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MÜNSTER



Diskussionspapier des Instituts für Organisationsökonomik

2/2017

Is Trustworthiness Written on the Face?

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Discussion Paper of the
Institute for Organisational Economics

**Diskussionspapier des
Instituts für Organisationsökonomik
2/2017**

Februar 2017

ISSN 2191-2475

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Abstract

Trust is an important driver of economic transactions, but how do people decide whom to trust? We conduct an experiment to investigate whether people are able to predict trustworthiness by judging the face of a stranger. The behavior of the second player in the Trust Game is used as a measure of trustworthiness. Other subjects assess the trustworthiness of the second players of the Trust Game in the second stage using standardized photos of their faces. We find no significant interrelation in our statistical estimations between trustworthiness ratings and the behavior of the examined players. Surprisingly, players that were rated as more attractive sent back significantly less in the Trust Game.

JEL-Codes: C72, C91, D03, D81, J71

Ist Vertrauenswürdigkeit ins Gesicht geschrieben?

Zusammenfassung

Vertrauen ist eine treibende Kraft ökonomischer Transaktionen, aber wie entscheiden Personen, wem sie vertrauen? Wir führen ein Experiment durch, um zu untersuchen, ob Menschen dazu in der Lage sind, die Vertrauenswürdigkeit eines Fremden anhand dessen Gesichts einzuschätzen. Das Verhalten des zweiten Spielers im Vertrauensspiel wird als Maß für die Vertrauenswürdigkeit verwendet. Andere Personen bewerten in der zweiten Phase des Experimentes die Vertrauenswürdigkeit des zweiten Spielers anhand von standardisierten Gesichtsfotos. Wir finden in unseren statistischen Schätzungen keinen signifikanten Zusammenhang zwischen der eingeschätzten Vertrauenswürdigkeit und dem Verhalten der untersuchten Spieler. Überraschenderweise schickten jedoch als attraktiver bewertete Spieler geringere Beträge im Vertrauensspiel an den ersten Spieler zurück.

Im Internet unter:

http://www.wiwi.uni-muenster.de/io/forschen/downloads/DP-IO_02_2017

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Is Trustworthiness Written on the Face?*

1. Introduction

Traditionally parents have told their children to never trust strangers. “Never trust a stranger” is used as the title of two pop songs¹ and seems to be a ubiquitous slogan. Still, we usually do trust and this does not only hold true for persons we know, but also for strangers.

Economically speaking trust and trustworthiness are particularly relevant in the case of incomplete contracts. As monitoring costs are decreasing when employees are more trustworthy, efficiency gains can be achieved (Sutter & Kocher, 2006). Since labor contracts are typically incomplete, companies should preferably recruit highly trustworthy personnel. Hence transaction costs can notably be reduced when individual effort levels are difficult to observe and to measure. Furthermore, if employees have to be dismissed or to be replaced due to insufficient performance additional costs arise. In these cases companies have to pay settlements to laid off employees while also searching for suitable replacements and training the new hires.

Before the recruitment of employees, suitable candidates have to be chosen in recruitment processes. A selection bias in favor of more attractive applicants in job interviews has been detected in several economic studies (e. g. Watkins & Johnston, 2000; Cash & Killcullen, 1985). Furthermore, the perceived trustworthiness of people can also be influenced by their attractiveness (Porter et al., 2010). Therefore personnel decisions can be inefficient and can lead to adverse effects. The aim of this study is to investigate to what extent people are capable of identifying trustworthiness having no more information than the face of another person. Apart from the importance for personnel management decisions, this can also be relevant for the whole field of business administration.

For many economic transactions trust is crucial. For example economic transactions via the internet are built on trust of users as trust is a “key facilitator of electronic commerce” (Bhattacharjee, 2002, p. 211). Since consumers face insecurity and risk in e-commerce, they

* We thank Benjamin Balsmeier, Jörg Oechssler, and Joachim Prinz for spreading the survey in their lectures. Furthermore we are thankful to our student and research assistants or colleagues Linn-Brit Bakkenbüll, Lena Gerling, Helena Helfer, Kim Kellermann, Diana Püplichhuysen, Sonja Rinne, Fabian Schleithoff, Lisa Schlesewsky, and Simon Winter for their kind help conducting the experiment. Julia Müller gratefully acknowledges financial support by the Research Fund for Junior Academics of the University of Münster.

