around the world, calling on the scientific and policymaking communities to come together (Interacademies, 2020).

Similar cooperation initiatives occurred also at the micro-level, where professionals invested their time and skills to help people in need. One notable event involved a small group of engineers who, acknowledging the lack of valves for life-saving coronavirus treatment, used 3D printers to build the valves themselves, which they distributed to medical facilities (BBC, 2020).

Others focused on the environment, trying to cope with the ecological consequences of the pandemic. Although reduced transport resulted in significant reduction in air pollution and greenhouse gas emissions, the United Nations Conference on Trade and Development underlined that due to the fact that environmental protection workers were at home in lockdown, illegal deforestation, fishing and wildlife hunting increased (UNCTAD, 2020). In addition, the volume of non-recyclable waste has risen. Stay-at-home policies have increased people's consumption of take-away food delivered with single-use packaging. Also throwaway protective masks are now used daily. At a time when recycling activities have been suspended due to coronavirus, many organizations mobilized to come to the rescue of the environment.

To conclude, it seems that there's overwhelming evidence that the civil society does not wait for official institutions to mobilize, but takes the lead with the goal of lessening the suffering of fellow human beings, beyond color, gender, and nationality, and preserving life in all its forms. In this regard, and specifically in relation to the pandemic, civil society may represent a model for the political world, which is entangled in nation-centric dynamics that render the nation-state, as it is, unfit to deal successfully with, let alone prevent, global catastrophes, thus cope with the challenges of the global risk society.

Imagining the post-pandemic world

> The future of human affairs is not merely some set of variables to be predicted. The future is what is to be decided—within the limits, to be sure, of historical possibility. But this possibility is not fixed; in our time the limits seem very broad indeed (Mills, 1959, p. 174).

The goal of this section is to use the concept of "Sociological Imagination" (1959) to do what C. Wright Mills suggests in the above extract from the homonymous book. Sociological Imagination helps to theorize four elements that a post-national global society must possess to become more cooperative, internationally coordinated, equal and solidary. These elements are: (1) Cosmopolitan constitutionalism, (2) Cosmopolitan parties, (3) Cosmopolitan education, (4) Methodological cosmopolitanism.

The function of a sociological imagination is not only to render visible the invisible relationships between micro and macro phenomena, how they interact and influence each other, but also to identify what Popper (1990) called the world of propensities. The future is what is to be decided, it is open in the sense of admitting numerous possibilities that could be actualized, but the possibility of a "good future" depends, first and foremost, on the capacity of imagining it in the present. When contemplating the warning of the scientific community about the potentially catastrophic consequences of other human-led global risks such as global warming, deforestation, nuclear war, and even deadlier pandemics, the only good world is one where societies cooperate globally to avoid self-destruction. "Cooperate or fail!" wrote Ulrich Beck, who, inspired by Kant, stressed that this is the twenty-first century categorical imperative. There is no good world in the future, and there might be no world at all for human beings, without enhanced cooperation between nation-states. A critical reading of Beck suggests that, to achieve the level of cooperation required, we need to make nation-states less nationalist, to de-nationalize nation-states, and make them more cosmopolitan. We are not alone in pointing to cosmopolitanism as a viable option and attempting to imagine it. Other scholars, among whom are Calhoun (2003), Archibugi and Held (1995), and the above-mentioned Beck (2011), walked a similar path. But why cosmopolitanism?

The augmented capacity in terms of cooperation and coordination between countries, and also a different kind of political legitimacy and collective subjectivity that a cosmopolitan world involves, are powerful answers to the problems posed by nation-states entrenched in nationalism. This became even more evident in the pandemic, when, during the initial phase of contagion, a lack of cooperation and coordination between countries delayed important countermeasures that would have saved lives. In addition, priority to the nation, which is one of the main features of nationalism (Posocco and Watson, 2022), made rich nation-states race to buy their way out of the crisis before poor ones by gaining for themselves the first doses of vaccines.[2] It isn't difficult to imagine what will happen when catastrophic events such as climate change will hit with more intensity than they already do now—when vast regions will be uninhabitable, extreme weather events will be more common, fires will destroy more forests, and droughts will jeopardize food supply (Chomsky and Pollin, 2020). Migration waves will possibly move entire populations from one region to another with consequences that, in a world dominated by national priority, can only be disastrous. Hence the need for a post-national society (Kendall et al., 2009).

