Honesty in the Digital Age

Online Appendix

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Contents:

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Appendix A: Descriptive statistics and randomization checks

The next pages show the descriptive statistics for subjects' personal characteristics. For Experiment 1, we also provide randomization checks across treatments and waves.

Table 1. Descriptive statistics and randomization check across conditions in Experiment 1

	CALL	FORM	ROBOT	CHAT	p-value
Age (years)	24.105	23.665	24.478	23.163	0.750
	(5.861)	(5.837)	(5.994)	(2.656)	
Male subject	0.513	0.453	0.464	0.535	0.558
	(0.501)	(0.499)	(0.502)	(0.502)	
Swiss nationality	0.730	0.764	0.725	0.779	0.775
	(0.445)	(0.426)	(0.450)	(0.417)	
Field of study: Law	0.059	0.037	0.043	0.058	0.798
	(0.237)	(0.190)	(0.205)	(0.235)	
Field of study: Economics/Business	0.059	0.112	0.072	0.116	0.297
	(0.237)	(0.316)	(0.261)	(0.322)	
Field of study: Medicine	0.039	0.106	0.043	0.035	0.044
	(0.195)	(0.308)	(0.205)	(0.185)	
Field of study: Social Sciences	0.151	0.112	0.145	0.105	0.634
	(0.360)	(0.316)	(0.355)	(0.308)	
Field of study: Natural Sciences	0.493	0.385	0.522	0.384	0.082
	(0.502)	(0.488)	(0.503)	(0.489)	
Field of study: Other	0.197	0.248	0.174	0.302	0.174
	(0.399)	(0.433)	(0.382)	(0.462)	
Observations	152	161	69	86	

Note: This table reports means and standard deviations (in parentheses) of subjects' responses to questions asking for their age (in years), their gender (1=male), whether they are Swiss citizens (1=yes), and their field of study. The last column contains p-values for the null hypothesis of perfect randomization (Kruskal-Wallis test for the age-variable and χ^2-tests for all other variables).

Table 2. Descriptive statistics across waves in Experiment 1

	Wave 1	Wave 2	p-value
Age (years)	23.599	24.123	0.711
	(4.778)	(6.129)	
Male subject	0.502	0.474	0.546
	(0.501)	(0.501)	
Swiss nationality	0.747	0.754	0.872
	(0.436)	(0.432)	
Field of study: Law	0.051	0.047	0.874
	(0.220)	(0.213)	
Field of study: Economics/Business	0.078	0.104	0.319
	(0.268)	(0.306)	
Field of study: Medicine	0.066	0.057	0.679
	(0.249)	(0.232)	
Field of study: Social Sciences	0.148	0.104	0.160
	(0.356)	(0.306)	
Field of study: Natural Sciences	0.385	0.507	0.008
	(0.488)	(0.501)	
Field of study: Other	0.272	0.180	0.018
	(0.446)	(0.385)	
Observations	257	211	468

Note: This table reports means and standard deviations (in parentheses) of subjects' responses to questions asking for their age (in years), their gender (1=male), whether they are Swiss citizens (1=yes), and their field of study. The last column contains p-values for the null hypothesis of perfect randomization (Kruskal-Wallis test for the age-variable and χ^2-tests for all other variables).

Table 3. Descriptive statistics for Experiment 2

Age (years)	23.089
	(3.725)
Male subject	0.474
	(0.500)
Swiss nationality	0.742
	(0.438)
Field of study: Law	0.066
	(0.248)
Field of study: Economics/Business	0.084
	(0.278)
Field of study: Medicine	0.082
	(0.274)
Field of study: Social Sciences	0.047
	(0.213)
Field of study: Natural Sciences	0.350
	(0.478)
Field of study: Other	0.371
	(0.484)
Observations	380

Note: This table reports means and standard deviations (in parentheses) of subjects' responses to questions asking for their age (in years), their gender (1=male), whether they are Swiss citizens (1=yes), and their field of study.