¹ Details of the two pop songs: Kim Wilde, “Never Trust a Stranger”, *Close*, 1988, and Fewjar, “Never Trust A Stranger”, *Journey of Dam*, 2011.

hesitate to share personal information and to purchase online (McKnight et al., 2002). By trusting the unknown vendor, perceived transaction risks due to information asymmetries are reduced and consumers feel more comfortable to participate in the e-commerce (Ba & Pavlou, 2002). Therefore, it can be concluded that trust is critical for popular online-platforms like eBay to work.

In experimental research trust is examined using the Trust Game (Berg et al., 1995). Trustworthiness is measured by the behavior in this game. We analyze whether trustworthiness can be correctly predicted based on facial appearance by asking a second group of subjects to evaluate the expected trustworthiness of the participants of the Trust Game. Some prior studies used photos of players in the Trust Game, but these studies differ from our approach as they show pictures of the player to their counterpart, thus giving the player more information (see for example Wilson & Eckel, 2006; Buchan et al., 2008; Centorrino et al., 2014; Zhao et al., 2015).² There exists also research on the influence of other information on the observed behavior in the Trust Game and in other games. Contrary to previous research the second player is not supplied with more information in our research design. The players take part in a classical Trust Game. We employ another group of participants who judge the trustworthiness of the second player. Finally, we analyze whether a player being *rated* as trustworthy (by a third party not involved in the game) actually *behaves* trustworthy (in an encounter with a stranger), i. e. we analyze to what extent the assessment of the players corresponds to their actual behavior in the Trust Game.

The remainder of the paper is organized as follows. In Chapter 2 we discuss the related literature in detail, where we set our research first into the context of the original Trust Game, second to studies using pictures of players within the Trust Game and third to research (mainly in psychology) on facial appearance. In Chapter 3 we describe the experiment itself, which had two separate stages: the first stage, the Trust Game, is described in Section 3.1., and the second stage, the rating of the photos, in Section 3.2.³ Then we delineate our empirical results in Chapter 4. Finally, in Chapter 5 we conclude.

² We discuss the related literature in detail in Chapter 2.

³ All instruction material can be found in the Appendices.

2. Related Literature

In this chapter we discuss the relevant empirical and theoretical findings. There is ample research examining trust and trustworthiness. In Section 2.1. we introduce the original Trust Game and the main findings on how people typically behave in this game. In Section 2.2. we present studies which extend the Trust Game by providing additional information to the participants before making their decisions. In Section 2.3. we focus on studies relying on research methods other than the Trust Game to measure trust and trustworthiness. Finally, we review the literature on the influence of facial appearance on the prediction of attributes such as trustworthiness.

2.1. The Original Trust Game

An important research stream utilizes the Trust Game, originally introduced by Berg et al. (1995) as the “investment game”, to measure trust and trustworthiness. In this two-player-game both players receive a certain endowment. First, Player 1 chooses how much of the endowment he wants to send to Player 2. This amount is tripled and Player 2 chooses the amount she wants to send back to Player 1. Assuming that both players purely want to maximize their own payoffs neither of them would send (nor send back) money. These strategies constitute the unique subgame-perfect equilibrium of the game. A rational second player will maximize her own payoff by not sending back anything, therefore the rational first player, anticipating this behavior of the second player, will not send anything in the first place. However, the game also offers an opportunity as the amount Player 1 sends is tripled so that both players could benefit from not acting merely self-interested. The behavior of Player 1 is used as a measure of trust, the reaction of Player 2 is used as a measure of trustworthiness. Therefore, in this context Player 1 is often referred to as the “trustor” and Player 2 as the “trustee”.

