Experiments on risk framing and moral appeal in the context of the coronavirus spread

Pre-Analysis Plan for the third survey wave

Björn Bos[a], Moritz A. Drupp[a,b], Jasper N. Meya[c,d] and Martin F. Quaas[c,d]

[a] Department of Economics, University of Hamburg, Germany

[b] CESifo, Munich, Germany

[c] Department of Economics, Leipzig University, Germany

[d] German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Germany

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I. Introduction

Following up on a first survey wave in March 2020 and a second one in August 2020, this study continues in aiming at an improved understanding of the private contributions to a public good under uncertainty as well as related questions on compliance. The coronavirus SARS-CoV-2 disease (COVID-19) still dominates life in Germany and all over the world. After an initial wave in the number of infections in Germany in March 2020, a second much higher wave is on-going in December 2020. Since November, the daily number of newly infected Germans has been in a range between 10,000 and 25,000 (Robert Koch Institut, 2020). Although a second "lockdown-light" has been introduced by the German government, the regulations have not yet reached their expectations in containing COVID-19. As there is still no vaccination available in Germany, we are focusing on public health effects and behavioral adjustments to protect against infection with the coronavirus. Individuals can contribute to this public good by keeping physical distance to others and by increasing their hygienic efforts. In addition to the focus on physical distancing and increased hand-washing, we also ask about other contributions to the public good

like wearing a face-mask, and the willingness to get vaccinated once a vaccine is available.

This pre-analysis plan is structured as follows: Section II describes the background and procedures of the third survey wave. Section III lists all data that we elicit as part of this wave and section IV reports pre-specified hypotheses in addition to those of our first and second survey wave.

II. Procedures

This survey wave is part of a panel survey experiment. Initially, we planned to conduct three survey waves, but we are open to collecting further survey waves if necessary.[1] Our survey includes questions on subjects' current health level, past and planned behavior related to the corona pandemic, support for governmental efforts to slow the spread of the virus, stated preferences as well as incentivised experiments on truth-telling and risk-taking.

In the third survey wave, we try to reach all 2,458 respondents again that participated in the first and second waves in March and August 2020, as well as those who only participated in the first survey wave in March. Depending on their willingness to participate in the survey again, we hope to reach between 1,600 and 2,000 respondents in the third survey wave. We will further add approximately 800 new respondents as a fresh sample.

We plan to start the third wave on December 09, 2020. We will start with a "soft launch" around noon to collect responses of up to 10% of our targeted sample. After a preliminary check of responses, we will then start with the main data collection in the afternoon. We plan to collect all responses of the fresh sample within 7 days by December 16, 2020, but allow for more time for participants that participated in the first two waves. The whole data collection should be completed by December 23, 2020 at the latest (i.e. within 2 weeks).

The start of the data collection is scheduled at a time when there are major restrictions on public life. Since the beginning of November, restrictions allow for meetings of two households with a maximum number of 5 persons only (excluding children younger than 14 year). Restaurants, theaters, and cultural facilities are closed and there is a ban on large events. The aim of these restrictions is to contain COVID-19 such that Christmas celebrations can take place in a less restricted environment. These restrictions, however, have not yet reached their expectations

[1] Our previous pre-analysis plans are pre-registered at the AEA RCT Registry (https://doi.org/10.1257/rct.5573-1.1) and we published parts of the data of the first survey wave at the Harvard Dataverse (https://doi.org/10.7910/DVN/WEIWDK).

such that they are prolonged until at least January 10. From December 23rd, to January 1st, however, restrictions will be lifted and allow for meetings with 10 persons (excluding children younger than 14 year). As of December 8th some German states (e.g. Bavaria, Saxony, Berlin) have announced to withdraw part of this relaxation or even impose additional restrictions, and further regulatory changes might be expected during our data collection period.

In contrast to the first wave, we will not carry out information treatments. We will exploit three natural sources of variation in the risk to get infected with the coronavirus (resulting in different ratios of private and external benefits of behavioural change):

1) spatial heterogeneity,
2) heterogeneity across societal groups (e.g., respondent's age, such as being older than 60, respondents with pre-existing chronic illnesses), and
3) heterogeneity over time in the course of the pandemic dissemination.

