# SHARE WORKING PAPER SERIES

# Beliefs, Risk and Time Preferences and COVID-19 Preventive Behavior: Evidence from France

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# Beliefs, Risk and Time Preferences and COVID-19 Preventive Behavior: Evidence from France

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**Abstract:**

We analyze how preferences with respect to time and risk as well as trust in others, political opinion and religiosity correlate with COVID-19 related protective behavior in France. We leverage individual-level data from the corona survey of the Survey of Health Aging and Retirement in Europe linked with a paper questionnaire survey about preferences conducted in France just before the coronavirus outbreak. Our results suggest that patience and risk aversion are strong predictors of individuals' protective behavior. More patient individuals are more likely to not visit their family members anymore, wear a mask and keep their distance from others when outside, wash their hands more regularly and cover their cough. Risk aversion increases the likelihood of not meeting more than 5 other people and not meeting with family members anymore. Concerning trust, we find that a higher level of trust in others reduces compliance with the recommendations about meeting with 5 or more people and family gatherings. We interpret this result as a sign that individuals with trust in others perceive a lower risk of being infected by friends and family members. Finally, we find that although the association is not always statistically significant, individuals who identify themselves as positioned on the extreme right or left of the political spectrum are less likely to comply. This latter result is particularly interesting in the French context, where the government identifies itself as centrist and more extreme political groups are its main opponents. The government should therefore consider individuals' heterogeneity in preferences and beliefs when implementing a strategy to encourage people to comply with its COVID-19 protective recommendations.

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## 1. Introduction

Adoption of preventive behaviors and compliance with COVID-19-related protective recommendations is particularly important for the collective management of the pandemic and for the individual reduction of the risk of having a severe form of COVID-19, especially for high-risk individuals. Older individuals represent an important part of this population, since the risk of dying from COVID-19 increases with age (O'Driscoll et al. 2020). Engaging in protective behavior can be associated with the provision of a public good: public health. It was particularly important when no vaccine was available, as was the case during the first year of the pandemic. It is therefore important to understand the individual decision to engage in protective behavior or comply with government recommendations (such as those of the World Health Organization) and its determinants in order to design relevant public health policies.

Conceptually, compliance with the COVID-related protective recommendations can be explained as a trade-off between perceived costs and perceived benefits. It is theoretically costly for all individuals since it corresponds to a limitation of their set of possible choices. Individuals with chronic disease, associated with a higher risk of severe forms of COVID-19, and older individuals - since the risk of dying from COVID-19 increases with age, independently of any chronic diseases - may have a substantial individual benefit to adopt protective behaviors. The health benefit may conversely be lower for individuals with lower risks of severe forms of COVID-19 due to their younger age or their health status. However, perceived costs and benefits may be influenced by preferences, beliefs and personality traits. First, compliance with COVID-19-related protective recommendations may be influenced by the individual perceived risk of being infected, independently of the objective risk of infection. This perceived risk may also be affected by the level of trust in others. Risk-averse individuals may gain more benefit from COVID-19 prevention than risk seekers, especially because of the risk of dying and the unknown consequences of infection. Risk aversion may also play a role because the duration of the pandemic is unknown and a person may fear the virus. Individuals more oriented toward the future may be better able to abstain from seeing their friends and family than individuals more oriented toward the present. Participating in the preservation of public health may also be a source of benefit, but this benefit may be higher for individuals who care for others. Conversely, the costs induced by compliance with public health recommendations may be higher for individuals who have less trust in the government.

There is a vast body of literature about COVID-19 (Brodeur et al., 2021). Studies on the correlation between time preferences, risk aversion, beliefs and protective behaviors and compliance with

government recommendations are scarce. Several studies have demonstrated that compliance with COVID-19-related protective recommendations is impacted by the perceived risk of being infected (Akesson et al., 2020; Banerjee, 2021; Akesson et al., 2020; Janssen and Shapiro, 2020). Personality traits seem to be associated with preventive health behaviors (Airaksinen et al. 2021).

Patience and risk aversion are known to be correlated with health behaviors (Anderson and Mellor, 2008; van der Pol, 2010; Lawless et al., 2013). Patience is also correlated with adherence to advice on physical activity (van der Pol et al., 2017), and risk aversion is associated with adherence to medication advice (Simon-Tuval et al., 2018). We could therefore expect that they correlate with protective behavior in the pandemic context. With respect to COVID-19, to our knowledge, the only two studies on compliance and economic preferences at the individual level are Müller and Rau (2020) and Sheth and Wright (2020), who use a sample of German and Californian students, respectively. Müller and Rau (2020) find that patience increases staying at home and avoiding crowds, risk tolerance decreases avoiding crowds and panic buying at the very beginning of the COVID-19 outbreak.[1] Present bias also increases panic buying. In contrast, Sheth and Wright (2020) find that risk tolerance is not associated with socialization under the stay-at-home order in California. Chan et al. (2020, a) study whether regions with a higher average willingness to take risks were more likely to comply with mobility restrictions. They find that regions with a higher risk tolerance were less likely to reduce their mobility. To our knowledge, there is no such study in the French context. However, it has been shown that the French population tends to overestimate the risk of both being infected by the coronavirus and dying from an infection (Attena et al., 2021). In addition, using a survey conducted during the first lockdown in France, Guillon and Kergall (2020) have found that risk aversion is positively associated with the probability of wanting the first lockdown to be extended and but increases the number of trips and outside physical activities individuals. This might be explained by a higher degree of risk aversion and translate into a higher perceived benefit of engaging in protective behavior.[2]

Political opinions and trust in the government and institutions also appear to be important factors of compliance with public health recommendations. Barrios and Hochberg (2020) find that US counties with a higher share of Trump voters showed a lower reduction in mobility despite stay-at-home recommendations. They also demonstrated that the perceived risk of being infected with COVID-19 and beliefs about the severity of the pandemic differed by political opinion. The response to

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[1] Their survey was implemented on March 16th and 17th.

[2] Note that, using the SHARE survey, Mendoza-Jiménez et al. (2021) find that the number of 'behavioral health factors' (BFR) individuals have (smoking, risky alcohol consumption, unhealthy eating habits, physical inactivity, and high BMI) is associated with protective behaviors. They find that it is negatively correlated with engaging in hygiene behaviors (i.e., hands washing, use of sanitizer and covering cough). Although this study is not explicitly about risk aversion and patience, it is known that the BFR they consider are correlated with them.

recommendations can also vary with respect to the political group of the one making the recommendation in addition to individual political opinions: Democrats responded more to calls to follow distancing rules from Republican governors than Democratic ones because they did not expect them to issue such calls, and they responded more than Republicans regardless of the political affiliation of the governor (Grossman et al., 2020).[3] Freeman et al. (2020) find that in England, 'those who rated themselves as at the extreme ends of either left or right holding higher levels of conspiracy thinking'. In France, to our knowledge, there is no evidence on political preferences and compliance with distancing recommendations, but it has been shown that the propensity to be vaccinated against COVID-19 is positively correlated with trust in the government, in others (including family members and neighbors), in institutions and the media (Tournay, 2021).

Trust in government can also play a role. Bargain and Aminjonov (2020) find that European regions with a higher level of trust in their government reduced their mobility more. On the other hand, Chan et al. (2020, b) explore the correlation between mobility and trust in health care systems at the country level. On the other hand, Wong and Jensen (2020), based on a qualitative survey with 10 individuals, find that compliance is lower among individuals in Singapore who trust the government's management of the pandemic. Another type of trust could influence compliance: trust in others. Indeed, if individuals trust their friends or family members, they may perceive a lower risk of transmission and may decide to participate in gatherings with friends or family members, even when it is recommended to not do so.

Religiosity is an important component of individuals' personality that could determine how they respond to different events (Kranz et al., 2020; Lassi and Mugnaini, 2015). As explained by Kranz et al. (2020), religiosity 'is positively related to core aspects of mental health, including self-esteem, well-being, and, at a process level, resiliency' but negatively correlated 'to cognitive skills, for example, analytical thinking, problem solving'.[4] Kranz et al. (2020), in the US, find that a higher degree of religiosity is not correlated with a reduction in the intention to avoid crowded places or with washing hands more regularly.[5] Freeman et al. (2020) also find that a higher degree of religiosity is associated with a higher level of conspiracy thinking in England. Religiosity may also be associated with health-related behaviors through altruistic motivations even if the literature on the links between religion and altruism provides mixed results (Hoffmann, 2015).

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[3] One could say that it was considered a sign of the seriousness of the pandemic crisis.

[4] See also Faigin and Pargament (2011), Hackney and Sanders (2003), and Koenig (2015) for the positive aspects and Gervais and Norenzayan (2012), Pennycook et al. (2016), and Zuckerman et al. (2013) for the negative aspects.

[5] One should note that their sample is not necessarily representative of the US population, and the religious individuals were mainly white Catholic men.