The Trust Game has been analyzed in further detail by many studies that followed the seminal paper of Berg et al. (1995). On average subjects in the role of Player 1 send approximately half of their endowment to Player 2 and subjects in the role of Player 2 do send back some part of the received amount (Camerer, 2003). The meta-analysis conducted by Johnson and Mislin (2011) gives an overview on main findings of 162 replications of the Trust Game. Johnson and Mislin conclude that participants send significantly less money if random payment schemes are used. A possible explanation is that the random payment schemes add risk to the game so that subjects are less willing to send money in order to secure at least some

payout. In the context of our research question the influence of random payment schemes on trustee behavior would be of interest as we focus on trustworthiness. Unfortunately, the meta-analysis gives no clear-cut evidence on the influence of random payment schemes on the behavior of the trustee.⁴

To elucidate the further proceeding it is necessary to define trust and trustworthiness as well as to discuss whether the Trust Game is an appropriate tool to measure these characteristics. Sapienza et al. (2013) examined this research question. Their central finding is that the behavior of Player 1 in the Trust Game is not an appropriate measure of trust. They propose to use the expectations of Player 1 about the trustworthiness of Player 2 as a better measure of trust. To be more accurate, they measure trust by the trustor's expectations on how much the trustee will send back. Despite this finding, the trustee's behavior as an appropriate measure of trustworthiness is not being questioned. More precisely, trust is driven by the trustor's preferences and beliefs and the trustor sends more money if the trustor holds high expectations about the amount the trustee will send back. Furthermore, expected trustworthiness is related to the amount of money sent.

Analyzing trust and trustworthiness in general leads to the question whether there are gender specific differences. Buchan et al. (2008) point out that on the one hand men are more trusting than women, measuring trust as the amount of money sent in the role of Player 1 in a Trust Game.⁵ On the other hand, women are more trustworthy compared to men. The authors conclude that men tend to be more willing to help in more anonymous situations compared to women and that women behave more altruistically toward a partner that trusted them by sending money.

⁴ Furthermore, Johnson and Mislin (2011) find that subjects send significantly more of their endowment if they play with a real person compared to when playing with a computer. If the amount of money sent by Player 1 is merely doubled, the proportional amount sent back by Player 2 is reduced less than proportionately. However, if Player 1 sends more of his endowment, signaling an increase in trust, Player 2 also sends back more, expressing an increase in trustworthiness. Moreover, their analysis of trustworthiness clearly shows that student subjects send back smaller amounts than non-student subjects. Johnson and Mislin state that anonymity between Player 1 and 2 helps to avoid that a possible relation between the subjects outside the game might influence the amount of money sent and leads to lower amounts being sent.

⁵ Using the trustor's behavior as a measure of trust is a very common method that was implemented in numerous studies. Most studies published so far did not consider the trustor's expectations but only the trustor's behavior as a measure of trust. As this measurement of trust is still common we mention results using this measure in the following.

2.2. Additional Information for the Players of the Trust Game

Several studies examine the effect of additional information about the counterpart's appearance or characteristics on the trustor's and trustee's behavior in a Trust Game. For the impact of information on age, race, facial expressions of happiness or anger, specific preferences and gender, see for example Bailey et al. (2015), De Neys et al. (2015), Cañadas et al. (2015) and Alguacil (2015).

As it is especially relevant for our study, we also focus on attractiveness. Wilson and Eckel (2006) extend the original Trust Game by analyzing whether attractiveness influences the decision to trust a stranger or not. Their study design differs from the original Trust Game by giving subjects additional information about their counterparts. Before participants choose the amount of money they want to send (or send back), a photo of the counterpart is presented to the player. In this setup, Player 1 sends on average more money to Player 2 if the counterpart is rated as being (more) attractive by her photo. Also, an attractive Player 2 sends comparably more money back. Consequently, Player 1 trusts an attractive counterpart more compared to a less attractive one and an attractive trustee is more trustworthy. However, it has to be considered that the amount sent back is also influenced by the amount the trustee received. Wilson and Eckel do not only focus on the influence of the attractiveness of the trustee but also how the attractiveness of Player 1 affects the game. To do so they analyze whether an attractive Player 1 receives higher returns. Contrarily, the more Player 1 is rated as attractive the less money Player 1 receives. This might be related to the expectations of Player 2. As trustees have higher expectations regarding the amount sent by an attractive Player 1 and if their expectations are not fulfilled the willingness to send back a high amount of money is diminished. Regarding gender differences Wilson and Eckel conclude that females are more trustworthy than males as females send back significantly more money than males in the role of Player 2. This finding concurs with the results of Buchan et al (2008) discussed in the previous paragraph.