What we add as a new feature in this survey wave are treatments that vary the reporting and payment schemes of the coin tossing task to elicit truth-telling behaviour. Moreover, we add a question on religious membership and a debriefing question on whether the coin was tossed.

The survey will be conducted by an independent research company (respondi, https://www.respondi.com/EN) that recruits participants and handles payments. Recruitment of participants follows a stratified random sampling procedure against criteria such as age, gender, income and education. While in the first survey wave quotas were managed actively to guarantee the sample's representativeness regarding these criteria, the sample in this third survey wave depends on how the willingness to participate again is distributed among socio-economic groups. The subsample with fresh respondents will be actively managed to ensure representativeness regarding these criteria. The money that respondents earn in our two experiments is paid out to them as so-called "mingle points" and one mingle point is worth 1 Euro-Cent.

III. Data and variables

Table 1 provides the variables that we collect as part of the third survey wave. Some of the questions are only asked to participants in the fesh sample as they would be redundant for those who participated in a previous survey wave already. Other

questions depend on previous answers and might be asked for clarification purposes. We indicate potential filtering options in Table 1 in italic.

Table 1. List of Variables (rough translation from German)	
Variable # | type	Question
First of all, we have two questions regarding your general life satisfaction.	
1 | numeric	How satisfied are you with your life in general?
2 | string /categorical	Would you agree with the following statement? “Much of the time during the past week I was happy.”
3 | numeric	*Ony for participants in the fresh sample:* In which year were you born?
4 | string /categorical	*Ony for participants in the fresh sample:* What is your gender?
5 | numeric	*Ony for participants in the fresh sample:* What is the zip-code of your home?
6 | string /categorical	*Ony for participants in the fresh sample:* What is your level of education?
7a | numeric	*Ony for participants in the fresh sample:* How many people do you count among your personal circle of family and friends with whom you are in regular contact (i.e. at least once every 3 months)?
7b | numeric	*Ony for participants in the fresh sample:* How many of them are over 60 years old?
8a | numeric	*Ony for participants in the fresh sample:* How many people live in your household? (please include yourself)
8b | numeric	*Ony for participants in the fresh sample:* How many people in your household are children under the age of 18?
8c | numeric	*Ony for participants in the fresh sample:* How many people in your household are older than 60 years?

9 | string /categorical	*Only for participants in the fresh sample OR those how participated in wave 1, but not in wave 2:* What is your monthly net household income (the remuneration of all household members, after deduction of taxes and social securities)?
10 | numeric	How has your annual income changed in the current year 2020 compared to 2019? (in percent)
11 | numeric	What do you expect approximately how your annual income will change in the current year 2021 compared to 2019? (in percent)
12 | numeric	How high was your monthly net household income in November 2020 compared to February 2020? (in percent)
13 | string /categorical	Are you currently employed? Which one of the following applies best to your status? [Employed full-time, Employed part-time, in marginal or irregular employment, not employed]
14 | string /categorical	*If any employment in Q13:* What is your current occupational status? [Self-employed, Blue-collar worker, White-collar worker, Civil servant, Student / Apprentice / Trainee / Intern]
15 | numeric	*If any employment in Q13:* What is the minimum share of your working time, that you need to spend at a place that your employer determines (e.g. in his offices or rooms, on his property, at customers)? (in parcent)
16 | numeric	*If any employment in Q13:* If you can work from home, to which share of your total working time are you using this option? (in percent)
17 | string /categorical	Do you belong to a church or religious community?
18 | string /categorical	*If "yes" in Q17:* Which church or religious community do you belong to?
19 | numeric	To what extent do you experience the emotion "fear" at the moment?
20 | numeric	Please tell us: How willing are you to take risks with regard to your finances?

21 | numeric	Please tell us: How willing are you to take risks regarding your health?

Task 1: Investment game based on Gneezy and Potters (1997), following the implementation by Cohn et al. (2015, 2017). We randomize the payoff profile across two groups:

Now we come to a task where you can earn additional money (mingle points). You will receive 100 Euro-Cent from us for this. You can use this money to invest it in a risky asset. Please decide now, which share of it you want to invest in the risky asset. You will receive the amount that you do not invest for sure.
The risky investment works as follows:

- You have a 50% chance of winning 2.5 times your investment.
- You have a 50% chance of losing your investment.

