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Calamities, common interests, shared identity: What shapes social cohesion in Europe? [☆]

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ABSTRACT

We conduct a large-scale incentivized survey experiment in nine EU countries to study how priming common economic interests (EU trade), a shared identity (EU common values), and a major health crisis (COVID-19), influences altruism, reciprocity and trust of EU citizens. We find that the COVID-19 treatment increases altruism and reciprocity towards compatriots, as well as altruism towards citizens of other EU countries. The EU common values treatment has similar effects and in addition also boosts reciprocity towards fellow Europeans. The EU trade treatment has no tangible impact on behavior. Trust in others is not affected by any treatment. Our results suggest that both a shared identity and a shared crisis can have a unifying effect among EU citizens, while shared economic interests (alone) do not significantly affect European cohesion.

1. Introduction

What fosters social cohesion among European citizens? Are the material benefits of European economic integration enough to achieve this goal? Or should the promotion of common European social and cultural values play a more prominent role? Can a

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shared crisis like COVID-19 strengthen social cohesion in Europe? These questions have long been the object of an animated and still unresolved debate among politicians and academics alike.¹ On the one hand, some believe that the strong economic ties fostered by the European Single Market bind member states together, and that, with time, economic unity will extend to other domains. On the other hand are those who believe that economic integration alone will not suffice, and that a stronger emphasis on shared values is indispensable for the emergence of a unifying European identity. According to the latter group, Brexit, uncoordinated policy responses of member states in the early stages of COVID-19 and the current tensions with some Eastern European countries should warn that a union built around economic interests alone is bound to fail.

To shed light on these questions, we conduct a randomized survey experiment in which we examine how priming and informing about economic integration vs. common values affects trust, reciprocity and altruism towards others, measured using standard incentivized games. In addition to estimating the effects of these treatments, we also compare them with those of a major health crisis, by priming and informing about the consequences of the COVID-19 pandemic in EU countries. Our experimental design allows us to distinguish the effect on attitudes towards fellow nationals from that towards citizens of other EU countries. Furthermore, by estimating the change in attitudes towards non-EU citizens, we can also rule out that our baseline effects are driven by a generic increase in solidarity.

Our large-scale survey experiment was run in nine EU countries (France, Germany, Greece, Hungary, Italy, the Netherlands, Poland, Spain, and Sweden) in August 2020 (after the first wave of the COVID-19 pandemic) covering 25,720 respondents.² How the unequal effects of the pandemic on different member states could impact integration, is a question that triggered a vibrant debate. While some argued that the common threat of the pandemic would bring EU countries closer together, others warned it could put integration at risk (Buti and Papaconstantinou, 2021; Bongardt and Torres, 2020), and could hurt citizens' trust in EU institutions, whose initial response to the crisis was broadly perceived as inadequate.

The prospects and risks faced by the European project in the aftermath of the pandemic crucially depend on the cohesion between European citizens and on their attachment to the EU. By producing novel and rigorous evidence on how economic and cultural factors shape these attitudes, our paper aims to contribute to this important debate. Importantly, we design a survey experiment to test our hypotheses, which are grounded on often mere correlational evidence in prior literature, in a causal manner.

Previous evidence on how crises affect trust, reciprocity and altruism is rather mixed. Ananyev and Guriev (2018) show that the Great Recession had a negative effect on social trust in Russia. Recent survey experiments have explored the effect of (priming) the COVID-19 crisis on various aspects of respondents' attitudes and behavior. While Cappelen et al. (2021) find that it makes people more willing to prioritize society's interests over their own, Bartoš et al. (2021) demonstrate that it increases hostility towards foreigners. Daniele et al. (2024) use an information provision experiment to show that pessimistic information about both the economic and health consequences of COVID-19 causally lowers solidarity with immigrants, since it reinforces the desire to restrict access to public health care to native residents.

Concerning European integration, Negri et al. (2021) find that the introduction of the Euro has fostered European identity. In terms of attitudes towards risk-sharing and redistribution in Europe, Kuhn and Kamm (2019) find that Europeans show more solidarity towards unemployed people in their own country than towards foreigners. Dolls and Wehrhöfer (2021) find low support for a common EU unemployment insurance scheme, while Beetsma et al. (2022) document substantial support among European citizens for an EU budgetary assistance instrument to combat adverse temporary or permanent economic shocks hitting member states.

In terms of identity, Yamagishi and Mifune (2008) show that dictators need to know recipients' group membership to enhance their generosity, and Chen and Li (2009) and Vázquez et al. (2017) show that sharing a sense of identity fosters altruism.³

Our paper also relates to previous work on the determinants of generalized trust, which documents interesting correlations between higher levels of trust on the one hand, and more equality and less diversity on the other hand (e.g., Bjørnskov (2007)). The focus of our analysis is quite distinct, as it examines how priming and informing about certain factors – i.e., material benefits, common values, and a shared painful experience – affects trust in others. We find little evidence in this respect. A distinct but related stream of literature looks, instead, at the association between social capital – and social trust in particular – and economic growth both at the country and at the regional level (Forte et al., 2015; Muringani et al., 2021; Bjørnskov, 2022).

Our paper contributes to these strands of literature by exploring several factors affecting national and European cohesion in a context where causality can be directly attributed, analyzing actions in incentivized Trust and Dictator games, and working with a representative sample of individuals from very diverse countries in Europe.

It is important to note that the treatments we propose are rather mild, and simply prime and inform about certain aspects that are likely already present in respondents' minds.⁴ However, in the absence of other ethical ways to induce a major crisis or an identity shock, our experiment provides a clean way to estimate the causal effect of these aspects on trust, reciprocity and altruism, which arguably represents the lower bound of the true effect.

¹ See for example the overview articles by Eichengreen (2006), Spolaore (2013) and Buti and Papaconstantinou (2021).

² The survey was also fielded in two non-EU countries (Serbia and Türkiye). Respondents in the two non-EU countries participated in the incentivized games so that participants in the EU countries had real fellow players in non-EU countries and there was no deception. Respondents in the two non-EU countries received different treatments and outcome questions whose analysis is not part of this paper.

³ Other studies have documented how historical experiences of cooperation (or conflict) in the face of adversities or external threats can have a persistent impact on social preferences and social capital (Nunn and Wantchekon, 2011; Guiso et al., 2016; Buggle and Durante, 2021; Gehring, 2022).

⁴ Other papers use similar priming techniques to investigate various aspects of the COVID-19 pandemic (e.g., Daniele et al. (2020, 2023) and Bartoš et al. (2021)). Alesina et al. (2023) use priming to explore the effect of immigration on demand for redistribution.

Our results can be summarized as follows. We find that invoking the COVID-19 crisis (T1) in people's minds has a positive effect on both altruism (that is, the sender's choice in the Dictator game) and reciprocity (the receiver's choice in the Trust game) towards fellow nationals, as well as on altruism towards citizens from other EU countries. Notably, there is no significant effect of T1 on reciprocity or altruism towards non-EU citizens.

The EU common values treatment (T3) significantly increases reciprocity and altruism, both towards respondents of the same country and of other EU countries. Interestingly, the effects are very similar for compatriots and other EU citizens, while there is no significant effect on altruism or reciprocity towards non-EU citizens. This pattern confirms that, indeed, the values mentioned in this treatment are perceived as common to EU citizens rather than universal.

Our EU trade relations treatment (T2) has no impact on any of the three outcomes, irrespective of whether the receiver is a fellow national, from another EU country or from a non-EU country. Finally, we find respondents' trust in others (that is, the sender's choice in the Trust game) to be unaffected by any of the treatments, with all coefficients being precisely estimated zeros.

These results suggest that EU common values positively affect cohesion among nationals and fellow EU citizens. Interestingly, and despite the initially uncoordinated actions taken by most EU countries to combat the pandemic – perceived as nationalistic by some observers – the COVID-19 crisis has a unifying effect, too. The null effect of our treatments on trust suggests that the effect comes from enhanced empathy towards others, and not by the expectation that they will behave better. The fact that we do not find any impact of our EU trade treatment on trust, reciprocity and altruism indicates that shared economic interests alone might not be enough to create cohesion and cooperation among EU citizens.

Finally, we examine how our treatment effects vary depending on the respondent's country of residence and its relative position (within our sample of countries), as well as respondents' individual characteristics. For the selection of individual-level variables for which we explore treatment effect heterogeneity, we correlate respondents' initial beliefs with their characteristics and attitudes elicited in our survey. This analysis hints at groups of respondents that might be (more) responsive to our treatments, for instance because of the treatment correcting respondents' misperceptions or having a stronger priming effect. In particular, we analyze the effects of the COVID-19 treatment separately for countries above and below median per capita COVID-19 deaths (among our sample of countries), and for individuals depending on (i) respondents' satisfaction with their government's handling of the pandemic, and (ii) the economic effects of the pandemic on respondents' household. For the EU trade treatment and the common values treatment, we explore whether individuals react differently depending on their education level, their attitudes towards migrants, and how strongly they identify as EU citizens.

For the COVID-19 treatment, we find that respondents who were hit harder by the pandemic - either personally in economic terms or in terms of COVID-19 deaths in their country - and who are dissatisfied with the government's response to COVID-19, are more likely to overestimate the number of COVID-19 deaths in their country (relative to the EU). They react more strongly to the treatment. In a similar vein, the common values treatment has a more pronounced effect on individuals with lower education, those who have more negative attitudes towards migrants and those who do not identify as EU citizens. These respondents were more likely to underestimate the level of agreement among European citizens on their shared values. None of these sample split regressions finds significant treatment effects for the EU trade treatment.

The remainder of the paper is organized as follows. In Section 2 we present the survey and the experimental design including the Trust and the Dictator game, explain the empirical strategy and discuss our hypotheses. In Section 3 we present balancing tests, average treatment effects and the heterogeneity analysis. Section 4 concludes.

2. Survey design and empirical strategy

2.1. Data collection and survey structure

We conducted large-scale surveys in nine EU member countries (France, Germany, Greece, Hungary, Italy, Netherlands, Poland, Spain, Sweden) and in two non-EU countries (Serbia, Türkiye) in early August 2020.⁵ The surveys were designed using an online platform and the survey participation links were distributed by the professional survey company Respondi (today Bilendi & Respondi).⁶ The samples were aimed to be broadly representative with respect to age, gender and sub-national region and with a good spread across income classes as reported in the Gallup World Poll data. We designed the original questionnaire in English, which was then translated into the major conversational languages of each country by professional translators. To ensure the quality of translations, an independent third party with knowledge of the survey also reviewed and revised the translation as necessary.

In terms of recruitment of respondents, the professional survey company sent out survey links via email to its pool of respondents. These emails informed potential participants about the length and non-commercial nature of the survey, but they were not told about the topic. Participation was voluntary and once respondents agreed to take part in the survey they were directed to the consent page and asked some initial screening questions that ensured that the quotas for age, gender and sub-national region were met. All respondents in our sample fully completed the survey and received a baseline remuneration of about 2 Euros (in their national currency) and an extra payment, which was based on their decisions made in the Trust and Dictator games. The average time for completion of the survey was about 20 min.