A recent study of Zhao et al. (2015) finds the same results as Wilson and Eckel. The authors conclude that one's expectation about a stranger's trustworthiness is higher for attractive people and that subjects trust attractive people more than unattractive people.

The findings of Wilson and Eckel (2006) clearly demonstrate that attractiveness does influence one's evaluation of trustworthiness of a counterpart and also that smiling does increase contribution slightly. Centorrino et al. (2014) extend the analysis by examining whether the genuineness of a person's smile has an impact on the rating of trustworthiness. A short video

of the trustee's face is presented to Player 1 before he decides on the amount of money he wants to send to Player 2. If a trustee's smile is perceived as genuine, Player 1 evaluates trustworthiness, attractiveness and intelligence of the trustee higher and also expects a higher willingness of the trustee to send back money. However, the smile of men with beard is perceived as less genuine and a woman's smile while showing part of her cleavage is rated as more genuine.

2.3. Other Research on Trust

The Trust Game is one common method to measure trust and trustworthiness, but there is numerous research analyzing trust using other methods. Dorfleitner et al. (2015) examine the trusting behavior of participants on peer-to-peer lending platforms by analyzing how soft factors of description texts affect one's decision. If the description text creates positive emotions the funding probability is significantly higher. Bohnet and Zeckhauser (2004) compare the decision making process of a Trust Game to taking the decision for or against a risky bet. Their main result is that people are greater risk takers if the outcome is determined by chance and if the counterpart shows trustworthiness. The study of Duarte et al. (2012) examines how the appearance of investor and borrower respectively affects expectations about trust and trustworthiness and consequently financial transactions. Borrowers who are perceived as trustworthy are more likely to receive a loan and their interest rates are lower. This result corresponds with main findings from the Trust Game (see Wilson and Eckel, 2006, and Zhao et al., 2015) indicating that appearance does have an impact on people's expectations about trustworthiness that consequently affects one's decision.

Gunnthorsdottir et al. (2002) analyze whether a subject's behavior in a Trust Game can be predicted by identifying different types of personalities as measured by the Machiavellianism scale. The scores on the Machiavellianism scale do not predict whether a trustor shows trusting behavior in the first place but do predict trustworthiness of the trustee. Participants scoring high on Machiavellianism tend to be less trustworthy as they reciprocate less. Müller and Schwieren (2012) use the Big Five Personality Questionnaire to predict behavior of the players in the Trust Game. They show that the behavior of Player 1, the trustor, can be explained by personality, while the behavior of the Player 2 is determined by the situation, i. e. by the actions of the first player.

2.4. Facial Expressions and Judgements

One focus of our paper is to examine whether trustworthy behavior in the Trust Game can be predicted by judging a picture of that person. Consequently, in the following we discuss research that considers psychological aspects of facial expressions and what expectations people have or what judgements they make (or are able to make) based on the appearance of a person. Summing up, the research stream presented in the following analyzes the perception of trustworthiness whereas our study aims to measure trustworthiness by analyzing the behavior of Player 2 in a Trust Game.