This paper explores the determinants of compliance with COVID-19 recommendations and other related preventive behaviors among seniors aged 50 or more in France. Compliance with preventive measures is represented in dummy variables indicating whether, since the pandemic outbreak, the individual i) has stopped meeting family members living outside the household, ii) has participated in gatherings with more than 5 other individuals, iii) has worn a mask when outside, iv) has maintained distance from others when outside, v) has engaged in handwashing or using hand sanitizer more frequently, and vi) has paid particular attention to covering their cough. We use these variables because they are related to recommendations by the French government, such as those on washing one's hands regularly and reducing social contact.

We particularly study how these protective behaviors or compliance with public health recommendations correlate with preferences with respect to risk (risk aversion) and time (patience) as well as other determinants of individuals' beliefs that can affect how they respond to the COVID-19 outbreak and recommendations: trust in others, political opinions, and religiosity.

We use individual-level data from the French part of the Survey of Health, Ageing and Retirement in Europe (SHARE). The SHARE is a multidisciplinary database of longitudinal microdata on health, socioeconomic status and intergenerational transfer from individuals aged 50 or over in Europe and Israel. The SHARE Corona survey was conducted in June and July 2020 by phone and provides information about the protective behavior and compliance with recommendations of older individuals since the outbreak of the COVID-19 crisis. To link this information with economic preferences before the pandemic, we take advantage of the French drop-off questionnaire (which is specific to France), which is a paper survey complementary to the usual CAPI questionnaire from the 8th wave of the SHARE. This drop-off questionnaire was completed before the coronavirus outbreak and provides a measurement of individual's preferences with respect to risk and the future. Finally, we also link our data to the usual questionnaire of the SHARE wave 8, conducted from October 2019 to March 2020, to study the influence of trust in others, religiosity and political opinions and to control for health status and different socioeconomic characteristics.[6] One should note that, because we observe the adoption of protective behavior in June/July 2020, and the lockdown ended the 10th May 2020, and it is likely that we measure the persistence in the adoption of preventive measures.

Our contributions can be summarized as follows. First, we use individual measures of risk, trust, and patience collected just before the COVID-19 outbreak rather than aggregated measures at the regional

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[6] Since the survey consists of face-to-face interviews, it was stopped at the very beginning of the COVID-19 crisis in France.

or country level and/or collected a long time before the corona crisis.[7] Concerning trust, we use a measure different from that used in other studies, trust in others, that can affect individuals' behavior in a different manner than trust in institutions or governments. We also focus on seniors, for whom the risk of complications or death due to the coronavirus is higher.

Our results suggest that patience and risk aversion are strong predictors of individuals' protective behavior. More patient individuals are more likely to not visit their family members anymore, wear a mask and keep their distance from others when outside, wash their hands more regularly and cover their cough. Risk aversion increases the probabilities of not meeting more than 5 other people and not meeting with family members anymore. A surprising result is that risk aversion reduces the probability of covering one's cough or sneeze. Concerning trust, we find that a higher level of trust in others reduces compliance with the recommendations about meeting with 5 or more people and family gatherings. We interpret this result as a sign that individuals with a higher trust in others perceive a lower risk of being infected by friends and family members. Finally, we find that although this association is not always statistically significant, individuals who identify themselves as positioned at the extreme right or left of the political spectrum are less likely to comply. This result is particularly interesting in the French context, where the government identifies itself as centrist, and more extreme political groups are its opponents.

The implications of our results are that government policies and public health campaigns should consider the heterogeneity of preferences and beliefs and more carefully target individuals who underestimate the spread of the virus and the risk of infection at gatherings due to their trust in others. Providing specific information on the risks associated with COVID-19, on the health and financial risks associated with the lockdown and shortage of health healthcare supply, and on their long-term effects should also help to better target risk seekers and more present-oriented individuals.

## 2. Data

We combine different questionnaires from the Survey of Health, Ageing and Retirement in Europe (SHARE): the Corona questionnaire, the 8th wave of the main questionnaire and the French drop-off questionnaire. Because these surveys were not conducted at the same time, we describe the periods of data collection for each questionnaire as well as the source of each variable in Table A.1 in the Appendix.

Importantly, the Corona questionnaire is considered a special module of the 8th wave of the SHARE conducted in June and July 2020 by phone. The questionnaire provides all the information we need to

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[7] The interest in using an individual measure of risk tolerance was also acknowledge by Chan et al. (2020). These authors also use measure of risk from a survey implemented in 2012.

measure the preventive behavior of individuals since the coronavirus outbreak. The main questionnaire survey was conducted from October 2019 to March 2020 with face-to-face interviews. This questionnaire provides socioeconomic and demographic information on surveyed individuals just before the corona crisis. The drop-off questionnaire is a country-specific paper questionnaire given to participants by interviewers at the end of the face-to-face interview. Surveyed individuals can then complete this questionnaire directly and give it to the interviewer or send it by mail using a prepaid envelope. This last questionnaire provides information on risk and time preferences just before the coronavirus outbreak. Note that 91% of the French participants to the wave 8 responded to the drop-off questionnaire.

### 2.1. Outcomes

Our outcome variables, protective behavior against COVID-19 or compliance with the recommendations, are derived from the Corona questionnaire.

Concerning recommendations with respect to social distancing, we use two dummy variables indicating whether individuals no longer engage in the following different activities since the outbreak: i) meeting with more than 5 people from outside their household and ii) visiting other family members. To construct these two variables, we proceed as follows. Individuals are asked whether they have ever left their home since the COVID-19 outbreak. If they respond yes, then they are asked, "*Since the outbreak of Corona, how often have you done the following activities, as compared to before the outbreak? Not anymore, less often, about the same, or more often?*". Then, individuals could respond for each of the two activities we consider. We construct a variable for each of these two activities that is equal to one if the individual responded that they had never left their home since the beginning of the outbreak or do not do this given activity anymore, and 0 otherwise. We should note that even though not meeting with more than 5 people from outside one's household was a clear recommendation of the government, whatever the period, not visiting other family members was recommended only during the first lockdown (17th of March – 11th of May).

Other recommendations are made for individuals when they go outside to prevent the spread of the virus: i) maintaining distance from others, ii) washing hands more regularly, iii) covering one's cough and iv) wearing a mask. For maintaining distance, because almost all the sample (95%) reported doing this always or often, we focus on the most extreme case: always maintaining distance. With respect to washing hands, there were two questions on whether respondents washed their hands more regularly and used hands sanitizer more regularly. Because sanitizer is used for hand washing and is recommended, at least in France, as a substitute for soap when outside, we consider a dummy variable equal to 1 if the individual reports more regular sanitizer use or hand washing. We also construct a

dummy variable for whether they pay particular attention to covering their cough or sneeze. Concerning wearing masks and maintaining distance from others, respondents are asked how often they wear a mask or keep their distance from others when they are outside, with the following response options: always, often, sometimes and never. For masks, we construct a dummy variable equal to 1 when the reported frequency is always or often and 0 otherwise. Note that wearing a mask was recommended only after the first lockdown when surgical masks became available for the general population.

To summarize, we have seven outcomes that capture individuals' preventive behavior since the beginning of the COVID-19 outbreak: i) does not meet family members living outside the household anymore, ii) does not participate in gatherings with more than 5 other individuals, iii) always keeps distance from others when outside, iv) always or often wears a mask when outside, , v) washes hands or use hands sanitizer more frequently, and vi) pays a particular attention to covering coughs. We argue that the three first variables measure behaviors related to social distancing, although the three last variables measure protective behaviors that relate to hygiene.

### 2.2 Preferences

We use different measures of preferences or beliefs that could be correlated with protective behaviors and were measured before the corona crisis. The first set of variables includes risk aversion and preferences for the future (or patience), which are derived from a questionnaire specific to France (also called the drop-off questionnaire) from the 8th wave of the SHARE survey conducted before the corona crisis.[8] The continuous variables are derived from self-reported measures, scored on a scale from 0 to 10, that are not specific to a given subject such that they capture broad risk tolerance and patience.[9] [10] Notably, these variables are therefore not specific to health or economic planning/risks, as is the case in some surveys, and they are not incentivized. Nonetheless, Dohmen et al. (2011) have shown that these broad measures are highly correlated with different specific dimensions and can explain different human behaviors, including health behaviors. These measures might also be better at predicting health behaviors than specific financial risk and time preferences.

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[8] The questionnaire is a paper survey that is given to surveyed individuals at the end of the face-to-face interview. An envelope with the return address is given to the surveyed individuals so they can send it to the agency in charge of conducting the survey for SHARE.

[9] Exact wording for risk aversion is: "On a scale from 0 to 10, do you generally consider yourself to be a cautious person, limiting risks as much as possible, or, conversely, do you consider yourself to be someone who likes to take risks, likes adventure, and seeks novelty and challenges?".

[10] Exact wording for patience is: "On a scale from 0 to 10, do you consider yourself more as someone who lives from day to day and takes life as it comes, without thinking too much about tomorrow, or, conversely, as someone who thinks about the future and is farsighted?"