⁵ The two non-EU countries were included in the experiment as this paper aims at analyzing treatment effects on behavior towards fellow nationals and EU citizens. Thus, to distinguish them from effects on behavior towards people in general, we elicited behavior towards non-EU citizens in addition, expecting a null effect.

⁶ <https://www.respondi.com/EN/>.

Our survey consisted of four blocks: (i) initial screening questions on socio-demographic characteristics; (ii) random split of respondents into four groups (three treatment groups and one control group) and information treatment; (iii) Trust and Dictator games; and (iv) other questions used for the heterogeneity analysis (such as strength of European identity, economic impact of COVID-19 on the respondent's household).⁷

We adopted common practices to enhance data quality: (i) Following other papers relying on online surveys (Prescott et al., 2016; Aksoy et al., 2022; Stantcheva, 2023), we clean our data by dropping respondents in the bottom 10% of the survey time distribution. These respondents completed the survey in half of the expected time which makes it unlikely that questions were considered carefully;⁸ (ii) Throughout the survey, we randomized the answer options to prevent order bias, which might arise when all respondents view the answer options in the same order. Our final sample includes 25,720 respondents (about 2800–3100 participants per EU country) between 18 and 70 years of age.

2.2. Experimental design

After the first set of screening questions on socio-demographic characteristics, respondents in each of the nine EU member state samples were randomly assigned into three treatment groups and a control group.

We refer to the first sub-sample as the *COVID-19 treatment group (T1)*, to the second as the *EU Trade treatment group (T2)* and to the third as the *EU Common Values treatment group (T3)*. The fourth sub-sample is the control group. All sub-samples contain about 700–750 survey respondents per country. Respondents were asked and informed about the following facts:

1. COVID-19 treatment group (T1): Respondents were told that the COVID-19 pandemic is causing large-scale loss of life and severe human suffering. Next, they were asked whether they think that the number of confirmed COVID-19 deaths per million people in their country by July 1, 2020, was higher, lower or around the same as in the EU as a whole.
2. EU Trade treatment group (T2): Respondents were informed that exports of goods within the EU have substantially increased in recent decades as economic integration within the EU's internal market has intensified. Next, they were asked what share of exports from their country they thought went to other EU countries in 2019.
3. EU Common Values treatment group (T3): Respondents were told that according to a recent Eurobarometer survey, European citizens consider the following values as fundamental and highly representative of the European project: peace, democracy, protection of human rights and equality. They were then asked about what share of respondents across all EU countries they believed had mentioned at least one of these values as fundamental and highly representative of the European project.

After answering the respective question, respondents in all three treatment groups were told the correct answer. In particular, they were provided with information on the COVID-19 death toll per capita in their country and in the EU (T1), the export share in EU trade in their country (T2), and the share of Eurobarometer respondents across all EU countries agreeing on the most frequently mentioned common values in the EU (T3), respectively. Respondents in the control group were asked to guess their country's population density in 2019 and were then informed of the correct number. While the question on the population density induces respondents to think about their country, we believe this effect to be negligible. It is a neutral fact unrelated to the EU that that should not influence respondents' allocations in the Trust and Dictator game.

Our experimental design is such that our interventions make survey participants think about the topic (triggered by the introductory statements and the following question), thereby manipulating the topic's salience. Additionally, the provided information may potentially correct respondents' prior beliefs. The treatments are hence expected to have both a priming and an information effect (Cohn and Maréchal, 2016; Haaland et al., 2023). Our design does not allow us to disentangle these two effects. We deliberately decided against priming participants in the control group about COVID-19, the ties in the EU through trade, and common values, and thus did not elicit their prior beliefs on the information provided to participants in the treatment groups. An alternative design would have been to prime participants in the control group as well, in which case it would have been possible to attribute any treatment effect solely to the provision of information and to study heterogeneous treatment effects by prior beliefs. Nevertheless, we chose to forgo this approach, anticipating that the primary effect of our interventions would emanate from the prime rather than the information provision. The introductory statements shown to respondents in the treatment groups before eliciting their prior beliefs already prime respondents on the respective issue. Moreover, the introductory statements are interlinked with the prior belief questions. Providing control group respondents with the three introductory statements and eliciting their prior beliefs would arguably have constituted a very strong prime, which we believe would have prevented us from identifying the main drivers of social cohesion in the EU.

⁷ The main questionnaire can be found [here](#). Our survey experiment was approved by the Ethics Office at King's College London and pre-registered at the AER RCT Registry, Trial No. AEARCTR-0006164. Note that, while our hypotheses were expanded for the sake of clarity compared to the pre-analysis plan, our experimental design and the empirical strategy employed in this paper closely follow the approach outlined in our pre-registered pre-analysis plan.

⁸ We implemented an attention check at the end of the survey where respondents were asked whether they could recall the information presented in our treatments. We find that respondents in the bottom 10% of the survey time distribution are much less likely to recall the presented information. The correlation between the time spent on the survey and the result of the attention check (1 if respondents answered correctly, 0 otherwise) is positive and significant for the full sample, but becomes insignificant once those who completed the survey speedily are dropped. It is reassuring, however, that our results are mostly unaffected by the sample selection.

2.3. Outcome measures for trust, reciprocity, and altruism

After providing respondents with the respective information treatments described above, the survey continued with the Trust and Dictator games, which were played in random order.

Each game was played among two players (Player A and Player B), and participants were informed that for the determination of the pay-out relevant game they would be randomly matched with another survey respondent who could either be from their own country, from another EU country or from a non-EU country.⁹ They had to take decisions both as Player A and Player B in the Trust game and as Player A in the Dictator game, and for each of the three possible matches (fellow player from own country/another EU country/non-EU country), respectively. This means all respondents made all choices, i.e., they played both games, both as Player A and Player B, and made selections for each of the three possible matches which were randomized as well. Respondents were not informed if they were actually matched with a person from their own country, from another EU country or from a non-EU country. To avoid stereotypes affecting respondents' selections in the two games, we also did not inform them which EU or non-EU countries their fellow player could potentially come from.

Respondents were also told that - depending on their own decisions and those of their counterpart in the game - they could earn points (that is, remuneration) determined by the points they earned in the selected game. That is, they were informed that only one of the selections in one of the games would be randomly chosen to be pay-out relevant, but they were told that they should make all the decisions as if they were pay-out relevant for themselves and their fellow player. After the survey was completed in all countries, we randomly matched participants in pairs,¹⁰ randomly decided which one is Player A and which one is Player B and randomly decided which of the two games would be chosen for the pay-out. This process determined the pay-out from the relevant game for each respondent.¹¹

In both games, players took decisions, which determined the allocation of points between themselves and their counterpart. In the Trust game, Player A had to decide between two options:

1. Option A1: By choosing this option, Player A allocated 50 points to themselves and 50 points to Player B.
2. Option A2: This option handed over the decision to Player B, who received 200 points and could decide how many points to keep for herself, and how many points to allocate to Player A. Player B had to keep a minimum of 50 points for herself so that any number between 0 and 150 points could be allocated to Player A. By choosing this option, Player A could potentially increase her own payoff, but only if they trusted in Player B to return more than 50 points to her.

All respondents were also asked to make selections as Player B in the Trust game for the case that Player A would choose option A2. In the Dictator game, Player A got 200 points and decided how much to keep for herself and how much to allocate to Player B. Player B did not make any active decisions in this game. Player A could theoretically keep all the points for herself. Our main outcome variables are defined as follows:

Trust: We consider the choice of option A2 by Player A as a sign of *trust* towards their counterpart. Our outcome variable for trust takes a value of 1 if the Player A chose option A2 and zero otherwise.

Reciprocity: We consider Player B's decision as *reciprocal* if they returned more than 50 points to Player A. Our outcome variable for reciprocity ranges between 0 to 150 points.

Altruism: Any positive amount of points that Player A allocated to Player B in the Dictator game is interpreted as a sign of *altruism*, with the degree of altruism increasing with the number of points. Our outcome variable for altruism ranges between 0 to 200.

2.4. Hypotheses

Using past evidence on related phenomena, we can build a set of hypotheses for our experiment.

2.4.1. Hypotheses on crises and natural disasters

There is a body of literature linking altruistic behavior to crises and natural disasters, beginning with the work of [Douty \(1972\)](#), who observed that natural disasters are often followed by increased charitable activities and a heightened sense of community among residents of the affected areas. More recent studies indicate that this phenomenon is not merely a reallocation of existing charitable efforts towards disaster zones but represents an overall increase in charitable giving ([Deryugina and Marx, 2021](#)). Additionally, experiencing disasters may have long-term effects on individual preferences ([Li et al., 2013](#)). In sum, this evidence suggests that the

⁹ Correspondingly, respondents in the two non-EU countries were informed that they would be randomly matched with another survey respondent who could either be from their own country, from an EU member state or from another non-EU country.

¹⁰ Matched pairs are either "respondent's country - respondent's country", "respondent's country - another EU country", or "respondent's country - non-EU country".

¹¹ Respondents were paid in their local currency and they knew the exchange rate between the points earned in the selected game and their local currency before making decisions. For example, in the euro-area countries, participants were informed that 100 points correspond to 1 EUR. The average pay-out in our sample amounts to 0.85 EUR. This is not a large amount (though it is almost half of the baseline remuneration of 2 EUR participants got for completing the survey). [Camerer and Hogarth \(1999\)](#) show that financial incentives in experiments like ours reduce generosity and risk-seeking which should be taken into account when interpreting average allocations made in the Trust and Dictator game.

positive effect of crises on altruism is robust, emerging across a variety of events. We thus expect a similar pattern in response to COVID-19.

Conversely, the relationship between crises and natural disasters and reciprocity is less clear. Fleming et al. (2014) find that reciprocity can decrease in earthquake-affected villages. However, individuals who received more aid following a disaster tend to be more generous, suggesting a form of indirect reciprocity (Becchetti et al., 2017). Additionally, Blumenstock et al. (2016) find that mobile phone-based giving patterns during natural disasters are more consistent with reciprocity models rather than pure charity. The concept of “upstream indirect reciprocity” is further supported by evidence that disaster victims who have received help are more likely to cooperate in common-pool resource scenarios and exhibit reciprocity norms (Obayashi et al., 2023). How our COVID-19 treatment will affect reciprocity is thus unclear, and may depend in particular on how respondents perceived policy responses to the COVID-19 pandemic at the national and EU level. While the initial phase of the pandemic saw EU Member States acting alone and there was a perceived lack of coordination within the EU, by July 2020, one month before our survey was conducted, the European Council had reached political agreement on an EU-wide recovery fund, the so-called *Recovery and Resilience Facility*, which was part of a broader recovery instrument entitled *NextGenerationEU*. To the extent that these joint efforts are perceived or interpreted as acts of recovery aid worthy of reciprocity, we would expect reciprocity towards EU citizens (and also fellow nationals) to increase when respondents are primed with COVID-19.

