What Determines the Enforcement of Newly Introduced Social Norms: Personality Traits or Economic Preferences? Evidence from the COVID-19 Crisis

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November 16, 2020

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What Determines the Enforcement of Newly Introduced Social Norms: Personality Traits or Economic Preferences? Evidence from the COVID-19 Crisis

Daniel Schunk* and Valentin Wagner†

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Abstract

Social norms govern human behavior and usually change slowly over time. While individuals' willingness to sanction others is decisive for the enforcement of social norms and thus social stability, little is known about individual sanctioning behavior related to *newly introduced* social norms. During the COVID-19 pandemic, governments have used various tools to rapidly and actively introduce the new norm of wearing a face mask; this offers a unique setting to study the determinants of individuals' willingness to enforce a cooperation norm. In a nationwide online survey in Germany, we find that higher levels of conscientiousness and neuroticism, but none of the economic preferences (time and risk), are significantly and robustly associated with higher norm enforcement behavior. Furthermore, there is a strong relationship behavior between supervisors' and their subordinates' norm enforcement, and we observe that females sanction less harshly than men. Our results shed light on the origins of individual compliance with and enforcement of newly introduced public policy measures that are meant to increase solidarity via the explicit shaping of new cooperation norms.

Keywords: Social norm enforcement, personality traits, risk and time preferences, COVID-19

JEL codes: D81, D90, H12, H40

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1 Introduction

Social norms are ubiquitous, they guide human actions in many situations, and thus are fundamental determinants of social life and social order (Bicchieri, 2006; Fehr and Schurtenberger, 2018), which is why they are often called the „cement of society" (Elster, 1989). Cooperation norms, for instance, play a crucial role in the way people solve social dilemmas where individuals' selfish interest is in conflict with the societal beneficial behavior (Villeval, 2020; Xiao and Houser, 2011; Rege and Telle, 2004). While norms vary across societies—e.g., in their scale, intensity, or domain (Henrich and Muthukrishna, 2020)—, they usually do not change quickly within a society (Bicchieri, 2006). However, externalities, e.g, caused by crisis situations, can change or lead to the emergence of new social norms (Diekmann, 2020), but this process happens rarely, especially in western societies; it usually evolves over several years or decades.

The worldwide COVID-19 pandemic had considerable effects on societies all over the world and thus is a unique setting to study changes in social norms. The pandemic clearly imposes negative externalities on humanity as it had and still has severe consequences for the economy, social life, and the health system. Therefore, it can lead to an unexpectedly quick emergence of new social norms. Two simple actions to fight the spread of COVID-19 are, besides washing hands regularly, wearing a mouth and nose protection as well as physical and social distancing. These actions have not been the social norm[1] in western societies, but during the pandemic, they have suddenly been promoted (and in some countries even legally enforced) by governments and organizations all over the world. In a short period of time, wearing a face mask has become a new norm.

In fact, as we detail below, wearing a face mask very much resembles the contribution to a public good, namely public health and all its social and economic consequences, by "stopping the spread of the virus". While physical distancing was recommended already at the beginning of the pandemic, wearing a mask in public was proposed only a few months later. For example, the World Health Organization (WHO) advised social distancing but not wearing a mask for the general public in April 2020, arguing that masks would encourage a false sense of security and would deprive medical professionals of needed protective equipment (World Health Organization, 2020b). The WHO changed its guidance on when the public should cover their face in June 2020 and advised to wear homemade mask where social distancing is not possible, e.g., public transport (World Health Organization, 2020a). In Germany, the norm of physical distancing was adopted much quicker than the norm of wearing masks. The decline in mobility started to decrease noticeably before the official policy of social distancing was in place on March 22 (most of the change took place in the third week, from March 15-22).[2] In contrast, self-reported measures on wearing masks were rather low (8% to 34% reported to wear a mask) before wearing a mask in public was made compulsory on April 27, but increased to 77% after the policy had been in place for one week and further increased to 90% in July and thereafter

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[1] According to Fehr and Schurtenberger (2018) social norms are *"commonly known standards of behavior that are based on widely shared views how individual group members ought to behave in a given situation."*

[2] https://www.covid-19-mobility.org/reports/first-report-general-mobility/

maintained at a high level between 84% –93%.[3] Besides the delayed recommendation by organizations and governments, the key reason for the delayed adoption of the mask norm could be that physical distancing and wearing a mask are, from a conceptual and game theoretical point of view, two different kinds of norms. While physical distancing protects oneself from getting infected with the virus, surgical and homemade face masks primarily protect others and not oneself. Importantly, this aspect of wearing masks is well-known to citizens. E.g., in the German COSMO-Study, 83% of the participants agree with the statement that masks help to protect others getting infected with COVID-19, whereas only 42% agree with the statement that masks protects oneself.[4] Furthermore, individuals might perceive wearing a mask as uncomfortable or a restriction of their individual freedom, and the delayed recommendation of the WHO could have additionally lowered the acceptance of face masks. Hence, for many individuals, the decision whether or not to wear a mask involves a conflict between individual objectives and the huge societal benefits of complying with the new social norm. Hence, physical distancing is a coordination norm while wearing a mask is a cooperation norm (Diekmann, 2020). Complying to the physical distance norm protects oneself and at the same time other persons. Violating the norm and getting closer to others increases the risk of getting infected with the virus. Hence, if all follow the norm and distance to each other, no person (not even a selfish individual) has an incentive to deviate from this equilibrium. In contrast, surgical and homemade face masks preliminarily protect others and not oneself. The social optimum is therefore that all persons wear face masks so that everyone is protected. However, selfish individuals have an incentive to deviate from this equilibrium, thereby avoiding their disutility of wearing a face mask without changing the risk of getting infected. This is equivalent to a contribution decision in a public good game.

It is no surprise then, that coordination norms are better in reaching and maintaining the socially desired behavior (following the norm) compared to cooperation norms where cooperation usually breaks down unless norm enforcement, e.g., through punishment, is possible (e.g., Fehr and Gächter, 2000; Fehr and Gächter, 2002). And this is especially the case in individualistic societies where social norms may be less frequent and less overt since fitting into society is a less valued concept (Heinrichs et al., 2006).[5] Hence, understanding which individuals enforce cooperation norms is very relevant, both out of general interest about the forces underlying human social behavior as well as for policy-making. In fact, many governments in individualistic societies have been appealing to social norm compliance when addressing their citizens (e.g., in presidential addresses) during the pandemic, thus they have been implicitly or even explicitly using social cooperation norms as potentially powerful tools of public policy. At the same time, we know that for cooperation norms, these appeals alone can often have only small effects unless norm enforcement mechanisms are used (Dal Bó and Dal Bó, 2014).

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[3]https://projekte.uni-erfurt.de/cosmo2020/web/topic/wissen-verhalten/30-schutzmassnahmen/#verhalten-im-zeitverlauf

[4]https://projekte.uni-erfurt.de/cosmo2020/web/topic/wissen-verhalten/40-masketragen/

[5]Interestingly, there is very recent evidence that the degree of individualism of a society indeed significantly increases the number of infection cases by COVID-19 (Neupane, 2020).