In the post-national society, national identity, traditions, and values need to be reinterpreted vis-à-vis the increasingly globalized world, resulting in the intensification of worldwide social relations which link previously disparate and isolated communities on this planet and unite them into mutual dependance and unity of one world (Richter, 2017). In recent years, interregional flows of people and goods grew and reached such a speed that the local and global stopped being two distinctive and different realities. New technologies such as social media made people hyperconnected, 24–7, and any event occurring in the world can be seen anywhere exactly when it happens. Faster internet connection, better software, artificial intelligence, robotization, 3D viewers, virtual reality and other technologies gave rise to what Baldwin (2016) called telemigration, the widespread new form of existence that allows people to sit in one nation and interact (Balwin's focus was on work, but the same is true for many other activities) with people in another, or more than one nation-states at the same time. From this perspective, a larger circle of the "we" (Alexander, 2016) is already here. What is

2 Data shows that in February 2021 over three-quarters of vaccines were available in just 10 countries that account for 60% of global GDP (World Health Organization, 2021).

lacking is nation-state constitutions that embrace our increasingly multilingual, multiethnic, and multicultural societies and depart from the introverted nation-centric bubbles in which nationals have priority, society is divided between class A and class B citizens, the "other," the "different," etc. So far, nation-states have not re-modernized (Beck, 2010) enough into better versions of themselves and this has created innumerable problems, the consequences of which are very visible—one among many is the way our societies deal with immigration. Masses of migrants and refugees fleeing from hunger and poverty, children and elderly included, begging for food in rich Western societies. Others do not even make it and stop at the frontiers of states, where "walls" have been erected, protected by armed police, and others perish en route (with thousands dying in the Mediterranean sea each year).

Implementing cosmopolitan constitutions does not mean flattening cultural differences—"there can be no cosmopolitans without locals" (Hannerz, 1990, p. 239). It is fundamental to ensure that the political and juridical fields keep pace with a world that is radically changed, and will keep changing. Not to do so would maintain the status of global hysteresis (Bourdieu, 2015), a disconnect between the imagined world of nations and the reality of the global village we live in Goldin (2021). That is to say, the required shift from national exceptionalism to universalism must be a shift involving the field of law. This is very much in line with Taraborelli's reading of Kantian cosmopolitanism, where it is clear that the inclusion of "cosmopolitan right" in states' constitutions is a fundamental step in making states more cosmopolitan and less national (Taraborrelli, 2019, p. 23).

Nation-states' constitutions entrenched in nationalism legitimize and protect the status quo, hindering our increasingly multicultural, multilingual, and multi-ethnic societies from taking their place as protagonists of nation-states' constitutions. To do so, a shift toward constitutional cosmopolitanism would be instrumental. The radical change that cosmopolitan constitutions would bring is evident in the fact that they entail a legal order where the fundamental rights of every person within their jurisdiction are granted "without respect to nationality or citizenship" (Stone Sweet, 2012, p. 53). Unlike most nation-states' constitutions, cosmopolitan constitutions would ensure the Kantian emphasis on individuals as human beings rather than nationals or citizens (Kleingeld, 1998). It is a fundamental shift that doesn't require the disappearance of the "nation-state" nor the category of "national," but it would legally empty them of their national exclusivism: a generator of inequality between nationals and non-nationals. This would have a strong impact on cultural and everyday nationalism, thus on the importance that nationals give to national tropes. Constitutional cosmopolitanism would enforce, and contribute to spreading the idea of, equality vis-à-vis the most important common denominator between all human beings: humanity.