Similarly, the impact of disasters on trust may be complex and multifaceted. First, the direction of change in generalized trust may be contingent upon how individuals perceive (the response of) others during crises. For example, if others are helpful and organized during a crisis, generalized trust may increase. In addition, the effect on trust may differ for in-group members compared to out-group members. Empirical evidence supports this complexity. Cassar et al. (2017) find that the tsunami in Thailand resulted in elevated levels of interpersonal trust. Conversely, Schilpzand (2023) report that while in-group trust tends to increase following disasters, the effect on out-group trust is less consistent, with some weak evidence suggesting a possible negative relationship. In addition, Li et al. (2021) find a statistically significant positive correlation between the frequency of long-term natural disasters and social trust, particularly trust in neighbors and medical professionals, which appears to be stronger in regions with a higher frequency of such events. Therefore, in the context of our experiment, and in consideration of the aforementioned findings, we would expect a positive effect of COVID-19 on trust towards fellow nationals and other EU citizens (the “in-group” in our context), particularly in countries that have been more severely affected by the pandemic.

We thus hypothesize that priming respondents with COVID-19 (T1) will increase altruism, reciprocity and trust. Since the treatment explicitly mentions respondents’ own countries and the EU and can thus be interpreted as priming fellow nationals and EU citizens as the “in-group” as opposed to “out-group” non-EU citizens, we furthermore expect the effect to occur predominantly towards fellow nationals and respondents from other EU countries. Furthermore, insofar as more severe disasters are expected to have stronger effects, we expect our treatment effects to be larger in countries which were hit harder by the COVID-19 pandemic.

Hypothesis 1. Respondents in T1 will exhibit higher altruism, reciprocity and trust towards fellow nationals and other EU citizens compared to people in the control group. The differences will be more pronounced in countries which were hit harder by the COVID-19 pandemic.

2.4.2. Hypotheses on common values

Concerning the effect of priming respondents with common European values, thereby emphasizing a common identity and “in-group” sentiment among fellow nationals and respondents from other EU countries (Shekhovtsova-Burianova, 2022), there is experimental evidence that a common group identity enhances altruism towards fellow group members. As evidenced by Konda et al. (2021), donations to public goods in experiments increase when social identity is made salient, and Charness and Chen (2020) find that participants are considerably more inclined to take actions that promote social welfare when interacting with someone from their own group. Similarly, reciprocity seems to be directed predominantly towards in-group members (Yamagishi and Kiyonari, 2000).

Research on trust and shared group membership or values reveals intricate relationships. Group membership can lead to higher well-being and expand the radius of trust (Haddad and Maluccio, 2002). Moreover, Holtug (2017) posits that sharing common values tends to promote trust. However, Peralta and Shupp (2017) find that the correlation between group membership and trust is relatively weak, with membership in community groups potentially negatively correlated with revealed trust. Moreover, common knowledge of shared group membership seems to play a crucial role in trust decisions, as people are more likely to trust in-group members when both parties are aware of their shared group identity (Platow et al., 2012). These findings suggest that while group membership can influence trust and well-being, the relationship is moderated by factors such as group type, trust in different actors, and awareness of shared group identity. In the context of our experiment, we expect that the “in-group” priming in combination with common knowledge of shared group identity will result in a positive overall effect on trust towards fellow group members.

Based on the above cited evidence we thus expect that priming respondents with common values shared among EU citizens will increase altruism, reciprocity and trust towards “in-group” members (i.e. fellow nationals and fellow EU citizens), and that this effect will be larger for individuals who identify more strongly as EU citizens (and are thus expected to be more receptive towards priming fellow EU nationals as in-group members).

Hypothesis 2. Respondents in T3 will exhibit higher altruism, reciprocity and trust towards fellow nationals and other EU citizens compared to people in the control group. The differences will be more pronounced for respondents who identify more strongly as EU citizens.

2.4.3. Hypotheses on shared economic interests

The hypotheses on how shared economic interests, through trade in particular, will affect altruism, reciprocity and trust are more derivative in nature. Common identity can be created in a number of ways, and there is some evidence that shared economic interests through EU membership can become a source of identity and trust over time (Klingemann and Weldon, 2013). This is a weak hypothesis, as it relies on a particular pathway to create a common identity that is highly speculative. However, it is an intriguing possibility, and indeed this is why we intend to test it in our experiment. Furthermore, if such a pathway does exist, it seems probable that individuals' reactions may, analogously to the effect of T3 postulated above, vary depending on their degree of identification as EU citizens. In light of the aforementioned hypothesis regarding the formation of shared group identity, we thus postulate that:

Hypothesis 3. Respondents in T2 will exhibit higher altruism, reciprocity and trust towards fellow nationals and other EU citizens compared to people in the control group. The differences will be more pronounced for respondents who identify more strongly as EU citizens.

2.5. Initial beliefs

Before informing respondents about the COVID-19 death toll (T1), their country's export share in EU trade (T2) and the agreement among European citizens on shared values in the EU (T3), we elicited their prior beliefs about these numbers. This was done to strengthen the prime and hence to increase the treatment effect. If people are asked about an issue first and have to guess a number, it can generally be expected that they think *more* about said issue than if they are simply presented with information. We designed comparable initial belief questions in the EU trade and the EU common values treatment group asking respondents to provide a percentage, respectively. This common framing of the initial belief questions facilitates comparability and helps us pinpoint whether our treatments were (predominantly) "positive" or "negative" (depending on how beliefs were corrected on average).¹² Table A.1 reveals that both in the EU trade (66%) and the EU common values treatment group (52%), the majority of respondents underestimate the correct values. A fifth (T2) and roughly a quarter (T3) of respondents overestimate the correct values and only relatively few respondents provide correct answers.

In the COVID-19 treatment group, we elicited initial beliefs using a categorical question (COVID-19 death toll per capita by July 1, 2020, in respondent's country higher/lower/around the same as the EU average). This was done in order to emphasize that COVID-19 had hit some EU member states harder than others. Table A.1 shows that 13% (31%) of respondents wrongly believe that the per capita COVID-19 death toll in their country was higher (lower) than in the EU. 47% of respondents answer the question correctly. When comparing initial beliefs across treatments, it should be taken into account, however, that it is easier to answer a categorical question than a continuous one.

As initial beliefs for T2 and T3 were below the truth for the majority of respondents, the average treatment effects can be regarded as displaying the results of (on average) an upwards correction concerning beliefs about the importance of the EU internal market for respondents' country and the share of European citizens who agree on the most important common values in the EU. It can thus be argued that treatments T2 and T3 were on average "positive" (pro EU) treatments. On the other hand, T1 was certainly not a generally positive or optimistic treatment - in fact it was probably rather pessimistic on average, irrespective of where countries stood in terms of COVID-19 impact compared to the rest of the EU, because it put the COVID-19 pandemic with all its ensuing problems front and center in respondents' minds.

We regress (misperceptions in) initial beliefs on socio-demographic characteristics and attitudinal variables collected in our survey to gain a better understanding of respondents' initial expectations. While our research design does not allow us to perform a treatment heterogeneity analysis with respect to initial beliefs, which were intentionally only elicited in the respective treatment group to avoid any priming effects on respondents in the control group (cf. Section 2.2), we can study how initial beliefs differ between respondents with different characteristics and attitudes. This exercise thus serves the purpose to shed light on which groups of respondents might be more responsive to our treatments, thereby guiding our heterogeneity analysis (Section 3.3).

As Table A.2 shows, most of our socio-demographic variables (age, gender, education) are not significantly correlated with initial beliefs in T1, with the dependent variable being a dummy that is one if a respondent wrongly stated that the per capita COVID-19 death toll in his/her country was higher than the EU average while in fact it was lower or around the same. We find a weak negative (positive) correlation between household income (living in cities with more than 100,000 inhabitants) and misperceptions in T1. In terms of attitudinal variables, Table A.2 reveals that respondents who were less satisfied with their government's response to COVID-19, whose household was negatively affected by COVID-19 in economic terms, and who stated that migrants undermine their culture are more likely to overestimate the COVID-19 death toll in their own country relative to the EU average.

For T2 and T3, we regress respondents' best guess of their country's export share in EU trade (T2) and of the level of agreement among European citizens on their shared values (T3) (both on a scale from 0–100) on a similar set of socio-demographic variables and attitudinal variables (cf. Table A.3).¹³ We find that age, the female dummy, and the dummy for tertiary education are positively correlated with the expected export share in EU trade. Similarly, age, tertiary education and household income are positively

¹² We define a correct answer as not deviating more than +/-5 percentage points from the correct value.

¹³ Results are very similar if the dependent variable is defined as a dummy variable that is one if a respondent has overestimated the true value presented in the information treatment.

correlated with the expected level of agreement among European citizens on their shared values. Moreover, respondents with higher EU identity and who believe in a positive effect of migrants on the economy have higher initial beliefs in T2 and T3. For T3, we find in addition that being left-leaning in political terms and perceiving migrants as a cultural enrichment are positively correlated with the expected level of agreement among European citizens on their shared values.

2.6. Empirical strategy

We use OLS models to estimate the average treatment effects for ease of interpretation, though logit regression models return similar patterns. Our models take the following form:

$$Y_i = \beta T_i + \gamma X_i + \mu_c + \zeta_t + \epsilon_i \quad (1)$$

where Y_i measures the allocations made by respondents in the Trust and Dictator game. The treatment dummies T_i capture the effect of the randomized interventions presented above. Given that the information treatments are randomized and therefore independent of all other relevant variables, their effects can be interpreted in a causal manner.

X_i is a vector of control variables that includes age, gender, marital status, education, equivalized household gross income in February and July 2020 (to account for changes in household income after the outbreak of the pandemic), total number of children and adults younger/older than 65 in the household, as well as the time to complete survey. In all models, we include country fixed effects, μ_c , (to control for time-invariant variation in the outcome variables caused by factors that vary across countries) and date fixed effects, ζ_t , (to capture the impact of country-level shocks that affect all countries simultaneously). We report p-values adjusted for multiple hypothesis testing using a method recently developed by Barsbai et al. (2024).

3. Results

This section first shows that the random allocation of respondents into the four groups - the main identifying assumption of our analysis - worked well (Section 3.1). Next, we present average treatment effects of the COVID-19 treatment (T1), the EU trade treatment (T2), and the EU common values treatment (T3) on interpersonal trust, reciprocity and altruism (Section 3.2). The section concludes with an analysis of heterogeneous treatment effects (Section 3.3).

3.1. Balancing tests

The main identifying assumption of our analysis is that the randomization of our information treatments worked properly. Therefore, we compute differences in mean values of those variables which are included in the control vector or used for heterogeneity analysis as well as the mean time to complete the survey between the three treatment groups and the control group, respectively,¹⁴ and test for their statistical significance. As can be seen in Table A.5 in the Appendix, most of the differences are insignificant or only weakly significant suggesting that the randomization worked well. Respondents in the EU trade treatment group (T2) completed the survey somewhat faster than respondents in the control group. However, time differences are small which suggests that our information treatments do not differ in their complexity.