In this study, we exploit data from an individualistic society, Germany, to analyze the determinants of a person's willingness to enforce the new norm of wearing a mask during the COVID-19 crisis. Specifically, we analyze the predictive power of dispositional measures taken from psychology (personality traits) and dispositional measures from economics (risk and time preference) for norm enforcement decisions. We use vignette-style survey questions (see, e.g., Friehe and Schildberg-Hörisch, 2018; Traxler and Winter, 2012) asking participants whether and by how many Euros individuals who do not wear a mask in public should be fined. The style of our norm enforcement question follows the idea of third-party punishment, i.e., unaffected-parties observe other peoples' behavior. One distinctive feature of our survey question on norm enforcement is that it was asked during a time when face masks were very saliently and controversially discussed in society in general and the media in particular, and the trade-off between individual freedom and public issues—public health, economic prosperity, social stability—was openly discussed. Hence, our question was not about an abstract concept, but about an issue of immediate personal relevance for every respondent. Moreover, individuals could directly and easily observe others' norm violating behavior in their daily life, e.g., in the supermarket or public transport. Our sample consists of 3,244 teachers in 12 (out of 16) federal states in Germany and was conducted between May and September 2020 (details on the procedures can be found in Section 2).[6] Studying teachers' willingness to enforce norms is of particular relevance for our case, as schools are important catalysts for (social) norm diffusion in the society, specifically with respect to the COVID-19 pandemic. Education institutions (e.g., schools) play a major role in value education (Lakshmi and Paul, 2018)—and hence in the diffusion of norms, as one of their roles is (i) "to build on and supplement the values children already have already begun to develop by offering further exposure to a range of values that are current in society, e.g., equal opportunities and respect for diversity" (Halstead and Taylor, 2000), and (ii) "not only to teach but also to help students acquire all values necessary as a human being" (Türkkahraman, 2014).

We find a significant correlation between two of the personality traits and individuals' willingness to enforce a new cooperation norm. More conscientious and more neurotic individuals are willing to impose higher fines on individuals who do not wear masks in public. In contrast, economic preferences do not explain norm enforcement behavior. Moreover, the results demonstrate a relation between norm enforcement behavior of individuals in a leadership position and their subordinates. A one standard deviation increase in headmasters' norm enforcement behavior increases teachers' norm enforcement behavior by about 0.6 of a standard deviation.

This study relates to several strands of the literature, both the literature on the COVID-19 crisis, as well as the general literature on social norm compliance, prosocial behavior, and public goods. First, it contributes to a quickly emerging literature analyzing how individuals changed their behavior and perceived the behavior of others during the first wave of the pandemic in general and how public policies affected peoples' perception of norms in the COVID-19 crisis in particular. Supporting our notion of wearing face

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[6]We did not receive permission to conduct the study in Bavaria, Hamburg, Mecklenburg-Western Pomerania, and Saarland.

masks as a cooperation norm, Betsch et al. (2020) find in a survey with German participants that others wearing a mask are perceived as prosocial and that wearing a mask is seen as a social contract where non-compliant others are negatively evaluated.[7] Casoria et al. (2020) exploit data of an online survey in France to study the effect of social and physical distancing regulations on peoples' perceived norm regarding social encounters.[8] The authors find that the average appropriateness of social gatherings (and actual behavior) decreased as soon as the new legal regulation was in place and increased once it was lifted. In contrast, broadcasted Presidential interventions did not affect perceived norms. Similarly, Galbiati et al. (2020) find that the announcement of a nation-wide lockdown in the UK had immediate positive affects on perceived norms measured in a survey about social gatherings, handshaking, stores closures, and a total curfew (see also Moussaoui et al., 2020 for further evidence of adoption of protective behavior in the UK). Surprisingly, Daoust (2020) finds that age is negatively correlated with a self-reported measure on wearing face masks in public (survey data of 27 countries).

Recent research in the context of the pandemic also tries to identify the underlying drivers of social norm compliance in the COVID-19 crisis. Kuiper et al. (2020) find in a study in the Netherlands that individuals who reported more impulsivity were more likely to violate physical distancing rules and moral beliefs about compliance with policy measures played a significant role in behavioral changes. Müller and Rau (2020), Campos-Mercade et al. (2020), Huynh (2020), and Chavarría et al. (2020) investigate the role of economic preferences on individuals' "COVID-19 behavior". Huynh (2020) shows that Vietnamese survey participants with higher risk perception are more likely to give incorrect answers regarding the correct handling of medical masks and Müller and Rau (2020) also report a negative relationship between risk preferences and complying to physical distancing (avoiding crowds) and panic buying in a sample of German students. Furthermore, Müller and Rau (2020) find that time preferences and a measure for social responsibility are positively associated with compliance to physical distancing rules but the authors do not find any effects for trust and honesty. In contrast, Chavarría et al. (2020) do not find that economic preferences (time, risk, trust) predict protection behavior (physical distancing, hygiene, face masks) in Indonesia. Campos-Mercade et al. (2020) show in a representative sample of the Swedish population that incentivized economic measures of prosociality are a strong predictor for compliance with physical distancing rules and buying masks, and that prosociality remains a significant predictor even when controlling for personality traits and economic preferences.[9] The only study we are aware of presenting results on the relationship between personality traits and an aggregated compliance measure on COVID-19 related protection behaviors[10] is the study by Brouard et al. (2020). The

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[7]See also Thielmann et al. (2020) for a recent meta-analysis of the predictive validity of personality traits to account for individual differences in prosocial behavior which further discusses this nexus of prosocial behavior and personality.

[8]See also Rieger and Wang (2020) for mobility patterns of citizens at the onset of the crisis in France, Germany, UK, and the United States.

[9]The authors report that they have used personality traits and economic preferences as control variables in their analysis, but they do not report the coefficients, making a closer link to our work impossible.

[10]The measure consists of answers to the following behaviors (i) washing hands more often and/or longer, (ii) coughing or sneezing into the elbow or a handkerchief, (iii) stopping greeting by shaking hands or kissing, (vi) keeping a distance of one meter from other people outside home, (v) having reduced trips, (vi) avoiding crowded places, and (vii) having stopped meeting friends.

authors exploit survey data in France and find that, overall, more conscientious individuals are more likely to comply but that extraversion and neuroticism is associated with lower norm compliance.

We also add to the literature that studies social norm enforcement behavior. For culturally and historically well established norms, there is evidence confirming individual differences in exhibiting social norm enforcement and the dependence of social norm enforcement on the specific norm as well as frequency with which people believe they are violated (Balafoutas and Nikiforakis, 2012; Fischbacher et al., 2013; Traxler and Winter, 2012). Traxler and Winter (2012) show that the more frequently a norm violation is expected to occur, the less likely it is sanctioned, especially for weak norms (e.g., absenteeism from work, evading taxes or TV licenses fees) but deviations from strong norms (e.g., drunk driving, speeding, hazardous wasting) are punished independently of beliefs about others' norm compliance. Friehe and Schildberg-Hörisch (2018) study the individual and joint predictive power of personality traits and economic preferences for individual norm enforcement behavior with regard to existing and established norms. Using survey data of a student sample, the authors study norm enforcement behavior for fare dodging, tax evasion, and drunk driving and find that risk attitudes (economic preference), conscientiousness, and neuroticism (both personality traits) are the main predictors of norm enforcement behavior.

