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Keywords:
Social preferences, Trust, Trustworthiness, Pandemic, COVID-19, Social distancing

JEL codes:
C92, D91, I18

Working Paper

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Fortuna Casoria† Fabio Galeotti‡ Marie Claire Villeval‡

February 6, 2023

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> "In seasons of public calamity, when confusion takes the place of order, we often behold a display of the sublimest virtue, but more frequently, alas! an increase of vice and crime."
>
> A. Manzoni, *The Betrothed*

1 Introduction

Trust and social preferences have been shown to be fundamental to the proper functioning of economies and societies. A large body of evidence suggests that they play a crucial role in making cooperation achievable and collective actions successful, favoring economic growth (*e.g.*, Fehr and Fischbacher [2002], Ostrom [2009], Algan and Cahuc [2010]). It is therefore important to know whether the ability to trust and reciprocate others' trust is an immutable property of individuals or whether it can change according to the circumstances. Similarly, are social preferences stable traits (as traditionally considered by economic theory, see, *e.g.*, Stigler and Becker [1977]) or are they malleable? The responses to these questions condition the ability of policy interventions to model preferences in the society. Unfortunately, it is difficult to answer such questions in a natural environment because of serious endogeneity issues. They can be addressed in laboratory experiments, but this typically raises concerns about the external validity of the results.

From this perspective, the exogenous shock represented by the occurrence of the COVID-19 pandemic in 2020 has provided a unique opportunity to address these questions in a more universally accepted way. Indeed, the imposition by governments of strict and long-lasting social distancing rules to mitigate contagion on their whole population and the overwhelming compliance of citizens with these rules constitute a natural experiment particularly well-suited to identify the malleability of trust, trustworthiness, and social preferences.

Previous research has already exploited the occurrence of acute crises to study the malleability of preferences (for a survey of experimental evidence, see Chuang and Schechter [2015]). In economics, the evidence comes mainly from studies of the impact of intergroup conflicts (such as wars or inter-ethnic conflicts) or major environmental shocks (like earthquakes, floods, or hurricanes).[1] The COVID-19 crisis, however, presents features that make it different from war and natural disaster situations; in particular, the imposition of strict lockdowns of the whole population for several weeks.

[1] For instance, higher levels of altruism have been found after the 9/11 terrorist attacks in the US (Kamas et al. [2005]) and after inter-ethnic conflicts in Burundi (Voors et al. [2012]). Choi and Bowles [2007] have shown the co-evolution of parochial altruism and exposure to wars. Gneezy and Fessler [2012] found that both positive and negative reciprocity increased during the 2006 Israeli-Palestinian conflict, and Bauer et al. [2014] showed that egalitarianism among people belonging to the same group increased after exposure to wars. Similarly, Eckel et al. [2007] found higher donations after the hurricane Katrina, and Cassar et al. [2017] reported an increase in trust after a tsunami in Thailand, whereas Fleming et al. [2014] identified no effect of an earthquake in Chile on trust but a reduced trustworthiness.

In this study, we analyzed whether the social distancing rules implemented at the beginning of the pandemic affected social preferences, and the willingness to trust others and to reciprocate others' trust. The consequences of such measures were difficult to anticipate. On the one hand, by requiring individuals to stay home and avoid contacts with others, the lockdowns have disrupted the lives of millions of people. This could have weakened cohesiveness in a community by feeding suspicion and a sense of distrust (since others are a source of contamination) and a need to take care of oneself, thereby promoting withdrawal and individualism. On the other hand, the world has seen instances of solidarity, expressions of gratefulness toward "essential workers", and people joining forces to support each other and guarantee access to consumption and health care. The fact that all countries and socio-economic categories have been harmed by the virus, even if to different extents, might have generated a feeling of common fate that mitigated the potential negative effects of physical distancing. Moreover, we know from psychological studies that existential threats or mortality reminders tend to strengthen prosociality (see, *e.g.*, Zaleskiewicz et al. [2015]).

Several studies were conducted during the pandemic to investigate its impact on social preferences. Their results are mixed, probably due to a multiplicity of factors: the approaches used (surveys, incentivized and non-incentivized tasks), the samples involved (students or general population), the time period covered (data collected before and after the outbreak of COVID-19, or only after), the number of waves of observation, the countries in which studies have been conducted.

Among studies finding a positive effect of the health crisis on social preferences, Shachat et al. [2021] elicited measures for inter-individual trust, altruism and cooperation in a sample of students from Wuhan in China, both before and over a period of six weeks during the crisis. While they reported a decrease in trust in the immediate aftermath of the lockdown, their results suggest a general, long-term increase in prosociality. Using an online experiment also in China, Li et al. [2022] reported a positive correlation between trust and trustworthiness and the prevalence rate of the virus. Cappelen et al. [2021] found that making the COVID-19 crisis salient increased stated attitudes towards solidarity of US citizens. Conducting an online experiment in the US and Italy, Grimalda et al. [2021] estimated that greater exposure to the pandemic was associated with greater parochial altruism toward a charity. Embedding an experiment in a three-wave panel survey in Italy, Gambetta and Moris [2022] concluded that trust increased within individuals who caught COVID-19 and those who were primed about the risk that the pandemic poses to their health. Using non-incentivized cross-sectional survey measures from MTurkers in the US, Alsharawy et al. [2021] found a positive relationship between the fear of the virus and altruism, and a negative relationship with negative reciprocity. Using a two-wave web-survey panel in Sweden, Esaiasson et al. [2021] estimated a positive effect of the pandemic on both institutional and individual trust. Surveying a sample of individuals from the Longitudinal Internet Studies for the Social Sciences panel in the Netherlands,

Oude Groeniger et al. [2021] estimated that the imposition of the lockdown in March 2020 induced a 18% increase in trust in government.

In contrast, in a sample of Spanish citizens observed during the initial phase of the crisis, Brañas-Garza et al. [2022] found that generosity, measured by means of charitable donations, decreased with the degree of exposure to the crisis. Buso et al. [2020] found in a sample of Italian students that the selfishness of the proposers in ultimatum games increased with the severity of the lockdown. An online experiment run in China observed an overall reduction in trust (Li et al. [2021]). Other studies found almost no change in preferences. Using experimental panel data from students in China and exploiting geographical variations in exposition to the virus, Lohmann et al. [2023] found that a higher exposure was associated with more anti-social behavior but it did not change trust or prosociality. Experiments involving a large non-laboratory population sample in the Netherlands before the pandemic and during two lockdowns concluded that individual and social preferences were stable during both the first and the second lockdown (Bokern et al. [2021]).

The previous studies conducted during the pandemic have some limitations. In particular, some studies collected non-incentivized measures and they used cross sectional data. When using panel data with the same individuals, none controlled for repetition effects, which cannot exclude possible confounding effects. Moreover, by focusing on relatively large periods of observation in which compliance with social distancing rules may have varied, endogeneity issues could not always be avoided.[2] Our study avoids these limitations by providing several repeated observations of the same individuals during the first imposed lockdown in 2020 in France, before the vaccination against the virus was developed, and with a control for capturing the effect of repetition of the observations. The massive compliance of the population with the rules imposed during the lockdown limits the risk of endogeneity between social preferences and the restrictions of social interactions.

Precisely, using the opportunity of the shock in social relationships created by the introduction and abrogation of a nationwide lockdown at the beginning of the COVID-19 pandemic, we conducted a longitudinal online incentivized experiment in France for a period of three months. The experiment was launched in the same week as the first lockdown, in March 2020, and ended a few weeks after its removal, in June 2020. Participants were invited from our regular experimental subject-pool. Every week, they completed a Social

[2]Indeed, people differed in their willingness to follow the rules (Allcott et al. [2020]) and a link has been established between social preferences and people's willingness to adopt preventive behaviors to contain the further spread of the virus. It has been shown that people living in areas with high levels of trust decreased their mobility significantly more than those living in areas with lower levels of trust (Bargain and Aminjonov [2020], Brodeur et al. [2021]). Campos-Mercade et al. [2021] provided evidence that more prosocial individuals, in terms of unwillingness to expose others to risks for own profit, were more likely to comply with social distancing measures. Dinic and Bodroza [2021] found a positive correlation between prosociality and health behaviors during the pandemic. Galdikiene1 et al. [2022] found that trust in government authorities, science, and pharmaceutical companies were important predictors of individuals' intention to get vaccinated (see also Bird et al. [2023] for evidence from South America).

Value Orientation task (to measure other-regarding concern), a trust game (to measure trust and trustworthiness), and a questionnaire (to get information on participants' mood, health and behavior).

To disentangle the effects of the lockdown from the learning effects that may arise due to the repetition of the same tasks, we also implemented a Control treatment a few months after the main "Long" treatment. The Control treatment differed from the main one in that participants played the experimental tasks for a number of periods one after the other, where each period corresponded to one session of the main treatment.

Our main results show that the experience of a long and unprecedented nationwide lockdown did not shift participants' prosocial preferences or trustworthiness. Both remained quite stable during the whole period under study. The absence of differences in these measures between the Long and the Control treatments suggests that the slightly negative time trend that we observed for both measures is largely due to repetition effects. In contrast, social distancing during the lockdown had an immediate negative effect on trust, which dropped right after the implementation of the confinement measures and remained at relative lower levels til after the lifting of such measures. However, nine months after the beginning of the study, the level of trust fully recovered to its initial levels.

We explored potential mechanisms behind this temporary, yet substantial, decrease of trust during the lockdown. The analysis suggests that the effect of the lockdown on the deterioration of trust over time was driven by those individuals who experienced financial hardship (*i.e.*, a drop in their income) during the lockdown, and by those who had less interactions with other people outside their own home. Individuals' general health condition, instead, does not explain the decline of trust, except for people who felt more anxious during the lockdown.

These findings tend to corroborate previous claims stating that social preferences are rather stable traits of individuals. In contrast, they reveal that trust is more fragile than distributional preferences. Since we found that this was especially the case for individuals who were more financially and socially deprived due to the pandemic, this highlights the crucial importance of implementing public policies protecting individuals' financial and mental integrity in times of acute (health but probably not only) crises.