3.2. Average treatment effects

We present average treatment effects on our main outcomes (trust, reciprocity and altruism) as well as mean values of the outcome variables in the control group in Table 1 separately for whether the fellow player was from respondents' own country, another EU country or a non-EU country.¹⁵ When it comes to trust, we find that none of our treatments has a significant effect on the selections made by respondents as Player A in the Trust game on average. Looking at reciprocity, we find that both the COVID-19 treatment (T1) and the EU common values treatment (T3) lead to more reciprocal behavior if respondents assume the fellow player to be from their own country. In this case, respondents in T1 and T3 send on average 2 points more to Player A compared to respondents in the control group. The treatment effect corresponds to roughly 2% of the average number of points respondents in the control group send back to Player A. Moreover, we find a positive albeit somewhat smaller and less significant treatment effect for T3 if the fellow player is from another EU country. There is no effect of any treatment on reciprocity if the fellow player is from a non-EU country.

Furthermore, we find that both the COVID-19 treatment (T1) and the EU common values treatment (T3) significantly increase respondents' altruism if they make their selection under the assumption that their fellow player is a citizen of their own country or a citizen of another EU member state. On average, these treatment effects amount to 2–3 points which corresponds to 2%–3% of the average number of points respondents in the control group send to their fellow players. Again, none of our treatments significantly affects altruism towards players from non-EU countries.

¹⁴ Mean values are reported in Table A.4.

¹⁵ Tables A.6–A.8 provide summary statistics for the selections made in the Trust game and the Dictator game. Table A.9 shows that all our results hold when excluding covariates, which suggests that the treatment effects presented in Table 1 are not affected by differences across groups with respect to observable characteristics. Table A.10 reveals that logit regressions yield the same result with respect to trust, i.e., that the null-effect on trust does not depend on the model specification.

Table 1

Average treatment effects: Trust, Reciprocity, Altruism.

	Outcome: Trust			Outcome: Reciprocity			Outcome: Altruism		
	Own country	EU	Non EU	Own country	EU	Non EU	Own country	EU	Non EU
T1: COVID-19	0.0001	−0.0015	0.0044	2.1092***	1.0493	1.2906	2.9509***	2.8748***	1.7872
<i>Unadjusted p-value</i>	(0.9920)	(0.8567)	(0.6163)	(0.0007)	(0.0860)	(0.0427)	(0.0003)	(0.0003)	(0.0350)
<i>Adjusted p-value</i>	(0.9920)	(0.9747)	(0.9270)	(0.0023)	(0.2660)	(0.1710)	(0.0003)	(0.0003)	(0.1683)
T2: EU trade	−0.0051	0.0026	−0.0104	1.1322	0.1534	−0.0375	−0.2840	0.3450	−1.5170
<i>Unadjusted p-value</i>	(0.5490)	(0.7640)	(0.2347)	(0.0593)	(0.7887)	(0.9553)	(0.7420)	(0.6797)	(0.0733)
<i>Adjusted p-value</i>	(0.9857)	(0.9820)	(0.7793)	(0.3510)	(0.9420)	(0.9553)	(0.9953)	(0.9947)	(0.3890)
T3: EU common values	0.0010	0.0035	−0.0004	2.2218***	1.4039*	0.7964	2.2798**	2.5925**	1.0211
<i>Unadjusted p-value</i>	(0.9087)	(0.6787)	(0.9680)	(0.0003)	(0.0177)	(0.1840)	(0.0050)	(0.0020)	(0.2123)
<i>Adjusted p-value</i>	(0.9890)	(0.9487)	(0.9680)	(0.0003)	(0.0883)	(0.5940)	(0.0283)	(0.0127)	(0.5590)
Observations	25 720	25 720	25 720	25 720	25 720	25 720	25 720	25 720	25 720
Outcome mean (in control):	0.409	0.408	0.406	85.142	84.788	83.877	103.567	99.552	97.794

Notes: The table reports average treatment effects of T1–T3 on our outcome variables based on Eq. (1) in Section 2.6. Outcome mean (in control group): Share of respondents choosing option A2 in the Trust game (Outcome: Trust), Number of points returned as Player B to Player A in the Trust game (Outcome: Reciprocity), Number of points sent as Player A to Player B in the Dictator game (Outcome: Altruism). Controls: age, gender, marital status, education level, equivalized household gross income in February/July 2020, time to complete survey, total number of children and adults younger/older than 65 in the household, in addition to country and date fixed effects. Unadjusted and adjusted p-values in parentheses. The adjusted p-values account for multiple hypothesis testing according to Barsbai et al. (2024), stars represent significance levels according to adjusted p-values, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The EU trade treatment (T2) does not lead to significant differences in behavior compared to the control group, neither for reciprocity nor for altruism.

These results partly confirm our hypotheses with regard to the COVID-19 (T1) and the EU common values treatment (T3), but do not lend support to our hypotheses concerning the EU trade treatment (T2) (cf. Section 2.4). Priming COVID-19 and common EU values and informing about the health costs of COVID-19 and the level of agreement among EU citizens on their shared values raises altruism towards fellow nationals and EU citizens (and reciprocity towards fellow nationals), but not towards non-EU citizens. Both the COVID-19 and the EU common values treatment hence magnify differences in mean outcomes across the three possible matches that are already present in the control group. The null effect on trust suggests that our treatments do not affect preferences of the sender or her beliefs about the trustworthiness of the fellow player (Sapienza et al., 2013). It might also be that the binary nature of the decision situation of Player A in the Trust game which is not as fine-grained as the other two decisions contributes to the null finding.

3.3. Heterogeneity analysis

Each of our treatments addresses an issue that might affect respondents differently depending on their country's position concerning the respective issue. This is most apparent for the COVID-19 treatment (T1), where we inform respondents about the number of confirmed per capita COVID-19 deaths in their country and the EU. A natural question that arises in connection with the COVID-19 treatment is therefore whether respondents from countries with a large number of COVID-19 deaths react differently to the treatment compared to those from countries with fewer COVID-19 deaths (as postulated in Hypothesis 1, c.f. Section 2.4.1). We thus examine its effect on trust, reciprocity and altruism separately for countries with above and below median per capita COVID-19 deaths (among our sample of countries).¹⁶ As shown in the upper panel of Table 2, we find more pronounced effects of the COVID-19 treatment on reciprocity and altruism towards fellow nationals and EU citizens among respondents from countries which were more severely affected early on in the pandemic in terms of COVID-19 deaths, confirming Hypothesis 1. Conversely, we do not find an effect on trust for either of the two groups.

In addition, we perform heterogeneity analyses with respect to selected variables from our survey that correlate significantly with respondents' initial beliefs. Such correlations might hint at groups that are potentially more responsive to our treatments, for instance because the treatments correct respondents' misperceptions or because the presented issue at hand is more relevant for some groups than for others and therefore has a stronger priming effect.

As shown in Section 2.5, respondents' answers to two COVID-19 specific questions in our survey correlate significantly with their initial beliefs (cf. Table A.2). Respondents who are not satisfied with how their government handled the COVID-19 pandemic as well as respondents who report that they were negatively affected by COVID-19 in economic terms are more likely to overestimate the COVID-19 death toll in their country relative to the EU average. We thus explore treatment effect heterogeneity for T1 with respect to these two variables.

For the first (country-level) sample split, we rank countries with respect to average levels of respondents' satisfaction with their government's response to COVID-19 and build two groups with above and below median satisfaction levels.¹⁷ For the second

¹⁶ We estimate split sample regressions instead of interactions since they allow us to correct for multiple hypothesis testing according to Barsbai et al. (2024).

¹⁷ Importantly, the group composition considered here differs from the country-level sample split according to above and below median per capita COVID-19 deaths. While Spain, Italy, Sweden and France are the countries with above median COVID-19 deaths per July 1, 2020, in our sample, the country-group with below median levels of respondents' satisfaction with their government's handling of COVID-19 consists of Poland, Spain, France, Sweden and Hungary.

Table 2
Sample split regressions for T1 (COVID-19).

	Outcome: Trust			Outcome: Reciprocity			Outcome: Altruism		
	Own country	EU	Non EU	Own country	EU	Non EU	Own country	EU	Non EU
Above median COVID-19 deaths ($N = 5766$)	-0.0060	-0.0070	-0.0060	3.3920***	2.1870*	1.9803	3.3604**	3.3546**	1.7476
<i>Unadjusted p-value</i>	(0.6423)	(0.5760)	(0.6397)	(0.0003)	(0.0177)	(0.0300)	(0.0083)	(0.0063)	(0.1800)
<i>Adjusted p-value</i>	(0.6423)	(0.8977)	(0.8497)	(0.0003)	(0.0890)	(0.1237)	(0.0490)	(0.0407)	(0.4927)
Below median COVID-19 deaths ($N = 7133$)	0.0048	0.0023	0.0132	1.0568	0.1207	0.7606	2.5811*	2.5420	1.8381
<i>Unadjusted p-value</i>	(0.6727)	(0.8353)	(0.2593)	(0.1893)	(0.8767)	(0.3580)	(0.0127)	(0.0157)	(0.0857)
<i>Adjusted p-value</i>	(0.9607)	(0.9703)	(0.7123)	(0.6370)	(0.8767)	(0.7883)	(0.0920)	(0.1040)	(0.4037)
Above median satisfaction ($N = 5636$)	0.0048	0.0017	0.0115	0.8511	-0.3710	-0.0229	0.8695	1.7093	0.5600
<i>Unadjusted p-value</i>	(0.7220)	(0.8883)	(0.3713)	(0.3470)	(0.6890)	(0.9780)	(0.4533)	(0.1473)	(0.6680)
<i>Adjusted p-value</i>	(0.9767)	(0.9887)	(0.9223)	(0.9257)	(0.9857)	(0.9780)	(0.9560)	(0.6340)	(0.9930)
Below median satisfaction ($N = 7263$)	-0.0041	-0.0045	-0.0014	3.1307***	2.1999**	2.3580**	4.6380***	3.8947***	2.8142*
<i>Unadjusted p-value</i>	(0.7197)	(0.6993)	(0.9010)	(0.0003)	(0.0073)	(0.0033)	(0.0003)	(0.0003)	(0.0173)
<i>Adjusted p-value</i>	(0.9140)	(0.9667)	(0.9010)	(0.0003)	(0.0333)	(0.0183)	(0.0003)	(0.0003)	(0.0627)
Negatively affected in economic terms ($N = 9618$)	0.0006	-0.0014	0.0017	2.2035**	1.2078	1.4207	3.4461***	3.7957***	2.8911**
<i>Unadjusted p-value</i>	0.9587	0.8877	0.8613	0.0023	0.0907	0.0480	0.0007	0.0003	0.0027
<i>Adjusted p-value</i>	0.9587	0.9860	0.9950	0.0133	0.2840	0.1873	0.0030	0.0003	0.0133
Not affected in economic terms ($N = 3281$)	0.0056	0.0010	0.0136	1.9970	0.6826	0.8660	1.5884	0.1079	-1.4058
<i>Unadjusted p-value</i>	0.7477	0.9533	0.4257	0.0960	0.5523	0.4683	0.3483	0.9417	0.3943
<i>Adjusted p-value</i>	0.9797	0.9533	0.9280	0.4763	0.9417	0.9340	0.9207	0.9963	0.9363