To our knowledge, this is the first study analyzing *social norm enforcement* of COVID-19 public policy measures and the first to report on the joint predictive power of personality traits and economic preferences for enforcing a *newly introduced* social norm—face masks in public. Enhancing our understanding of who is willing to enforce new COVID-19 norms is critical in light of the repercussions to the introduced policy measures in the context of the Corona-crisis: Recent violent protests in Italy,[11] mass demonstrations in Berlin,[12] and a marked decrease in trust and cooperativeness after having experienced a lockdown (e.g., individuals who remained in Wuhan during the lockdown exhibited lower trust and cooperation behavior relative to others Shachat et al., 2020).

2 Data and Survey Design

Procedures

We recruited participants (headmasters and teachers) in a two step procedure. First we approached the educational authorities of the 16 federal states in Germany to ask for approval for our study; 12 responded positively. The federal states of Bavaria, Hamburg, Mecklenburg-Western Pomerania, and Saarland did not give their consent. Second, we sent invitation emails including a link to our questionnaire to all headmasters asking to participate in our study and to forward our request to all teachers of their school. Reminders were sent two weeks later. Data were collected between end of May to end of September. The start of the data collection always lasted for four weeks, but in some states the data collection period was extended due to

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[11]https://edition.cnn.com/2020/10/27/europe/italy-coronavirus-protests-intl/index.html
[12]https://www.bbc.com/news/world-europe-53622797

summer holidays. Before answering the questionnaire, teachers had to sign a data privacy statement and answering the questionnaire took on average about 20 minutes. Participants could pause and return to or exit the questionnaire at any time and were allowed to skip survey items.

Participants

Overall, we contacted about 76% of all schools in Germany. In total, 5,234 teachers of 2,160 schools clicked on the survey link. 26% of participants exited the survey early (i.e., stopped the survey before reaching the last page) and 629 headmasters actively opted out without forwarding the survey to teachers. As participants were not forced to answer the question on social norm enforcement we are left with 3,244 participants (the possibility to skip questions was a prerequisite of school authorities). On average, survey participants had 17.02 years of working experience; 72% were female. The number of participants per school ranged from 1 to 23 teachers (see Figure 4 in the Appendix for the distribution of participants per school) and 31.49% of participants were headmasters. 35.75% of the survey answers stem from teachers in primary school (see Figure 5 in the Appendix for the distribution of school types). Of the 3,244 teachers in our sample, 496 did not answer any of the five personality trait related questions. Table 1 in the Appendix reports the complete sample characteristics (number of observations, means, std dev) for our study.

Questionnaire

We designed an online teacher-questionnaire, which consisted of seven blocks measuring (i) teachers' background characteristics and teaching style during school closures, (ii) ICT skills, (iii) technophobia, (Khasawneh, 2018), (iv) the Technology Acceptance Model (Davis et al., 1989), (v) the Big Five personality traits (Gerlitz and Schupp, 2005), (vi) the organizational climate of the school (Litwin and Stringer, 1968), and (vii) time and risk preferences (Falk et al., 2018; Falk et al., 2016).

In the following, we describe the questionnaire items used in this study: social norm enforcement, risk and time preferences, and personality traits (for an exact wording of all these items see the Appendix).

Dependent variable: Social norm enforcement We follow Traxler and Winter (2012) and Friehe and Schildberg-Hörisch (2018) in using vignette-style survey questions inquiring an individual's willingness to sanction others' norm violations. We ask participants whether the government should fine people who do not wear masks in public. Participants could select one of seven options: no fine, verbal warning, 5€, 10€, 15€, 50 €, or 100€.

Risk and time preferences We elicited individuals' risk and time preferences as in the Global Preferences Survey (Falk et al., 2018; Falk et al., 2016). For both preferences, participants had to answer one question regarding participants' self-assessed level of the respective preference (on a scale from 0 to 10) and a sequence of five interdependent quantitative questions: (i) for risk preferences, individuals had to make five interdepen-

dent choices between a sure payment of a particular amount of money, or a draw, where participants would have an equal chance of getting an amount x or getting nothing, and (ii) for time preferences, participants had to make five interdependent choices between receiving 100€today or x€in 12 months. Missing values were imputed following the procedure used in the Global Preferences Survey (see the Online Appendix of Falk et al., 2018)). For each of the two preferences, we computed an individual-level index that aggregated responses across the different survey items using the weights of the Global Preference Survey (see the Appendix for the exact wording of the survey items and weights to construct the individual-level indexes). The measures for risk and time preferences were standardized (mean = 0, std dev = 1).

Personality traits To obtain measures of the Big Five personality traits (conscientiousness, agreeableness, extraversion, neuroticism, and openness), we used survey items of the GSOEP survey (Gerlitz and Schupp, 2005). Each personality trait is constructed from three items answered on a scale ranging from 0 ("disagree strongly") to 7 ("agree strongly"). In order to aggregate items into a single measure of a facet of the Big Five, we sum items up and standardize the overall measure (mean = 0, std dev = 1).

Data Analysis

We used ordered probit regressions to estimate the association between each personality trait and economic preference on social norm enforcement behavior. All variables were standardized to mean = 0 and std dev = 1. For each personality trait and economic preference, a higher value represents a stronger intensity of that trait or preference (e.g., being more patient). We control for week fixed effects, teachers' gender, teachers' working experience, whether the respondent is the headmaster, school type, school size (number of pupils), whether teachers like their job and teaching in their class, and we control for the organizational climate of the school to increase precision.[13] Standard errors are clustered at the school level. We provide comprehensive tables for all our estimations in Section A.1.

3 Results

First, we present the correlation structure of economic preferences and personality traits. Second, we analyze the role of individuals' personality traits and preference for scoial norm enforcement. Thereafter, we shed light on headmaster effects, this is, we analyze whether the headmasters' degree of social norm enforcement affects teachers' social norm enforcement behavior. Furthermore, we analyze whether social norm enforcement behavior depends on gender, age, or the organizational climate. For all these analyses, we estimate ordered probit models that link individuals' norm enforcement behavior to the explanatory variables mentioned above. The questionnaire and scales are described in Section 2. Details on the estimation strategy can be found

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[13]To do so, we use the Litwin and Stringer (1968) Organizational Climate Questionnaire which measures teachers' levels of responsibility, reward, and warmth.

in Section 2. In this section, figures present our results in a visual form; complete estimation tables can be found in Appendix A.1, Tables 3 and 4.