It is not surprising that cosmopolitan constitutionalism has a bad name in law and "its tenets are routinely dismissed as naïve, sloppy, or even disingenuous" (Perju, 2013, p. 711), and why it remains relegated to the realm of "dreams," a utopia (Kennedy, 2007). Our world is a world of nation-states driven by nationalism, and nationalism is a boundary-building phenomenon. "It locks up nation-states in themselves, making them principally worry about matters of internal security, domestic homogeneity and national growth and less about global issues and other nations' troubles" (Posocco and Watson, 2022, p. 2). Cosmopolitanism is the opposite phenomenon, it opens nation-states up, it puts national solidarity at the same level as global solidarity, and it involves a shift in terms of collective subjectivity. Cosmopolitanism assumes that nation-states and their people have obligations toward one another across, and irrespective of, national borders or nationality, while nationalism posits that nation-states have obligations, first and foremost, to the nation. It is not difficult to see how all this entails a radical change in terms of ideology that shakes the very foundations of the nation-state system as we know it, and results in a rejection of cosmopolitan constitutionalism as a utopia. Indeed, cosmopolitan constitutionalism is a necessary update to nationalism vis-à-vis the great transformations that our world went through in the last 200 years; it would provide solutions to its most problematic features. It would render nation-states less nationalist while keeping them alive and functioning.

Cosmopolitanism and its constitutionalism entail the possibility of breaking with a singular political particularity. In such a system one can be Irish, Italian, Indian or American and a "citizen of the world" at the same time, as Beck (2002, p. 19) "cosmopolitanism means: rooted cosmopolitanism, having 'roots' and 'wings' at the same time." Cosmopolitanism doesn't require the rejection of one's nationality but the addition of another wider identity with potentially enormous positives for everybody. World citizenship rights would ensure every person's right and duty to participate in the authority structures and public life of any state regardless of their "historical or cultural ties to that community" (Soysal, 1994, p. 3). The introduction of such rights within cosmopolitan constitutions would have profound implications on issues of global importance such as immigration and the job market, not to mention improving a sense of belonging and solidarity that go beyond the nation. Finally, a world driven by cosmopolitan constitutionalism coupled with world citizenship rights increases the possibility of comfort and a feeling of patriotism everywhere in the world.

One of the most important challenges that cosmopolitan constitutionalism is faced with is nationalist parties. Nationalist parties are the carrier, and the most fervent advocates, of exclusivism. To use an expression by Conversi (2020), they want to fence people in, whereas to find solutions to the problems raised by nationalism we need the exact opposite. We are well-accustomed to slogans such as Make America Great Again, Make Great Britain Great Again, etc., which are at the basis of a view of the world that reinforces competitive rather than cooperative behaviors. Vis-à-vis the fact that nationalist parties are proliferating and joining forces (Jenne, 2018), and that these forces hinder a successful response to global risks, there is a need to (1) understand, and (2) challenge them. For Beck, the answer lies in internationalist parties (Beck, 2000), which should support each other on the global arena and counterbalance nationalist ones. This translates into a new deal between political parties that acknowledge the importance of international partnership as a way to enhance cooperation and decrease division around global commons.

Another important point is that we must understand how the "internalization of globalization" and the "post-national imagination" are shaped by ideological forces which favor and reproduce power relations, not cooperation. Imperialism, colonialism, and neoliberal globalization have clear forces and actors at their core that aspire to a global society with specific hierarchies in mind. For example, a recent work by Williams and Gilbert (2022) shows the dark side of the tech industry, in particular in Silicon Valley, and its connections with Wall Street. They showed how these forces helped to make the world a global village but also transformed it into one which enforces the values, pursues the interests, and maintains the worldwide position of the powerful. Numerous other works are shedding light on other forces and processes (and facilitate an understanding of what can be done about them) exacerbating divisions and hierarchies at the international levels (Davies et al., 2022; Maronitis and Pencheva, 2022; Specter, 2022).