[**Group Investment_A**:] You win if the super number (between 0 and 9) of the Saturday Lotto drawing on December 26, 2020 (www.lotto.de) is one of the numbers 0, 1, 2, 3, or 4. You lose if the super number of this draw is one of the numbers 5, 6, 7, 8, or 9.

[**Group Investment_B**:] You win if the super number (between 0 and 9) of the Saturday Lotto drawing on December 26, 2020 (www.lotto.de) is one of the numbers 5, 6, 7, 8, or 9. You lose if the super number of this draw is one of the numbers 0, 1, 2, 3, or 4.

Therefore, the amount you earn by investing in this task is calculated as follows:

- If you win: Payout = 100 Euro-Cent minus investment plus (2.5 x investment)
- If you lose: Payout = 100 Euro-Cent minus investment

Investment | numeric	How many Euro-Cent would you like to invest (0 - 100)? _____

We would now like to ask you some questions about your health state and the consequences of an infection with the coronavirus.

22 | binary	*Ony for participants in the fresh sample:* Do you have one or more of the following diseases? [Heart disease, Lung disease, Liver disease, Diabetes, Cancer, Weakened immune system]
23 | numeric	How do you assess your health status? [very good, … , very bad]

We would now like to ask you some questions regarding an infection with the coronavirus.	
24 | string /categorical	If you have the opportunity to get tested for corona infection, how willing are you to get tested, even if this involves additional effort for you?
25 | numeric	How often have you been tested on COVID-19?
26 | binary	Have you been tested positive for COVID-19?
27 | string /categorical	Have you already fallen ill with the coronavirus? [Yes, No, Maybe, No answer]
28a | numeric	*If "No", "Maybe" or "No answer" in Q27:* How likely do you think it is that you will become infected with the coronavirus or that you have already been infected?
28b | numeric	*If "No", "Maybe" or "No answer" in Q27:* How likely do you think it is that if you are infected, you will only get sick mildly?
28c | numeric	*If "No", "Maybe" or "No answer" in Q27:* How likely do you think it is that if you are infected, you will be in acute danger of death in case of infection?
29 | binary	*Filter if "Yes" in Q27:* Have you recovered after the corona infection?
30 | numeric	How many persons among your family members and friends, with whom you are regularly in contact (i.e., at least once every 3 months), got infected with the coronavirus?
31a | numeric	*If answers is greater than zero in Q30:* How many persons among your family members and friends, with whom you are regularly in contact (i.e., at least once every 3 months), have been treated due to the coronavirus in a hospital?
31b | numeric	*If answers is greater than zero in Q30:* How many persons among your family members and friends, with whom you are regularly in contact (i.e., at least once every 3 months), died due to the coronavirus?

We would now like to know to what extent the following statements apply to you. In the following, “physical, social contact” refers to situations in which you come closer than two metres to other people.	
32 | numeric	Compared to the same time period last year, by what percentage have you reduced or increased your physical, social contacts in the past 7 days?
33 | numeric	How many people on average came closer than 2 meter to you on a single day? (Please calculate the average number for the past 7 days)
34 | numeric	Compared to the same time period last year, by how many percent have you reduced or increased your intensive hand washing (longer than 20 seconds) in the past 7 days?
35 | numeric	As far as you reduce physical, social contacts or take protective efforts such as intensive hand washing, in what proportions (in percentage points that sum up to 100%) do you do this in order to - Protect yourself and members of your household [x%] - Protect your family and close friends [y%] - To protect other people [100-x-y%]
We now have a question regarding your future expectations.	
36 | string / categorical	What do you expect, when will we be able to live again without substantial restriction due to COVID-19?
We would now like to know what you are planning for the next 7 days:	
37 | numeric	Compared to the same time period last year, by what percentage will you reduce or increase your physical, social contacts in the next 7 days?
38 | numeric	Compared to the same time period last year, by what percentage will you reduce or increase your intensive hand washing (longer than 20 seconds) in the next 7 days?
We would now like to know to what extent you agree with the following statements.	
39 | numeric	The current government measures to contain the COVID-19 pandemic are… [going way too far, …, are not nearly enough]