Correlation structure of economic preferences and personality traits

Table 2 in Appendix A.1 shows Pearson's correlation coefficients for extraversion, agreeableness, openness, conscientiousness, neuroticism, and risk and time preferences. We observe only small correlations between personality traits and economic preferences, i.e., correlations smaller than 0.3 (see the classification by Cohen, 1988). In 10 out of 11 cases the correlation is even below 0.1. Thus, the correlation analysis indicates that the two concepts measure distinct characteristics and that personality traits and economic preference seem to complement each other in predicting individual behavior, similar to what e.g. Friehe and Schildberg-Hörisch (2018) have found.
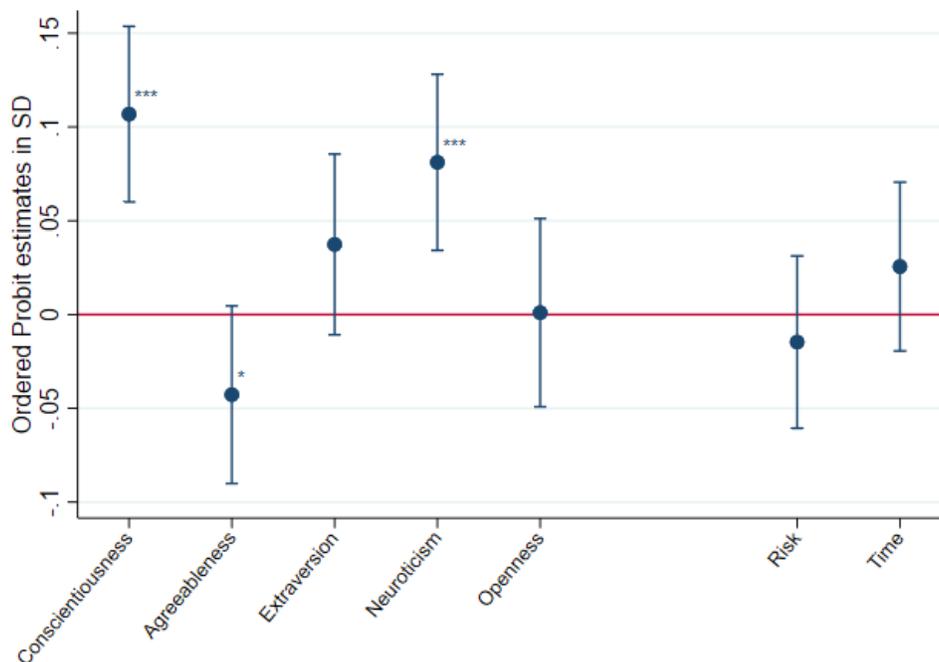
Personality traits or economic preferences?

We now turn to the question whether personality traits or economic preferences predict individuals' willingness to enforce a newly introduced social norm, in this case, wearing a mask in public. In the questionnaire, we elicited individual norm enforcement behavior by asking participants whether and by how much another person should be fined if she does not wear a mask in public. Participants could choose between the answers (i) no fine, (ii) verbal warning, (iii) 5€, (vi) 10€, (v) 15€, (vi) 50€, and (vii) 100€. Our findings are summarized in the following

Result 1. *Conscientiousness and extraversion are significant predictors of individual's willingness to enforce social norms. Economic preferences have no power in predicting social norm enforcement behavior.*

This result is supported by Figure 1, which shows point estimates from the ordered probit regressions mentioned above along with 95% confidence intervals. Two of the five personality traits are significant predictors of individuals' norm enforcement behavior, while economic preference are not: The higher an individuals' level of conscientiousness and neuroticism, the higher is the reported fine that should be imposed on norm violators. A one standard deviation increase in conscientiousness is associated with a 0.107 standard deviation increase in the willingness to enforce the social norm. For neuroticism, the effect size amounts to 0.081 standard deviation. Both effects are highly statistically significant at the 1%-level ($p = 0.000$ and $p = 0.001$). Agreeableness, extraversion, and openness do not predict social norm enforcement behavior and coefficients are smaller compared to conscientiousness and neuroticism (the coefficient for agreeableness is negative but only marginally significant at the 10%-level; $p = 0.077$). With respect to economic preferences, neither time nor risk attitudes can explain social norm enforcement (time: 0.026, $p = 0.265$; risk: -0.015, $p = 0.530$).

Figure 1: The relationship between social norm enforcement and economic preferences and personality traits

Note: Figure displays standardized coefficients from ordered probit estimations (see Table 3 in Appendix A.1 for the corresponding regression table). The dependent variable is self-reported norm enforcement behavior concerning wearing a mask, coded such that higher numbers indicate stronger norm enforcement behavior. Conscientiousness, agreeableness, extraversion, neuroticism, and openness are the big five personality traits. Risk and time preferences are measured according to the Global Preference Survey (Falk et al., 2018; Falk et al., 2016, see Section 2 for details). All independent variables are standardized and higher values indicate a stronger intensity of the respective trait or preference. Error bars show 95% confidence intervals; stars indicate coefficients significantly different from zero (* p<.10, ** p<.05, *** p<.01). The number of observations is $N = 2,341$.

The role of leadership

Social norms might change over time in response to individual behavior and actions by prominent agents or leaders (Acemoğlu and Jackson, 2015), and leaders might be able to steer the evolutionary process toward a new norm within a fairly short period of time (Young, 2015). This can be in particular the case when leaders are in a position to set a public example. Such an example would be, e.g., the headmaster of a school wearing a mask in the teacher's room or in interactions with teachers, parents or children, although not mandatory. There is also laboratory evidence demonstrating the important role of leadership behavior for other players' adherence to a cooperation norm in a public good setting (Kumuru and Vesterlund, 2010; Eckel et al., 2010; Eckel and Wilson, 2007). In a repeated public goods game with a player in a leadership role, Eckel et al.

(2010) show that high status central players are attended to and mimicked more systematically.[14] Similarly, Kumuru and Vesterlund (2010) find in a voluntary-contribution game that low-status players are likely to follow the action of a high-status player leading to higher contributions if the high-status players decide first and their action can be observed.[15] Furthermore, Eckel and Wilson (2007) report that players can coordinate more often on the payoff-dominant but risky outcome if the player that is commonly observed by others is of high status. We hypothesize that these findings in laboratory settings would also translate to the setting of newly introduced social cooperation norms in a field setting. More specifically, as headmasters are in a leadership position in our sample of school teachers, we hypothesize that their willingness to enforce a new social norm could play a pivotal role in explaining teachers' norm enforcement behavior. Our analysis yields

Result 2. *The headmasters' willingness to enforce social norms is significantly associated with a higher willingness of teachers to enforce norms.*

Figure 2 supports this result by linking headmasters' willingness to enforce norms and teachers' willingness to sanction norm violators. The variable "Norm Headmaster" is the response of the headmaster to our norm enforcement question; i.e., the higher the value, the higher is the fine that the headmaster wants to have imposed on norm violators. We observe a strongly positive and significant effect of headmasters' norm enforcement decision on teachers' norm enforcement decision. The coefficient is about six times larger than the coefficient for conscientiousness (0.610 std dev) and it is highly significant at the 1%-level ($p = 0.000$). Notice that the number of observations is smaller than in Figure 1 because we can only include schools with more than one survey respondent and respondents of both categories (headmasters and teachers). As sown in Figure 4, in almost half of the cases only one or two teachers responded per school leaving us with less than half of the observations compared to Figure 1 ($N = 1,185$). Nevertheless, the coefficients for conscientiousness and neuroticism remain highly significant and do not change considerably in size, highlighting that these two personality traits continue to have predictive power in explaining social norm enforcement behavior, even in this reduced sample. We thus summarize that our earlier results are robust to the inclusion of the leadership variable and that leadership effects play a substantial role for the enforcement behavior of newly introduced social cooperation norms.

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[14]The high and low social status of the central player was determined by a score in a trivia tasks.

[15]The status of players was determined by a trivia quiz and was made public via a small ceremony.