Notes: The table reports average treatment effects of T1 on our outcome variables based on sample split regressions according to Eq. (1) in Section 2.6. Controls: age, gender, marital status, education level, equalized household gross income in February/July 2020, time to complete survey, total number of children and adults younger/older than 65 in the household, in addition to country and date fixed effects. Unadjusted and adjusted p-values in parentheses. The adjusted p-values account for multiple hypothesis testing according to Barsbai et al. (2024), stars represent significance levels according to adjusted p-values, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. First (country-level) split above/below median COVID-19 deaths per million people by July 1, 2020: ES (606.63), IT (575.02), SE (528.06), FR (457.20), NL (356.52), DE (107.24), HU (60.56), PL (38.66), EL (18.42). The “Above median COVID-19 deaths” group includes respondents from ES, IT, SE, and FR. The “Below median COVID-19 deaths” group includes respondents from NL, DE, HU, PL, and EL. Second (country-level) split above/below median satisfaction with government response to COVID-19, based on the following survey question: *How satisfied are you with how the government of [respondent’s country] handled the COVID-19 pandemic on a scale from 0 to 10 (0 being the lowest and 10 being the highest)?* Sample averages: PL (4.35), ES (4.78), FR (5.21), SE (5.75), HU (6.00), EL (6.19), IT (6.44), NL (6.56), DE (6.82). The “Above median satisfaction” group includes respondents from DE, NL, IT, and EL. The “Below median satisfaction” group includes respondents from PL, ES, FR, SE, and HU. Third (individual-level sample) split negatively vs not affected in economic terms, based on our survey question *How much, if at all, has the Covid-19 pandemic economically affected your household in comparison with the situation in end of February 2020? A great deal, a fair amount, just a little, not at all.* The “Negatively affected in economic terms” group comprises respondents who were affected great deal/a fair amount/just a little. The “Not affected in economic terms” group comprises respondents who were not at all affected.

(individual-level) sample split, we build two groups of respondents. The first group consists of respondents who report that they were negatively affected by COVID-19 in economic terms, for instance because of job loss or reductions in earnings. The second group includes respondents who state that they were not at all affected. Our results which are presented in the middle and lower panel of Table 2 suggest that treatment effects of T1 on reciprocity and altruism are larger and more pronounced among respondents in countries with below median levels of satisfaction and among respondents who were negatively affected by COVID-19 in economic terms.¹⁸

All heterogeneity results for T1 support our hypothesis that respondents who were hit harder by COVID-19 – either personally in economic terms or their countries in terms of COVID-19 deaths – (and who are thus more likely to be unsatisfied with their government’s response to COVID-19) react stronger to the COVID-19 treatment. The larger unifying effect might be explained by a perceived solidarity with their situation from fellow Europeans (cf. Section 2.4.1). One interpretation of the insignificant effect on trust in both country groups is that respondents might consider the more (less) dramatic health impact in their country relative to other European countries mostly as fate (luck) rather than the result of own reckless (virtuous) behavior.

For the EU trade (T2) and the EU common values treatment (T3), we conduct sample split regressions with respect to respondents’ education, their attitudes towards migrants, and their EU identity. As shown in Section 2.5 and Table A.3, these variables correlate significantly with respondents’ initial beliefs. Respondents with tertiary (elementary or secondary) education, with more positive (negative) views on migrants’ impact on the economy and culture, and with a higher (lower) EU identity believe in larger (smaller) EU export shares and higher (lower) levels of agreement among European citizens on their shared values, and are more likely to overestimate (underestimate) the respective true values.¹⁹ Table 3 reveals that our EU common values treatment induces respondents whose highest completed level of education is secondary (or below), who have negative or neutral views on migrants’ impact on their culture, and who do not feel as an EU citizen to become more reciprocal and altruistic towards fellow nationals and other EU citizens, but that no such effect (or smaller, but insignificant effects) can be observed for respondents with tertiary education, with positive attitudes towards migrants, and who identify themselves as EU citizen.²⁰

¹⁸ We find even larger treatment effects of T1 on altruism among those who were negatively affected by COVID-19 in economic terms if we drop respondents from the ‘negatively affected’ group who state that they were only moderately affected. Results are available upon request.

¹⁹ The latter finding is based on an alternative specification of the regressions shown in Table A.3 where the dependent variable is a dummy that is one if respondents overestimate the true values provided in the information treatments of T2 and T3.

Table 3
Sample split regressions for T3 (EU common values).

	Outcome: Trust			Outcome: Reciprocity			Outcome: Altruism		
	Own country	EU	Non EU	Own country	EU	Non EU	Own country	EU	Non EU
T3: EU common values									
Tertiary education (N = 5854)	0.0047	−0.0020	−0.0031	1.1759	0.6038	0.7874	1.1541	1.2507	0.0757
<i>Unadjusted p-value</i>	(0.7323)	(0.8657)	(0.8057)	(0.1730)	(0.4773)	(0.3650)	(0.3197)	(0.2640)	(0.9483)
<i>Adjusted p-value</i>	(0.9920)	(0.9817)	(0.9907)	(0.7153)	(0.9480)	(0.9000)	(0.8917)	(0.8550)	(0.9483)
Elementary/Secondary education (N = 7001)	−0.0055	0.0055	−0.0010	3.1911***	2.1723**	0.8316	3.2231**	3.8035***	1.8529
<i>Unadjusted p-value</i>	(0.6363)	(0.6370)	(0.9277)	(0.0003)	(0.0077)	(0.3173)	(0.0033)	(0.0007)	(0.1073)
<i>Adjusted p-value</i>	(0.9307)	(0.8470)	(0.9277)	(0.0003)	(0.0403)	(0.7400)	(0.0190)	(0.0027)	(0.3987)
Culture enriched (N = 5997)	−0.0068	0.0053	−0.0053	0.1122	−0.0428	0.4084	1.1883	1.1776	0.3361
<i>Unadjusted p-value</i>	(0.5933)	(0.6820)	(0.6677)	(0.8987)	(0.9587)	(0.6283)	(0.3033)	(0.2997)	(0.7817)
<i>Adjusted p-value</i>	(0.9937)	(0.9843)	(0.9923)	(0.9893)	(0.9587)	(0.9933)	(0.8870)	(0.9007)	(0.9873)
Culture undermined/Not affected (N = 6878)	0.0075	0.0029	0.0052	4.2087***	2.7591***	1.2421	3.2727**	3.9191***	1.7039
<i>Unadjusted p-value</i>	(0.5210)	(0.8087)	(0.6553)	(0.0003)	(0.0013)	(0.1477)	(0.0027)	(0.0013)	(0.1457)
<i>Adjusted p-value</i>	(0.8600)	(0.8087)	(0.8653)	(0.0003)	(0.0083)	(0.4333)	(0.0133)	(0.0073)	(0.5073)
EU citizen (N = 5029)	0.0015	0.0101	−0.0022	1.3672	0.3288	1.1255	1.9974	2.7850	1.1096
<i>Unadjusted p-value</i>	(0.9093)	(0.4700)	(0.8797)	(0.1443)	(0.7220)	(0.2517)	(0.1113)	(0.0187)	(0.3780)
<i>Adjusted p-value</i>	(0.9093)	(0.8923)	(0.9813)	(0.5903)	(0.9747)	(0.7777)	(0.5290)	(0.1287)	(0.8817)
Neutral (N = 4802)	−0.0140	0.0020	−0.0055	1.3900	1.3530	0.0402	1.0936	1.2868	−0.2089
<i>Unadjusted p-value</i>	(0.3227)	(0.8853)	(0.6857)	(0.1480)	(0.1600)	(0.9660)	(0.4230)	(0.3203)	(0.8677)
<i>Adjusted p-value</i>	(0.8550)	(0.9850)	(0.9900)	(0.6497)	(0.6507)	(0.9660)	(0.9110)	(0.8743)	(0.9973)
Not EU citizen (N = 3024)	0.0163	−0.0096	0.0052	4.7721***	3.1495*	1.5189	4.7261*	4.4724**	2.5672
<i>Unadjusted p-value</i>	(0.3613)	(0.5900)	(0.7807)	(0.0007)	(0.0163)	(0.2467)	(0.0080)	(0.0083)	(0.1617)
<i>Adjusted p-value</i>	(0.6837)	(0.8090)	(0.7807)	(0.0030)	(0.0817)	(0.6247)	(0.0530)	(0.0483)	(0.5390)

Notes: The table reports average treatment effects of T3 on our outcome variables based on sample split regressions according to Eq. (1) in Section 2.6. Controls: age, gender, marital status, education level, equalized household gross income in February/July 2020, time to complete survey, total number of children and adults younger/older than 65 in the household, in addition to country and date fixed effects. Unadjusted and adjusted p-values in parentheses. The adjusted p-values account for multiple hypothesis testing according to Barsbai et al. (2024), stars represent significance levels according to adjusted p-values, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Individual-level sample splits based on the following survey question: 1. What is your highest completed level of education? a. Elementary (up to 8 years of basic education), b. Secondary (9 to 15 years of education), c. Tertiary (completed four years of education beyond “high school” and/or received a four-year college degree or more). 2. Would you say that [country]’s culture is generally undermined or enriched by people coming to live here from other countries? Please tell me on a score of 0–10 (0 means culture undermined, and 10 means culture enriched). Culture Enriched: 6–10, Culture Undermined/Not Affected: 0–5. 3. To what extent do you feel you are a citizen of the EU? On a scale from 0 (No, definitely not) to 10 (Yes, definitely), select the value that best reflects your feelings. EU Citizen: 7–10, Neutral: 4–6, Not EU Citizen: 0–3.

In contrast, as shown in Table A.11 we do not find much heterogeneity of our EU trade treatment with respect to these variables, despite the significant correlations with initial beliefs. If anything, T2 seems to have a small, positive effect on reciprocity and altruism for respondents who are pessimistic about migrants’ impact on culture and the economy, but coefficients are mostly insignificant. Also for these sample splits, there is no effect of any of the two treatments on trust.²¹

Overall, these heterogeneity results suggest that in particular the “in-group” priming of T3 tends to lead to more pronounced treatment effects towards “in-group” members (fellow nationals and EU citizens) among respondents who do not identify much with part of the in-group (i.e., the EU), and who are more skeptical towards “out-group” members (in this case represented by migrants) and their impact on culture and the economy.²² These results partially contradict Hypothesis 2, which postulates that priming common EU values should be more effective for individuals with a stronger EU citizen identity. Our results indicate that the opposite holds. One explanation could be that the treatment works indeed like an information (rather than a mere priming)

²⁰ Split sample regressions based on respondents’ views on migrants’ impact on the economy yield very similar results. In contrast, there seems to be less treatment effect heterogeneity of T3 with respect to political orientation which also correlates significantly with initial beliefs. All additional heterogeneity analyses not reported here are available upon request.