The remaining of the paper is organized as follows. In Section 2, we describe the experimental design and procedures. Section 3 presents the results, and Section 4 concludes.

2 Experimental design and procedures

We conducted the experiment online with participants recruited within the GATE-LAB subject pool (Lyon, France).[3] The "Long" treatment was run from March 18 (immediately after the introduction of the social distancing measures) until June 24, 2020 (few weeks

[3]The experimental protocol was approved by the CEEI of INSERM (IRB IRB00003888) and registered at the DPO of CNRS for conformity with the European GDPR.

after the lifting of these measures).[4] Every week (for 15 weeks) the same participants completed a Social Value Orientation (SVO) task (Murphy et al. [2011]), a trust game (Berg et al. [1995]), and a questionnaire including a norm-elicitation task (Krupka and Weber [2013]).[5] The detailed instructions and the full questionnaire can be found in Appendix A.

Social Value Orientation task We used the SVO task to measure subjects' pro-sociality. Participants faced six successive decisions, each consisting in choosing how to allocate experimental currency units (ECU) between themselves and another anonymous participant to the experiment (with each ECU converted into €0.1 at the end of the whole experiment for payment). Figure A1 in the Appendix B reproduces the first decision. Here, one option offered an equal split (85 ECUs to each person), while the other eight options gave 85 ECUs to the decision maker and a decreasing amount of ECUs to the other person (from 76 to 15 ECUs). The other five decisions had a similar structure. From these six decisions, we constructed, for each participant, a SVO score expressed in terms of an angle, with a positive (negative) angle indicating a positive (negative) concern for the other's payoff.[6] An angle close to 0° corresponds to narrow self-interest. Hence, the SVO angle reflects the level of pro-sociality of an individual.

Trust game We used a trust game to measure subjects' trust and reciprocity. As trustors, participants received 10 ECU (with 1 ECU, this time, equals to €1), and decided how many to send to the trustee (trust). This amount was multiplied by three, and transferred to the trustee. As trustees, participants decided how many ECUs to send back (reciprocity). Participants made both decisions without knowing their role (trustor or trustee) nor the decision of the counterpart in advance. Therefore, as trustees, they made a decision for each possible amount sent by the trustor (strategy method).

Final questionnaire In the final questionnaire, we asked participants to answer a number of questions about their feelings (*e.g.*, loneliness), their personal life (*e.g.*, compliance with social distancing practices), their perception of the health risk of COVID-19, and whether they had relatives and friends diagnosed with COVID-19. In the first session, we asked standard demographic questions, and in the last one, whether they had been diagnosed with COVID-19 during the study.

[4] On March 16, 2020, the French president Macron announced on television that a nation-wide lockdown would begin on March 17, 2020. The lockdown was maintained until May 11, 2020, except for few restrictions that remained until late June (*e.g.*, ban of gatherings with more than 10 people in public spaces, interdiction of travels exceeding 100 km from one's own residence).

[5] We analyzed the norm-elicitation task in a companion paper (Casoria et al. [2021]) where we studied the evolution of the social-distancing norm before and after a change in the law. In the norm-elicitation task, subjects indicated the social appropriateness of the behavior of a hypothetical person X who invited friends over for dinner. They earned money if they matched the answer given by the majority of the other participants.

[6] The SVO angle is equal to $\tan^{-1}(\frac{\bar{x}-50}{\bar{y}-50})$ where $\bar{x}$ is the mean allocation that an individual allocated to himself or herself and $\bar{y}$ is the mean allocation that (s)he allocated to the other person.

Payment rules At the end of the 15 weeks, as pre-announced, a random draw determined whether participants would be paid for their decisions either in the SVO task or in the trust game.[7] If the SVO was selected for payment, participants received the money that they allocated to themselves in one randomly drawn decision of a randomly drawn session. They also received the money from the randomly drawn decision of another participant in another randomly drawn session. For the trust game, we randomly selected one session, and matched participants in random pairs. Within each pair, one person was assigned the role of trustor, while the other the role of trustee. We then paid participants based on their decisions in their respective roles. A participant who had skipped the session randomly drawn for payment received €0 for that session. This was pre-announced and done to motivate participants to take part in all sessions. In addition, participants received a fixed payoff of €2 for each session they participated in. This means that, in the Long treatment, they could earn up to €30 as a fixed payoff.

Control treatment We complemented the Long treatment with a Control treatment to disentangle the effects of the lockdown from the learning effects that may arise due to the repetition of the same experimental tasks over time.[8] The Control treatment was identical to the Long one in terms of content, online procedures, and monetary incentives. The only difference was in that participants played the 15 periods after each other, where each period corresponded to one session of the Long treatment. Therefore, in each period of the Control treatment, participants completed the SVO task and the trust game. The final questionnaire was administered only at the end of the 15 periods.

Participants In the Long treatment, 447 participants took part in the first session, while 367 still engaged in the last session (82.10%). 228 subjects participated in all 15 sessions. Moreover, 319 participants took part in the Control treatment. In both treatments, subjects were 18 years old or older (Long: average age = 23.79, SD = 6.87; Control: average age = 23.61, SD = 6.06). Most of our participants were university students (Long: 84.35%; Control: 86.79%) from a wide range of disciplines. In both treatments, the majority of participants were females (Long: 62.13%; Control: 51.26%). We provide more details on the demographic characteristics of our subject pool in Tables A1 in Appendix C. Depending on the treatment, in the invitation email, we informed the participants that the study would consist of 15 weekly brief sessions (10 minutes on average, 15 minutes for the first session) or 15 periods (40 minutes overall). We pre-registered each treatment separately with AsPredicted (#37535 and #53977).

[7] Payment was made only at the end of the experiment to create an incentive for people to participate in as many sessions as possible, and to minimize transaction costs. To preserve the value of incentives in each game, it was therefore important to make credible this delayed payment. This is why we recruited our participants from our regular subject-pool.

[8] We conducted the Control treatment 25 weeks after the end of the Long treatment, just after a second nationwide lockdown, which ran in France from October 30 until December 14, 2020.

3 Results

In this section, we present the main results of our experiment. We first report on the results of the SVO task. We then analyze the data from the trust game. Lastly, we explore some possible mechanisms behind the observed effects. Throughout the section, we call a result significant if the p-value is below 0.05. We use the term "period" to identify both a session in the Long treatment and a period in the Control treatment.

3.1 SVO task

Panel 1a in Figure 1 shows the evolution of the average SVO angle over time for the Long and the Control treatments. In the Long treatment, we observe a slight decay in the level of pro-sociality that persisted after the abrogation of the lockdown. This pattern is indistinguishable from the one observed in the Control treatment. In particular, the difference between the Long and Control treatments is significant neither at the aggregate level (*i.e.*, if we pool all periods together; Mann–Whitney U (MW) test, $p = 0.978$) nor if we look at each period separately (MW tests, $p > 0.5$). These patterns suggest that the introduction and the experience of the lockdown did not affect our participants' preferences for prosocial behavior. The slightly negative trend observed in the Long treatment seems to be the result of learning and/or pressure due to the repetition of the tasks rather than the effect of the nationwide lockdown.

A regression analysis confirms this. Table 1 reports the results of two random-effects OLS regressions (Models (1) and (2)).[9] The dependent variable is the SVO angle of a participant in a given period. In Model (1), the predictors are a period variable, a dummy variable for the Control treatment, and an interaction term between these two variables. In Model (2), we also control for subjects' previous experience with economic experiments, their age and gender, whether they have an economics educational background, whether they are students, and whether their choices in the SVO task satisfy transitivity.[10]

The coefficient of the period variable is significant and negative, confirming the overall decreasing trend in pro-social behavior that we observe in Figure 1. Note, however, that the effect is very tiny: the SVO angle drops by only 0.08 in each period. This means that, at the end of the 15 periods, the overall reduction in the SVO angle is only of around 1.2°, a variation that would hardly affect the general predisposition of an individual toward pro-social behavior.[11] There are also no statistically significant differences in the overall

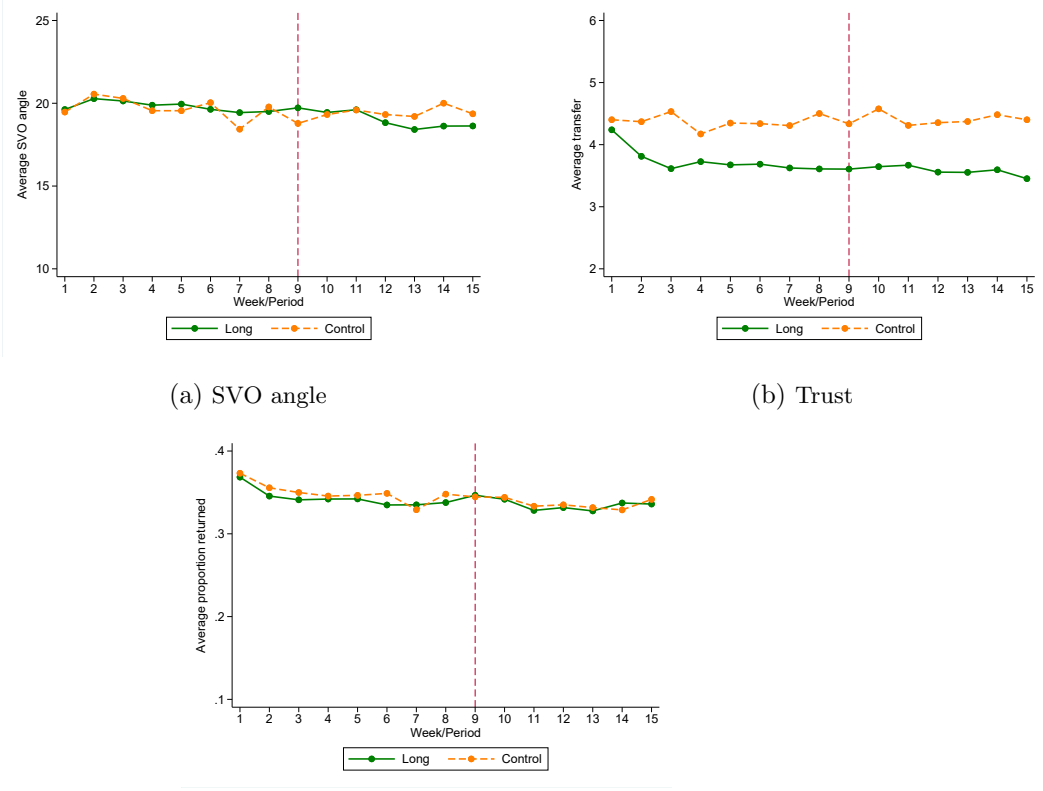
[9] For both models, we conduct a Breusch-Pagan Lagrange Multiplier test to determine whether random effects are significant. We reject the null hypothesis, and conclude that random effects are appropriate. Also, a Hausman specification test does not reject the null hypothesis that the random effects estimator is unbiased. Hence, we use random instead of fixed effects regressions.