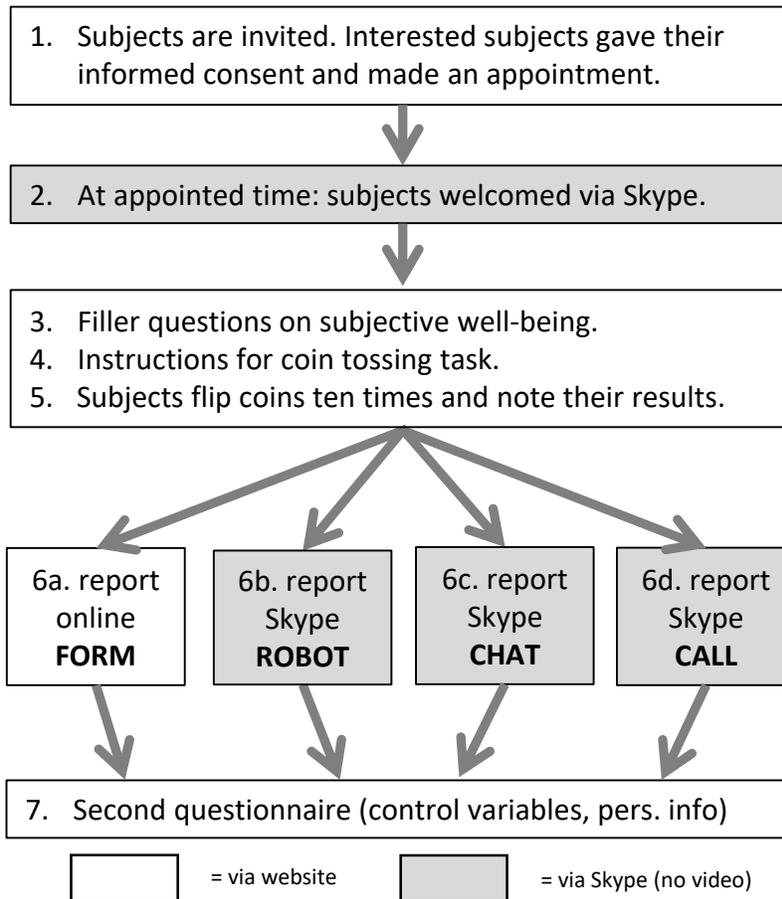## Appendix C: Procedures and Instructions for Experiment 1

The experiment had the following structure: In step 1, subjects from the university's subject pool were invited (via email) to participate. [1] We excluded psychology students and subjects who had never participated in an economic lab experiment to ensure that they trusted our payment procedure. We also excluded individuals who had participated in previous experiments involving the coin tossing task. They were told that the study would require a Skype account and that they would need to provide their address as their earnings would be mailed to them. If subjects gave consent, they could register on our website and make an appointment. At the scheduled time, they were contacted by an experimenter via Skype in step 2. [2]

The experimenter welcomed the subjects and sent them, via Skype's chat function, a personalized link to an online questionnaire. The first part of the questionnaire contained filler questions on subjective wellbeing and life satisfaction (step 3). In step 4, subjects received the instructions for the coin tossing task and they were informed how to report the outcomes. Subsequently, subjects flipped the ten coin tosses and noted the results (step 5). When ready, subjects could proceed to report the outcomes in step 6, depending on the treatment, via online FORM on the webpage, via Skype CALL to an experimenter or ROBOT, or via Skype CHAT to an experimenter. Finally, they received a link for an exit questionnaire which elicited additional information, including their address to which their earnings were sent. Figure 1 visualizes these steps:

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[1] We obtained IRB approval from the Human Subjects Committee of the Faculty of Economics, Business Administration, and Information Technology at the University of Zurich.

[2] The initial contact differed by wave: In the first wave, subjects were contacted using Skypes call function (without video), whereas in the second wave they were contacted via Skypes chat function. However, how subjects were approached did not have any influence on their behavior in the coin tossing task as the results of treatments FORM and CALL were almost identical across waves (p=0.710 and p=0.767, rank-sum tests). We therefore pooled the data from both waves for the analysis.

Figure 1. Timeline of Experiment 1

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┌─────────────────────────────────────────────────────────┐
│  1.  Subjects are invited. Interested subjects gave their │
│      informed consent and made an appointment.            │
└─────────────────────────────────────────────────────────┘
                          ↓
┌─────────────────────────────────────────────────────────┐
│  2.  At appointed time: subjects welcomed via Skype.      │
└─────────────────────────────────────────────────────────┘
                          ↓
┌─────────────────────────────────────────────────────────┐
│  3.  Filler questions on subjective well-being.           │
│  4.  Instructions for coin tossing task.                  │
│  5.  Subjects flip coins ten times and note their results.│
└─────────────────────────────────────────────────────────┘
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6a. report online **FORM**	6b. report Skype **ROBOT**	6c. report Skype **CHAT**	6d. report Skype **CALL**

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┌─────────────────────────────────────────────────────────┐
│  7.  Second questionnaire (control variables, pers. info) │
└─────────────────────────────────────────────────────────┘
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☐ = via website   ▨ = via Skype (no video)

The following pages display the instructions (translations from German) for the coin tossing task. Content in frames was shown in the subjects' web browser.