²¹ We have conducted further heterogeneity analyses for T2. First, we have examined the impact of the EU trade treatment separately for countries with below and above median (among our sample of countries) export shares to other EU countries, as it is conceivable that respondents’ reactions might vary depending on their countries’ export share to other EU countries (and hence the degree their country relies on and benefits from the EU internal market). Second, we have tried to identify respondents in our sample who are exposed to economic uncertainty and foreign competition, for instance proxied by having a job in the private sector (as compared to the public sector), by having a temporary contract (as compared to a permanent contract), or by being unemployed and looking for a job (as compared to being employed), as one might hypothesize that higher economic uncertainty might make people more averse to international trade, while the effect of exposure to foreign competition might go in both directions, depending on to what extent respondents benefit from this exposure. Third, we have conducted heterogeneity analyses with respect to other socio-demographic and attitudinal variables collected in our survey, such as political orientation, age, place of residence (urban vs. rural), and household income. We do not find much heterogeneity in any of those sample split regressions. All results are available upon request.

²² All attitudinal variables from our survey used in the heterogeneity analysis were elicited only after our treatments and hence could theoretically be affected by them. This applies to respondents’ satisfaction with how their government handled the COVID-19 pandemic, the economic consequences of COVID-19 for their household, their attitudes towards migrants, and their EU identity. However, as Table A.12 shows, these variables do not seem to be significantly affected by any of our treatments. We thus consider their inclusion in our heterogeneity analysis as valid.

treatment and that - as respondents with weaker EU identity are more likely to underestimate agreement on common values in the EU (see [Table A.3](#)) - their margin of adjustment is larger, leading to higher treatment effects.

4. Concluding remarks

Social cohesion in Europe and the willingness of EU member states to cooperate to a large extent depend on social preferences of its citizens such as altruism, reciprocity and social trust. Our paper provides causal evidence on how a common crisis (COVID-19), common economic interests and common values affect these qualities among European citizens. We ran an incentivized survey experiment in nine EU countries in early August 2020. Our treatment groups were primed and informed about their country's COVID-19 death toll relative to the EU average, their country's degree of EU trade integration and commonly held European values, respectively, while the control group received neutral information unlikely to affect their actions later in the survey. Afterwards, survey respondents played incentivized Trust and Dictator games, where they could earn an extra payment depending on their decisions and the decisions of their matched player, who could be either a fellow citizen, a respondent from another EU country or a citizen from a non-EU country.

We show that the common crisis and the common values treatments have similar and positive effects on altruism and reciprocity towards fellow natives and other EU citizens. Interpersonal trust is not affected on average. In addition, priming and informing respondents about a common economic interest does not have an effect on any of our three outcome variables.

In terms of treatment effect heterogeneity, we find strongest effects of the COVID-19 treatment among respondents from countries with a very high number of COVID-19 deaths at the time of the survey as well as among those who were negatively affected by COVID-19 in economic terms and dissatisfied with their government's response to the pandemic. Respondents who do not feel they are a citizen of the EU, who have negative attitudes towards migrants, and who are lower educated are most responsive to the common values treatment. We do not find much treatment effect heterogeneity of the trade integration treatment.

These findings indicate that European common values enhance cohesion among nationals and fellow EU citizens. By contrast, our results suggest that economic interests alone might not suffice to build social cohesion and unity. However, the latter result should be interpreted with caution as it is conceivable that respondents did not associate increased trade integration with shared economic interests. We leave the question to what extent other interventions that emphasize shared (economic) interests in Europe more explicitly could strengthen cohesion for future research.

We conclude by commenting on two in our view encouraging results for future European integration. First, despite (at least initially) uncoordinated reactions by EU member countries to the pandemic, the effect of priming and informing respondents about COVID-19 has a similar unifying effect as the common values treatment. One interpretation of this finding is that the policy response at European level, in particular the Next Generation EU initiative, was perceived by European citizens as an important signal that Europe would overcome the COVID-19 crisis together. However, our finding of a unifying effect of the COVID-19 crisis may not necessarily extend to other shared crisis experiences, since the way policy-makers and society in general deal with crises probably affects their impact on citizens' attitudes and behavior as has been argued in this paper. Second, the fact that our common values treatment has the strongest effect among respondents who do not identify as EU citizens suggests that promoting European values – be it in political communication or in actual policies – can have a positive effect on social cohesion in Europe, even among people with weak EU identity.

CRediT authorship contribution statement

Cevat Giray Aksoy: Formal analysis, Writing – original draft, Conceptualization, Methodology, Writing – review & editing. **Antonio Cabrales:** Conceptualization, Methodology, Writing – review & editing, Formal analysis, Writing – original draft. **Mathias Dolls:** Formal analysis, Writing – original draft, Conceptualization, Methodology, Writing – review & editing. **Ruben Durante:** Conceptualization, Methodology, Writing – review & editing, Formal analysis, Writing – original draft. **Lisa Windsteiger:** Formal analysis, Writing – original draft, Conceptualization, Methodology, Writing – review & editing.

Appendix. Appendix tables

See [Tables A.1–A.12](#).

Table A.1
Beliefs (T1–T3).

	Treatment groups			Total	N
	T1: COVID-19 Col%	T2: EU trade Col%	T3: EU common values Col%		
Answer correctly	47	13	21	27	5244
Underestimate	31	66	52	50	9615
Overestimate	13	20	27	20	3885
Don't know	9	0	0	3	589
Total	100	100	100	100	19,333

Notes: The table reports the share of respondents in the three treatment groups whose belief elicited before the information was correct and the share of respondents who underestimated/overestimated the correct numbers (T2, T3)/the per capita COVID-19 death toll in their country relative to the EU average. For T2 and T3, answers are counted as correct if the given percentage does not deviate more than +/-5 percentage points from the correct value. Only respondents in T1 had the option to choose the “Don't know” answer option. T1: Confirmed COVID-19 deaths per million people below (above) the EU average by July 1, 2020: DE, EL, HU, PL (ES, FR, IT, NL, SE). T2: Export share in EU trade in 2019: DE: 54.4%, EL: 51.8%, ES: 62.2%, FR: 54.5%, HU: 79.1%, IT: 53.3%, NL: 68.9%, PL: 74.8%, SE: 54.8%. T3: Share of Eurobarometer respondents across all EU countries that consider at least one of the following values (peace, democracy, protection of human rights, equality) as fundamental and highly representative of the European project: 78%.

Table A.2
Misperceptions in T1 (COVID-19).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Female	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
Tertiary education	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Gross household income	-0.01* (0.00)	-0.01** (0.00)	-0.00* (0.00)	-0.01* (0.00)	-0.01** (0.00)	-0.00 (0.00)	-0.01* (0.00)
Urban	0.01* (0.01)	0.01 (0.01)	0.01 (0.01)	0.01* (0.01)	0.01 (0.01)	0.01* (0.01)	0.01* (0.01)
EU identity		0.00 (0.00)					
Govt. response to COVID-19			-0.01*** (0.00)				
Political orientation				-0.00 (0.00)			
Migrants' effect on culture					0.00** (0.00)		
Economic effect of COVID-19						0.03*** (0.01)	
Migrants' effect on economy							0.00 (0.00)
Observations	6512	6512	6512	6512	6512	6512	6512
R ²	0.24	0.24	0.24	0.24	0.24	0.24	0.24

Notes: Linear regressions with country and date fixed effects. Dependent variable: Dummy that is one if respondent wrongly believed that per-capita COVID-19 death toll by July 1, 2020 in his/her country was higher than the EU average. Independent variables: Age; Female: dummy variable for being female; Tertiary education: dummy variable for having completed a tertiary education; Gross Household Income: Hh. Equalized Gross Income Quintile (July 2020); Urban: Living in a city with more than 100,000 inhabitants; EU identity: feel as a citizen of the EU from 0 (No, definitely not) to 10 (Yes, definitely); Govt. response to COVID-19: Satisfaction with how the government handled the COVID-19 pandemic (0: lowest, 10: highest level of satisfaction); Political Orientation: scale from 0–10 (0: left, 10: right); Migrants' effect on culture: culture undermined or enriched by migrants on a score of 0–10 (0: undermined, 10: enriched); Economic effect of COVID-19: dummy variable that is one if COVID-19 pandemic has economically affected household a great deal/a fair amount/just a little (omitted category: not at all); Migrants' effect on economy: migrants good or bad for the economy on a score of 0–10 (0: bad, 10 good).

Table A.3
Misperceptions in T2 (EU trade) and T3 (EU common values).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	T2	T3	T2	T3	T2	T3	T2	T3	T2	T3
Age	0.08*** (0.02)	0.13*** (0.02)	0.07*** (0.02)	0.12*** (0.02)	0.08*** (0.02)	0.13*** (0.02)	0.08*** (0.02)	0.14*** (0.02)	0.08*** (0.02)	0.14*** (0.02)
Female	2.81*** (0.53)	0.85 (0.61)	2.88*** (0.53)	0.77 (0.61)	2.83*** (0.53)	0.60 (0.61)	2.81*** (0.53)	0.60 (0.61)	2.89*** (0.53)	1.00 (0.61)
Tertiary education	1.83*** (0.55)	2.20*** (0.63)	1.70*** (0.55)	1.64*** (0.62)	1.83*** (0.55)	2.15*** (0.63)	1.75*** (0.55)	1.57** (0.63)	1.72*** (0.55)	1.66*** (0.63)
Gross household income	0.04 (0.19)	2.00*** (0.22)	−0.02 (0.19)	1.73*** (0.22)	0.04 (0.19)	2.05*** (0.22)	0.02 (0.19)	1.91*** (0.22)	0.00 (0.19)	1.84*** (0.22)
Urban	−0.38 (0.54)	−0.50 (0.62)	−0.49 (0.54)	−0.73 (0.61)	−0.38 (0.54)	−0.62 (0.61)	−0.43 (0.54)	−0.75 (0.61)	−0.46 (0.54)	−0.69 (0.61)
EU identity			0.33*** (0.09)	1.45*** (0.11)						
Political orientation					0.06 (0.11)	−0.81*** (0.12)				
Migrants' effect on culture							0.14 (0.09)	1.02*** (0.10)		
Migrants' effect on economy									0.23** (0.10)	1.19*** (0.11)
Observations	6353	6468	6353	6468	6353	6468	6353	6468	6353	6468
R ²	0.14	0.05	0.14	0.07	0.14	0.05	0.14	0.06	0.14	0.06

Notes: Linear regressions with country and date fixed effects. Dependent variable: Initial beliefs in T2 and T3 (scale from 0–100). Independent variables: Age; Female: dummy variable for being female; Tertiary education: dummy variable for having completed a tertiary education; Gross Household Income: Hh. Equivalized Gross Income Quintile (July 2020); Urban: Living in a city with more than 100,000 inhabitants; EU identity: feel as a citizen of the EU from 0 (No, definitely not) to 10 (Yes, definitely); Political Orientation: scale from 0–10 (0: left, 10: right); Migrants' effect on culture: culture undermined or enriched by migrants on a score of 0–10 (0: undermined, 10: enriched); Migrants' effect on economy: migrants good or bad for the economy on a score of 0–10 (0: bad, 10 good).