Figure 2: The relationship between social norm enforcement and headmasters' degree of social norm enforcement
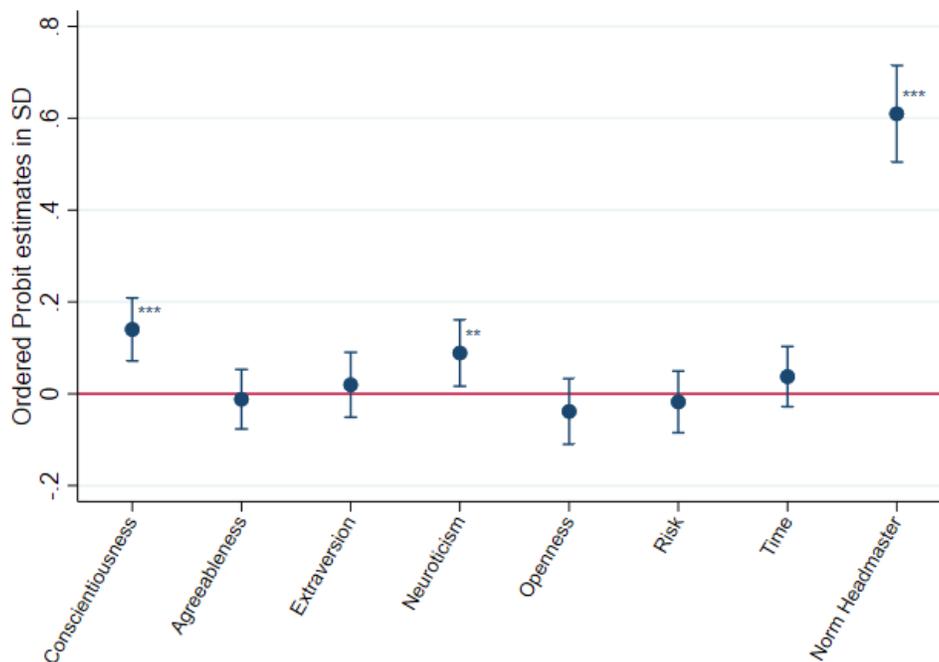
Note: Figure displays standardized coefficients from ordered probit estimations (see Table 4 in Appendix A.1 for the corresponding regression table). The dependent variable is self-reported norm enforcement behavior concerning wearing a mask, coded such that higher numbers indicate stronger norm enforcement behavior. Conscientiousness, agreeableness, extraversion, neuroticism, and openness are the big five personality traits. Risk and time preferences are measured according to the Global Preference Survey (Falk et al., 2018; Falk et al., 2016, see Section 2 for details). *Norm Headmaster* is the average norm enforcement behavior of the teachers' headmaster. All independent variables are standardized and higher values indicate a stronger intensity of the respective trait or preference. Error bars show 95% confidence intervals; stars indicate coefficients significantly different from zero (* p<.10, ** p<.05, *** p<.01). The number of observations is $N = 1,185$.

Further Results

There is also evidence in the experimental literature that females are less willing to punish norm violators and that, if they engage in punishment, they punish less harshly than men (e.g., Rodriguez-Ruiz et al., 2019; Albrecht et al., 2018; Balafoutas and Nikiforakis, 2012). We are therefore interested in the extent to which gender affects the decision to enforce a newly introduced social norm. Furthermore, we investigate whether older people have a higher propensity to enforce norms as older people are more likely to belong to the group that is at greater risk of suffering from a more severe form of COVID-19. We find

Result 3. *Females sanction deviations from a social norm less strongly than males.*

As Figure 3 indicates, on average, females choose lower levels of punishment for norm violators than men (-0.132 std dev, $p = 0.017$) while older peoples' behavior does not significantly differ from that of younger people (age of survey participants is captured by the variable "Experience", which is the number of years in the job).[16] Other covariates such as the position of the survey participant ("Headmaster"), job satisfaction ("Teacher likes his/her class" and "Teacher likes his/her job"), and the organizational climate (Litwin and Stringer, 1968) have no predictive power in explaining the enforcement of newly introduced social norms.

Figure 3: The relationship between social norm enforcement and gender and age (teachers' working experience)

Note: Figure displays standardized coefficients from ordered probit estimations (see Table 3 in Appendix A.1 for the corresponding regression table). The dependent variable is self-reported norm enforcement behavior concerning wearing a mask, coded such that higher numbers indicate stronger norm enforcement behavior. Conscientiousness, agreeableness, extraversion, neuroticism, and openness are the big five personality traits. Risk and time preferences are measured according to the Global Preference Survey (Falk et al., 2018; Falk et al., 2016, see Section 2 for details). All independent variables are standardized and higher values indicate a stronger intensity of the respective trait or preference. Error bars show 95% confidence intervals; stars indicate coefficients significantly different from zero (* p<.10, ** p<.05, *** p<.01). The number of observations is $N = 2,341$.
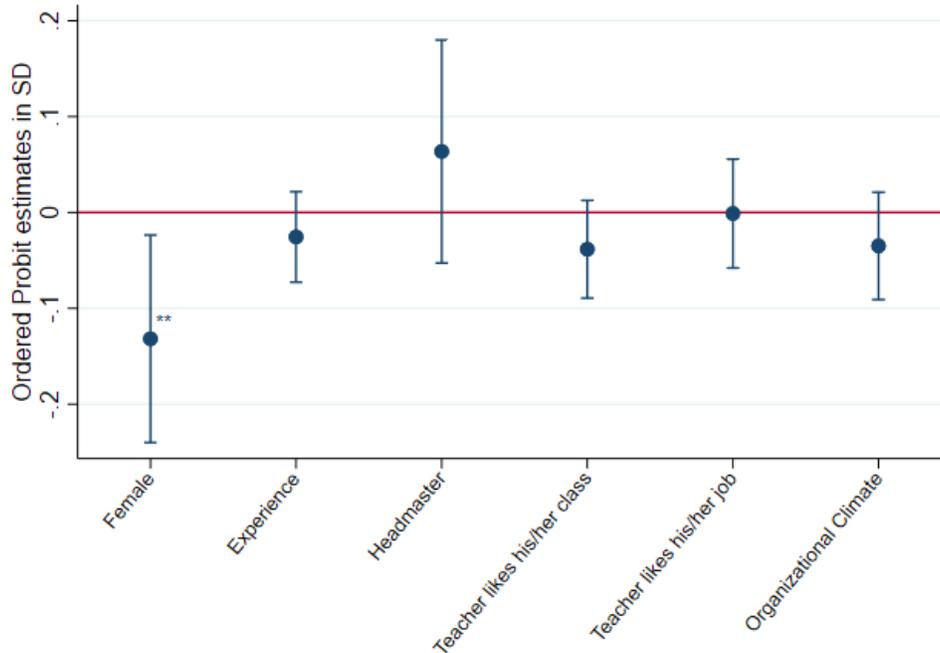
Self Selection and External Validity

To analyze the predictive power of personality traits and economic preferences, we exploit questionnaire data on self-reported norm enforcement behavior. As participants were free to skip any question in the survey, a

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[16]In Germany, due to the civil servant system, teachers all start their job at a similar age.

natural question that arises is whether participants who answered the social norm question systematically differ from those who chose not to answer the question. About 8.4% of survey participants did not answer the question. Table 5 shows the means of economic preferences, personality traits, gender, and teachers' position within school for both groups (answered vs. not answered social norm questions) and lists tests for differences in means. Overall, we observe only small and insignificant mean differences indicating that there was no self-selection into answering the social norm question.