Step 4: Instructions for the coin tossing task

Now you can win money!

All participants of this study can earn up to **CHF 20.**- *The amount you earn depends on what you report. It is thus very important that you read the instructions carefully.*

Please have the **coin, the paper, and the pencil** *ready. You will now be asked to toss the coin ten times and to note the results (heads or tails) on paper. Using the corresponding payment tables, you can see whether you won the toss or not. Each win increases your income by CHF 2.-, meaning that you can earn up to CHF 20.-*

[in treatment FORM]
You will be asked later to report the results of your coin tosses in writing on one of the following pages.

[in treatment CALL]
You will be asked later to report the results of your coin tosses orally to the person with whom you spoke early per Skype call (without video).

[in treatment CHAT]
You will be asked later to report the results of your coin tosses in writing to the person with whom you spoke early per Skype chat.

[in treatment ROBOT]
You will be asked later to report the results of your coin tosses orally per Skype on an answering machine (without video).

Example of a payment table :

Yield	CHF 2.-	CHF 0.-

You win if you toss tails, and your income is increased by CHF 2.–

If you toss heads, you lose and will not earn anything more.

Please click on "continue" to continue.

[continue-button]

7

Step 5: Coin tosses

Please pick up the coin and toss it 10 times. **Please note the corresponding result for each toss, i.e. heads or tails.** *You can see whether you won on the corresponding payment table below.*

[in treatment FORM]

You will be asked later to report the results of your coin tosses in writing on one of the following pages.

[in treatment CALL]

You will be asked later to report the results of your coin tosses orally to the person with whom you spoke earlier per Skype call.

[in treatment CHAT]

You will be asked later to report the results of your coin tosses in writing to the person with whom you spoke earlier per Skype chat.

[in treatment ROBOT]

You will be asked later to report the results of your coin tosses orally per Skype on an answering machine.

Please begin now with toss 1 and write down the results of the remaining 9 tosses.

Toss 1

Yield	CHF 0.-	CHF 2.-

...
[The corresponding pictures for tosses 2 to 9 are omitted. The sequence was
"Heads"/"Tails"/"Tails"/"Heads"/"Tails"/"Tails"/"Heads"/"Heads".]

Toss 10

Yield	CHF 2.-	CHF 0.-

Please click on "continue" when you have noted all 10 tosses.

[continue-button]

Step 6 i): Preparation to report

<u>In treatment FORM:</u>

> *You will now be asked to report the results of your coin tosses. Please only answer with "heads" or "tails". You do not need to provide any other information in your answer.*
> *Please click on "continue" to continue.*
>
> [continue-button]

<u>In treatment CALL:</u>

> *Please call back by Skype. Thank you.*
> *You can close this window when the connection has been made.*

Once subjects called back the experimenter welcomed them with the following spoken text:
Welcome back! We now ask you to report the results of your coin tosses. Please only answer with "heads" or "tails". You do not need to provide any other information in your answer.

<u>In treatment CHAT:</u>

> *Please contact us by Skype chat. Thank you.*
> *You can close this window when the connection has been made.*

Once subjects wrote back the experimenter welcomed them by writing the same text as the one spoken in CALL (see above).

<u>In treatment ROBOT:</u>

> *We now ask you to report the results of your coin tosses orally per Skype on an answering machine. Please only answer with "heads" or "tails". You do not need to provide any other information in your answer.*
> *Please have the results of your coin tosses ready. Afterwards you can leave us your address on an internet page so that we can send you your earnings*
> [The instructions on how to call the specific Skype contact with the answering machine is omitted.]
> *You can close this window when the connection has been made.*

Once subjects were connected to the answering machine, it welcomed them by using one of the experimenter's pre-recorded greeting with the same text as in CALL (see above).

Step 6 ii): Reporting

<u>In treatment FORM:</u>
There were ten separate screens for each of the ten coin tosses. Each screen elicited the response via a text entry field which only accepted the German equivalents for "Heads" or "Tails" (case-insensitive). Below, we show the screen which elicits the response for coin toss 1, the other nine screens are analogous:

You will win CHF 2 in toss 1 if you have "tails". Did you have "heads" or "tails"?
[Text entry box]
Please click on "continue" once you have entered your result.   [continue-button]

After having reported their result for all ten coin tosses, subjects were forwarded to another screen with the exit-questionnaire.