Table A.4
Balance table.

	(1) T1: Covid Mean/SE	(2) T2: EU trade Mean/SE	(3) T3: EU common values Mean/SE	(4) Control Mean/SE
Age	43.218 (0.175)	42.977 (0.176)	43.074 (0.176)	42.746 (0.176)
Female	0.543 (0.006)	0.548 (0.006)	0.551 (0.006)	0.538 (0.006)
Other gender	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)
Secondary education	0.486 (0.006)	0.484 (0.006)	0.481 (0.006)	0.485 (0.006)
Tertiary education	0.452 (0.006)	0.450 (0.006)	0.457 (0.006)	0.453 (0.006)
Single	0.369 (0.006)	0.380 (0.006)	0.379 (0.006)	0.388 (0.006)
N° adults above 65 in the household	0.268 (0.008)	0.261 (0.008)	0.268 (0.008)	0.262 (0.008)
N° adults below 65 in the household	1.969 (0.013)	2.012 (0.013)	1.995 (0.013)	2.000 (0.013)
N° children in the household	0.466 (0.010)	0.469 (0.011)	0.452 (0.010)	0.471 (0.010)
Hh. Equivalized gross income quintile (Feb. 2020)	1.967 (0.017)	1.921 (0.018)	1.958 (0.018)	1.939 (0.018)
Hh. Equivalized gross income quintile (July 2020)	1.953 (0.017)	1.908 (0.018)	1.955 (0.018)	1.923 (0.018)
EU identity	5.553 (0.036)	5.557 (0.036)	5.598 (0.036)	5.537 (0.036)
Economic effect of COVID-19	2.211 (0.012)	2.220 (0.012)	2.197 (0.012)	2.196 (0.012)
Satisfaction with government response to COVID-19	5.770 (0.035)	5.730 (0.035)	5.801 (0.034)	5.797 (0.035)
Migrants' effect on culture	5.177 (0.037)	5.212 (0.037)	5.218 (0.037)	5.268 (0.037)
Migrants' effect on economy	5.178 (0.033)	5.191 (0.033)	5.149 (0.033)	5.200 (0.033)
Time to complete the survey	22.059 (0.179)	21.405 (0.171)	21.894 (0.186)	21.955 (0.193)
N	6512	6353	6468	6387

Notes: The table shows mean values and their standard errors of the variables included in the control vector or used for heterogeneity analysis as well as the mean time to complete the survey for the three treatment groups and the control group. 'Female' ('Other gender') denotes the share of women (respondents who neither identify as men or women) in the sample. 'Secondary education' ('Tertiary education') denotes the share of respondents whose highest completed level of education is secondary (tertiary). 'Single' denotes the share of respondents who are not married (either never married, widowed, separated, or divorced). 'EU identity' is elicited by the question "To what extent do you feel you are a citizen of the EU? On a scale from 0 (No, definitely not) to 10 (Yes, definitely), select the value that best reflects your feelings." 'Economic effect of COVID-19' is elicited by the question "How much, if at all, has the Covid-19 pandemic economically affected your household in comparison with the situation in end of February 2020? 1 - A great deal. 2 - A fair amount. 3 - Just a little. 4 - Not at all." 'Satisfaction with government response to COVID-19' is elicited by the question "How satisfied are you with how the government of [respondent's country] handled the COVID-19 pandemic on a scale from 0 to 10 (0 being the lowest and 10 being the highest)?" 'Migrants' effect on culture' is elicited by the question "Would you say that [country]'s culture is generally undermined or enriched by people coming to live here from other countries? Please tell me on a score of 0–10 (0 means culture undermined, and 10 means culture enriched)" 'Migrants' effect on economy' elicited by the question "Would you say it is generally bad or good for [country]'s economy that people come to live here from other countries? Please tell me on a score of 0–10 (0 means bad for the economy, and 10 means good for the economy)." 'Time to complete the survey' is measured in minutes.

Table A.5
Balancing tests.

	Δ T1 – Control Diff./SE	Δ T2 – Control Diff./SE	Δ T3 – Control Diff./SE
Age	0.4725 (0.2488)	0.2316 (0.2494)	0.3277 (0.2495)
Female	0.0050 (0.0088)	0.0093 (0.0088)	0.0130 (0.0088)
Other gender	0.0003 (0.0005)	0.0006 (0.0006)	–0.0000 (0.0005)
Secondary education	0.0008 (0.0088)	–0.0013 (0.0089)	–0.0044 (0.0088)
Tertiary education	–0.0015 (0.0088)	–0.0031 (0.0088)	0.0042 (0.0088)
Single	–0.0196** (0.0085)	–0.0082 (0.0086)	–0.0087 (0.0086)
N° adults above 65 in the household	0.0054 (0.0116)	–0.0008 (0.0116)	0.0061 (0.0114)
N° adults below 65 in the household	–0.0310* (0.0183)	0.0124 (0.0187)	–0.0049 (0.0185)
N° children in the household	–0.0052 (0.0145)	–0.0019 (0.0148)	–0.0194 (0.0143)
Hh. Equivalized gross income quintile (Feb. 2020)	0.0285 (0.0248)	–0.0176 (0.0250)	0.0195 (0.0250)
Hh. Equivalized gross income quintile (July 2020)	0.0308 (0.0248)	–0.0146 (0.0250)	0.0328 (0.0249)
EU identity	0.0163 (0.0513)	0.0203 (0.0510)	0.0618 (0.0509)
Economic effect of COVID-19	0.0142 (0.0169)	0.0232 (0.0170)	0.0005 (0.0168)
Satisfaction with government response to COVID-19	–0.0267 (0.0489)	–0.0670 (0.0494)	0.0044 (0.0488)
Migrants' effect on culture	–0.0907* (0.0520)	–0.0555 (0.0520)	–0.0500 (0.0521)
Migrants' effect on economy	–0.0218 (0.0471)	–0.0082 (0.0473)	–0.0507 (0.0471)
Time to complete the survey	0.1040 (0.2632)	–0.5504** (0.2574)	–0.0612 (0.2680)

Notes: The table shows the difference in mean values of key socio-demographic characteristics as well as the mean time to complete the survey between the respective treatment group and the control group as well as standard errors. 'Female' ('Other gender') denotes the share of women (respondents who neither identify as men or women) in the sample. 'Secondary education' ('Tertiary education') denotes the share of respondents whose highest completed level of education is secondary (tertiary). 'Single' denotes the share of respondents who are not married (either never married, widowed, separated, or divorced). 'EU identity' is elicited by the question "To what extent do you feel you are a citizen of the EU? On a scale from 0 (No, definitely not) to 10 (Yes, definitely), select the value that best reflects your feelings." 'Economic effect of COVID-19' is elicited by the question "How much, if at all, has the Covid-19 pandemic economically affected your household in comparison with the situation in end of February 2020? 1 - A great deal. 2 - A fair amount. 3 - Just a little. 4 - Not at all." 'Satisfaction with government response to COVID-19' is elicited by the question "How satisfied are you with how the government of [respondent's country] handled the COVID-19 pandemic on a scale from 0 to 10 (0 being the lowest and 10 being the highest)?" 'Migrants' effect on culture' is elicited by the question "Would you say that [country]'s culture is generally undermined or enriched by people coming to live here from other countries? Please tell me on a score of 0–10 (0 means culture undermined, and 10 means culture enriched)." 'Migrants' effect on economy' elicited by the question "Would you say it is generally bad or good for [country]'s economy that people come to live here from other countries? Please tell me on a score of 0–10 (0 means bad for the economy, and 10 means good for the economy)." 'Time to complete the survey' is measured in minutes. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.6
Trust game: Descriptive statistics player A.

	T1: COVID-19	T2: EU trade	T3: EU common values	Control	Total
Own country	59.1%	59.7%	59.2%	59.1%	59.3%
EU country	59.4%	59.2%	59.0%	59.2%	59.2%
Non-EU country	59.1%	60.6%	59.6%	59.4%	59.7%

Notes: The table reports the share of respondents in the three treatment groups (T1–T3) and the control group who have selected option A1 as Player A in the Trust game, depending on whether the fellow player is from their own country, another EU country or from a non-EU country. By choosing option A1, Player A allocated 50 points to themselves and 50 points to Player B.

Table A.7

Trust game: Descriptive statistics player B.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	T1: Covid Mean/SD	T2: EU trade Mean/SD	T3: EU common values Mean/SD	Control Mean/SD	Total Mean/SD	T-test Difference		
						(4)-(1)	(4)-(2)	(4)-(3)
(1) Own country	87.258 (35.070)	86.259 (33.771)	87.379 (33.350)	85.142 (34.257)	86.516 (34.131)	-2.116***	-1.118*	-2.237***
(2) EU country	85.883 (35.080)	84.948 (34.048)	86.237 (33.357)	84.788 (33.774)	85.469 (34.077)	-1.095*	-0.160	-1.448**
(3) Non EU country	85.211 (35.730)	83.788 (34.634)	84.700 (34.212)	83.877 (34.735)	84.400 (34.838)	-1.335**	0.088	-0.823
T-test difference								
(4): (1) - (2)	1.375**	1.311**	1.142*	0.354				
(5): (1) - (3)	2.047***	2.471***	2.679***	1.265**				
(6): (2) - (3)	0.672	1.160*	1.537***	0.911				
N	6512	6353	6468	6387	25720			

Notes: The table reports the average number of points and its standard deviation respondents in the three treatment groups (T1–T3) and the control group have returned to the sender (Player A) as Player B in the Trust game, depending on whether the fellow player is from their own country, another EU country or from a non-EU country. The table also reports t-tests of the differences between the three treatment groups and the control group (columns 6–8), respectively, as well as of the differences within treatment groups (rows 4–6). Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8

Dictator game: Descriptive statistics player A.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	T1: Covid Mean/SD	T2: EU trade Mean/SD	T3: EU common values Mean/SD	Control Mean/SD	Total Mean/SD	T-test Difference		
						(4)-(1)	(4)-(2)	(4)-(3)
(1) Own country	106.551 (47.936)	103.416 (46.426)	105.821 (45.137)	103.567 (46.509)	104.852 (46.533)	-2.984***	0.151	-2.254***
(2) EU country	102.397 (47.599)	99.999 (45.332)	102.161 (43.998)	99.552 (45.886)	101.039 (45.741)	-2.845***	-0.448	-2.610***
(3) Non EU country	99.559 (48.570)	96.360 (46.476)	98.849 (46.110)	97.794 (47.331)	98.152 (47.149)	-1.765**	1.434*	-1.055
T-test difference								
(4): (1) - (2)	4.154***	6.992***	2.838***	4.015***				
(5): (1) - (3)	3.417***	7.056***	3.639***	5.773***				
(6): (2) - (3)	3.660***	6.972***	3.312***	1.758**				
N	6512	6353	6468	6387	25720			

Notes: The table reports the average number of points and its standard deviation respondents in the three treatment groups (T1–T3) and the control group have sent to the receiver (Player B) as Player A in the Dictator game, depending on whether the fellow player is from their own country, another EU country or from a non-EU country. The table also reports t-tests of the differences between the three treatment groups and the control group (columns 6–8), respectively, as well as of the differences within treatment groups (rows 4–6). Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.9

Average treatment effects: Trust, Reciprocity, Altruism.