Another concern in the same vein is whether personality traits and economic preferences of teachers in our sample differ from the general population. We therefore compare our survey sample with the German Socio-Economic Panel (GSOEP) and the Global Preference Survey (GPS). To elicit personality traits, our survey uses the same questionnaire items as the GSOEP. To measure time and risk preferences, we use the same items as the GPS (Falk et al., 2018; Falk et al., 2016). Panel A in Table 6 compares the means of the personality traits between the survey sample and the GSOEP and Panel B compares the means of the economic preferences between the survey sample and the GPS. We report results separately for females and males as females are overrepresented in our survey sample. Overall, while differences in means are statistically significant for both females and males (exept for risk preferences of females), they are all very small. Generally, they are less than 0.5 standard deviations and the standard deviations of the respective personality traits and economic preferences are comparable, indicating that personality traits and economic preferences of teachers in our sample do not differ much from the general population in Germany. One exemption are time preferences for which we find the largest differences in means (0.579 standard deviations for females and 0.676 for males) and larger standard deviations for males and females in the GPS panel compared to the standard deviations in our survey.

4 Conclusion

To fight the spread of COVID-19, many countries first recommended and later enforced the new social cooperation norm of wearing a face mask in public. The effect of introducing new laws can in principle be twofold: The laws may backfire when they are in strong conflict with prevailing social norms (Acemoğlu and Jackson, 2017), or they may quickly shape new social norms, i.e., they strengthen social disapproval towards an action (Lane and Nosenzo, 2019). This latter effect was what many governments intended when they first appealed to peoples' adherence to the new norm and then later introduced the corresponding law. Crucially, individuals' willingness to enforce the law can be important to support the latter effect and individuals' willingness to sanction others is decisive for enforcing cooperation norms (Fehr and Fischbacher, 2004; Fehr and Schurtenberger, 2018). Surprisingly, however, existing research falls short of clear evidence on peoples' willingness to sanction others when violating *newly introduced* social norms in general and social norms related to the COVID-19 pandemic in particular. Furthermore, there is a scarcity of evidence on the

question which dispositional trait variables are characteristic for people that are willing to sanction others who do not wear masks in public.

Our results are an attempt to address this lack of evidence. We show that standard self-assessed measures of personality are better predictors of norm enforcement behavior than economic measures of time and risk preferences, which are based on a combination of self-assessed questions and interdependent choices. Individuals with higher levels of conscientiousness and neuroticism choose higher punishment levels. In contrast, economic preferences are not significantly related to social norm enforcement behavior. Our findings are partly in line with the findings of Almlund et al. (2011), who conclude that among the personality traits conscientiousness and neuroticism predict a wide range of life outcomes. Similarly, Friehe and Schildberg-Hörisch (2018) show that higher levels of conscientiousness and neuroticism are positively associated with the enforcement behavior of established social norms. In contrast to our findings, Friehe and Schildberg-Hörisch (2018) also find a significant negative effect of risk preferences. One reason why our results differ from the results of Friehe and Schildberg-Hörisch (2018) might be that we study norm enforcement behavior of a newly introduced social norm which was disussed saliently in the media whereas they study norms, which have culturally been in place in western societies for several decades already and which were not very salient at the time of the study.

Importantly, conscientiousness and neuroticism remain significant predictors of individuals' norm enforcement behavior even when controlling for the norm enforcement behavior of the headmaster. The size of the coefficients does not change considerably when adding the headmasters' willingness to enforce norms indicating that these personality traits are indeed important in explaining individual norm enforcement behavior. In line with the studies by Acemoğlu and Jackson (2017) and Young (2015) our results indicate that individuals in a leadership position may have a strong influence on individuals' norm enforcement behavior. The high magnitude of the estimated coefficient suggests that for newly introduced norms, leadership might play a particularly important role, compared to other determinants of behavior.

The study by Friehe and Schildberg-Hörisch (2018) is, to our knowledge, the only other study analyzing the joint predictive power of personality traits and economic preferences on *social norm enforcement* behavior. Other contributions on social norms related to the COVID-19 pandemic have focused on norm compliance behavior (e.g., Müller and Rau, 2020; Campos-Mercade et al., 2020; Chavarría et al., 2020; Casoria et al., 2020; Galbiati et al., 2020). However, neither of these contributions has analyzed social norm enforcement behavior, nor did these works discriminate between the predictive power of economic preferences as compared to the predictive power of personality traits. It is important to notice that it remains an open discussion how economic preferences relate to personality traits, i.e., do economic preferences generate personality traits or vice versa or are both generated by other unknown parameters (Almlund et al., 2011).

A limitation of our study is that we rely on self-reported social norm enforcement behavior instead of observing individuals' enforcement behavior in context with higher external-validity. Furthermore, we do not know to what extent individuals' self-reported willingness of norm enforcement behavior correlates with

individuals compliance with the social norm and with wearing a mask in public themselves. However, there is ample evidence, e.g., on risky behavior or intertemporal choices, that self-reports correlate with behavior in incentivized lab experiments (e.g., Dohmen et al., 2011; Falk et al., 2016) and are predictive for behavior in field settings (e.g., Frey et al. (2017), Moffitt et al. (2011), and White et al. (1994); see also Camerer (2015) for a review on lab experimental findings generalizing to the field). Here, we should emphasize that our question about norm enforcement was asked during a time when the discussion about wearing face masks was prevalent, salient, and actively enforced by frequent debates in media and politics. Similarly, there was an ongoing discussion in politics and the media about whether and how deviant behavior should be sanctioned. Whe thus think that the responses of our survey participants are well-considered, as the question was of immediate relevance for all survey participants.

Finally, we would like to point out that there is recent conclusive evidence that individuals who remained in Wuhan during the lockdown exhibited lower trust and cooperation behavior relative to others (Shachat et al., 2020). If policy measures taken during the first COVID-19 wave indeed lower peoples' preferences for cooperation, it is very likely that individuals' willingness to comply with cooperation norms (e.g., wearing face masks) will decrease after further waves of the pandemics. In fact, the recent violent protests in Italy and mass demonstrations in Berlin against new COVID-19 restrictions point into that direction and at the same time they forcefully demonstrate the need to enhance our understanding of peoples' perception and willingness to enforce COVID-19 public policy measures.

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A   Appendix

A.1   Tables

Table 1 presents summary statistics and Table 2 the correlation structure of personality traits and economic preferences. Table 3 presents estimations on the determinants of social norm enforcement, i.e., whether personality traits or economic preferences can explain social norm enforcement. Table 4 presents estimates for headmaster effects, i.e., whether the headmasters' level of social norm enforcement affects teachers' level of social norm enforcement. Furthermore, Table 5 examines whether a self-selection effect exists in answering the social norm enforcement question (i.e., do participants who answer the social norm enforcement question differ from those participants who did not answer that question), and Table 6 compares the survey sample to the sample of the German Socio-Economic Panel (GSOEP) and the German sample of the Global Preference Survey (GPS) to analyze whether survey respondents differ from the general population in their personality traits and economic preferences. Data analysis was conducted using Stata 16 SE.