As discussed before, someone's judgment of a stranger's trustworthiness is driven by facial attractiveness (Wilson & Eckel, 2006; Zhao et al., 2015). Willis and Todorov (2006) discover that looking at someone's face for 100ms is sufficient to judge a person's attributes such as attractiveness, likeability, trustworthiness, competence and aggressiveness. Wilson and Rule (2015) confirm that facial appearance has a strong influence on the perception of trustworthiness and that this in turn affects sentencing. Inmates who committed a first degree murder and who look less trustworthy received more often a death penalty instead of a life imprisonment. Furthermore, the same result was found for innocent inmates, as in this case innocent inmates were more frequently sentenced to death if they were looking less trustworthy. Wilson and Rule conclude that the fact that sentencing is influenced by the judges' expectations about an inmate's trustworthiness due to his appearance is an "alarming bias in the criminal-justice system" (Wilson and Rule, 2015, p. 1). These studies highlight the powerful influence facial appearance has on judging a stranger's expected attributes or personality traits.

De Bruin (2002) examines whether facial resemblance raises expectations about someone's trustworthiness by conducting a Trust Game in which both players are shown a photo of their counterpart's face before their respective decision. Subjects in the role of Player 1 trust their counterpart more if her face resembled their own. An explanation might be that facial similarity leads to a higher perceived attractiveness and thus the person is trusted more, but the study does not find clear evidence for this. However, the author finds that facial resemblance does not influence the behavior of Player 2.

Further studies analyze the relationship between facial expressions and expected personality traits such as trustworthiness and cooperativeness and how factors as age, gender and race may affect this interrelations, see for example Ma et al., 2016, Tognetti et al., 2013, Ewing et al., 2015, and De Neys et al., 2015.

3. Experimental Design and Procedures

Our experiment consists of two separate stages with different groups of student subjects participating in the single stages of the experiment. In the first stage participants played the Trust Game and pictures of them were taken. In the second stage the pictures of the participants of the first experimental stage were rated regarding their trustworthiness (or cooperation or attractiveness) by other subjects via an online survey. An overview of the experimental stages is displayed in Table 1.

Stage	Events	Location	Student Participants from
1st stage	Trust Game questionnaire	lecture hall	University of Münster (Bachelor CIW)
2nd stage	online survey	online	University of Duisburg-Essen, Technische Universität Freiberg, University of Heidelberg, University of Münster (Master Business Administration & Bachelor Economics)

Table 1: Overview Experiment

3.1. First Stage: The Trust Game

Participants of the first stage of the experiment played the Trust Game (Berg et al., 1995) and were photographed by the experimenters. The course of action of the first stage is displayed in Figure 1.

The first stage of the experiment took place during the lecture Introduction to Business Economics, a first-year bachelor course at the University of Münster. We conducted the experiment in the first half of one lecture of the course in week 2 of the summer semester 2016. In total the first stage of the experiment lasted about one hour.

When entering the lecture hall students were informed that they could voluntarily participate in an economic experiment. We used real incentives, employing a random incentive scheme. Students were seated randomly by using lottery tickets that determined their places in the room. We placed students in every second row of the lecture hall, leaving one row empty to

be able to distribute materials and approach every participant. One seat was left empty in between participants, leaving space to both neighbors.⁶