40 | numeric	Relative to the governmental regulations, I will limit my physical, social contacts as follows: [participation in Corona-parties, …., complete avoidance of all contacts]
Imagine there will be a reliable and authorized vaccination against the coronavirus available in Germany.	
41 | numeric	How likely is it that you will get vaccinated voluntarily? [impossible, …, for sure]
42 | numeric	*If the probability is greater than zero in Q41:* If you would get vaccinated voluntarily, in what proportions (in percentage points that sum up to 100%) do you do this in order to - Protect yourself and members of your household [x%] - Protect your family and close friends [y%] - To protect other people [100-x-y%]
We would now like to know, by how much you agree to the following statements.	
43 | numeric	It should be compulsory, to get a vaccination against the coronavirus. [completely disagree, …, fully agree]
44 | numeric	Relative to the governmental regulations, I am wearing my face-mask… [never, …, as requested, … , always]
45 | numeric	If somebody is not wearing his face-mask at a place where it is required to do so by regulations, or if somebody is not wearing it correct (e.g., by not covering the nose),… - this bothers me [not at all, … , a lot] - I will point this out to that person [not at all, …, energetic] - I will point this out to other persons [not at all, …, energetic]
46 | numerically	If you wear a face-mask, in what proportions (in percentage points that sum up to 100%) do you do this in order to - Protect yourself and members of your household [x%] - Protect your family and close friends [y%] - To protect other people [100-x-y%]
Task 2: Coin tossing game, such as by Abeler et al. (2014), implementation following Cohn et al. (2014). For participants that participated already in the first survey, we randomize them across two groups and provide them with an information treatment. Participants in the fresh sample, are not randomized and do not see the information treatment:	

Now, we come to another task where you can earn additional money (mingle points). In this task, your additional payout is decided by coin tosses. Please get a coin with heads and tails for this.

[**Group Coin_A:]** Your task is to toss the coin exactly 10 times. Every time you toss "tails", you will receive 0.20 Euro, for a total of up to 2.00 Euro.

Please enter the number of your tosses with “tails” at the top in the following field: [____]

[**Group Coin_B:]** Your task is to toss the coin exactly 10 times. Every time you toss "tails", you will receive 0.40 Euro, for a total of up to 4.00 Euro.

Please enter the number of your tosses with “tails” at the top in the following field: [____]

[Group Coin_C:| Your task is to toss the coin exactly 10 times. Every time you toss "tails", you will receive 0.02 Euro, for a total of up to 0.20 Euro.

Please enter the number of your tosses with “tails” at the top in the following field: [____]

Group Coin_D: Your task is to toss the coin exactly 10 times. Every time you toss "tails", you will receive 0.20 Euro, for a total of up to 2,00 Euro.

Please enter which side is up for every single toss: […]

Imagine, you would have the choice to receive a monetary payoff today or in 12 months. We will present you five situations in which the payoff today is always the same. The payoff in 12 month, however, will differ in each situation. For each situation, we would like to know which payoff you prefer. Please assume that there is no inflation, such that future prices are the same as today.

47 | numeric	*This question is adapted from Falk et al. (2018). It is repeated up to 5 times with varying payoffs for the future time period.* Please assess the following situation. Would you rather prefer 100 Euro today or 154 Euro in 12 months. [Today, in 12 months, do not know / prefer to not answer]

Please answer the following questions:

48 | string /categorical	How willing would you be to give up something that is beneficial for you today in order to benefit more from that in the future?
49 | string /categorical	How much would you be willing to punish someone who treats you unfairly, even if there may be costs for you?
50 | string /categorical	How much would you be willing to punish someone who treats others unfairly, even if there may be costs for you?
51 | string /categorical	How much would you be willing to give to a good cause without expecting anything in return?
	Thank you very much for your answers. Your payout of […] for the coin toss is already fixed and will be credited to you by respondi shortly. Depending on whether you invested an amount at the investment task, you will get your return depending on the outcome of the lottery draw on December 26 or receive the amount not invested for sure. Finally, we have one last question. Please tell us how many of the following statements you can answer with "Yes". **[Control group]:** - My father's birthday is in the first half of the year (Jan - June). - I own a pet. - I did not toss a coin during the coin toss, but I have thought up the result. - The first letter of my mother's birth name is between A to K. **[Treatment group]:** - My father's birthday is in the first half of the year (Jan - June). - I own a pet. - The first letter of my mother's birth name is between A to K.
52 | numeric	Number of statements that I can answer with "Yes": [___]

In addition to the variables collected as part of this survey, we will collect observable data that can be matched to respondents through information about their zip-code. Among those information will be the number of officially confirmed COVID-19 incidents by the Robert Koch Institute (https://survstat.rki.de/), the number of deaths from COVID-19, and regulatory stringency. As these types of information might not

be available on the zip-code level but on the county level, our matching might be based on a higher spatial aggregation.