Table 1: Summary statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Norm enforcement	3.244	0	1	-1.84	1.05
Risk Preference	2.763	0	1	-2.11	3.56
Time Preference	2.775	0	1	-2.511	1.07
Extraversion	2.839	0	1	-3.55	1.53
Agreeableness	2.843	0	1	-4.90	1.43
Conscientiousness	2.848	0	1	-4.60	1.35
Neuroticism	2.851	0	1	-1.92	2.69
Openness	2.829	0	1	-3.61	1.58
Female	3.238	0.72	0.45	0	1
Headmaster	3.230	0.31	0.46	0	1
Experience (in years)	3.240	17.02	10.23	0	51
Teacher likes job	3.244	0	1	-5.72	0.51
School climate	2.653	0	1	-3.44	1.72
Answered questions	3.237	87.26	22.71	26	96
Questionnaire time (in s)	3.237	1255.62	616.01	237.09	11695.70

Note: This table presents summary statistics of survey participants. The variables norm enforcement, the five personality traits, risk and time preferences, teacher likes job, and school climate are standardized. The dummy variable Female is equal to one for females and the dummy variable Headmaster is equal to one for teachers in a leading position (e.g., headmasters and deputy headmaster). Experience is the number of years a teachers is in the job, school climate is the standardized measure of the Organizational Climate Scale (see Litwin and Stringer, 1968), and teachers likes job is the standardized measure of how much the teacher likes her job. Questionnaire time is the number of seconds participants spent on answering the survey and answered questions indicates the number of the last question in the survey participants answered (the last question had the number 96).

Table 2: Correlation structure of economic preferences and personality traits

	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness	Time pref.
Risk pref.	0.0583***	-0.0361*	-0.0689***	-0.1500***	0.0690***	0.0411**
Time pref.	-0.0357*	0.0324*	-0.0005	-0.0711***	-0.0498***	

Note: Cell entries present Pearson correlation coefficients. All variables are standardized; higher values indicate a stronger intensity of the respective trait. We do not display correlations between the five personality traits as they are assumed to be independent factors by construction. Indeed, their pairwise Pearson correlations are small, that is, below 0.3 in 9 out of 10 cases (the correlation between openness and extraversion is 0.3636).

Table 3: Determinants of social norm enforcement (ordered probit)

	Model 1	Model 2	Model 3	Model 4	Model 5
Conscientiousness	0.092***		0.096***	0.107***	0.107***
	(0.02)		(0.02)	(0.02)	(0.02)
Agreeableness	-0.045**		-0.048**	-0.045*	-0.043*
	(0.02)		(0.02)	(0.02)	(0.02)
Extraversion	0.045**		0.042*	0.046**	0.037
	(0.02)		(0.02)	(0.02)	(0.02)
Neuroticism	0.076***		0.072***	0.081***	0.081***
	(0.02)		(0.02)	(0.02)	(0.02)
Openness	-0.025		-0.019	-0.018	0.001
	(0.02)		(0.02)	(0.02)	(0.03)
Risk		-0.013	0.000	-0.005	-0.015
		(0.02)	(0.02)	(0.02)	(0.02)
Time		0.011	0.020	0.016	0.026
		(0.02)	(0.02)	(0.02)	(0.02)
Female				-0.120**	-0.132**
				(0.05)	(0.06)
Teacher Experience				-0.019	-0.026
				(0.02)	(0.02)
School Type	Yes	Yes	Yes	Yes	Yes
Week FE	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	No	Yes
Pseudo R2	0.017	0.013	0.018	0.019	0.022
Observations	2710	2688	2573	2567	2341

Note: This table presents results of an ordered probit estimation. The dependent variable is social norm enforcement behavior. The dependent variable and all independent variables are standardized. Positive coefficients of the independent variables indicate stronger social norm enforcement behavior. Conscientiousness, agreeableness, extraversion, neuroticism, and openness are the big five personality traits and risk and time are the economic preferences measured according to the Global Preference Survey (Falk et al., 2018). Female is a dummy for the gender (0 = male, 1 = female) and teacher experience indicates how many years teachers are in their job. In all regressions include school type and week fixed effects. Further control variables include a dummy whether the respondent is in a leading position (headmaster), whether teacher like their job, whether teacher like teaching their class, and a measure for the organizational climate (Litwin and Stringer, 1968). Standard errors given in parentheses and clustered at the school level. * p<0.10, ** p<0.05, *** p<0.01.

Table 4: Headmaster effect on social norm enforcement (ordered probit)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Norm Headmaster	0.664***	0.646***	0.646***	0.646***	0.655***	0.610***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Conscientiousness		0.128***		0.131***	0.142***	0.140***
		(0.03)		(0.03)	(0.03)	(0.03)
Agreeableness		-0.021		-0.021	-0.019	-0.012
		(0.03)		(0.03)	(0.03)	(0.03)
Extraversion		0.038		0.026	0.028	0.019
		(0.03)		(0.03)	(0.03)	(0.04)
Neuroticism		0.072**		0.078**	0.084**	0.089**
		(0.03)		(0.04)	(0.04)	(0.04)
Openness		-0.050		-0.050	-0.047	-0.039
		(0.03)		(0.03)	(0.03)	(0.04)
Risk			-0.016	0.007	0.001	-0.018
			(0.03)	(0.03)	(0.03)	(0.03)
Time			0.026	0.026	0.020	0.037
			(0.03)	(0.03)	(0.03)	(0.03)
Female					-0.103	-0.112
					(0.07)	(0.07)
Teacher Experience					0.005	-0.008
					(0.03)	(0.04)
School Type	Yes	Yes	Yes	Yes	Yes	Yes
Week FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	No	No	Yes
Pseudo R2	0.099	0.099	0.094	0.100	0.103	0.096
Observations	1664	1392	1400	1335	1331	1185

Note: This table presents results of an ordered probit estimation. The dependent variable is social norm enforcement behavior. The dependent variable and all independent variables are standardized. Positive coefficients of the independent variables indicate stronger social norm enforcement behavior. Conscientiousness, agreeableness, extraversion, neuroticism, and openness are the big five personality traits and risk and time are the economic preferences measured according to the Global Preference Survey (Falk et al., 2018). Norm headmaster is the social norm enforcement behavior of the headmaster of the teachers' school (average social norm enforcement behavior of all teachers in a leading position within a school). Female is a dummy for the gender (0 = male, 1 = female) and teacher experience indicates how many years teachers are in their job. In all regressions include school type and week fixed effects. Further control variables include a dummy whether the respondent is in a leading position (headmaster), whether teacher like their job, whether teacher like teaching their class, and a measure for the organizational climate (Litwin and Stringer, 1968). Standard errors given in parentheses and clustered at the school level. * p<0.10, ** p<0.05, *** p<0.01.

Table 5: Do participants answering social norm enforcement question differ from participant who did not answer the question?

Variable	Mean Not Answerd	Mean Answered	Difference Means	p-value	Obs. Not Answered	Obs. Answered
Risk Preference	-0.002	0.007	-0.009	0.467	102	2763
Time Preference	0.170	0.012	0.158	0.606	104	2775
Extraversion	0.090	-0.003	0.093	1.000	110	2839
Agreeableness	0.181	0.004	0.177	0.384	110	2843
Conscientiousness	0.183	-0.007	0.190	0.294	112	2848
Neuroticism	-0.070	-0.020	-0.050	1.000	110	2851
Openness	-0.016	0.009	-0.025	1.000	107	2829
Female	0.011	-0.029	0.040	1.000	172	3238
Headmaster	0.088	0.048	0.040	1.000	171	3230

Note: This table compares survey participants who answered the question measuring social norm enforcement behavior and survey participants who did not answer this question. Means and the difference in means are presented in standardized values. P-values are corrected for multiple hypothesis testing (Holm correction).