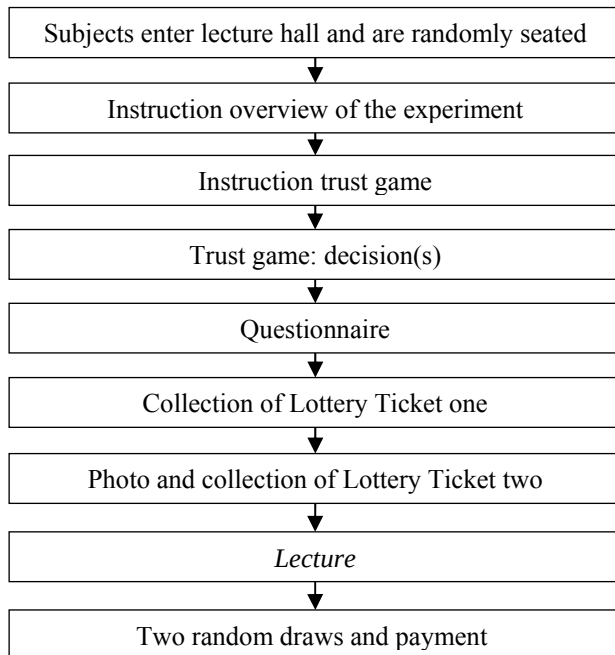


Figure 1: Course of Action of the First Stage

The experiment started at the same time when the usual lecture would have started. The experiment manager stood at the stage during the whole experiment to make announcements and to supervise the experiment. There were five other experimenters in the room to conduct the experiment. The manager welcomed the subjects to the experiment and the five experimenters distributed the first set of materials, a general overview of the experiments as well as instructions and decision sheets for the Trust Game. The overview was read aloud by the manager.

Then the manager read aloud the instructions for the Trust Game to ensure common knowledge. As part of the reading, subjects were informed that everyone had the same instructions for the game and that only the roles would differ. Subjects sitting next to each other played the Trust Game in different roles, i.e. the role of the player alternated within a row. After reading the instructions subjects had the opportunity to ask questions in private. Then the Trust Game started, subjects made their decision and noted their choice on their respective decision sheets. Afterwards the decision sheets were collected by the experimenters and the

⁶ As more students than expected participated in the experiment, we had to make exemptions to the rule of leaving an empty seat to both neighbors. Students arriving shortly before the beginning of the lecture were seated directly next to other students.

subjects received the questionnaires. The subjects completed the questionnaires, then the questionnaires were collected by the experimenters. Subsequently the first lottery tickets were also collected from all participants to enable payments.

After this first part of the experiment more assistants (photographers) entered the lecture hall. The manager announced that pictures of the participants would be taken. Participants were free to choose whether or not they were willing to be photographed. The photographers took pictures of the participants and collected those subjects' second lottery tickets for the random payment procedure.

Every participant received an individual six-digit code (printed on the general overview) and two lottery tickets with a personal code. Lottery ticket one was collected by the experimenters for all participants and placed in a blue box. Only those participants that had their picture taken were allowed to hand in the second lottery ticket to the photographer. Those tickets were placed in a red box. At the end of the lecture one lottery ticket was drawn from each of the boxes to determine the two participants to be paid out in cash. To derive their respective payments we executed their decisions in the Trust Game and paid them accordingly.

The Trust Game

Subjects played the Trust Game either in the role of Player 1, the trustor, or of Player 2, the trustee.⁷ The roles were assigned randomly. Subjects seated next to each other always played the game in different roles. Subjects were randomly matched into pairs by using the individual six-digit code.

During the Trust Game we used an experimental currency (ET), the exchange rate to Euro was 1/10, thus $1 \text{ ET} = \text{€ } 10$. At the end of the experiment we executed the decisions of two randomly chosen participants and paid them in cash. The maximal possible amount for Player 1 to receive was € 300, for Player 2 it was € 400,⁸ while the lowest possible amount was € 0 for Player 1 and € 100 for Player 2.

In the Trust Game both players receive 10 ET. First, the trustor, Player 1, can decide whether or not to send something to Player 2 and if so how many ET. The amount x sent to Player 2

⁷ We used neutral wording in the instructions.

⁸ To be paid out the maximal amount is only possible for Player 1 if Player 1 trusts Player 2 fully and sends the whole amount and the matched Player 2 sends the whole tripled amount back and likewise for Player 2 only if again Player 1 trusts fully, i.e. sends the whole amount, and Player 2 keeps the whole tripled amount. For the unlikely case that both lottery tickets of the same participant would have been drawn in the two draws, the maximal possible amount would even be € 600 or € 800.

(with x being integer amounts between 0 and 10) will be tripled. Then Player 2 decides to send an amount y (y being integer amounts between 0 and $3x$) back to Player 1. Therefore the earnings of the two players are calculated as follows: For Player 1 it is $10 \text{ ET} - x + y$, and for Player 2 it is $10 \text{ ET} + 3x - y$.