COVID_incidence	Number of officially confirmed COVID-19 incidents per county (Source: Robert-Koch-Institute)
COVID_death	Number of officially confirmed COVID-19 deaths (Presumably on the county level by Robert-Koch-Institute)
Reg_string	Regulatory Stringency (Based on regulations by the individual federal states, following classifications - if applicable - by the Oxford COVID-19 Government Response Tracker (OxCGRT))

IV. Hypotheses of individual sub-projects for the third survey wave

Following up on our hypotheses of our first and second wave, we update them as follows:

A. Risk attitudes, risk exposure and the private provision of a public good under uncertainty

Economic theory predicts that risk-averse individuals may provide more of a public good if they (also) benefit from a (private) risk-reducing effect of providing the public good. For example, Bramoulle and Treich (2009) consider a game with pollution emissions that generate stochastic damage that has a public good character. They show that risk increases individual abatement efforts and thus private provision of the public good. As a consequence, risk may increase welfare. Quaas and Baumgärtner (2008) and Baumgärtner and Quaas (2010) show that individual efforts to conserve biodiversity increase with risk and risk aversion due to the natural insurance function of biodiversity. Also, lab experiments in threshold public good games suggest that risk may lead to improved outcomes (McBride 2006; Tavoni et al. 2011; Barrett and Dannenberg 2014). Here we aim to use the data from the survey to test the implications of the theory and the validity of those lab experiments.

Individual protective measures with respect to the coronavirus have exactly the property that they reduce, at the same time, the individual probability of getting infected and the probability to spread the virus. Thus, we expect that risk averse individuals would contribute more to the public good.

We measure individual risk aversion by stated preferences (W1Q10, W1Q11, W2Q17, W2Q18, W3Q20, W3Q21) and revealed preferences (W1Q12, W2Investment, W3Investment). The amount of private provision of the public good is measured by stated past and planned individual defence efforts (W1Q17, W1Q18, W1Q20, W1Q21, W2Q30, W2Q32, W2Q36, W2Q37, W3Q32, W3Q34, W3Q37, W3Q38), the assessment of public policies (W1Q22, W1Q23, W2Q38, W2Q39, W2Q42, W2Q43, W3Q39, W3Q40, W3Q43, W3Q44), the willingness to get vaccinated voluntarily (W2Q40, W3Q41). We further need to control for individual risk exposure with respect to the severity of health damage in case of an infection (age, health); with respect to the (objective or subjective) probability of infection; and with respect to the effect on close relatives (household members, family and friends).

We will test the following hypotheses by means of multivariate regression, using the variables specified in the previous paragraph. All the following hypotheses are ceteris paribus, i.e. controlling for the effect of the other variables.

A_H1: Private provision of the public good increases with risk aversion.

A_H2: Private provision of the public good increases with individual risk.

A_H3: Private provision of the public good increases with the aggregate risk of household members and friends (number of elderly people).

A_H4: Private provision of the public good increases relatively more with overall risk (COVID_incidence) for those who state a higher share for being motivated for a concern for other people (W1Q19, W2Q33, W2Q41, W2Q45, W3Q35, W3Q42, W3Q46).

B. Effect of risk expectations on private public good contributions

Expectations can become a relevant factor for individual decision making when individuals consider the future implications of their current behavior. While the spread of the coronavirus over the coming weeks and months is uncertain, policymakers explicitly highlight the dynamic implications of current

defence efforts (“flatten the curve”). Hence, we explore the effect of expectations about respondents’ health risk on the private public good provision.

Between subject estimation

Our risk treatment of the first survey wave was designed to examine the role of risk expectations between subjects. Hence, we affected respondents’ expectations about the health-related and economic risk of the COVID-19 pandemic with information treatments. We use the treatment-induced variation in risk expectations in the first survey wave to estimate the effect of expectations on the private public good provision in the first survey wave following a two-stage approach.