We also include several belief variables from the regular waves of SHARE.[11] Trust in others is measured by a continuous variable derived from a self-reported score from 0 to 10. Political opinions come from a self-reported variable scored from 0 (left) to 10 (right) that is discretized to capture extreme political orientation. Indeed, those with extreme opinions may be less likely to comply with some public health measures, such as vaccination (Kennedy, 2019). Tournay (2021) also finds that individuals who feel marginalized and do not feel represented by the government have a lower propensity to be vaccinated. This indicates that comparing extreme opinions might be of interest when studying protective behavior since conspiracy thinking might correlate with individuals' level of compliance. We therefore construct a variable taking three different values: 0 if the individual responded 0, 1 if the individual responded with a value from 1 to 9, and 2 if the individual responded 10.[12]

Finally, for religiosity, individuals were asked at what frequency they currently pray. We construct a binary variable indicating whether the individuals pray or not. These variable captures whether individuals are religious enough to pray. The wording of the survey questions is provided in Appendix C.

### 2.3. Control variables

We control for several characteristics that might be correlated with our key variables and the outcomes. We control for age (using spline functions in order to take into account potential nonlinearity), education and gender. We also control for dummy variables indicating whether the individual's household has difficulties to make ends meet. This indicator provides a subjective measure of living conditions that has been shown to be robust to cultural norms and to be correlated to both income and health-related behaviors (Fahey, 2007; Arnault et al., 2021). This measure may also better reflect the current living conditions of the individuals during the crisis than the income they reported before the pandemic[13]. Additionally, we control for determinants of the demand for healthcare and the risk of developing severe COVID-19: whether the individual's body mass index (BMI) is higher than or equal to 30, whether the individual has at least one chronic condition, whether the person has at least one limitation in their activities of daily living (ADL limitations) and whether they visited at least one specialist during the year before the coronavirus outbreak[14].

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[11] The questions related to our measures of belief were posed to individuals the first time they were interviewed for the SHARE survey only; we therefore take the response of each individual at this moment. The variables are therefore taken from waves 2 to 8 of the regular SHARE waves.

[12] We find similar results when using a slightly different categorization, such as 0 if the individual responded 0-1, 1 if the individual responded with a value from 2-8, and 2 if the individual responded 9-10.

[13] The results are robust to the inclusion of income instead of the subjective measure of living conditions.

[14] Having visited at least one GP during the year before the coronavirus outbreak was excluded, since it was never significant.

2.4. Descriptive statistics

The descriptive statistics are displayed in Table 1. We can see that many individuals report not visiting family members anymore (48%) and no longer meeting with 5 or more other people (61%). Indeed, although the interviews were conducted after the lockdown when gatherings were not strictly forbidden but the government's recommendations were still to not gather with more than 6 adults, older French people seem to have remained careful.[15]

With respect to recommendations when outside, French seniors appear to be compliant, since 95% report washing their hands or using sanitizer more regularly, 86% always or often wear a mask, 86% pay particular attention to covering their cough or sneeze and 75% always keep their distance from others.[16]

All in all, these first descriptive statistics tend to highlight that old age French people have been persistent in the adoption of protective behavior. Indeed, the proportion of individuals who adopt such behaviors is relatively high given that the recommendations were not mandatory anymore (or yet for mask wearing) during the survey period.

With respect to our main variables of interest that are continuous, the distributions of risk aversion, patience and trust are displayed in histograms in Figure B.1. The average risk aversion is 6.5, and very few individuals report a high level of risk tolerance (13% of the sample reports a value lower than or equal to 3), while 38% of the sample reports a value higher than or equal to 7. We can also observe that 20% of the sample reported a risk aversion equal to 5, which is the midpoint. Regarding patience, its mean is also 6.5, and its distribution appears relatively similar, with a high proportion of individuals reporting a high level of patience. For trust in others, its mean is 5.5, and some observations report a low level of trust (18% of the sample reports a value lower than or equal to 3); 32% of the sample reported a value higher than or equal to 7. This also means that many individuals (46%) reported a value around the midpoint of the scale.

For political opinions, we first look at the variable that isolates the most extreme responses. We can see that the proportion of individuals reporting being at the extreme left (7.2%) is slightly higher than that of those who report being at the extreme right (5.9%). When we use a broader definition of the right and left, we observe the opposite, since 13% report being on the left and 15% on the right. Notably, most individuals place themselves in the middle of the scale, which might indicate that those who rate their opinions as being at the extreme end of the scale actually have very extreme opinions or adhere to these ideologies. We can see that approximately 43% of individuals pray.

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[15] The interviews were conducted in June and July 2020, and the first lockdown ended on May 11, 2020.
[16] Note that 96% of individuals reported always or often keeping their distance when outside.

With respect to age, the median age was 70 years, and the mean was 71 years. This indicates that our sample is indeed composed of individuals at high risk of severe COVID-19. We can also see that 59% are women, that 11% of them report having difficulty making ends meet and that there are many missing observations on this latter variable. With respect to health, 86% of individuals in the sample had at least one chronic condition, 21% had a BMI greater than or equal to 30, 13% had at least one ADL limitation and 68% visited a specialist at least once during the year before the coronavirus outbreak.

Table 1: Descriptive statistics

| Variables | Mean | Standard deviation |
|---|---|---|
| **Panel A: Outcomes** | | |
| Does not meet with 5 or more other people anymore | 0.608 | |
| Does not visit family members anymore | 0.478 | |
| Washes hands or uses sanitizer more regularly | 0.951 | |
| Always or often wears a mask when outside | 0.862 | |
| Covers cough and sneeze | 0.864 | |
| Always keep distance when outside | 0.752 | |
| **Panel B: Variables of interest** | | |
| Risk aversion | 6.468 | (2.427) |
| Patience | 6.432 | (2.561) |
| Trust in others | 5.473 | (2.306) |
| *First variable of political opinions* | | |
| Extreme Left (0) | 0.072 | |
| Middle (1-9) | 0.788 | |
| Extreme Right (10) | 0.059 | |
| *Second variable of political opinions* | | |
| Left (0-2) | 0.131 | |
| Middle (3-7) | 0.632 | |
| Right (8-10) | 0.156 | |
| Political opinion missing | 0.079 | |
| **Panel C: Control variables** | | |
| Age $\geq$ 65 | 0.753 | |
| Age $\geq$ 70 | 0.529 | |
| Age $\geq$ 75 | 0.315 | |
| Age $\geq$ 80 | 0.203 | |
| Has a chronic condition | 0.863 | |
| BMI $\geq$ 30 | 0.207 | |
| Has ADL difficulties | 0.129 | |
| Has physical difficulties only | 0.380 | |
| Has visited a specialist during the two last years | 0.682 | |
| Is a woman | 0.589 | |
| No education | 0.217 | |

| | |
|---|---|
| Lower secondary education | 0.092 |
| Higher secondary education | 0.389 |
| Tertiary education | 0.300 |
| Has no difficulties to make ends meet | 0.597 |
| Has difficulties to make ends meet | 0.113 |
| Difficulties to make ends meet missing | 0.289 |

Source: SHARE Wave 8 (main questionnaire and French drop-off) and SHARE Corona Survey 1

## 3. Methodology

The purpose of the paper is to assess whether our preferences variables are related to the adoption of social distancing (visiting family members, meeting more than 5 persons, keeping distance) and hygiene behaviors (hands hygiene, covering cough, mask wearing). We first define the following latent variable $y_{ik}^*$ that captures the propensity of an individual $i$ to adopt the preventive behavior $k$ (one of the six outcomes defined in the data section), as follows for each $k$:

$$y_{ik}^* = Preferences_i\beta_{1k} + X_i\beta_{2k} + u_{ik}$$

where $Preferences_i$ is a vector of preferences variables, $X_i$ a vector of control variables and $u_{ik}$ is an unobserved random term. This latent variable is not observed, and we only observe whether the individual decided to adopt the given preventive behavior. For each preventive behavior $k$, we define the observed preventive $y_{ik}$ as follows:

$$y_{ik} = \begin{cases} 1 \; if \; y_{ik}^* > 0 \\ 0 \; if \; y_{ik}^* \leq 0 \end{cases}$$

Assuming that the unobserved random terms are distributed an univariate normal, we estimate separate probit regressions for each outcome. Finally, because we want to test whether the preferences are correlated to each type of preventive behavior, i.e social distancing and hygiene, we jointly test the significance of the estimated coefficients for each of the three outcomes that are related to the type of behavior. For example, we jointly test the coefficient associated to risk aversion in the equations for visiting family members, meeting more than 5 persons and keeping distance in order to test whether risk aversion is correlated to social distancing measures. We will jointly the test the coefficients in the equations for hands hygiene, covering cough, mask wearing to whether risk aversion is correlated to hygiene measures.

Finally, we will estimate the probit models with and without controls (results without controls are presented in the appendix).