We conducted the Trust Game with the use of pen and paper.⁹ We asked for the decisions of both players in the Trust Game and also collected their expectations, i. e. for Player 1 what he believes Player 2 will return and for Player 2 what she believes Player 1 will send. For the decision of Player 2 we used the strategy method (Selten, 1967), i. e. Player 2 had to decide which amount to return for all 10 possible amounts sent by Player 1.

The Questionnaire

In the questionnaire subjects had to provide socio-demographic information: age, gender, nationality, course of studies, attempted degree, and semester of study. We asked for their overall grade of the final secondary school examination (Abitur) as a proxy for intelligence.

We checked whether the participants knew the Trust Game and whether they had played it before. Subjects had to indicate what kind of behavior they would judge as fair, i. e. Player 1 was asked to state the fair amount to be returned and Player 2 the fair amount to be sent. The players had to explain their decisions in the Trust Game. For each player we specified nine potential reasons and gave the reason “other” with a possibility for the subjects to write down their own explanation. At last, the subject should assume that they had taken the role of the other player in the Trust Game and to indicate their decision(s) for this case (hypothetical decisions).

Taking Pictures

Pictures of the participants were taken by the assistants with digital cameras. The photographers entered the empty row in between two rows where participants were seated and approached the participants one after another. The photographers asked whether the subjects would like to have their picture taken, if so, they took the picture and collected the second lottery ticket of the participant. Participants were instructed to look into the camera with a neutral facial expression.

⁹ The exact wordings of the instructions, the decision sheets and all other instruction materials can be found in Appendix A.

Further Experimental Details

In total 189 subjects participated in the first stage of the experiment (50.3 % male, 47.3 % female). 158 subjects had their pictures taken.

Both of the randomly for payment selected participants played the Trust Game in the role of Player 2. We implemented the matching procedure for those two participants and paid them accordingly. One participant received €100, the other €140.

3.2. The Second Stage: Evaluation of the Pictures

All pictures taken of the participants of the experiment were edited and thus standardized. The pictures were cut to portrait-size such that the picture would display the face only (upper cut just above the forehead, lower cut below the chin and lateral cuts next to the ears). The background of the picture was deleted and filled with light blue. The clothing of the participants was standardized by changing the colors to black and white.¹⁰

The Survey

We used an open access software (LimeSurvey) to provide the subjects of the second stage with the survey. We analyzed three attributes – trustworthiness, cooperation, and attractiveness. Each subject had to rate one of these attributes for 24 or 25 different persons (pictures). Every rating was done on an 11-point Likert-type scale.¹¹

To avoid order effects we used pseudo-random orderings of the pictures. For each attribute there were three different orders, with which we made sure that the same two pictures never followed each other and that every picture would appear approximately in the beginning, middle and end of one survey. In all orderings we presented pictures alternating males and females.

The survey was distributed in different lectures and via the respective e-learning platforms at the University of Duisburg-Essen, TU Freiberg, University of Heidelberg, and University of

¹⁰ In general more information might help to better evaluate attributes like trustworthiness. However, more information could affect the perception of evaluators and thus lead to deviated assessments. As people often think in stereotypes more information might cause biased judgements. For example certain clothing styles or accents and dialects can activate prejudices (Bodenhausen, 1988), which do not have to be correct. By using standardized pictures, assessments have to be made using little information but the described bias can be avoided.

¹¹ See the Appendix B for the full text of the survey. In the introduction of the survey it was explicitly stated that there are no right or wrong answers and that only the personal appraisal matters.

Münster¹². In all, 213 persons participated in the survey (42.6 % male, 57.4 % female). Research on ratings of attributes, especially attractiveness, regards ratings as valid when the measure builds on the evaluation of about twenty raters (Rosar et al., 2017). In our data sample trustworthiness is rated by between 27 and 33 raters. For the other two attributes, the majority of persons (pictures) is rated on average by nearly twenty raters. Table 2 shows average ratings of the taken pictures sorted by category.