The third element favoring cooperation and solidarity between states is cosmopolitan education. There is evidence that since the birth of the public education system in the nineteenth century, education served as a nation-building apparatus giving substance to exclusive national identity. This system is still intact and functioning, although a number of studies have shown that globalization gave rise to different forms of cosmopolitan education (Gunesh, 2004; Camicia and Zhu, 2011; Caruana, 2014; Yemini et al., 2014). Camicia and Zhu's study, in particular, investigated citizenship education in China and the USA, concluding that although nationalism remains the main discourse around which citizenship education revolves, globalization and cosmopolitanism merge within it. Students know more and more about and feel more sensitive to global commons, in particular thanks to school curricula that address these issues, although also social media play an increasingly important role (Szerszynski and Urry, 2002; Verboord, 2017; Delanty, 2018). Reforming education to further spread cosmopolitan principles would contribute to producing citizens that are more responsive to global issues and vote for parties that act accordingly. Greta Thunberg's movement "School Strike for Climate Change" is an example of how the school institution can be a force for change.

This process is definitely ongoing, but in the face of immediate global existential threats, a different pace is needed. Regarding climate change, this was expressed clearly by the sixth Intergovernmental Panel on Climate Change (IPCC) Assessment Report (IPCC, 2022). Time is over. Nation-States must act now. Governments must strengthen their globally-oriented education systems and spread cosmopolitan ideas. This step is fundamental to give birth to a post-national consciousness that is not left to chance, as it is today, but becomes part of a reflected and reflexive transition from a world of divided nation-states to a united and solidaristic one. History taught us that great harm can be done by generations raised in the principles of nationalism and its racist aberrations, Nazism and fascism among others, but we have yet to fully experience what great good could we achieve if we raise our youth in the principles of internationalism, cosmopolitanism, democracy, and global welfare.

This transition must be accompanied by a process of consciousness-raising within the social sciences too, which brings us to the fourth and last element favoring cooperation. Beck conceptualized this principle in the idea of overcoming "methodological nationalism." Methodological nationalism is an expression used to explain the fact that social scientists assume that nation-states are the natural social and political forms of the modern world (Wimmer and Glick Schiller, 2002). As a result, their studies reflect this view, which in turn reproduces nationalism on a daily basis also in academia, which is expected to be more aware and more critical of national axioms. Delanty (2018) focused on a similar subject, highlighting the fact that narrowing social and political analysis to national horizons results in not being equipped to explain the major transformations of contemporary society. In this view, a cosmopolitan shift also in the social sciences is needed. It will help to better understand how global phenomena, including global risks, come to be, what their main properties or characteristics are, and what their significance or consequences are. Such a shift would also provide political action with the tools to fight denial and apathy, two major problems hindering successful responses to global risks, and favor transformation instead (Beck, 2011). More importantly, a better understanding of the functioning principles of global risks through lenses that are wider than the national ones will help to de-nationalize the social sciences and make them more open and responsive to cosmopolitan ideas. There are a number of problems, such as social inequality and poverty, that are mostly investigated as national issues within national borders through national lenses. This approach is problematic insofar as it frees the "national gaze [...] from looking at the misery of the world" (Beck, 2011, p. 25), and has as a consequence that the supranational logics and reasons of these phenomena remain poorly studied by scholars, who de facto legitimize them.

Conclusions

This article suggests that the Pandemic, as a global test, is functioning as a bifurcation point and offers the opportunity to acknowledge that not only the crisis the world is facing will positively change our present, and hopefully the future, but also that, after all, not all the past is to be thrown away.