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4. Results

We present the results for our variables of interest in different graphs, and full tables are provided in the Appendix. Concerning risk aversion (Figure 1), it increases the probability of not participating in meeting with more than 5 other persons and no longer visiting family members anymore. These results highlight the fact that risk preferences are related to fear of the coronavirus. Indeed, these two outcomes relate to (usually inside) social gatherings that represent greater risk due to a higher transmission rate. Risk-averse individuals might therefore greatly fear transmitting the virus to their friends and family members. These results are in line with Müller and Rau (2020), who find that risk aversion tends to have a positive or null correlation with compliance. In contrast, it contradicts Sheth and Wright (2020), who find that risk aversion does not correlate with socialization among students in California. Our results are also in contradiction with Guillon and Kergall (2020). One should note that, with respect to the latter, the population of interest (they do not focus on old age population) and the dimensions of behaviors with respect to covid that are used are different.

Regarding the magnitude, we find that, on average, increasing the risk aversion score by one unit increases the probability of not meeting with more than 5 people and not visiting family members by 1.5 and 1.3 percentage points, respectively. This implies substantial effects since, for each activity, the average difference in the probability of complying between the most risk averse and least risk averse is approximately 15 and 13 percentage points, respectively.

Figure 1. Marginal effect of risk aversion on the different outcomes
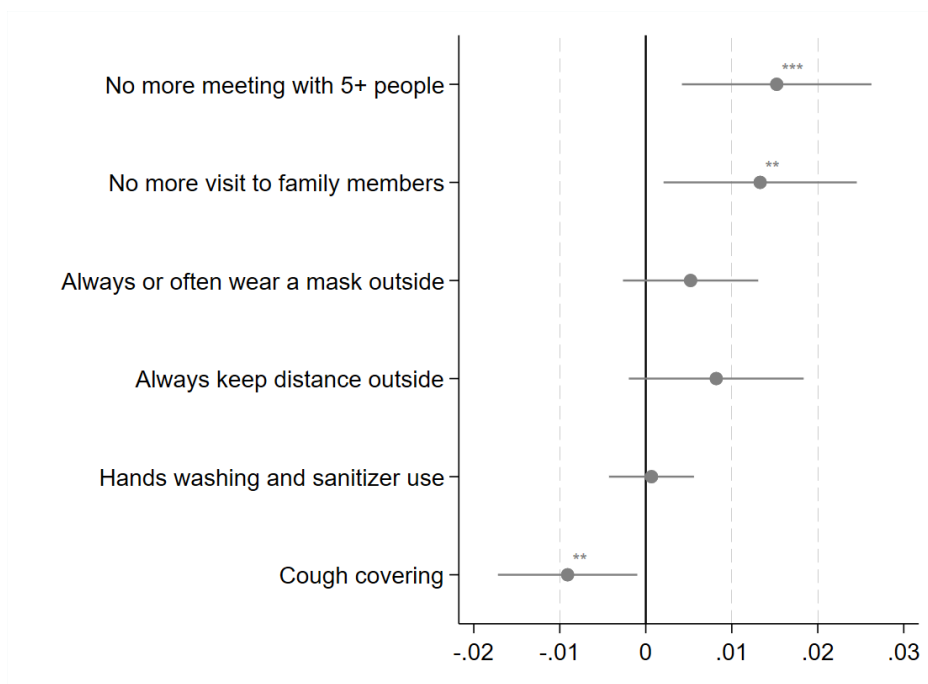
In contrast, risk aversion decreases the probability of covering one's cough or sneeze. This negative effect can be explained by different mechanisms. One reason may be the wording of the question (see Appendix C). Since it relates to paying particular attention and more risk-averse individuals may have already been paying attention to covering their coughs and sneezes before the corona crisis, it is possible they were less inclined to report paying particular attention because of COVID-19. This result is nonetheless difficult to understand, and more research needs to be done to better understand this result. Finally, our joint test of significance (Table 2) show that risk aversion is significantly associated to distancing and hygiene behaviors since the p-values are 0.017 and 0.026, respectively.

Table 2: p-values from multiple hypothesis tests

| | Social distancing | Hygiene |
|---|---|---|
| Risk aversion | 0.0165 | 0.0258 |
| Patience | 0.0095 | 0.0070 |
| Trust | 0.0226 | 0.2264 |
| Pray | 0.2073 | 0.0149 |
| Left | 0.5909 | 0.9483 |
| Right | 0.6897 | 0.2708 |
| Extreme Left | 0.7252 | 0.2333 |
| Extreme Right | 0.6729 | 0.1285 |

Note: N=1,271. The table reports the p-values from multiple testing hypothesis of the cofficients for the variable of interest being equal to 0 in three different equations. The three equations relate either to social distancing (visiting family members, meeting more than 5 persons, keeping distance when outside) or hygiene measures (covering cough, hands hygiene, mask wearing).

Concerning patience, it positively correlates with most of the preventive measures (Figure 2). This confirms the findings of Müller and Rau (2020). Patience significantly increases not visiting family members anymore, paying particular attention to covering coughs and sneezes, always wearing a mask when outside, always keeping distance from others when outside, and washing hands more frequently than before the corona crisis. This shows that patience is a major determinant of compliance with respect to recommendations and might reflect that our general measure of patience captures preferences or patience related to health decisions, especially in the uncertain context of the coronavirus, for which long-term effects are unknown, just as its duration. One should also note that because the survey was conducted in June and July, when wearing masks when outside was not necessarily promoted by the French government, our result could indicate that patience increases persistence in the diligent practice of protective behaviors.

The effects are also substantial, since, for example, the average difference between the more patient and least patient individuals in the probability of always wearing a mask is approximately 19 percentage points. This means that if all individuals were patient, the mean probability of wearing masks would be approximately 77% (note that it is 70% in the data), and it would be 58% if all individuals were impatient. The difference is approximately 12 and 10 for not visiting family members anymore and always keeping its distance when outside, respectively. Finally, our joint test of significance (Table 2) show that patience is significantly associated to distancing and hygiene behaviors since the p-values are 0.010 and 0.007, respectively.

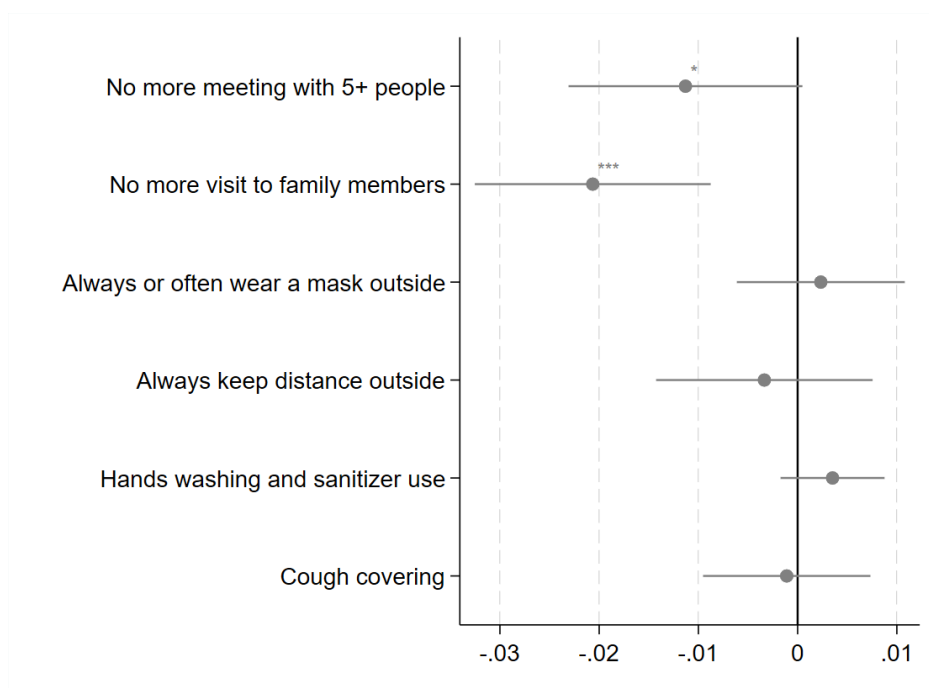Figure 2. Marginal effects of patience on the different outcomes
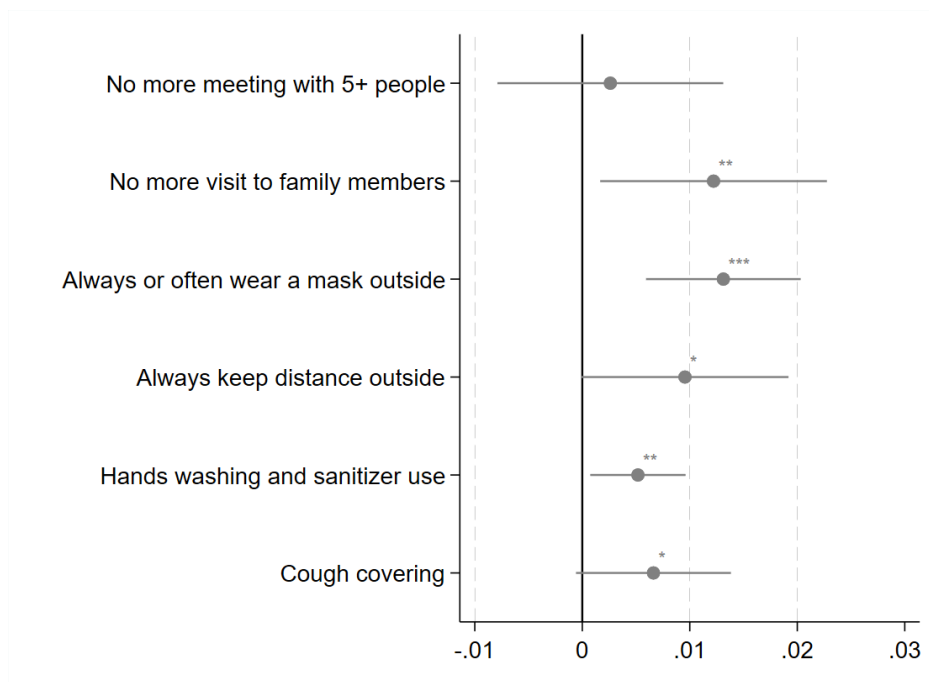