[10] A participant who produces an intransitive set of responses in a given period signals random responding (Murphy et al. [2011]).

[11] From the SVO angle, we can classify subjects into types. An angle greater than 57.15° identifies altruists, an angle between 22.45° and 57.15° prosocial types, an angle between −12.04° and 22.45° individualists, and an angle smaller than −12.04° competitive types [Murphy et al., 2011]. Only the classification of subjects who are at the edge between two categories would be affected by the observed drop in the SVO

negative evolution of social preferences between the Long and the Control treatments (none of the treatment dummy and its interaction with the period variable are significant).[12]

Figure 1: Evolution of the SVO angle, trust, and trustworthiness over time, by treatment



(a) SVO angle

(b) Trust

(c) Trustworthiness

Note: In each panel, the dashed line indicates the first week after the lockdown.

The regression analysis also shows that more experienced participants, and participants with more transitive choices in the SVO task, tend to behave less pro-socially. Intransitive choices are probably the results of errors or confusion. From this perspective, our findings are in line with previous studies suggesting a positive relationship between kindness and confusion (see,*e.g.*, Andreoni [1995]).[13] Concerning experience, our results are consistent with previous research showing a negative correlation between the number of times a subject participated in previous experiments and pro-social behavior in allocation settings [Matthey and Regner, 2013].

We can report our first main result:

angle.

[12]Figure A2 in Appendix B displays the evolution over time of the different types that result from the SVO angles. The results are in line with those reported here. In particular, the proportion of individualists (pro-socials) slightly increased (decreased) over time. The evolution of these types is the same in the Long and Control treatments.

[13]Only 45.58% of the participants never made intransitive choices in the SVO task. Table A2 in Appendix C reports the same analysis as in Models (2), (4), and (6) in Table A3 after excluding the participants who made intransitive choices at least once. The previous results hold, except that the time trend in the SVO angle and in trustworthiness is no longer significant.

Result 1. *The experience of an unprecedented and nationwide lockdown did not affect our subjects' preferences for prosocial behavior in simple allocation decisions during the first wave of COVID-19.*

Table 1: Evolution of the SVO angle, trust, and trustworthiness over time

	SVO angle		Amount sent		Average proportion returned	
	(1)	(2)	(3)	(4)	(5)	(6)
Period	-0.08***	-0.08***	-0.05***	-0.04***	-0.002***	-0.001***
	(0.02)	(0.02)	(0.01)	(0.01)	(0.00)	(0.00)
Control	-0.39	-1.43	0.47	-0.43	0.00	-0.04*
	(0.96)	(0.94)	(0.35)	(0.40)	(0.02)	(0.02)
Period × Control	0.04	0.03	0.05***	0.04***	-0.00	-0.00
	(0.03)	(0.03)	(0.01)	(0.01)	(0.00)	(0.00)
Experience		-0.43***		-0.23***		-0.01***
		(0.08)		(0.04)		(0.00)
Age		0.16*		0.04		0.00
		(0.09)		(0.04)		(0.00)
Male		0.74		-0.06		-0.06***
		(0.86)		(0.37)		(0.02)
Economics		-0.13		-0.22		-0.01
		(0.93)		(0.40)		(0.02)
Student		-1.91		-0.95		-0.06
		(1.56)		(0.66)		(0.04)
Transitivity		-18.76***		-0.59		-0.17***
		(1.32)		(0.56)		(0.03)
SVO angle	-			0.02***		0.00***
				(0.00)		(0.00)
Constant	20.26***	34.47***	3.78***	5.27***	0.33***	0.52***
	(0.62)	(3.29)	(0.23)	(1.41)	(0.01)	(0.08)
Observations	10426	8895	10419	8892	10401	8877
Right-cens obs.	-	-	1460	1212	252	209
Left-cens obs.	-	-	1841	1550	1563	1358
Wald χ^2	22.76	322.49	44.29	136.38	45.13	249.26
Log-likelihood	-	-	-18411.7	-15681.039	3372.068	3122.122

$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Models (1) and (2) are random-effects OLS regressions. Models (3)-(6) are random-effects Tobit regressions. Standard errors are in parentheses. Demographic controls are age, gender (if a participant is male or not), education (if a participant studied economics or not), occupation (if a participant is a student or not), and number of participations in previous experiment (experience). We also control for transitivity (how often a participant produces a transitive set of responses in the SVO task across periods). In models (3-6), we also include the SVO angle among the explanatory variables. Control is a dummy variable that takes value 1 if the observation comes from the Control treatment, and 0 otherwise.

3.2 Trust game

We measure trust by the amount that a participant transfered to the trustee in the trust game. Trustworthiness is captured by the proportion of the money received (*i.e.*, three times the transfer made by the trustor) that a trustee returned to the trustor. Since our participants made a decision for each possible amount sent by the trustor, we measure trustworthiness by taking the average proportion sent back by a participant for each possible amount sent by the trustor.[14]

Panels 1b and 1c in Figure 1 show the evolution of trust and trustworthiness over time, respectively, in the Long and Control treatments. Like for the SVO angle, the level of trustworthiness slightly decreased over time, and it is statistically indistinguishable between Long and Control (MW tests, $p > 0.1$ both at the aggregate level and for each period).[15] Trust, on the other hand, does not seem to have evolved in the same way in the two treatments. In the Long treatment, we find a decreasing trend, which is particularly marked in the first periods after the lockdown. In the Control treatment, instead, trust remained stable and, with the only exception of the first period (MW, $p = 0.505$), it was always higher than in the Long treatment, both when we look at the aggregate data (MW, $p < 0.001$) and across periods (MW, $p < 0.05$).[16] These results suggest two things. First, trustworthiness was not affected by the pandemic. As for the SVO angle, the small downward trend observed in the data can be attributed to repetition effects. On the contrary, the lockdown measures had an immediate negative effect on trust, which persisted throughout the lockdown period and after the lifting of the restrictive public health measures. This effect is independent of the fact that the trusting decisions were repeated each week.

These results are confirmed by a regression analysis (see models (3) to (6) in Table 1). Given the nature of the dependent variables, we ran random-effects Tobit regressions.[17] In models (3) and (4), the dependent variable is the amount sent by a participant as a trustor. In Models (5) and (6), the dependent variable is the average proportion returned by a participant as a trustee. The independent variables are the same as those used earlier for the SVO angle, except that the latter is now included as a predictor in Models (4) and (6).

In all models, the coefficient of the period variable is negative and statistically significant, confirming the decay of both trust and trustworthiness over time in the Long treatment. The drop in trustworthiness is however negligible (the proportion returned

[14] We analyzed, separately, the level of trustworthiness for each possible amount received from the trustor. We also classified subjects into types depending on their behavior as trustees. The results are consistent with the results reported in the paper (see Figure A3 in Appendix B).

[15] On average, participants in the Long treatment returned 34.02% of the amount they received (34.37% in the Control treatment; MW test, $p = 0.714$).

[16] In period 4, the difference is only weakly significant (MW, $p = 0.068$). In the Long treatment, trustors sent, on average, 3.68 of their initial endowment of 10 ECU to the trustee, against 4.39 in the Control, that is, 19% less.

[17] Trust is censored between 0 and 10, while trustworthiness between 0 and 1.

drops by less than 0.002 in each period). In addition, the effect of Period is equivalent in the Control and Long treatments (the coefficients of both *Control* and *Period* × *Control* are not statistically significant). That is, trustworthiness barely responded to the repetition of the game, and it was unaffected by the lockdown.

A different picture is revealed for trust. First, the magnitude of the decay is more pronounced: the amount sent dropped, on average, by 0.04 ECU in each period of the Long treatment. This corresponds to an overall fall of 0.6 ECU at the end of the 15 periods, that is, a drop of 14.2% from the initial average level of trust observed in period 1. Second, trust dropped in the Long treatment but not in the Control treatment. This is captured by the coefficient of the interaction term between the Control and the Period variables, which is equal in size (Wald test, $p = 0.609$ and 0.944 in Models (3) and (4), respectively) but opposite in sign to the coefficient of the Period variable. This means that trust remained unaffected by repetition but rather deteriorated over time as a result of the spread of the pandemic and the introduction of the social distancing measures. Interestingly, trust was not restored nor decreased further after the lifting of the lockdown, but it remained stable at a lower level until the end of the Long treatment experiment.[18]

In periods 1 and 15, we also elicited the beliefs of the trustor regarding the trustworthiness of the trustee (after the trustor decided how much to send).[19] In period 1, trustors expected, on average, 5.19 ECU back from the trustees in Long, and 5.56 ECU in Control (MW test, $p = 0.541$). In period 15, they expected 3.98 ECU back in Long, and 5.39 in Control (MW test, $p = 0.003$). The trustors' beliefs significantly dropped from period 1 to 15 only in Long (Wilcoxon signed-rank tests, $p = 0.002$ in Long; $p = 0.762$ in Control). In both periods, the beliefs also strongly correlated with the trust decisions (Spearman's $\rho > 0.70$, $p < 0.001$ for each treatment and period). Hence, the decline of trust observed in Long was clearly associated with a deterioration in beliefs regarding others' trustworthiness.

If we look at the other covariates of Models (3-6), we find that – in line with previous literature on this subject (Benndorf et al. [2017]) – previous participation in economic experiments significantly and negatively affected both trust and trustworthiness. There is also some evidence that male subjects returned lower proportions as trustees.[20] Finally, participants who displayed more pro-social allocation decisions in the SVO task tend to send more money and return higher proportions of the amount received in the trust game. Those who made more erratic choices in the SVO task also tend to return more.