<u>In treatment CALL:</u>
The experimenter orally asked subjects exactly the same question as in the above example screen for treatment FORM to report the outcome of each coin toss, and subjects answered orally. After having reported their result for all ten coin tosses, the experimenter sent subjects a link for the exit-questionnaire per Skype chat.

<u>In treatment CHAT:</u>
The experimenter asked subjects in writing exactly the same question as in the above example screen for treatment FORM to report the outcome of each coin toss, and subjects answered in writing. After having reported their result for all ten coin tosses, the experimenter sent subjects a link for the exit-questionnaire per Skype chat.

<u>In treatment ROBOT:</u>
The pre-recorded experimenter's voice asked subjects exactly the same question as in the above example screen for treatment FORM to report the outcome of each coin toss, and subjects answered orally.
As in the other treatments, subjects in ROBOT received a reminder email a day before the actual experiment. Unlike those in the other treatments however, it contained a link to the exit-questionnaire. Access to the exit-questionnaire was password-protected. The email stated that they would have to keep the email with the link and they would receive the password during the experiment. The computer-voice interface announced and repeated this password after subjects had reported the result for the last coin toss.

Appendix D: Procedures and Instructions for Part A of Experiment 2

The initial steps of experiment 2 were essentially identical to treatment FORM in experiment 1 (see figure 1). The only substantial differences were that when subjects signed up in step 1, they had to make an appointment for part B, while part A had to be completed at a pre-determined day, a week after the invitation. Moreover, the welcome stage (step 2) on a webpage for which subjects received an individualized link by email on the day where part A had to be completed. Most importantly, following the socio-economic questionnaire of step 7, subjects received the instructions for the second coin tossing task. They were then offered the choice whether they wanted to report the outcomes per Skype call or online form in the upcoming part B. Finally, subjects entered their address to receive the payment by mail. This concluded part A. Those subjects who were not randomly selected to participate in part B received an email notification email on the following day. Subjects selected for participation in part B were contacted on the previously agreed date and time by an experimenter via a Skype call. Then they had to report the results of their second set of coin tosses either via Skype call or through an online form for which the experimenter sent them a link, depending on their choices in part A. We used the same reporting protocol as in treatment FORM and CALL of experiment 1, respectively.

The next pages show the instructions for the coin tossing task and choice of reporting channel in experiment 2. As in experiment 1, these are translations from German and content in frames was displayed in the subjects' web browser.

Step 7 i) in Experiment 2: Announcement

Preparation for Part B:

In part B, you again have the opportunity to earn up to CHF 20. We again ask you to **toss the coin ten times** *and to write down the results on paper.* **You will not report the results until part B of the study.**

Please note that only part A or part B will be paid out. This will be determined at random at the end of the study.

Please have the coin, the paper, and the pencil ready. Using a second payment table, you can see whether you won the toss or not. Each win increases **your income by CHF 2.-**, *meaning that you can earn up to CHF 20.-*

Here is another example of a payment table :

Yield	CHF 2.-	CHF 0.-

You win if you toss tails, and your income is increased by CHF 2. -
If you toss heads, you lose and will not earn anything more.

Please click on "continue" to continue.

[continue-button]

Step 7 ii) in Experiment : Instructions for the second coin tossing task

Please pick up the coin and toss it 10 times. **Please note the corresponding result for each toss, i.e. heads or tails.** *The payment table below shows for every toss the result that will allow you to earn CHF 2.-*

You may begin tossing the coin.

Toss 1

Yield	CHF 0.-	CHF 2.-

...

[The corresponding pictures for tosses 2 to 9 are omitted. The sequence was "Heads"/"Tails"/"Tails"/"Heads"/"Heads"/"Heads"/"Heads"/"Heads".]

Toss 10

Yield	CHF 0.-	CHF 2.-

Please click on "continue" when you have noted all 10 tosses.

[continue-button]

Step 7 iii) in Experiment 2): Choice of the communication channel to report the results from the second coin tossing task

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We now ask you to inform us **how you wish to report the results of the coin toss in part B**. *You have two options (Your selection will not influence whether you will be chosen to participate in part B):*

Option 1: Online form. *You will receive a link to the online form at the end of the Skype call (without video). The reporting of the results of the coin toss takes place in the same way as in part A.*

Option 2: Orally by Skype. *Following the Skype call, the study conductor will ask you to report the results of the coin tosses orally by Skype (without video), i.e. you must either say "heads" or "tails".*

Please note that no further questions will be asked in either option. Now decide between option A and option B:

[radio-button] With the online form

[radio-button] Orally by Skype

[continue-button]

The order in which the options were presented was randomized and counterbalanced between subjects.