In the first stage, we focus on the treatment effect on risk expectations. Our two treatments are designed to make health and financial risks salient. Thus, we expect an impact on respondent’s general emotions and risk expectations, which we test through the following hypotheses:

B_H1: The more salient the (health-related and economic) risk is, the higher is the fear level (W1Q8).

B_H2: The more salient the (health-related and economic) risk is, the lower the expected income (W1Q9) and the lower the willingness to take risk (W1Q10, W1Q11).

While the information treatment focuses particularly on the spread of the coronavirus, we expect stronger changes in risk expectations about individuals’ health risk. In the high (low) risk treatment, we expect that both the perceived probability of getting infected as well as the severity of potential health damages become relatively high (low):

B_H3: Respondents in the high-risk treatment (HRT) report a higher likelihood to get infected than respondents in the low-risk treatment (LRT) (W1Q16a).

B_H4: Respondents in the low-risk treatment (LRT) report a lower likelihood to get seriously endangered than respondents in the high-risk treatment (HRT) (W1Q16c).

With respect to the investment task of the first survey wave, we do not expect any effects of the risk treatment. We control the risk profile in this task. All respondents have full information about the probability of winning and losing and are aware that winning and losing is determined exogenously. Therefore, the only effect of the risk treatment on the behavior in the investment task

could be via the perceived background risk, while the actual background risk remains unaffected by the information treatment. We hypothesize, however, that the treatment effect on the perceived background risk does not change behavior on average:

B_H5: The risk treatment does not affect behavior in the investment task (W1Q12).

Given B_H5, the incentivized investment task would allow us to capture risk-preferences independent of the information treatment.

In the second stage, we focus on the effect of risk expectations on the private public good contribution. We expect that risk preferences and expectations about an individual's health risk both determine private public good contributions. In particular, we expect that high expectations about one's own health risk increase private public good contributions, which also reduces the individual probability of getting infected, and exacerbate risk and time preferences. Hence:

B_H6: The higher the individuals' expected health risk (W1Q16a-c), the higher future private public good contributions (W1Q20, W1Q21).

B_H7: Risk averse subjects (primarily W1Q12; additionally we also consider W1Q10, W1Q11) with high (low) expectations about their health risk (W1Q16a-c) will contribute more (less) to the public good (W1Q20, W1Q21) than risk averse subjects with moderate expectations.

B_H8: Subjects with a high utility of their current (future) consumption, split at the median response for (W1Q25), will contribute less (more) to the public good (W1Q20, W1Q21).

Within subject estimation

An advantage of our panel survey is that we can observe subjects at multiple occasions. We exploit this feature to examine changes over time that we measure within subjects. We expect that changes in the local infection rates affect the background risk and therefore lead to different financial investments and private public good contributions over time. When we compare the investment level and level of private public good contributions between the first and second survey wave, we expect the following:

B_H9: Subjects that live in a region in which local infection rates increased particularly strongly from the first to the second survey wave, will invest less than in the first survey wave (W1Q12, W2Investment, W3Investment).

*B_H10: Subjects that live in a region in which local infection rates (*COVID_incidence*) increased particularly strongly from the first to the second survey wave, will provide more to the public goods (*W2Q30, W2Q32, W2Q36, W2Q37, W3Q32, W3Q34, W3Q37, W3Q38*).*

Regarding our hypotheses on the long-term effect of the risk framing treatment, please refer to the previous Subsection A.

C. Coin-tossing: temporal stability and experience effects

In all three survey waves, we conducted a coin tossing experiment (following the 10 coin tosses of Cohn et al. 2015). As far as we are aware, this is the first large-scale panel study on coin tossing. If cheating on a coin-tossing experiment is a stable predictor of social preference on honesty, we would expect that there is some consistency in over-reporting. We thus hypothesize:

C_H1a: Reporting of coin-tosses in the first, second and third waves is positively correlated.

C_H1b: This correlation is particularly strong for those with very low (0,1,2 winning coin tosses) and very high (8,9,10 winning coin tosses) reports in the first wave.

Having repeatedly substantially higher than average coin tosses, is getting statistically more unlikely with the number of survey rounds. Respondents that care about their reputation of being honest might therefore want to report lower coin tosses in wave 3, than they reported in wave 1 or wave 2. We thus hypothesize:

C_H2a: For participants that participated in all three survey waves, the number of very high reported winning tosses (8,9, or 10 winning coin tosses) is lower in wave 3 than in wave 1 or wave 2.