This analysis supports our second main result:

[18] We can see this when running Models (3) and (4) separately for the periods before and after the lifting of the lockdown (see Table A3 in Appendix C). The Period variable is statistically significant only before the lifting of the lockdown. In addition, the average trust level was lower in Long than in Control both before and after the lifting of the lockdown (MW tests, $p = 0.004$ and $p < 0.001$, respectively).

[19] We incentivized these beliefs by paying €1 extra for correct guesses.

[20] Two previous survey papers on gender effects in trust games suggest that men are less trustworthy than women (Croson and Gneezy [2009], Rau [2011]). A recent meta-analysis by Van Den Akker et al. [2020] finds, however, that men are *not* more trustworthy than women in the trust game.

Result 2. *Trust deteriorated over time after the implementation of the drastic social distancing measures to combat the spread of COVID-19. Trustworthiness, in contrast, remained unaffected.*

Since we conducted the Control treatment 25 weeks after the end of the Long treatment, we can also test whether the effect on trust of the COVID-19 outbreak – and the unprecedented measures put in place to combat it – persisted several months after the lifting of these measures.[21] In particular, we can compare the level of trust in period 1 of the Control treatment with the level of trust in periods 1 and 15, respectively, of the Long treatment. Trust in period 1 of Control is similar to trust in period 1 of Long (4.40 vs. 4.24; MW test, 0.506) and significantly higher than trust in period 15 of Long (4.40 vs. 3.45; MW test, $p < 0.001$). This suggests that the negative effect of the first lockdown on trust was short-lived: several months after the end of the first lockdown, trust returned to the initial level observed at the beginning of the lockdown.

This analysis leads us to our third main result:

Result 3. *Nine months after the beginning of the study, the level of trust fully recovered to its initial levels.*

3.3 Possible mechanisms behind the deterioration of trust

The results reported so far indicate that the containment measures introduced at the onset of the COVID-19 pandemic did not affect prosociality, nor the general predisposition to reciprocate the trust of others. However, they reveal a negative, though only transitory, effect on trust. Here, we consider different factors that could help explaining why trust declined over time during the lockdown. This analysis is exploratory in nature and it draws upon the data collected in the questionnaire.

A first factor that we consider is financial hardship. Many people – and especially young adults – experienced increasing economic difficulties during the pandemic. Individuals, who lost their (usually part-time) job or saw their income drop during the lockdown, might have been less willing to make themselves vulnerable by taking financial risk in trusting decisions.[22] We exploit two questions posed in the final questionnaire to measure financial and material hardship, respectively. On week 5 of the Long treatment (*i.e.*,

[21] A limitation of this test is that the Control treatment was implemented after the lifting of a second nationwide lockdown, which ran in France from October 30 until December 14, 2020 (some restrictions, like those on non-essential services, started to be lifted earlier, at the end of November). This second lockdown was less strict, and compliance with it less widespread. For example, compared to the first lockdown, only non-essential businesses were closed while schools and factories remained open. In addition, the majority of people (almost twice as much as compared to the first confinement) admitted violating the lockdown rules (`https://www.ifop.com/wp-content/uploads/2020/11/117703_Rapport_Ifop_Consolab_trist_2020.11.09.pdf`; accessed on February 2, 2023). It is possible that this second lockdown, even if milder and less exceptional than the first one, reinforced or re-activated the effects of the first lockdown. If anything, however, this goes against the evidence reported here, making our result even more remarkable.

[22] Financial hardship might have also induced people to adopt more selfish behaviors. Our results on the SVO task and on the behavior of the trustees, however, reject this hypothesis.

halfway through the lockdown), we asked our participants to indicate whether their income had increased, decreased or remained stable since the beginning of the lockdown.[23] 38.38% of our participants reported to have experienced a drop in their income, confirming the association between the lockdown and financial hardship despite the governmental measures to protect economic activity and employment.

Every week, we also asked the following question: "Last week, did you lack anything materially because of the confinement (food, money, etc.)?". Subjects who answered "yes" were invited to specify what they lacked. Many participants reported lacking basic goods and services such as food, housing, clothing. A minority also explicitly reported a lack of money. For each participant, we average out his/her answers during the lockdown to obtain an individual measure of material hardship.[24] This measure correlates with a decrease in income during the lockdown (Spearman's $\rho = 0.165$, $p = 0.001$).

Table 2 reports the results of random effects Tobit regressions on the amount sent in the trust game. The regressions are similar to those reported earlier, except that here we restrict the analysis to the Long treatment. In Models (2) and (3), we include a measure of financial hardship (*No income loss*) and one of material hardship (*Material lack*), and their interaction with the period variable. Point estimates of the period variable remain stable and significant across the different specifications. However, while in Model (2) none of the control variables we added turn out to be significant, in Model (3) we find that trust deteriorated much more over time for participants who experienced a drop in their income during the lockdown. Those who did not experience financial hardship still reduced their trust over time ($p = 0.004$) but to a much lesser degree (the magnitude of the effect is more than halved). We observe no significant impact of the material hardship. This finding suggests that financial hardship (more than material hardship) explains, at least in part, the deterioration of trust observed during the lockdown.

A second factor that could explain the decay of trust is psychological or emotional distress. In an unprecedented situation of forced home isolation, many people might have experienced psychological and emotional discomfort. Past research in psychology has shown that the experience of certain negative emotions or psychological symptoms might impair social skills and decrease trust in others (*e.g.*, Dunn and Schweitzer [2005], Myers and Tingley [2016], Wehebrink et al. [2018]).

In our questionnaire, each week we measured (on a scale from 1 to 10) how much subjects felt happy, lonely, bored, and worried (about the pandemic). Each of these emotions varied differently over time during the lockdown.[25] We take the average response

[23] The same question was asked in the following weeks, but only in relation to the previous week. Only 6% of the subjects who experienced financial hardship in the first five weeks reported an increase in their income in the remaining weeks of the lockdown.

[24] We standardize this measure by subtracting the mean and then dividing by the standard deviation. A limitation of this measure is that we cannot tell whether the lack of basic goods was due to shortages in shops, to the impossibility to go out to buy these items, or to financial hardship.

[25] Participants felt significantly less happy, more lonely, less bored, and less worried over time during the lockdown. This result is obtained by regressing each emotion against the period variable and its squared term. The results are reported in Table A4 in Appendix C.

Table 2: Evolution of trust controlling for financial and material hardship

	(1)	(2)	(3)
Period	-0.04***	-0.06***	-0.04***
	(0.01)	(0.01)	(0.01)
No income loss		-0.13	
		(0.46)	
Period × No income loss		0.04**	
		(0.01)	
Material lack			-0.01
			(0.22)
Period × Material lack			-0.01
			(0.01)
Constant	5.23***	5.31***	5.26***
	(1.75)	(1.81)	(1.75)
Control variables	Yes	Yes	Yes
Observations	5067	4829	5067
Right-cens obs.	627	575	627
Left-cens obs.	924	862	924
Wald χ^2	99.87	104.73	100.72
Log-likelihood	-8851.227	-8456.908	-8850.809

Notes: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. The table reports the estimates from random-effects Tobit regressions. Standard errors are in parentheses. The dependent variable is the amount sent in the trust game. No income loss is a dummy that takes value 1 if a participant did not experience a drop in income during the lockdown. Material lack is a standardized (by subtracting the mean and dividing by the standard deviation) measure of the frequency at which a participant lacked something material during the lockdown. Controls include age, gender (if a participant is male or not), education (if a participant studied economics or not), occupation (if a participant is a student or not), number of participations in previous experiments, transitivity (how often a participant produces a transitive set of responses in the SVO task across periods), and the SVO angle.

provided on each emotion to measure how much an individual felt a given emotion during the period of compulsory home isolation. We then conduct a regression analysis, similar to the one for financial hardship, where we control for each emotion (after standardization) separately (see Table 3). Since a poor health condition may reflect psychological distress or a mental health issue (besides a physical problem), we also run a regression on a variable capturing the average self-reported health condition of each individual during the lockdown.[26]

The results of this analysis suggest that, overall, emotional factors and the general health condition do not explain the deterioration of trust observed during the lockdown. However, they also reveal that individuals who were on average more worry about the pandemic reduced their trust towards others even more over time. This result is in line with previous evidence from psychological research on the negative relationship between

[26]Each week, subjects reported their previous week's health condition on a 5-point scale from "very bad" to "very good".

anxiety and trust (Myers and Tingley [2016]).

Table 3: Evolution of trust controlling for emotions

	(1)	(2)	(3)	(4)	(5)	(6)
Period	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Loneliness		-0.12				
		(0.23)				
Period × Loneliness		-0.01				
		(0.01)				
Sadness			-0.05			
			(0.23)			
Period × Sadness			-0.00			
			(0.01)			
Boredom				0.08		
				(0.23)		
Period × Boredom				-0.01		
				(0.01)		
Worry					0.29	
					(0.23)	
Period × Worry					-0.04***	
					(0.01)	
Health						0.17
						(0.23)
Period × Health						0.00
						(0.01)
Constant	5.23***	5.43***	5.14***	5.24***	5.25***	5.44***
	(1.75)	(1.76)	(1.76)	(1.76)	(1.75)	(1.76)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5067	5067	5067	5067	5067	5058
Right-cens obs.	627	627	627	627	627	627
Left-cens obs.	924	924	924	924	924	924
Wald χ^2	99.87	101.55	100.24	102.22	133.04	101.28
Log-likelihood	-8851.227	-8850.416	-8851.046	-8850.035	-8834.637	-8833.979

Notes: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. The table reports the estimates from random-effects Tobit regressions. Standard errors are in parentheses. The dependent variable is the amount sent in the trust game. Each emotion represents how much, on average, a participant felt that emotion during the lockdown. Health is the average self-reported health condition of each individual during the lockdown. All these variables are standardized by subtracting the mean and then dividing by the standard deviation. Control variables include age, gender (if a participant is male or not), education (if a participant studied economics or not), occupation (if a participant is a student or not), number of participations in previous experiments, transitivity (how often a participant produces a transitive set of responses in the SVO task across periods), and the SVO angle.