Without losing sight of the negatives, this article chose to focus on the positives stemming from the Pandemic, and acknowledged the countless initiatives of solidarity, that emerged from the political and civil world, aimed at alleviating the suffering of people, often crossing the borders of nationalism, beyond skin color, age, gender, and nationality. Most of the organizations on which this article focused, especially (but not exclusively) international NGOs, worked to alleviate the suffering of those affected the most from the Pandemic, the poor, the needy, immigrants, and all those categories already at risk. In addition, everywhere there have been initiatives not only to help other fellow human beings but also to come to the rescue of the animal world and the environment. That said, it would be wrong not to stress the good that stemmed from these people and societies coming together to withstand the shared threat posed by the pandemic. At the same time, these initiatives strengthened, and it couldn't be otherwise, many bonds of solidarity.

Focusing on long term dynamics, we suggested that many initiatives to cope with the Pandemic did not come from nothing. The organizations that support them were born in the twentieth century, in the aftermath of previous global catastrophes e.g.,

WW2. Societies have the capacity to learn (and they do) from events that shake up their foundations and create antibodies for the future. Given the available evidence, there is no reason to think that the Pandemic will be any different. Indeed, some evidence suggests that the Pandemic might be more than a terrible tragedy. It could be the trigger for new important changes at the systemic level bringing hope for a new and better world, in particular the return of the state as a force balancing neoliberal aspirations and a new general understanding that more cooperation and coordination between states is the recipe against the challenges that await us in the future.

At the same time, the Pandemic has shown that we are still far from solving some of the most problematic aspects of our societies. Above all, this article, which, like its authors, is strongly rooted in the tradition of nationalism studies, pointed out the problem of our system of nation-states. Facing global risks, this system, in its current form, is no longer sustainable.

And yet, we are far from having a clear answer as to how to reform it, especially in view of major global threats such as climate change. A critical reading of a recent work by Kemp et al. (2022), on the potential catastrophic scenarios emerging from climate change, suggests that it will put society to the test much more than COVID-19 did. In the context of the magnitude of such threats, humanity faces a potentially terminal cataclysm. Reforming the nation-state is an urgent necessity.

It is true, the nation-state system is not the only element hindering better responses to global threats such as pandemics or climate change. Moreover, nationalism is not the only force reproducing power relations that create inequalities and injustice, which worsen the negatives of said threats. Imperialism, colonialism and neoliberal globalization all play a role in hindering the development of better solutions and/or better mitigation strategies. There wasn't enough space in this article for a thorough analysis of the connections between nationalism and the mentioned forces. Some studies, see the recent work by HadŽidedić (2022), have begun to do it. We hope to deepen the subject in a dedicated future publication.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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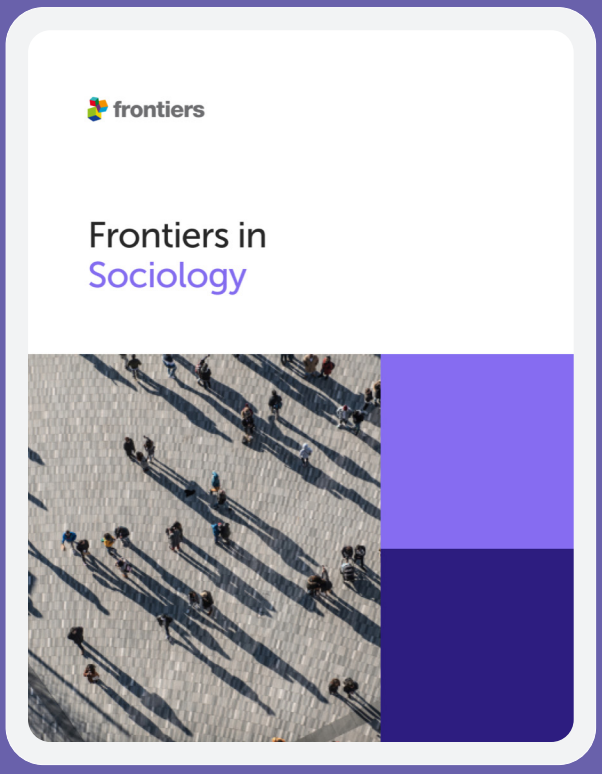

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