Table 6: Comparing personality traits and economic preferences of the survey sample to the general population

Variable	Mean Survey	Mean GSOEP/GPS	Difference Means (in Std. Dev.)	p-value	Std. Dev. Survey	Std. Dev. GSOEP/GPS	Obs. Survey	Obs. GSOEP/GPS
Panel A: GSOEP								
Females								
Extraversion	5.272	5.033	0.212	0.002	1.193	1.128	2700	32374
Agreeableness	5.698	5.531	0.177	0.001	0.926	0.941	2699	32374
Conscientiousness	5.819	5.913	-0.105	0.001	0.923	0.894	2709	32374
Neuroticism	3.648	4.041	-0.322	0.000	1.327	1.221	2711	32374
Openness	5.199	4.702	0.414	0.002	1.158	1.199	2688	32374
Males								
Extraversion	4.983	4.809	0.150	0.002	1.144	1.156	985	28744
Agreeableness	5.470	5.261	0.208	0.002	0.980	1.002	987	28744
Conscientiousness	5.459	5.755	-0.308	0.001	0.958	0.962	991	28744
Neuroticism	3.190	3.532	-0.291	0.001	1.220	1.177	988	28744
Openness	5.058	4.534	0.445	0.002	1.138	1.178	979	28744
Panel B: GPS								
Females								
Risk Preference	-0.082	-0.094	0.012	0.766	0.964	0.905	2603	525
Time Preference	-0.057	0.522	-0.579	0.001	1.019	1.158	2614	518
Males								
Risk Preference	0.223	-0.033	0.256	0.000	1.062	0.832	963	469
Time Preference	0.155	0.831	-0.676	0.001	0.927	1.185	969	467

Note: Panel A shows differences in personality traits between survey participants and the sample of the German Socio-Economic Panel (GSOEP). Panel B shows differences in economic preferences between survey participants and the German subsample of the Global Preference Survey (GPS; Falk et al., 2018; Falk et al., 2016). We use only people in the GSOEP between 25 to 67 years of age to increase comparability with our survey sample (teachers have finished University and have not yet retired). We compare females and males separately as 70% of survey participants are female. In Panel A, differences in means are presented in standardized values. In Panel B, all values are standardized. P-values are corrected for multiple hypothesis testing (Holm correction).
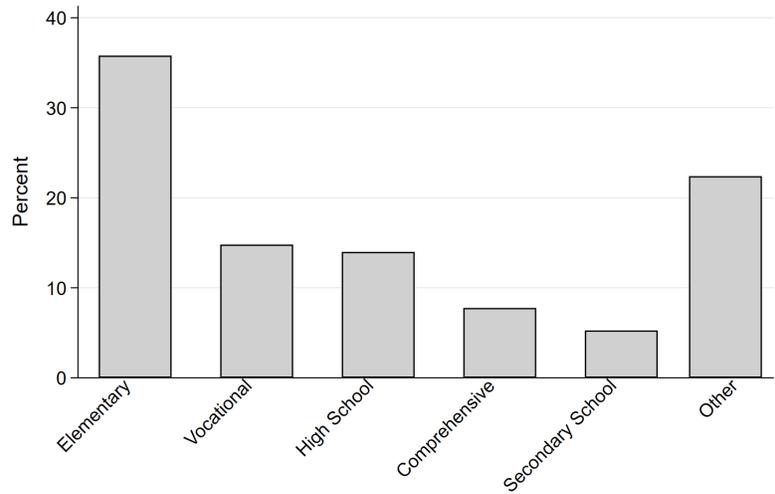
A.2 Graphs

Figure 4: Number of Responses per School
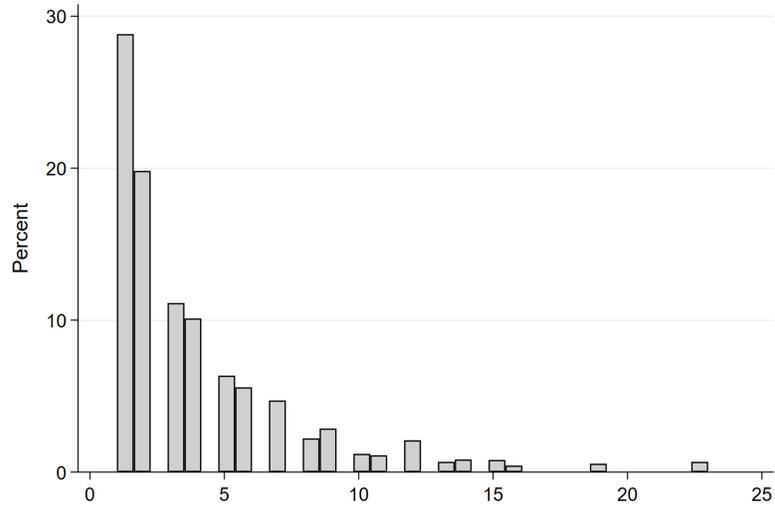
Note: This graph shows the distribution of the number of participants per school, e.g., in 28.82% of schools only one teacher or headmaster answered the survey and in 19.82% of schools two teachers and/or headmasters answered the survey.

Figure 5: Distribution of School Types

Note: This graph shows the fraction of participants by school types, e.g., 35.75% of participants were elementary teachers. Elementary, vocational, comprehensive, secondary and high school represent the major school types in Germany, this is, school types that exist in every federal state. "Other" school types encompass, e.g., Reform schools (Waldorf, Montessori), special school, or state specific school forms.

A.3 Wording of Survey Items

Social norm enforcement   Many countries had mandated the use of masks in public. Suppose there will be a second corona wave in autumn in Germany, which is comparable to the first wave. What do you think: Should the government impose a fine on people who demonstrably do not comply using a mask in public? Answering options: no fine, verbal warning, 5€, 10€, 15€, 50€, and 100€.

Risk preferences

- *Self-assessment:* Please tell me, in general, how willing or unwilling you are to take risks. Please use a scale from 0 to 10, where 0 means "completely unwilling to take risks" and a 10 means you are "very willing to take risks". You can also use any numbers between 0 and 10 to indicate where you fall on the scale.

- *Interdependent choices:* Please imagine the following situation. You can choose between a sure payment of a particular amount x of money, or a lottery, where you would have a 50% chance of getting amount y or a 50% chance of getting 0€. We will present to you five different situations. Please indicate whether you prefer to receive the sure payment of x or to play the lottery (the precise sequence of questions was given by the "tree" logic in Figure S2 in the Online Appendix of Falk et al., 2018)).

- Individual-level risk index: 0.4729985 × Interdependent risk choices + 0.5270015 × Self-assessment risk.

Time preferences

- *Self-assessment:* How willing are you to give up something that is beneficial for you today in order to benefit more from that in the future? Please use a scale from 0 to 10, where 0 means "completely unwilling to give up something today" and a 10 means you are "very willing to give up something today". You can also use any numbers between 0 and 10 to indicate where you fall on the scale.

- *Interdependent choices:* Suppose you were given the choice between receiving a payment today or a payment in 12 months. We will now present to you five situations. The payment today is the same in each of these situations. The payment in 12 months is different in every situation. For each of these situations we would like to know which you would choose. Please assume there is no inflation, i.e, future prices are the same as today's prices. Please consider the following: Would you rather receive 100€ today or x € in 12 months? (the precise sequence of questions was given by the "tree" logic in Figure 1 in the Online Appendix of Falk et al., 2018).

- Individual-level time index: 0.7115185 × Interdependent time choices + 0.2884815 × Self-assessment time.