A last factor that we consider is social isolation. As during the lockdown people were forced at home, the number of face-to-face interactions with others drastically reduced. This might have reinforced the bond between individuals who live together or in proximity (friends, neighbors, relatives, flatmates) but weakened the trust towards others (*e.g.*, strangers). Previous research supports this argument. For example, Ermisch and Gambetta [2010] show that factors that limit the number of interactions with strangers (like a lockdown, in our case) lower the level of trust in the trust game. Evidence in psychol-

ogy also suggests a negative association between loneliness and trust (see, *e.g.*,Rotenberg [1994]).

To investigate whether social isolation may explain the decay in trust, we again make use of the information collected in the final questionnaire. Every week, we asked participants to indicate how many times they went out for work-related reasons during the lockdown.[27] Participants answered on a five point scale that ranged from "Never or Not applicable", "Once", "Every three days", "Every two days", to "Every day". From this question, we create a dummy variable that is equal to one if a participant went out for work-related reasons at least once in a given week, and zero otherwise. For each participant, we then average out his/her answers during the lockdown to obtain an individual measure of *outward exposure*. Our argument to use this variable as a proxy of outward exposure is twofold. First, in a period in which going out for leisure was banned, going out for work-related reasons was probably one of the few ways in which people could maintain some face-to-face contact with other individuals outside their home. Second, we believe this variable to be less prone to endogeneity issues than others collected in the questionnaire.[28] In particular, we argue that the decision to go out for work-related reasons was in part exogenous and determined by the regulations and directives of the company for which one worked.

Table 4 reports the results of a regression analysis similar to the previous ones, where we add to the explanatory variables our measure of outward exposure (after standardization) and its interaction with the period variable. The results of this analysis reveal that the deterioration in trust occurred only for those participants who were exposed less to people outside their home. This is captured by the highly significant and negative coefficient of the period variable, and the highly significant and positive coefficient of the interaction term (the two coefficients cancel each other out; Wald test, $p = 0.753$).

It is possible that those who did not go out for work-related reasons were those who lost their job or were placed in partial unemployment. Hence, the above result might simply represent the effect of financial hardship rather than a lack of outward exposure. Our data however reject this interpretation. First, we find no correlation between our measure of financial hardship and going out for work-related reasons (Spearman's correlation $\rho = -0.012$, $p = 0.818$). In contrast, we identify a strong positive correlation between going out for work-related reasons and having face-to-face conversations with people outside one's home (Spearman's correlation $\rho = 0.194$, $p < 0.001$), and between the former and participating in social and outdoor activities (Spearman's correlation $\rho = 0.142$, $p = 0.004$). That is, going out for work-related reasons was strongly associated with more opportunities to deal with people outside one's home. Second, controlling for financial

[27]This question was added to the questionnaire only from April 14, 2020 (week 5) onward.

[28]For example, we asked our participants to indicate how frequently they had a face-to-face conversation with people living outside their home, and how much time they spent with people not living with them. Concerns over endogeneity, however, led us to leave out these questions from the analysis. In particular, we suspect that individuals who are more prone to trust others might be more likely to engage in social interactions with others.

Table 4: Evolution of trust controlling for outward exposure

	(1)	(2)	(3)
Period	-0.04***	-0.08***	-0.07***
	(0.01)	(0.02)	(0.02)
Outward exposure		1.24	0.77
		(1.34)	(1.42)
Period × Outward exposure		0.09**	0.09**
		(0.04)	(0.04)
No income loss			0.13
			(0.46)
Period × No income loss			-0.03**
			(0.01)
Constant	5.23***	4.56**	4.72**
	(1.75)	(1.87)	(1.93)
Control variables	Yes	Yes	Yes
Observations	5067	5067	4829
Right-cens obs.	627	627	575
Left-cens obs.	924	924	862
Wald χ^2	99.87	106.27	109.84
Log-likelihood	-8851.227	-8848.149	-8454.437

Notes: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. The table reports the estimates from random-effects Tobit regressions. Standard errors are in parentheses. The dependent variable is the amount sent in the trust game. Outward exposure captures how often a participant reported to have gone out for work related reasons at least once a week during the lockdown. No income loss is a dummy that takes value 1 if a participant did not experience a drop in income during the lockdown, and 0 otherwise. All these variables are standardized by subtracting the mean and then dividing by the standard deviation. Controls include age, gender (if a participant is male or not), education (if a participant studied economics or not), occupation (if a participant is a student or not), number of participations in previous experiments, transitivity (how often a participant produces a transitive set of responses in the SVO task across periods), and the SVO angle.

hardship in the regression analysis does not change our results (see Model (3) in Table 4).

4 Conclusion

It has been shown in the literature that the level of trust among citizens and the individuals' social preferences in a country are associated with the perspectives of growth and development of this country. There is less consensus on whether trust and social preferences are exogenous inputs or whether they are malleable. The COVID-19 pandemic has provided a unique opportunity to test whether these preferences adapted to an exogenous and global shock in social interactions. Several attempts to measure the impact of the pandemic on the evolution of social preferences have developed in parallel, using various methodologies and data (surveys or experiments, incentivized or non-incentivized measures, cross-sectional or panel data, representative or non-representative samples). They

provided mixed evidence, calling for more research. We have measured the evolution of individuals' social preferences and willingness to trust others and reciprocate others' trust over a period of three months, from right after the introduction of the first confinement in France up to few weeks after its removal. From a methodological point of view, we combined the advantages of a natural experiment with those of standard laboratory tools using incentivized measures. We provide the only study with a weekly participation of subjects and with a control treatment allowing us to isolate the effect of repetition from those of the lockdown and social distancing.

Comparing preferences elicited during and right after the lockdown, we did not find robust and significant shifts in preferences for prosocial behavior and willingness to reciprocate the trust of others. The mild negative trend that we observed seem mostly due to repetition effects. The lockdown had instead an immediate negative effect on trust, which dropped immediately after the implementation of the confinement measures and remained at relative lower levels til after the lifting of such measures. Our results also show that the initial levels of trust were fully restored nine months after the beginning of the study. These findings are in line with those of Li et al. [2021], Buso et al. [2020], Bokern et al. [2021] and Brañas-Garza et al. [2022], based on various games implemented, respectively, in China, Italy, the Netherlands and Spain.

Our research is able to elucidate some potential mechanisms driving the relationship between the introduction of the lockdown and the transitory change in trust. We found that the effect of the lockdown on trust was most pronounced for those individuals who experienced financial hardship (*i.e.*, a drop in their income) during the lockdown. Emotional distress and the general health condition of our participants, instead, could not explain the observed deterioration of trust, except for people who felt more anxious and tended to become less trusting over time more than more serene people. Lastly, it seems that our results on trust are largely due to the lack of outward exposure: participants who were less exposed to contacts with other people are those who reduced their level of trust over time.

The implications of our findings on the sensitivity of trust to an exogenous global shock are important. They, in particular, suggest that both the implementation of policies protecting the financial resources of the population and limiting the duration of social distancing policies in time of acute (health) crisis were not only important from a human point of view, but also from an economic point of view. If one believes in the relationship between trust in the population and the economic success of a country, it is crucial to prevent that trust be eroded by the occurrence of shocks. More generally, our results show that some preferences may be malleable, whereas others are more robust to shocks. Our differing results for trust, trustworthiness, and social preferences also indicate that social preferences do not come as a bundle.

Of course, we acknowledge some limitations of our study. In particular, our sample of participants is not representative, as it consists mainly of students. Note, however, that

by examining a fraction of the population that has presumably suffered more from the deprivation of social relationships than older generations,[29] our results on the stability of social preferences and trustworthiness are even stronger. It remains that it would have been interesting to conduct the same study in several countries at the same time to test whether different national systems of social protection during the pandemic would have led to observe different results. Finally, by design, the conditions of the study are not reproducible and, therefore, we cannot add robustness tests of our findings. Despite these limitations, we believe that the study brings important insights regarding both the resistance of social preferences and the fragility of trust in a hostile environment.

[29]Several medical studies pointed out a downward trend in youth mental health during the pandemic. For example, see https://ec.europa.eu/research-and-innovation/en/horizon-magazine/covid-generation-effects-pandemic-youth-mental-health; accessed on February 4, 2023.

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A Instructions (Long treatment, translated from French)

The text in square brackets refers to the instructions of the Control treatment.

INVITATION EMAIL

We invite you to take part in an **online experiment** organized by GATE-Lab under the responsibility of Fortuna Casoria, Postdoc, Fabio Galeotti, CNRS Researcher, and Marie Claire Villeval, CNRS Research Professor.

This is a study on decision making. All your answers will be kept anonymous and private. You will create your own user id, which under no circumstances will be linked to your name or any other identifying characteristics.

[This session lasts around 40 minutes.]
This study consists of **15 weekly sessions (always held on the same day of the week)** of **short duration** (10 minutes on average, 15 minutes for the first session). We strongly recommend that you don't miss any session.

You will receive a **fixed payoff** of €2 for each session you participate in (therefore, you will receive a sure payment of €30 if you participate in all the sessions). Moreover, you will earn an **additional variable payoff which will depend on the decisions that you and the other participants will make**.

[You will receive a **fixed payoff** of 2€ plus an **additional variable payoff which will depend on the decisions that you and the other participants will make** (up to a maximum of €31).]

The data that we collect will be used to write research articles.

[Due to the pandemic, your earnings will be transferred directly to your bank account. To do this, when you register you will need to upload a bank statement in pdf format to our secure site at the address that will be indicated in our confirmation email.]

If you are interested and want to participate, please click on this link: ...

Beware: this link will be valid only for today!

Welcome!

Thank you for agreeing to participate in this new experiment organized by GATE-Lab under the responsibility of Fortuna Casoria, Postdoc, Fabio Galeotti, CNRS Researcher, and Marie Claire Villeval, CNRS Research Professor.

This study is on decision making and is part of a research project supported by the French National Research Agency (ANR) and by the IDEXLyon of the University of Lyon.