	Outcome: Trust			Outcome: Reciprocity			Outcome: Altruism		
	Own country	EU	Non EU	Own country	EU	Non EU	Own country	EU	Non EU
T1: COVID-19	-0.0006	-0.0020	0.0033	2.1161***	1.0945	1.3347	2.9837***	2.8452**	1.7647
Unadjusted p-value	(0.9377)	(0.8163)	(0.6990)	(0.0003)	(0.0730)	(0.0350)	(0.0003)	(0.0020)	(0.0413)
Adjusted p-value	(0.9377)	(0.9610)	(0.9583)	(0.0003)	(0.2327)	(0.1673)	(0.0003)	(0.0113)	(0.1680)
T2: EU trade	-0.0066	0.0008	-0.0118	1.1179	0.1596	-0.0885	-0.1506	0.4476	-1.4337
Unadjusted p-value	(0.4533)	(0.9303)	(0.1640)	(0.0607)	(0.7777)	(0.8800)	(0.8580)	(0.5740)	(0.0843)
Adjusted p-value	(0.9583)	(0.9303)	(0.6423)	(0.3493)	(0.9973)	(0.9853)	(0.9967)	(0.9793)	(0.4230)
T3: EU common values	-0.0010	0.0022	-0.0018	2.2374***	1.4484*	0.8231	2.2540**	2.6095***	1.0553
Unadjusted p-value	(0.9167)	(0.8020)	(0.8327)	(0.0007)	(0.0173)	(0.1760)	(0.0057)	(0.0007)	(0.1927)
Adjusted p-value	(0.9167)	(0.9867)	(0.9677)	(0.0027)	(0.0833)	(0.5680)	(0.0327)	(0.0027)	(0.5297)
Observations	25720	25720	25720	25720	25720	25720	25720	25720	25720
Outcome mean (in control):	0.409	0.408	0.406	85.142	84.788	83.877	103.567	99.552	97.794

Notes: The table reports average treatment effects of T1–T3 on our outcome variables based on Eq. (1) in Section 2.6, but without control variables. Outcome mean (in control group): Share of respondents choosing option A2 in the Trust game (Outcome: Trust), Number of points returned as Player B to Player A in the Trust game (Outcome: Reciprocity), Number of points sent as Player A to Player B in the Dictator game (Outcome: Altruism). Unadjusted and adjusted p-values in parentheses. The adjusted p-values account for multiple hypothesis testing according to List et al. (2019), stars represent significance levels according to adjusted p-values, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.10
Average treatment effects: Trust (Logit).

	Own country	EU	Non EU
T1: COVID-19	1.000 (0.036)	0.995 (0.036)	1.019 (0.037)
T2: EU trade	0.978 (0.036)	1.010 (0.037)	0.957 (0.035)
T3: EU common values	1.003 (0.036)	1.015 (0.037)	0.998 (0.036)
Observations	25 720	25 720	25 720
Fixed effects:	Country & date		

Notes: The table reports average treatment effects of T1–T3 on trust based on a logit model. The table displays odds ratios. Robust standard errors are in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls: age, gender, marital status, education level, equalized household gross income in February/July 2020, time to complete survey, total number of children and adults younger/older than 65 in the household.

Table A.11
Sample split regressions for T2 (EU trade).

	Outcome: Trust			Outcome: Reciprocity			Outcome: Altruism		
	Own country	EU	Non EU	Own country	EU	Non EU	Own country	EU	Non EU
T2: EU trade									
Tertiary education (N = 5755)	–0.0006	–0.0085	–0.0126	0.2159	–0.5421	–0.4997	–1.0097	–1.2637	–2.3293
<i>Unadjusted p-value</i>	(0.9600)	(0.5290)	(0.3487)	(0.8040)	(0.5473)	(0.5757)	(0.4043)	(0.2743)	(0.0607)
<i>Adjusted p-value</i>	(0.9600)	(0.9583)	(0.9087)	(0.9590)	(0.9307)	(0.9030)	(0.9293)	(0.8603)	(0.3500)
Elementary/Secondary education (N = 6985)	–0.0108	0.0103	–0.0095	1.8405	0.6980	0.2654	0.2786	1.5684	–0.9518
<i>Unadjusted p-value</i>	(0.3580)	(0.3797)	(0.4050)	(0.0253)	(0.4050)	(0.7527)	(0.8177)	(0.1503)	(0.3970)
<i>Adjusted p-value</i>	(0.9283)	(0.9170)	(0.8543)	(0.1640)	(0.7553)	(0.9327)	(0.8177)	(0.6367)	(0.8930)
Culture enriched (N = 5887)	–0.0184	–0.0006	–0.0119	–0.5810	–1.0739	0.7016	–1.6528	–1.1280	–3.1313*
<i>Unadjusted p-value</i>	(0.1433)	(0.9667)	(0.3547)	(0.4843)	(0.1990)	(0.4100)	(0.1623)	(0.3307)	(0.0090)
<i>Adjusted p-value</i>	(0.6063)	(0.9667)	(0.7767)	(0.7290)	(0.6553)	(0.7567)	(0.6170)	(0.8283)	(0.0657)
Culture undermined/Not affected (N = 6853)	0.0065	0.0063	–0.0080	2.6653**	1.2432	–0.5846	1.0083	1.6834	–0.0270
<i>Unadjusted p-value</i>	(0.5800)	(0.5947)	(0.4813)	(0.0040)	(0.1447)	(0.4963)	(0.4037)	(0.1440)	(0.9783)
<i>Adjusted p-value</i>	(0.9187)	(0.8310)	(0.9510)	(0.0277)	(0.5857)	(0.9263)	(0.9327)	(0.6153)	(0.9783)
EU citizen (N = 4927)	–0.0083	0.0112	–0.0169	0.1854	–0.8754	0.9185	–0.5152	–0.2874	–2.0633
<i>Unadjusted p-value</i>	(0.5540)	(0.4387)	(0.2273)	(0.8480)	(0.3563)	(0.3493)	(0.6773)	(0.8170)	(0.1163)
<i>Adjusted p-value</i>	(0.9393)	(0.9207)	(0.7963)	(0.8480)	(0.8873)	(0.9103)	(0.9533)	(0.9667)	(0.5690)
Neutral (N = 4805)	–0.0069	–0.0091	–0.0151	1.2328	0.6863	–0.5384	–0.7240	–0.7215	–1.7765
<i>Unadjusted p-value</i>	(0.6360)	(0.5180)	(0.2613)	(0.2053)	(0.4877)	(0.5793)	(0.5910)	(0.5777)	(0.2070)
<i>Adjusted p-value</i>	(0.6360)	(0.9570)	(0.8280)	(0.7957)	(0.9650)	(0.9183)	(0.8317)	(0.9557)	(0.7687)
Not EU citizen (N = 3008)	0.0037	0.0074	0.0066	2.2011	0.6447	–1.1762	0.6334	2.9838	–0.5466
<i>Unadjusted p-value</i>	(0.8443)	(0.6847)	(0.7117)	(0.0960)	(0.6263)	(0.3837)	(0.7220)	(0.0833)	(0.7750)
<i>Adjusted p-value</i>	(0.8443)	(0.9947)	(0.9903)	(0.4793)	(0.9957)	(0.9483)	(0.9747)	(0.4517)	(0.9523)

Notes: The table reports average treatment effects of T2 on our outcome variables based on sample split regressions according to Eq. (1) in Section 2.6. Controls: age, gender, marital status, education level, equalized household gross income in February/July 2020, time to complete survey, total number of children and adults younger/older than 65 in the household, in addition to country and date fixed effects. Unadjusted and adjusted p-values in parentheses. The adjusted p-values account for multiple hypothesis testing according to Barsbai et al. (2024), stars represent significance levels according to adjusted p-values, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Individual-level sample splits based on the following survey question: 1. *What is your highest completed level of education?* a. *Elementary (up to 8 years of basic education)*, b. *Secondary (9 to 15 years of education)*, c. *Tertiary (completed four years of education beyond “high school” and/or received a four-year college degree or more)*. 2. *Would you say that [country]’s culture is generally undermined or enriched by people coming to live here from other countries? Please tell me on a score of 0–10 (0 means culture undermined, and 10 means culture enriched)*. Culture Enriched: 6–10, Culture Undermined/Not Affected: 0–5. 3. *To what extent do you feel you are a citizen of the EU? On a scale from 0 (No, definitely not) to 10 (Yes, definitely), select the value that best reflects your feelings*. EU Citizen: 7–10, Neutral: 4–6, Not EU Citizen: 0–3.

Table A.12

Average treatment effects on attitudinal variables used in heterogeneity analysis.

	EU identity	Econ. eff.	Gov. sat.	Migr. cult.	Migr. econ.
T1: COVID-19	0.0137 (0.0488)	-0.0211 (0.0155)	-0.0374 (0.0468)	-0.0776 (0.0506)	-0.0111 (0.0456)
T2: EU trade	0.0234 (0.0491)	-0.0190 (0.0156)	-0.0686 (0.0471)	-0.0405 (0.0509)	0.0116 (0.0459)
T3: EU common values	0.0463 (0.0488)	-0.00568 (0.0155)	-0.00686 (0.0469)	-0.0524 (0.0507)	-0.0522 (0.0457)
Observations	25,720	25,720	25,720	25,720	25,720
R-squared	0.084	0.163	0.092	0.056	0.065
Fixed effects:	Country & date				

Notes: The table reports average treatment effects of T1–T3 on the attitudinal variables used in our heterogeneity analysis (EU identity, economic consequences of COVID-19 for respondent's household, satisfaction with government handling of COVID-19 and attitudes towards migrants (effect on culture and economy)) based on Eq. (1) in Section 2.6. Robust standard errors are in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls: age, gender, marital status, education level, equivalized household gross income in February/July 2020, time to complete survey, total number of children and adults younger/older than 65 in the household.

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