Note: N=1,271. Marginal effects estimated from a probit model. These results are obtained when controlling for age, education, risk aversion, trust in others, the use of specialist care and GP care in wave 8, the existence of a chronic condition, gender, political opinions, BMI, religiosity, and economic difficulties. ***p<0.01, **p<0.05, *p < 0.1

The marginal effects of trust in others are displayed in Figure 3. The correlation is significantly different from zero and negative for the probabilities of no longer visiting family members and no longer participating in gatherings with more than 5 other people. This suggests that individuals with a high level of trust in others are less likely to comply with the recommendations to have fewer (and smaller) social gatherings. This result could be explained by the fact that individuals with a higher level of trust expect their friends/family members to be less likely to transmit the coronavirus. Note that this effect does not necessarily contradict Bargain and Aminjonov (2020), who find that trust (at

the regional level) in government increases compliance with mobility restrictions. Indeed, our result is about trust in others and not the government and is also a measure at the individual level.

Regarding the magnitude, it is again substantial since the average predicted probability of not visiting family members (not participating in gatherings with more than 5 other people) is 0.59 (0.67) for those with the lowest level of trust and 0.39 (0.56) for those with the highest.[17] All in all, our joint test of significance (Table 2) show that trust in others is significantly associated to distancing measures, but not to hygiene behaviors since the p-values are 0.023 and 0.226, respectively.

Figure 3. Marginal effects of trust in others on the different outcomes
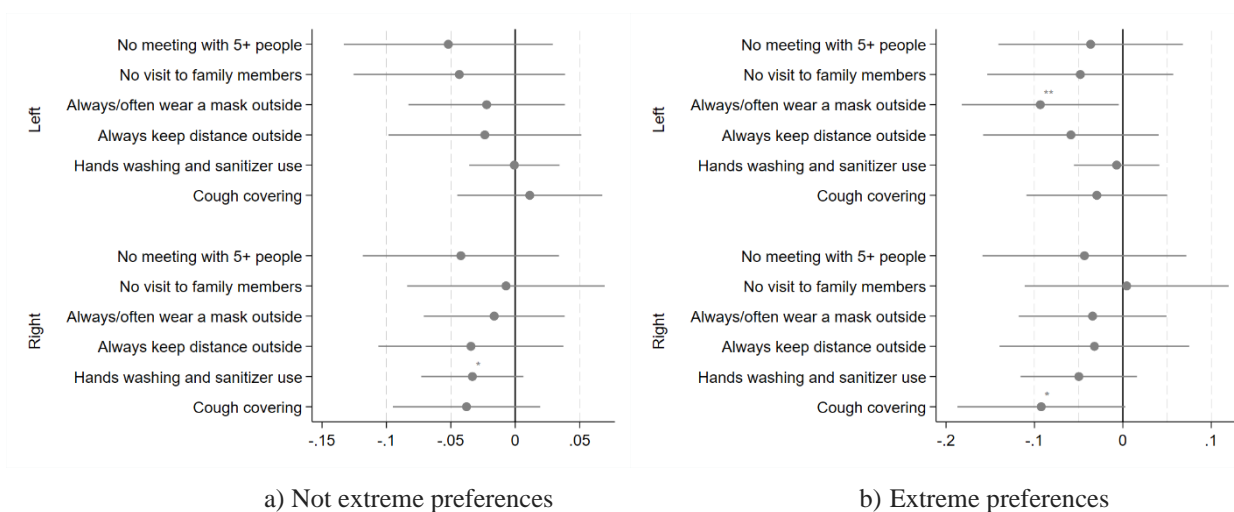


Note: N=1,271. Marginal effects estimated from a probit model. These results are obtained when controlling for age, education, risk aversion, patience, trust in others, the use of specialist care and GP care in wave 8, the existence of a chronic condition, gender, political opinions, BMI, religiosity, and economic difficulties. ***p<0.01, **p<0.05, *p < 0.1

We display the average marginal effects of political opinions in Figure 4. Although the coefficients are not always significantly different from zero, they tend to be negative. This result indicates that individuals who report being on the left or the right of the political spectrum are less likely to comply. We can also see that declaring oneself to be on the left or the right of the political spectrum makes a particular difference, since we find significant effects on different outcomes for the left and right orientation, respectively. We also find that having extreme opinions rather than less extreme opinions

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[17] Note that at the average of trust in the sample, the average predicted probability is 0.61 for not participating in gatherings with 5+ individuals anymore and 0.48 for not visiting family members anymore.

does not necessarily make a difference except for a few outcomes. Regarding those who lean left politically, the marginal effect on the probability of always or often wearing a mask when outside doubles when we include extreme opinions only (from approximately 0.05 percentage points to 0.1). Concerning individuals who declare themselves to be on the right, the marginal effect is twice as large on the probability of covering coughs and sneezes when we consider extreme opinions only. In addition, those who report being on the right are less likely to wash their hands more than before.[18] This result is line with the results by Freeman et al. (2020) in the context of England. The multiple hypothesis tests (Table 2) show that political opinions are not correlated to protective behaviors.

Figure 4. Marginal effects of political preferences on the different outcomes



a) Not extreme preferences            b) Extreme preferences

Note: N=1,271. Marginal effects estimated from a probit model. In the left panel, nonextreme left includes individuals who report 0 to 2 on the scale and nonextreme right those who report 8 to 10. The reference is individuals reporting 3 to 7. In the right panel, extreme left includes individuals who report 0 on the scale and extreme right those who report 10. The reference is individuals reporting 1 to 9. These results are obtained when controlling for age, education, risk aversion, patience, trust in others, the use of specialist care in wave 8, the existence of a chronic condition, gender, BMI, religiosity, and economic difficulties. ***$p<0.01$, **$p<0.05$, *$p < 0.1$

Concerning religiosity and the practice of prayer, we find few significant effects (Figure 5). We find that those who pray are less likely to wear a mask when outside but more likely to keep their distance from others when they are outside. Notably, the marginal effect for wearing a mask is the only one that is negative. These mixed results are difficult to interpret but might indicate that some groups of individuals, here, the religious ones, may perceive wearing masks and keeping distance from others as

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[18] The marginal effect of extreme opinions is very similar to that for not extreme opinions but is not significant due to lower statistical precision.

substitutes for each other. The joint test of significance (Table 2) show that the practice of prayer is not associated to either hygiene or social distancing behaviors.