Information to participate in the online experiment

Participation and duration of the experiment

Your participation in this experiment is voluntary.
This experiment consists of **15 short sessions**. These sessions are held online **every week, on the same day**. Your contribution to this research project consists in participating in the 15 sessions, from today until June 24, 2020. For your participation in all the sessions, you will receive **30 Euro plus an additional variable payoff**.

Each session consists of three parts, and these three parts are more or less the same in

each session. Apart from this first session, each of the following sessions will take you approximately 10 minutes.

[This experiment consists of one session of **15 periods**. In each period, you have to complete **two tasks**. At the end of the session, we will ask you to answer to some questions. For you participation, you will receive **2 Euro plus an additional variable payoff**.]

You can withdraw from this study at any time and without providing any justification (in this case you will not receive any compensation).

We remind you that you cannot participate in this study if you are younger than 18 years old.

Privacy

We guarantee that all the data collected in this study are kept anonymous and confidential. We will not ask you to provide us with your name, address or phone number. Your name will never be linked to your decisions. You will create your own user id which will be necessary to log into each new session and to collect your payment at the GATE-Lab at the end of the experiment.

Risks

The questions we ask and the answers you provide do not expose you to any physical or psychological risk, besides those incurred when carrying out any activity on a computer.

Your expected earnings

Your earnings in this experiment consist of a fixed payoff of €2 for each session in which you participate (up to a maximum of €30) and a variable payoff (up to a maximum of €32) which depends on your decisions and on the decisions of another participant in one of the three parts of one or more sessions, as it will be explained below.

Your earnings will be paid to you in cash at the end of the experiment, **starting from June 25**, and **in person** at the GATE-Lab after providing your user id. However, exceptionally and only if you are not able to get to the GATE-Lab, we can pay you through bank transfer. This will require that you provide our accountant with your bank details before the end of June.

[Your earnings in this experiment consist of a fixed payoff of €2 for your participation and a variable payoff (up to a maximum of €31) which depends on your decisions and on the decisions of another participant in one of the tasks of the session, as it will be explained below.
Your earnings will be paid to you through bank transfer. This will require that you provide our accountant with your bank details by filling them in before the beginning of the session.]

Absences

If you miss a session and the part randomly drawn to determine your variable payoff belongs to the session you missed, your variable payoff will be null. However, you will still receive the fixed payoff for all the sessions in which you have participated.

If you need help during the experiment, you can write to: thevenet@gate.cnrs.fr.

This project has received approval (n.20-665) by the CEEI INSERM ethics committee (IRB00003888).

Instructions for session [period] 1

This session consists of three parts. At the end of each part, you will receive the instructions for the following part.

You have to create your own user id. You will be asked to log in with this user id at the beginning of **each session**. Therefore, it is important that you do not forget it!

[This session consists of **15 periods and a questionnaire**. In each period, you have to complete **two tasks**. These tasks are the same in all periods. At the end of the first task, you will receive the instructions for the second task.
You have to create your own user id.]
In order for you to remember your user id, we advise you to create it in the following way (without spaces, dashes, cedilla and in lower case):

- the first two letters of your mother's first name
- the first two letters of your father's first name
- your day and month of birth (in figures)

For example, if your mother's name is Julie and your father's name is Martin and you are born on July 2, then your user id is juma0207.

Please, choose your user id (and write it down to remember it):

Please, type in your user id again:

[Once you have created your user id, please connect to the following link to fill in your bank details so that we can transfer you your earnings at the end of the session. Once you have provided us with your bank details, you can reconnect to the website of the experiment by clicking on the following link: ...]

Instructions for following sessions

Hello and thank you for logging in!
Please enter your user id:

As a reminder, we advised you to create your user id in the following way (without spaces, dashes, cedilla and in lower case):

- the first two letters of your mother's first name
- the first two letters of your father's first name
- your day and month of birth (in figures)

The session consists of three parts, as in the previous session.
Reminder: Your earnings in this experiment include a fixed payoff of €2 per session (€30 maximum) and a variable payoff (€32 maximum) which depends on your decisions and on the decisions of another participant in one of the three parts of one or more sessions.

Your earnings will be paid to you **from June 25** at the GATE-Lab after providing your user id. However, exceptionally and only if you are not able to get to the GATE-Lab, we can pay you through bank transfer. This will require that you provide our accountant with your bank details before the end of June.

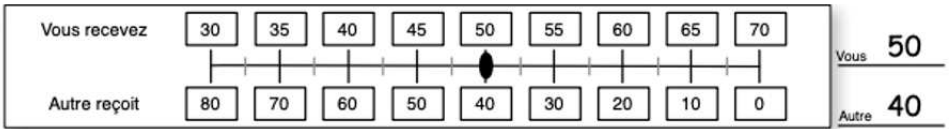
To begin, click on OK.

Part 1 [Period 1 - Task 1]

Instructions - Part 1 [Period 1]
In this part [task], you make six decisions on how to divide an amount expressed in ECU (Experimental Currency Unit, with 10 ECU = €1) between you and another participant in this session.

For each of the following questions, indicate you preferred allocation by clicking on the corresponding button. There are no right or wrong answers; choose according to your personal preferences.

Here is an example (*You receive / Other receives)*:



In this example, the participant has chosen the allocation that gives him 50 ECU, while the other participant receives 40 ECU.

Your earnings
At the end of the experiment, the program will randomly select one of the parts [one of the two tasks]. If this part [If the first task] is selected, it will also draw two sessions [periods] at random. In each session [period], you will be randomly matched with a different participant.

- For one of the two sessions [periods], one of your six decisions will be randomly selected. This decision will determine your earnings and the earnings of the other participant.
- For the other randomly drawn session [period], one of the other participants six decisions will be randomly selected. This decision will determine your earnings and the earnings of the other participant.

Your earnings in these two sessions [periods] will be added up and paid to you in Euro.

When you are ready, you can click on the OK button.

Part 2 - Period 1 - Task 2

Instructions - Part 2
In this part [task], pairs are randomly formed. Each pair consists of a participant A and a participant B.
Participant A and participant B receive an endowment of 10 ECU each (Experimental Currency Unit, with 1 ECU = €1).

- Participant A chooses how many ECU between 0 and 10 (included) he wants to send to participant B.

Each ECU sent to participant B is multiplied by 3 by the program. For example, if A sends 2 ECU, B receives $2 \times 3 = 6$ ECU; if A sends 4 ECU, B receives $4 \times 3 = 12$ ECU; and so on.

- Participant B then chooses the amount he wants to return to participant A.

This amount has to be between 0 and three times the amount sent by A.

When choosing the amount to return to A, B does not know the amount sent by A. B

must therefore choose the amount he wants to return for each amount potentially sent by A.
For each amount potentially sent by A, B can return any amount between 0 ECU and 3 times that amount (since he received the amount sent multiplied by 3).
For example, if A sends 2 ECU, B receives 6 ECU and can return any amount between 0 and 6 ECU included. If A sends 5 ECU, B receives 15 ECU and can return any amount between 0 to 15 ECU included.

You are going to make a decision in the role of participant A. Then, you will make a decision in the role of Participant B for each of the possible decisions of Participant A.

Your earnings

At the end of the experiment, if this part [second task] is selected for payment, the program will randomly draw one session [one of the 15 periods]. In the selected session [period], the program will also randomly match you with another participant (who will also be paid for that part [task]) and randomly assign you either the role of participant A or the role of participant B.

- If you are assigned the role of Participant A, it is your decision as A that will determine your and the other participant's earnings.

  A's earnings = 10 - amount sent to B + amount returned by B
- If you are assigned the role of Participant B, it is your decision corresponding to the amount actually sent by A that will determine your and the other participant's earnings.

  B's earnings = $10 + 3\times$amount sent by A - amount returned to A

If you are ready, you can click on the OK button.

Make your decision in the role of participant A

You and B receive 10 ECU each.
How many ECU do you want to send to B (between 0 and 10)? B will receive 3 times this amount.
How much do you think that participant B will return (between 0 and 3 times the amount that you sent)?
If this part [task] and this session [period] are selected for payment, you earn 1 Euro more if your prediction is correct.

Make your decision in the role of participant B

You and A receive 10 ECU each. A sent you an amount between 0 and 10 ECU. This amount has been multiplied by 3. Please, for each amount potentially sent by A, choose how many ECU you want to return to A.

If A sent you 1 ECU, you receive 3 ECU. How many ECU do you return to A?
If A sent you 2 ECU, you receive 6 ECU. How many ECU do you return to A?
If A sent you 3 ECU, you receive 9 ECU. How many ECU do you return to A?
If A sent you 4 ECU, you receive 12 ECU. How many ECU do you return to A?
If A sent you 5 ECU, you receive 15 ECU. How many ECU do you return to A?

If A sent you 6 ECU, you receive 18 ECU. How many ECU do you return to A?
If A sent you 7 ECU, you receive 21 ECU. How many ECU do you return to A?
If A sent you 8 ECU, you receive 24 ECU. How many ECU do you return to A?
If A sent you 9 ECU, you receive 27 ECU. How many ECU do you return to A?
If A sent you 10 ECU, you receive 30 ECU. How many ECU do you return to A?

[Period 2 - Task 1

Task 1 is the same as the task 1 in the previous period. You make six decisions on how to divide an amount in ECU between you and another participant in this session.
For each of the following questions, indicate you preferred allocation by clicking on the corresponding button.

Period 2 - Task 2

Task 2 is the same as the task 2 in the previous period. Pairs are randomly formed. Each pair consists of a participant A and a participant B. Participant A and participant B receive an endowment of 10 ECU each.]