C_H2b: For participants that participated in all three survey waves, the number of reported winning tosses is lower in wave 3 than in wave 1.

Out of a concern for reputation the respondents may also report coin tosses to signal that they have actually tossed a coin, although they did not spend the effort of getting a coin and tossing it ten times. We hypothesize that respondents do not remember the exact number they reported in previous rounds, but follow similar heuristics to signal actual coin tossing. We formulate this as

C_H2c: For participants that participated in more than one survey wave, the reported numbers of winning tosses are more strongly correlated than expected for a fair coin.

C_H3a: The share of very high reported winning tosses (8,9, or 10 winning coin tosses) relative to all reported winning tosses, is lower in the fresh sample, than in the sample of those who participated in wave 1 and wave 2.

C_H3b: The number of reported winning tosses is higher in the fresh sample than in the sample of those who participated in wave 1 and wave 2.

D. Coin-tossing: adherence to regulations

Based on the various studies that have shown some form of external validity of the coin tossing task concerning other measures of truth-telling or cheating (e.g. Cohn and Maréchal 2018, Potters and Stoop 2016), we hypothesize that a similar correspondence may be observed for the case of adhering to governmental regulations in the COVID-19 pandemic response. We thus hypothesize:

*D_H1a: The number of reported winning tosses, pooled over all survey waves, is positively correlated with non-adherence to governmental regulations (*W1Q23, W2Q39, W2Q43, W3Q40, W3Q44*) and negatively correlated with the private provision of public goods (*W1Q17, W1Q18, W1Q20, W1Q21, W2Q30, W2Q32, W2Q36, W2Q37, W3Q32, W3Q34, W3Q37, W3Q38*).*

As reporting 4 and 6 winning tosses may be correlated with reputational concerns, we also expect this to correlate with *(non)-adherence to governmental regulations* and the *private provision of public goods*. We formulate:

*D_H1b: The number of times reporting 4 or 6 winning tosses, is positively correlated with non-adherence to governmental regulations (*W1Q23, W2Q39, W2Q43, W3Q40, W3Q44*) and negatively correlated with the private provision of public goods (*W1Q17, W1Q18, W1Q20, W1Q21, W2Q30, W2Q32, W2Q36, W2Q37, W3Q32, W3Q34, W3Q37, W3Q38*).*

*D_H2: The average number of reported winning tosses across all waves is positively correlated with the number of reported corona infections (*W3Q26*).*

E. Hypotheses on truth-telling treatments

We added three treatments to the coin-tossing task to manipulate intrinsic lying and reputational costs (following the recent literature summarized in Abeler et al. 2019), retaining our previous coin tossing design as Group A (see Task 2 above). In particular, we state the following hypotheses:

E_H1: Participants in the treatment group with higher stakes (Coin Group B) have higher lying costs and report more winning coin tosses than participants in the control group with medium stakes (Coin Group A). In particular, we expect a higher share of reported very high winning coin tosses (8,9,10 winning tosses) in Coin Group B than in Coin Group A.

E_H2: Participants in the treatment group with very low stakes (Coin Group C) have low lying costs and will report less winning coin tosses than participants in the control group with medium stakes (Coin Group A) and to the group with high stakes (Coin Group B). The distribution of their reported coin tosses is closer to a binomial distribution than for the control group (Coin Group A) and treatment group with high stakes (Coin Group B).

E_H3: Participants that report each coin toss (Coin Group D) have higher reputational costs and report less winning coin tosses relative to the control group (Coin Group A) that only states the overall number of winning tosses.

Finally, we cannot observe if subjects actually toss the coin. For this reason, we indirectly ask, using the approach of list randomization (Karlan and Zinman 2012) if they have tossed the coin or answered a random number (W3Q52). We expect that those who report - by inference - to have not tossed the coin, report more 4 and 6 winning tosses but fewer 5 winning coin tosses to signal that they have engaged in the task and followed the instructions. We thus hypothesize:

E_H4: Participants that have been more likely to enter a random number of winning coin tosses (as measured by W3Q52) report more 4 and 6 winning coin tosses but fewer 5 winning coin tosses.

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