Figure 5. Marginal effects of praying on the different outcomes.
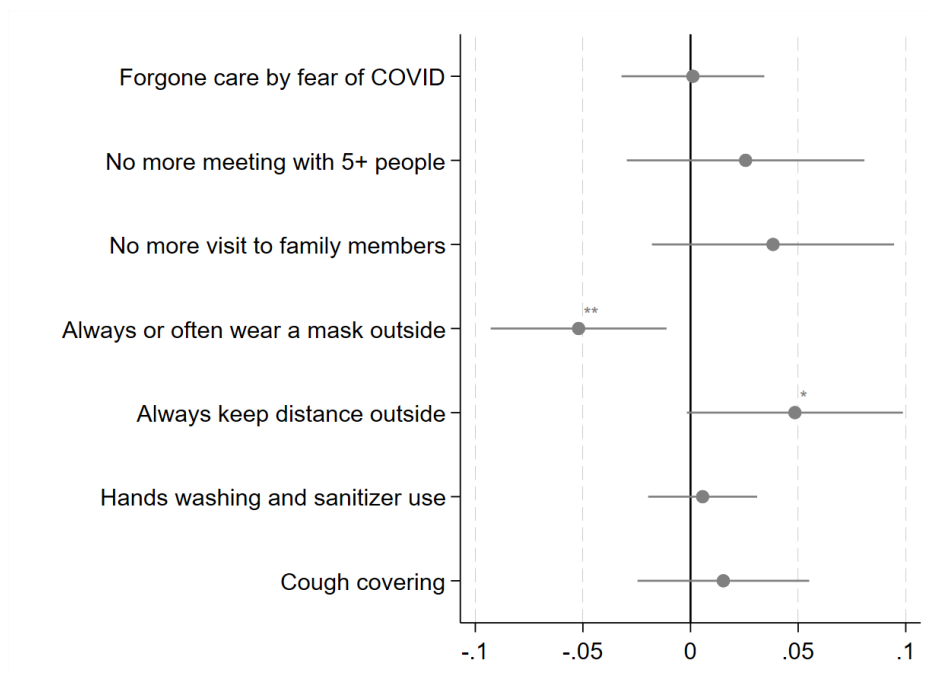


Note: N=1,271. Marginal effects estimated from a probit model. These results are obtained when controlling for age, education, risk aversion, patience, trust in others, the use of specialist care and GP care in wave 8, the existence of a chronic condition, gender, political opinions, BMI, and economic difficulties. ***p<0.01, **p<0.05, *p < 0.1

Conclusion

Using an original survey conducted among French participants in the European SHARE Survey, this article explores how the adoption of preventive behaviors and compliance with COVID-19-related protective recommendations correlate with several preferences and beliefs measured before the corona crisis, namely, risk aversion, patience, trust in others, political opinion, and religiosity.

We find evidence that patience, risk aversion and trust in others have substantial correlations with protective behaviors. We also find that extreme political opinions seem to reduce the likelihood of engaging in the protective behavior recommended by the government. The effect of political opinions differs with the intensity of these opinions and their orientations (left or right). This latter result is particularly interesting in the French context, where the government identifies itself as centrist and extremists are its main opponents.

Our work suffers from several limitations that need to be discussed. First, the focus on France might appear less relevant than investigation of other countries. It should be emphasized that Fetzer et al.

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(2020) conducted a survey in 175 countries (between March 20 and April 5, 2020) and revealed that France is an average country in terms of staying at home and more regular handwashing. France was also close to the mean in terms of not attending gatherings and keeping distance to distance from others. One should also note that France was close to the average in terms of trust in the government. Finally, France seems to have been slightly less severely affected by the virus than its neighbors in terms of cases and deaths, except for Germany and Switzerland (see Table F.1). One could therefore speculate that the French population might have perceived a lower risk than the residents in some of these countries.

Nevertheless, the results highlight several insights for policy recommendations. To implement effective public health policy, the government should consider individuals' heterogeneity in preferences and beliefs when implementing a strategy to encourage people to comply with its COVID-19 protective recommendations. Information policies should in particular aim to increase the perception of the health and financial risks associated with the pandemic as well as of the long-run effects of contracting COVID-19. Finally, the government should take into account the impact of beliefs and political opinions, especially in the French context, where the government identifies itself as centrist and extremists are its main opponents.

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**Online Supplementary materiel**

**Beliefs, Risk and Time Preferences and COVID-19 Preventive Behavior: Evidence from France**

**Appendix A. Sources of data**

Table A.1. Sources for the different variables

| Variable | Questionnaire |
|---|---|
| *Outcomes* | |
| No more meetings with more than 5 people from outside household | SHARE Corona 1 |
| No more visits to other family members | SHARE Corona 1 |
| Always keep distance to others when went outside | SHARE Corona 1 |
| Wash your hands or use sanitizer more frequently than usual | SHARE Corona 1 |
| Pay special attention to covering cough and sneeze | SHARE Corona 1 |
| *Variables of interest* | |
| Risk aversion | wave 8 - French Drop-off |
| Preferences for future | wave 8 - French Drop-off |
| Trust in others | wave 2 to wave 8 - regular SHARE |
| Political opinions | wave 7 - regular |
| *Explanatory variables* | |
| Age | SHARE Corona 1 |
| Gender | SHARE Corona 1 |
| Education level | wave 1 to 8 - French Drop-off |
| Difficulties to make ends meet | wave 8 - French Drop-off |
| BMI | wave 8 - Regular SHARE and SHARE Corona 1 |
| Has a chronic condition | wave 8 - Regular |
| Prayer | wave 8 - Regular |
| Specialists visit in wave 8 | wave 8 - Regular |
| Has ADL difficulties | wave 8 - Regular |
| Has physical difficulties only | wave 8 - Regular |
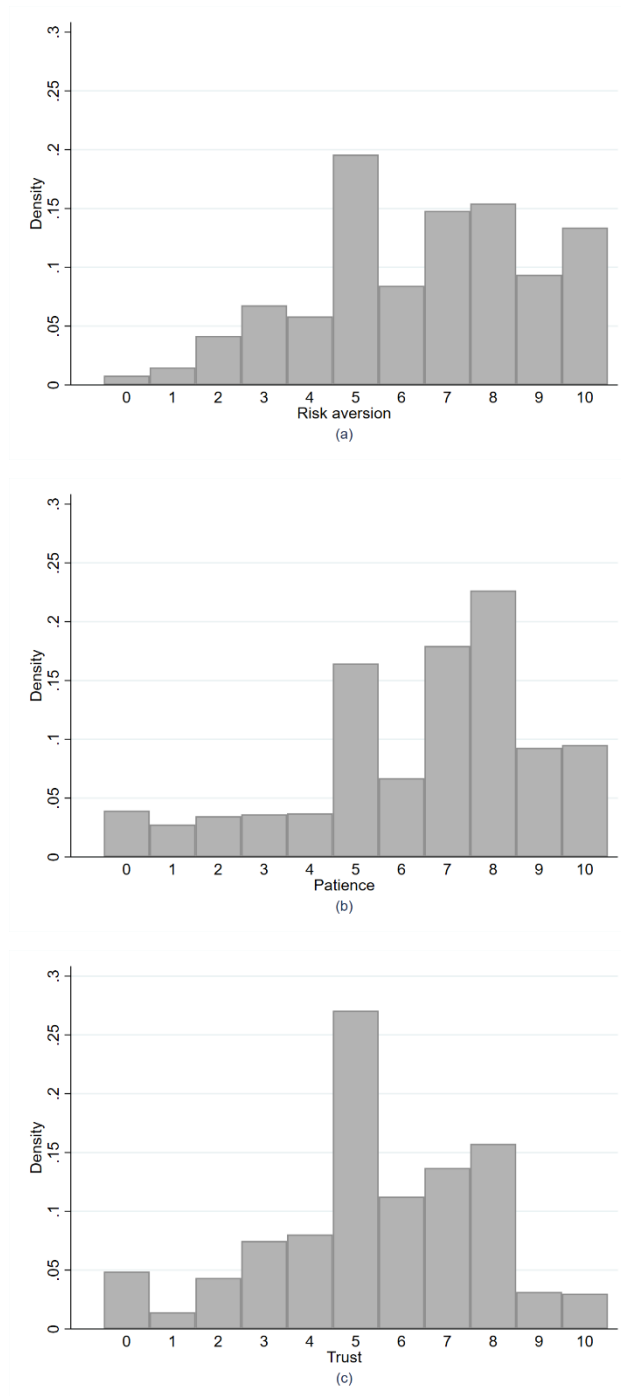
Figure B.1: Distribution of preferences in the sample.

**Appendix C. Definition of variables**

[Outcomes]

- *Since the outbreak of Corona, have you ever left your home? Yes or no.*

If yes is replied, then respondent is asked

- o *Since the outbreak of Corona, how often have you done the following activities, as compared to before the outbreak? Not anymore, less often, about the same, or more often?*

    - ▪ *Meeting with more than 5 people from outside your household?*

    - ▪ *Visiting other family members?*

  o *How often did you keep distance to others when you went outside your home? Was it always, often, sometimes, or never?*

  o *How often did you wear a face mask when you went outside your home to a public space?*

- *Did you wash your hands more frequently than usual?*

- *Did you pay special attention to covering cough and sneeze?*

[Non-financial risk aversion]

*On a scale from 0 to 10, do you generally consider yourself to be a cautious person, limiting risks as much as possible, or, conversely, do you consider yourself to be someone who likes to take risks, likes adventure, and seeks novelty and challenges?*

*0 Very cautious – 10 Like taking risks*

[Patience]

*On a scale from 0 to 10, do you consider yourself more as someone who lives from day to day and takes life as it comes, without thinking too much about tomorrow, or, conversely, as someone who thinks about the future and is farsighted?*

*0 Live from day to day – 10 Very patient, farsighted*

[Trust]

*Now I would like to ask a question about how you view other people. Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?*

*Not looking at card 45 anymore, please tell me on a scale from 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted.*

[Political opinions]