Part 3

To conclude, please answer the following questions.[30]

1. Gender: Male/Female/Other.
2. Age:
3. Status: Student/Employed/Unemployed/Retired.
4. Field of education: Management/ Economics/ Engineering/ Computer Science/ Mathematics/ Medicine/ Other (specify).
5. Approximately, how many close friends (with whom you go out regularly) do you have?
6. Approximately, how many friends do you have (including your friends on social networks)?
7. **Last week**, in what type of housing did you live? House/ Apartment/ Student residence/ Other (specify).
8. **Last week**, how many people lived with you (in the same house or in the same apartment)?
9. What is the relationship between you and these people? Person 1: Spouse, partner/Friend, co-tenant/Child, grandchild/Parent, grandparent/Other relative.
   Person 2, 3, 4, 5.
10. **Last week**, on a scale from 1 to 10, how lonely did you feel? 1 means that you did not feel lonely at all and 10 means that you felt very lonely.
11. **Last week**, on a scale from 1 to 10, how sad or happy did you feel overall? 1 means that you felt very sad and 10 means that you felt very happy. If you did not feel sad or happy, enter 5.
12. **Last week**, what was your degree of boredom and lassitude, on a scale from 1 to 10, where 1 means "I wasn't bored at all" and 10 means "I was terribly bored"?
13. **Last week**, did you lack anything materially because of the confinement (food, money, etc.)? Yes/ No/ If yes, please specify.
14. **Last week**, what was your opinion on the information received from the authorities

[30] Questions 1 to 6 were asked only in the first session.

on the importance of the confinement? Please answer on a scale from 1 to 10, where 1 means "I did not feel informed at all" and 10 means "I felt fully informed".

15. **Last week**, how frequently did you perform each of the following activities in physical presence?[31] Every day/ Every two days/ Every three days/ Once/ Never.
    a. Attending public gatherings (e.g. religious services, demonstrations, etc.)
    b. Playing sports or exercising with others (gym, swimming pool)
    c. Visiting a friend or a family member who does not live with you
    d. Participating in the social activities of a club, company or association
    e. Going to the supermarket, grocery store, pharmacy or medical centre
    f. Going to a restaurant, bar, cafe, movie theatre, non-essential store
    g. Attending or organizing a social event with family or friends (e.g., dinner, birthday party, wedding party, game night)
    h. Taking the public transport
16. **Last week**, on average, how frequently did you have a face-to-face conversation (apart from just greetings) with the following people living outside your home?[32] Every day/ Every two days/ Every three days/ Once/ Never/ NA
    a. Family members
    b. Friends or neighbors
    c. Colleagues or fellow students
    d. Strangers
17. **Last week**, do you think that you communicated with **your friends** via Internet and social networks:
    a. Much less than the previous week
    b. Less than the previous week
    c. As much as the previous week
    d. More than the previous week
    e. Much more than the previous week
18. [**As compared to the first lockdown**, do you think that you communicated with **your friends** via Internet and social networks:
    a. Much less than the first lockdown
    b. Less than the first lockdown
    c. As much as the first lockdown
    d. More than the first lockdown
    e. Much more than the first lockdown]
19. **Last week**, do you think that you communicated with **your family** via Internet and social networks:
    a. Much less than the previous week
    b. Less than the previous week
    c. As much as the previous week
    d. More than the previous week
    e. Much more than the previous week
20. [**As compared to the first lockdown**, do you think that you communicated with **your family** via Internet and social networks:
    a. Much less than the first lockdown
    b. Less than the first lockdown
    c. As much as the first lockdown
    d. More than the first lockdown

[31] This question was added on March 27, 2020.
[32] This question was added on March 27, 2020.

e. Much more than the first lockdown]

21. **Last week**, did you attend or organize a social event with family or friends (e.g., aperitifs, board game nights) via Internet and social networks? Yes/ No/ How many times?[33]
22. **Last week**, on average per day (over 24 hours):
    a. How much time awake did you spend alone?
    b. How much time awake did you spend with the people that live with you?
    c. How much time awake did you spend with people that do not live with you?
    d. How much time did you spend asleep?
23. Below, we describe the behavior held last week by a "Person X". You are asked to evaluate the behavior of this "Person X" by choosing between six options, ranging from "Very socially inappropriate" to "Very socially appropriate". By "socially appropriate", we mean a behavior that is considered correct and ethical by the majority of people.

    The objective is to select the option that is chosen most frequently by all the other participants in this experiment. At the end of the experiment, the program will randomly draw one session. If the option you have selected in that session is the same as the option most frequently chosen by the other participants, you will earn an additional €1.

    For example, if the most frequent answer among the other participants is "Very socially inappropriate", you will earn €1 if you also chose the option "Very socially inappropriate". If the most frequent answer among the other participants is "Very socially appropriate", you will earn €1 if you also answered "Very socially appropriate".

    Here is the behavior that you are asked to evaluate: "Last week, "Person X" invited some friends to her house for dinner".

    How would you rate Person X's behavior? If you give the same answer as the majority of the other participants, you can earn an additional €1. Please select only one of the following answers:
    a. Very socially inappropriate
    b. Socially inappropriate
    c. Rather socially inappropriate
    d. Rather socially appropriate
    e. Socially appropriate
    f. Very socially appropriate
24. On a scale from 1 to 10, how concerned are you about the current coronavirus pandemic for your own health? 1 means "not at all concerned", 10 means "extremely concerned".
25. **Last week**, in general, how was your health? Very good/ Quite good/ Fair/ Quite bad/ Very bad/ I prefer not to answer.
26. **Last week**, have any of your family members been diagnosed positive to or carriers of the coronavirus? Yes/ No/ I prefer not to answer.
27. **Last week**, have any of your close friends been diagnosed positive to or carriers of the coronavirus? Yes/ No/ I prefer not to answer.
28. **Last week**, in which region were you?[34] Auvergne-Rhône-Alpes/ Bourgogne-Franche-Comté/ Bretagne/ Centre-Val-de-Loire/ Corse/ Grand-Est/ Hauts-de-France/ Île de France/ Normandie/ Nouvelle-Aquitaine/ Occitanie/ Pays-de-la-Loire/ Provence-Alpes-Côte-Azur/ Région-Outre-Mer/ Abroad.

[33] This question was added on March 27, 2020.
[34] This question was added on April 7, 2020.

29. **Last week**, have you followed your courses online or worked remotely from home?[35] Yes/ No
30. **Last week**, how many times did you go out to for work related reasons?[36] Every day/ Every two days/ Every three days/ Once/ Never/ NA
31. **Since the beginning of the lockdown/As compared to last week**, your income has:[37]
    a. been stable
    b. decreased: I lost my job/ I am in partial unemployment/ I work less (excluding partial unemployment, including transition to part-time)
    c. increased
32. [**As compared to the first lockdown**, your income has:
    a. been stable
    b. decreased: I lost my job/ I am in partial unemployment/ I work less (excluding partial unemployment, including transition to part-time)
    c. increased]
33. **Last week**, if you went out, did you wear a face mask?[38] Never/Sometimes/Always/NA
34. **Last week**, if you went out and met a friend or somebody you used to kiss on the cheek before March 16:[39] you kissed them on the cheek as before/you shook hands instead of kissing them on the cheek/you greeted them without shaking hands or kissing them on the cheek/ NA
35. For each of the following activities, please indicate whether you think that they were allowed last week (before May 11) in the place (city/region) where you are currently staying (while respecting all other restrictions)?[40]
    a. Doing sports in a group (max 10 people) outside: Allowed/Forbidden
    b. Visiting friends or family members who do not live with you without a compelling reason: A/F
    c. Going out freely in the own neighborhood without a movement certificate: A/F
    d. Meeting with friends (max 10 people): A/F
    e. Going to the restaurant, to a bar, to the cinema, to the theatre, to a museum: A/F
    f. Going to a festival: A/F
36. **Last week**, have you used the app StopCovid (have you downloaded it, accepted the conditions, and turned the Blootooth on when going out or meeting with other people)?[41] Yes/No/It does not work/My mobile is not compatible with the app/I downloaded it but I didn't use it.
37. Have you been diagnosed with coronavirus in the last 3 months? Yes/ No/ I prefer not to answer.[42]
38. If yes, when (please specify the date).

This session is now over. €2 will be added to your other earnings from this experiment. All of your earnings will be paid at the end of the experiment, from June 25, 2020.
We thank you and look forward to seeing you next week, same day.

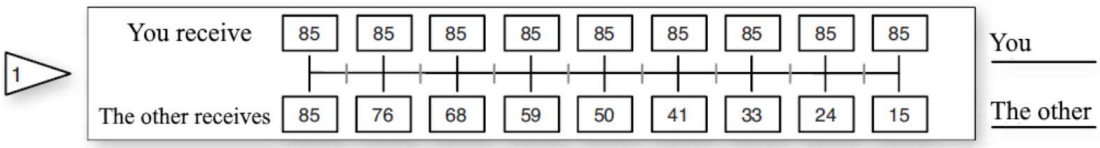
[This session is now over. Your earnings will be transferred to your bank account based

[35]This question was added on April 14, 2020.
[36]This question was added on April 14, 2020.
[37]This question was added on April 14, 2020.
[38]This question was added on May 12, 2020.
[39]This question was added on May 12, 2020.
[40]This question was added on May 12, 2020.
[41]This question was added on June 9, 2020.
[42]This question was added on June 23, 2020.

on the information that you gave to us.]