*In politics people sometimes talk of left and right. On a scale from 0 to 10, where 0 means the left and 10 means the right, where would you place yourself?*

[Prayer]

*Please think about your current habits, how often do you pray?*

*1. More than once a day*

*2. Once daily*

*3. A couple of times a week*

*4. Once a week*

*5. Less than once a week*

*6. Never*

## Appendix D. Full Tables

Table D1: Marginal effects on the different outcomes (with not extreme political preferences as covariate)

| Outcomes | Does not meet with 5+ other people anymore | | Does not visit family members anymore | | Wash hands or use sanitizer more regularly | | Always or often wear a mask when outside | | Cover cough and sneeze | | Always keep distance when outside | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| Age ≥ 65 | -0.002 | -0.006 | 0.054 | 0.041 | -0.010 | -0.006 | 0.005 | 0.011 | -0.028 | -0.019 | -0.001 | -0.001 |
| | (0.039) | (0.039) | (0.040) | (0.040) | (0.019) | (0.019) | (0.028) | (0.028) | (0.030) | (0.030) | (0.035) | (0.035) |
| Age ≥ 70 | 0.049 | 0.045 | 0.060 | 0.056 | -0.005 | -0.004 | -0.021 | -0.027 | -0.005 | -0.003 | 0.075** | 0.071* |
| | (0.040) | (0.040) | (0.041) | (0.041) | (0.019) | (0.019) | (0.029) | (0.029) | (0.030) | (0.030) | (0.037) | (0.037) |
| Age ≥ 75 | 0.180*** | 0.181*** | 0.131*** | 0.126** | -0.014 | -0.018 | 0.052 | 0.038 | -0.062* | -0.070** | -0.063 | -0.066 |
| | (0.051) | (0.051) | (0.051) | (0.051) | (0.022) | (0.022) | (0.038) | (0.037) | (0.035) | (0.034) | (0.046) | (0.046) |
| Age ≥ 80 | -0.095* | -0.101* | -0.080 | -0.092* | -0.012 | -0.003 | -0.047 | -0.021 | -0.016 | 0.001 | -0.018 | -0.018 |
| | (0.053) | (0.053) | (0.051) | (0.052) | (0.021) | (0.021) | (0.039) | (0.038) | (0.034) | (0.034) | (0.047) | (0.047) |
| Risk aversion | 0.015*** | 0.015*** | 0.012** | 0.013** | 0.000 | 0.000 | 0.006 | 0.005 | -0.008* | -0.009** | 0.009* | 0.008 |
| | (0.006) | (0.006) | (0.006) | (0.006) | (0.002) | (0.003) | (0.004) | (0.004) | (0.004) | (0.004) | (0.005) | (0.005) |
| Patience | 0.001 | 0.003 | 0.011** | 0.012** | 0.005** | 0.005** | 0.014*** | 0.013*** | 0.008** | 0.007* | 0.009* | 0.009* |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.002) | (0.002) | (0.004) | (0.004) | (0.004) | (0.004) | (0.005) | (0.005) |
| Trust in others | -0.014** | -0.012* | -0.022*** | -0.021*** | 0.004 | 0.003 | 0.005 | 0.002 | 0.000 | -0.001 | -0.004 | -0.003 |
| | (0.006) | (0.006) | (0.006) | (0.006) | (0.003) | (0.003) | (0.004) | (0.004) | (0.004) | (0.004) | (0.005) | (0.006) |
| Extreme left (0-2) | -0.036 | -0.036 | -0.048 | -0.048 | -0.000 | -0.007 | -0.072* | -0.093** | -0.014 | -0.029 | -0.048 | -0.059 |
| *ref: middle (3-7)* | (0.053) | (0.053) | (0.053) | (0.054) | (0.022) | (0.025) | (0.043) | (0.045) | (0.038) | (0.041) | (0.050) | (0.051) |
| Extreme right (8-10) | -0.032 | -0.043 | -0.001 | 0.004 | -0.061* | -0.050 | -0.074 | -0.034 | -0.124** | -0.092* | -0.048 | -0.032 |
| *ref: middle (3-7)* | (0.058) | (0.059) | (0.059) | (0.059) | (0.036) | (0.034) | (0.048) | (0.043) | (0.052) | (0.048) | (0.055) | (0.055) |
| Political opinions missing | -0.046 | -0.056 | -0.012 | -0.012 | -0.024 | -0.023 | -0.009 | -0.011 | -0.043 | -0.038 | 0.048 | 0.050 |
| *ref: middle (3-7)* | (0.057) | (0.057) | (0.058) | (0.057) | (0.029) | (0.029) | (0.041) | (0.040) | (0.046) | (0.045) | (0.048) | (0.048) |
| Prays | 0.036 | 0.027 | 0.043 | 0.037 | 0.010 | 0.005 | -0.042** | -0.055*** | 0.026 | 0.017 | 0.053** | 0.046* |
| *ref: does not pray* | (0.028) | (0.028) | (0.028) | (0.029) | (0.013) | (0.013) | (0.021) | (0.021) | (0.020) | (0.020) | (0.025) | (0.026) |
| Prayer missing | 0.059 | 0.065 | 0.098 | 0.099 | 0.004 | -0.004 | 0.052 | 0.041 | 0.039 | 0.012 | -0.050 | -0.063 |
| *ref: does not pray* | (0.092) | (0.091) | (0.097) | (0.097) | (0.041) | (0.045) | (0.052) | (0.055) | (0.062) | (0.070) | (0.099) | (0.100) |

Note: This Table reports the marginal effects otbained from probit estimations. Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table D1: Marginal effects on the different outcomes (with not extreme political preferences as covariate)

| Outcomes | Does not meet with 5+ other people anymore | | Does not visit family members anymore | | Wash hands or use sanitizer more regularly | | Always or often wear a mask when outside | | Cover cough and sneeze | | Always keep distance when outside | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| Has a chronic condition | | -0.029 | | 0.056 | | -0.002 | | 0.054* | | -0.033 | | -0.003 |
| | | (0.041) | | (0.043) | | (0.019) | | (0.028) | | (0.032) | | (0.037) |
| bmi≥30 | | 0.073** | | -0.009 | | 0.001 | | -0.010 | | 0.016 | | -0.014 |
| | | (0.035) | | (0.035) | | (0.015) | | (0.024) | | (0.025) | | (0.032) |
| Has ADL difficulties | | -0.004 | | 0.010 | | -0.002 | | -0.020 | | 0.038 | | 0.027 |
| | | (0.045) | | (0.045) | | (0.021) | | (0.031) | | (0.033) | | (0.042) |
| Has physical difficulties only | | -0.013 | | -0.004 | | -0.006 | | 0.036 | | 0.044** | | 0.064** |
| | | (0.031) | | (0.031) | | (0.014) | | (0.022) | | (0.022) | | (0.028) |
| Has visited a specialist | | 0.039 | | 0.045 | | 0.031** | | 0.053*** | | 0.030 | | 0.033 |
| | | (0.030) | | (0.030) | | (0.013) | | (0.020) | | (0.021) | | (0.027) |
| Is a woman | | -0.007 | | -0.018 | | 0.011 | | 0.059*** | | 0.068*** | | 0.025 |
| | | (0.029) | | (0.029) | | (0.013) | | (0.020) | | (0.020) | | (0.026) |
| Lower secondary education | | -0.057 | | -0.106* | | 0.019 | | 0.037 | | 0.048 | | -0.013 |
| ref: No education | | (0.053) | | (0.055) | | (0.025) | | (0.041) | | (0.041) | | (0.050) |
| Higher secondary education | | -0.080** | | -0.099** | | 0.012 | | 0.037 | | 0.035 | | 0.001 |
| ref: No education | | (0.037) | | (0.039) | | (0.018) | | (0.030) | | (0.030) | | (0.035) |
| Tertiary education | | -0.098** | | -0.060 | | 0.032* | | 0.093*** | | 0.092*** | | 0.014 |
| ref: No education | | (0.041) | | (0.042) | | (0.019) | | (0.030) | | (0.030) | | (0.038) |
| Has difficulties to make ends meet | | 0.054 | | 0.059 | | 0.015 | | 0.025 | | -0.002 | | 0.040 |
| ref: has no difficulties | | (0.043) | | (0.045) | | (0.017) | | (0.031) | | (0.034) | | (0.040) |
| Economic difficulties missing | | 0.017 | | 0.055* | | -0.008 | | 0.035* | | 0.023 | | 0.006 |
| ref: has no difficulties | | (0.031) | | (0.031) | | (0.015) | | (0.021) | | (0.022) | | (0.028) |
| Observations | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 |

Note: This Table reports the marginal effects otbained from probit estimations. Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table D.2: Marginal effects on the different outcomes with extreme political preferences

| Outcomes | Does not meet with 5+ other people anymore | | Does not visit family members anymore | | Wash hands or use sanitizer more regularly | | Always or often wear a mask when outside | | Cover cough and sneeze | | Always keep distance when outside | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Age ≥ 65 | -0.002 | -0.006 | 0.054 | 0.041 | -0.010 | -0.006 | 0.005 | 0.011 | -0.028 | -0.019 | -0.001 | -0.001 |
| | (0.039) | (0.039) | (0.040) | (0.040) | (0.019) | (0.019) | (0.028) | (0.028) | (0.030) | (0.030) | (0.035) | (0.035) |
| Age ≥ 70 | 0.049 | 0.045 | 0.060 | 0.056 | -0.005 | -0.004 | -0.021 | -0.027 | -0.005 | -0.003 | 0.075** | 0.071* |
| | (0.040) | (0.040) | (0.041) | (0.041) | (0.019) | (0.019) | (0.029) | (0.029) | (0.030) | (0.030) | (0.037) | (0.037) |
| Age ≥ 75 | 0.180*** | 0.181*** | 0.131*** | 0.126** | -0.014 | -0.018 | 0.052 | 0.038 | -0.062* | -0.070** | -0.063 | -0.066 |
| | (0.051) | (0.051) | (0.051) | (0.051) | (0.022) | (0.022) | (0.038) | (0.037) | (0.035) | (0.034) | (0.046) | (0.046) |
| Age ≥ 80 | -0.095* | -0.101* | -0.080 | -0.092* | -0.012 | -0.003 | -0.047 | -0.021 | -0.016 | 0.001 | -0.018 | -0.018 |
| | (0.053) | (0.053) | (0.051) | (0.052) | (0.021) | (0.021) | (0.039) | (0.038) | (0.034) | (0.034) | (0.047) | (0.047) |
| Risk aversion | 0.015*** | 0.015*** | 0.012** | 0.013** | 0.000 | 0.000 | 0.006 | 0.005 | -0.008* | -0.009** | 0.009* | 0.008 |
| | (0.006) | (0.006) | (0.006) | (0.006) | (0.002) | (0.003) | (0.004) | (0.004) | (0.004) | (0.004) | (0.005) | (0.005) |
| Patience | 0.001 | 0.003 | 0.011** | 0.012** | 0.005** | 0.005** | 0.014*** | 0.013*** | 0.008** | 0.007* | 0.009* | 0.009* |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.002) | (0.002) | (0.004) | (0.004) | (0.004) | (0.004) | (0.005) | (0.005) |
| Trust in others | -0.014** | -0.012* | -0.022*** | -0.021*** | 0.004 | 0.003 | 0.005 | 0.002 | 0.000 | -0.001 | -0.004 | -0.003 |
| | (0.006) | (0.006) | (0.006) | (0.006) | (0.003) | (0.003) | (0.004) | (0.004) | (0.004) | (0.004) | (0.005) | (0.006) |
| Extreme left (0) | -0.036 | -0.036 | -0.048 | -0.048 | -0.000 | -0.007 | -0.072* | -0.093** | -0.014 | -0.029 | -0.048 | -0.059 |
| *ref: middle (1-9)* | (0.053) | (0.053) | (0.053) | (0.054) | (0.022) | (0.025) | (0.043) | (0.045) | (0.038) | (0.041) | (0.050) | (0.051) |
| Extreme right (10) | -0.032 | -0.043 | -0.001 | 0.004 | -0.061* | -0.050 | -0.074 | -0.034 | -0.124** | -0.092* | -0.048 | -0.032 |
| *ref: middle (1-9)* | (0.058) | (0.059) | (0.059) | (0.059) | (0.036) | (0.034) | (0.048) | (0.043) | (0.052) | (0.048) | (0.055) | (0.055) |
| Political opinions missing | -0.046 | -0.056 | -0.012 | -0.012 | -0.024 | -0.023 | -0.009 | -0.011 | -0.043 | -0.038 | 0.048 | 0.050 |
| *ref: middle (1-9)* | (0.057) | (0.057) | (0.058) | (0.057) | (0.029) | (0.029) | (0.041) | (0.040) | (0.046) | (0.045) | (0.048) | (0.048) |
| Prays | 0.036 | 0.027 | 0.043 | 0.037 | 0.010 | 0.005 | -0.042** | -0.055*** | 0.026 | 0.017 | 0.053** | 0.046* |
| *ref: does not pray* | (0.028) | (0.028) | (0.028) | (0.029) | (0.013) | (0.013) | (0.021) | (0.021) | (0.020) | (0.020) | (0.025) | (0.026) |
| Prayer missing | 0.059 | 0.065 | 0.098 | 0.099 | 0.004 | -0.004 | 0.052 | 0.041 | 0.039 | 0.012 | -0.050 | -0.063 |
| *ref: does not pray* | (0.092) | (0.091) | (0.097) | (0.097) | (0.041) | (0.045) | (0.052) | (0.055) | (0.062) | (0.070) | (0.099) | (0.100) |

Note: This Table reports the marginal effects otbained from probit estimations. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table D.2: Marginal effects on the different outcomes with extreme political preferences

| Outcomes | Does not meet with 5+ other people anymore | | Does not visit family members anymore | | Wash hands or use sanitizer more regularly | | Always or often wear a mask when outside | | Cover cough and sneeze | | Always keep distance when outside | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Has a chronic condition | | -0.029 | | 0.056 | | -0.002 | | 0.054* | | -0.033 | | -0.003 |
| | | (0.041) | | (0.043) | | (0.019) | | (0.028) | | (0.032) | | (0.037) |
| BMI ≥ 30 | | 0.073** | | -0.009 | | 0.001 | | -0.010 | | 0.016 | | -0.014 |
| | | (0.035) | | (0.035) | | (0.015) | | (0.024) | | (0.025) | | (0.032) |
| Has ADL difficulties | | -0.004 | | 0.010 | | -0.002 | | -0.020 | | 0.038 | | 0.027 |
| | | (0.045) | | (0.045) | | (0.021) | | (0.031) | | (0.033) | | (0.042) |
| Has physical difficulties only | | -0.013 | | -0.004 | | -0.006 | | 0.036 | | 0.044** | | 0.064** |
| | | (0.031) | | (0.031) | | (0.014) | | (0.022) | | (0.022) | | (0.028) |
| Has visited a specialist | | 0.039 | | 0.045 | | 0.031** | | 0.053*** | | 0.030 | | 0.033 |
| | | (0.030) | | (0.030) | | (0.013) | | (0.020) | | (0.021) | | (0.027) |
| Is a woman | | -0.007 | | -0.018 | | 0.011 | | 0.059*** | | 0.068*** | | 0.025 |
| | | (0.029) | | (0.029) | | (0.013) | | (0.020) | | (0.020) | | (0.026) |
| Lower secondary education | | -0.057 | | -0.106* | | 0.019 | | 0.037 | | 0.048 | | -0.013 |
| *ref: No education* | | (0.053) | | (0.055) | | (0.025) | | (0.041) | | (0.041) | | (0.050) |
| Higher secondary education | | -0.080** | | -0.099** | | 0.012 | | 0.037 | | 0.035 | | 0.001 |
| *ref: No education* | | (0.037) | | (0.039) | | (0.018) | | (0.030) | | (0.030) | | (0.035) |
| Tertiary education | | -0.098** | | -0.060 | | 0.032* | | 0.093*** | | 0.092*** | | 0.014 |
| *ref: No education* | | (0.041) | | (0.042) | | (0.019) | | (0.030) | | (0.030) | | (0.038) |
| Has difficulties to make ends meet | | 0.054 | | 0.059 | | 0.015 | | 0.025 | | -0.002 | | 0.040 |
| *ref: has no difficulties* | | (0.043) | | (0.045) | | (0.017) | | (0.031) | | (0.034) | | (0.040) |
| Economic difficulties missing | | 0.017 | | 0.055* | | -0.008 | | 0.035* | | 0.023 | | 0.006 |
| *ref: has no difficulties* | | (0.031) | | (0.031) | | (0.015) | | (0.021) | | (0.022) | | (0.028) |
| Observations | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 | 1,271 |

Note: This Table reports the marginal effects otbained from probit estimations. The difference in the number of observations in columns (11) and (12) is due to missing values on the variable 'cover cough and sneeze'. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix F. Infection and deaths per country

Table F.1: Cumulative death and cases per 100,000 population (2020/07/01)

| | Population size (2020/01/01) | Total cases (2020/07/01) | /100,000 | Total deaths (2020/07/01) | /100,000 |
|---|---|---|---|---|---|
| Belgium | 11 549 888 | 62078 | 537 | 9646 | 84 |
| Spain | 47 329 981 | 255580 | 540 | 29738 | 63 |
| Italy | 60 244 639 | 240578 | 399 | 34767 | 58 |
| France | 67 098 824 | 157194 | 234 | 29760 | 44 |
| Germany | 83 166 711 | 194725 | 234 | 8973 | 11 |
| Switzerland | 8 606 033 | 31910 | 371 | 1728 | 20 |

Sources: World Health Organization and French National Instituteof Demographic Studies (INED).