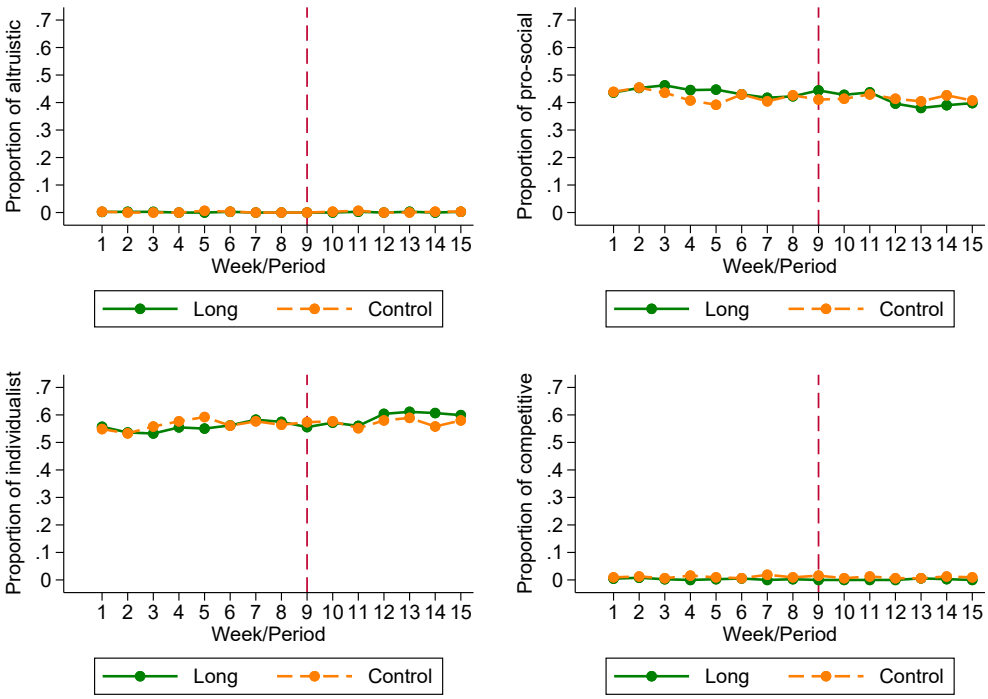
B Additional Figures

Figure A1: First decision in the SVO task



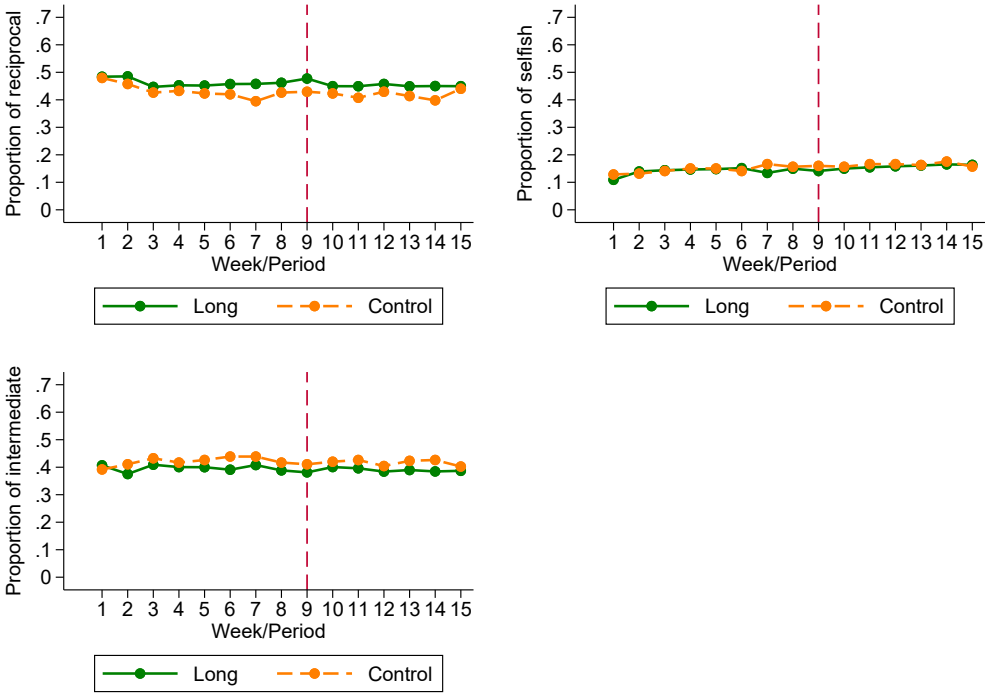
Notes: In the task, participants had to choose how to allocate experimental currency units (ECU) between themselves and another anonymous participant. The figure reproduces the first decision. Here, one option offered an equal split (85 ECUs to each person), while the other eight options gave 85 ECUs to the decision maker and a decreasing amount of ECUs to the other person.

Figure A2: Evolution over time of types according to SVO angles



Notes: In each panel, the dashed line indicates the first week after the lockdown. Altruists have a SVO angle greater than 57.15°; prosocial types have a SVO angle between 22.45° and 57.15°; individualists have a SVO angle between −12.04° and 22.45°; competitive types have a SVO angle smaller than −12.04° (Murphy et al. [2011]). The proportion of individualists (prosocial types) significantly increases (decreases) over time. The evolution of each type over time is not statistically different between the Long and Control treatments. These results are obtained by running a separate random-effects OLS regression for each type. The dependent variable is a binary variable for being altruist, prosocial, individualist or competitive. Controls include age, gender (if a participant is male or not), education (if a participant studied economics or not), occupation (if a participant is a student or not), number of participations in previous experiments, and transitivity (how often a participant produces a transitive set of responses in the SVO task across periods). The results of these regressions are available upon request.

Figure A3: Evolution over time of types according to trustees' choices in the trust game



Notes: In each panel, the dashed line indicates the first week after the end of the lockdown. To classify participants, we uses the method of Altmann et al. [2008]. For each participant, we ran an OLS regression with the dependent variable being the amount returned and the independent variable being the amount possibly received from the trustor. The slope is forced to pass through the origin. We then classified participants based on their slope coefficient (r). Reciprocal types have $r > 1$; selfish types have $r = 0$; intermediate types have $0 < r \leq 1$. Only the proportion of selfish types significantly increases over time. The evolution of each type over time is not statistically different between the Long and Control treatments. These results were obtained by running a separate random-effects OLS regression for each type. The dependent variable is a binary variable for being reciprocal, selfish, or intermediate. Controls include age, gender (if a participant is male or not), education (if a participant studied economics or not), occupation (if a participant is a student or not), number of participations in previous experiments, transitivity (how often a participant produces a transitive set of responses in the SVO task across periods), and the SVO angle. The results of these regressions are available upon request.

C Additional Tables

Table A1: Socio-demographic characteristics of the participants

	Long treatment	Control treatment	p
Age	23.79 (6.87)	23.61 (6.05)	0.7854
Gender			0.003
Male	37.64%	47.80%	
Female	62.13%	51.26%	
Other	0.23%	0.94	
Occupation			0.713
Student	84.35%	86.79%	
Employed	11.11%	10.06%	
Unemployed	3.85%	2.52%	
Retired	0.68%	0.63%	
Education background			0.263
Management	24.94%	25.16%	
Economics	27.89%	31.76%	
Engineering	20.86%	17.92%	
IT	1.59%	1.89%	
Mathematics	0.68%	0.31%	
Medicine	5.44%	2.20%	
Other	18.59%	20.75%	

Notes: The table displays the relative frequency of the participants' individual characteristics by treatment. Standard deviations are in parentheses. For age, p is from Mann-Whitney tests. For all the other variables, p are from Fisher's exact tests.

Table A2: Evolution of the SVO angle, trust, and trustworthiness over time (including only participants who made transitive choices in the SVO task)

	(1)	(2)	(3)
Period	-0.02	-0.06***	-0.00
	(0.02)	(0.01)	(0.00)
Control	0.06	-0.84	-0.07
	(1.36)	(0.84)	(0.05)
Period × Control	-0.01	0.05***	-0.00**
	(0.03)	(0.02)	(0.00)
Experience	-0.39***	-0.35***	-0.02***
	(0.11)	(0.06)	(0.00)
Age	0.73***	0.10	0.01***
	(0.14)	(0.08)	(0.00)
Male	2.92**	-0.57	-0.08*
	(1.21)	(0.74)	(0.04)
Economics	-0.35	0.43	0.04
	(1.31)	(0.80)	(0.05)
Student	1.87	-0.42	-0.04
	(2.21)	(1.40)	(0.07)
SVO angle	-	0.03***	0.00***
		(0.01)	(0.00)
Constant	-5.11	3.26	0.09
	(4.69)	(2.80)	(0.16)
Observations	3981	3981	3974
Right-cens obs.	-	580	73
Left-cens obs.	-	1088	1075
Wald χ^2	57.29	73.58	102.02
Log-likelihood	-	-6063.124	1543.598

Notes: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Models (1) is a random-effects OLS regression. Models (2) and (3) are random-effects Tobit regressions. Standard errors are in parentheses. Demographic controls are age, gender (if a participant is male or not), education (if a participant studied economics or not), occupation (if a participant is a student or not), and number of participations in previous experiment (experience). In models (2) and (3), we also include the SVO angle among the explanatory variables. Control is a dummy variable that takes value 1 if the observation comes from the Control treatment, and 0 otherwise.

Table A3: Evolution of trust over time, Tobit regressions - Before vs. after the lockdown

	Amount sent before the lockdown		Amount sent after the lockdown	
	(1)	(2)	(3)	(4)
Period	-0.09***	-0.09***	-0.02	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)
Control	0.30	-0.53	0.92*	0.07
	(0.34)	(0.38)	(0.54)	(0.58)
Period × Control	0.09***	0.08***	0.02	0.00
	(0.03)	(0.03)	(0.03)	(0.03)
Constant	3.98***	5.11***	3.32***	4.45***
	(0.22)	(1.31)	(0.37)	(1.71)
Control variables	No	Yes	No	Yes
Observations	5679	4785	4740	4107
Right-cens obs.	784	645	676	567
Left-cens obs.	945	788	896	762
Wald χ^2	28.74	129.82	7.98	68.63
Log-likelihood	-1.07e+04	-9022.310	-7944.948	-6819.871

Notes: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. The table reports the estimates from random-effects Tobit regressions. Standard errors are in parentheses. The dependent variable is the amount sent in the trust game. Controls include age, gender (if a participant is male or not), education (if a participant studied economics or not), occupation (if a participant is a student or not), number of participations in previous experiments, transitivity (how often a participant produces a transitive set of responses in the SVO task across periods), and the SVO angle. Control is a dummy variable that takes value 1 if the observation comes from the Control treatment, and 0 otherwise.

Table A4: Evolution of emotions during the lockdown

	Loneliness	Sadness	Boredom	Worry
Period	0.40***	-0.16***	-0.02	-0.43***
	(0.07)	(0.05)	(0.10)	(0.06)
Period Squared	-0.03***	0.01**	-0.00	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	2.11***	6.53***	4.17***	4.49***
	(0.18)	(0.12)	(0.25)	(0.15)
Observations	3478	3478	3041	3478
Right-cens obs.	23	136	50	52
Left-cens obs.	854	37	528	827
Log-likelihood	-7249.419	-7446.754	-6774.726	-7290.895

Notes: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. The table reports the estimates from random-effects Tobit regressions. Standard errors are in parentheses.