Characteristic	Attractiveness	Cooperativeness	Trustworthiness
Ø Ratings per Picture	19.18	18.90	31.36

Table 2: Average Amount of Ratings per Taken Picture

4. Results

First, we present the main results on our research question of predicting trustworthiness (Section 4.1.). In Section 4.2. we show the behavior in the Trust Game in more detail, providing the results not only on trustworthiness but also on trust and the answers to the questions in the questionnaire. Finally, in Section 4.3 we analyze whether subjects that did not allow us to take their picture behave differently than those who did.

4.1. Predicting Trustworthiness

Examining the ratings of the subjects revealed that the raters rarely used the entire rating scale. Therefore, we normalized the ratings for all three attributes (trustworthiness, attractiveness and cooperation).

In order to obtain results for the trustworthiness of Player 2, the strategy method was applied, which generated rich data on trustworthiness. For every possible amount sent by Player 1 Player 2 had to decide how much she would like to send back to Player 1, i. e. in total we have ten answers from every Player 2. To form a single index of trustworthiness we calculate the average of the relative returned amount of Player 2. Table 3 contains descriptive results of the normalized values of the ratings of the different attributes, of the average relative return of

¹² In Münster the participants of this second part belonged to a completely different cohort of students than those participating in the first part (the Trust Game). The participants of the first part were second-year bachelor students with a minor in Business Administration. For the second part we had two different groups of students. The participants of the first group were first-year students of the same bachelor. The second group consisted of students obtaining a master degree in Business Administration. In the case of the master students we did not include the attribute trustworthiness in the survey, but only the other attributes.

the second player (trustworthiness) and of the additional control variables. The control variables are Gender (female), Age, Semester Studied Economics, which is the number of semesters the participant had studied economics, and Fair Amount Sent, which is the amount that Player 2 would consider a fair amount sent by Player 1 (hypothetical question in the questionnaire).

Variable	Mean	Standard Dev.
Relative Average Return of Player 2 (sent back)	0.5260	0.0287
Norm. Attractiveness	5.5024	0.1995
Norm. Cooperativeness	6.2332	0.1151
Norm. Trustworthiness	6.3875	0.1208
Female	0.5000	0.0585
Semester Studied Economics	1.9459	0.1631
Age	22.2702	0.4619
Fair Amount Sent	5.2432	0.4254

Table 3: Descriptive Results

To analyze whether trustworthiness can correctly be evaluated by assessing a person's appearance we estimate a correlation analysis between the normalized ratings of trustworthiness (rated trustworthiness) and the average return of Player 2 (measured trustworthiness in the Trust Game). The result is an insignificantly interrelation (Pearson's $r = -0.2035$; $p > t = 0.664$). This result already indicates that people are not really capable of predicting others' trustworthiness by looking at their faces.

For a further analysis we applied a probit model. For this estimation we first had to modify the dependent variable, the measure of trustworthiness. Subjects were categorized into three groups based on their decisions regarding the amount they would send back to Player 1. If Player 2 decides to send back exactly one third of the amount received from Player 1, then Player 1 would receive 10 ET at the end of the Trust Game, which is the amount Player 1 started with, i. e. Player 2 puts Player 1 in the exact same position as if Player 1 had sent nothing to Player 2. In this case Player 1 has no gain from trusting Player 2 and only Player 2 benefits from the tripled amount sent by Player 1. Therefore, a person in the role of Player 2

that sends less than one third of the received amount back to Player 1 was categorized as ‘un-trustworthy’. The category is labelled with the value 0. As soon as Player 2 returns more than one third of the received amount to Player 1, both players benefit and end the Trust Game with a higher payoff compared to their initial position. Thus, we categorize persons in the role of Player 2 as ‘trustworthy’ if they return between $\frac{1}{3}$ and $\frac{2}{3}$ of the received amount. This category is labelled with the value 1. In the case that a player in the role of Player 2 returns more than two thirds of the received amount, Player 2 ends with less money than Player 1 and Player 1 benefits more. Players that behaved in this manner were categorized as ‘highly trustworthy’. This category was labelled with the value 2. Figure 2 shows the distribution of the three categories.

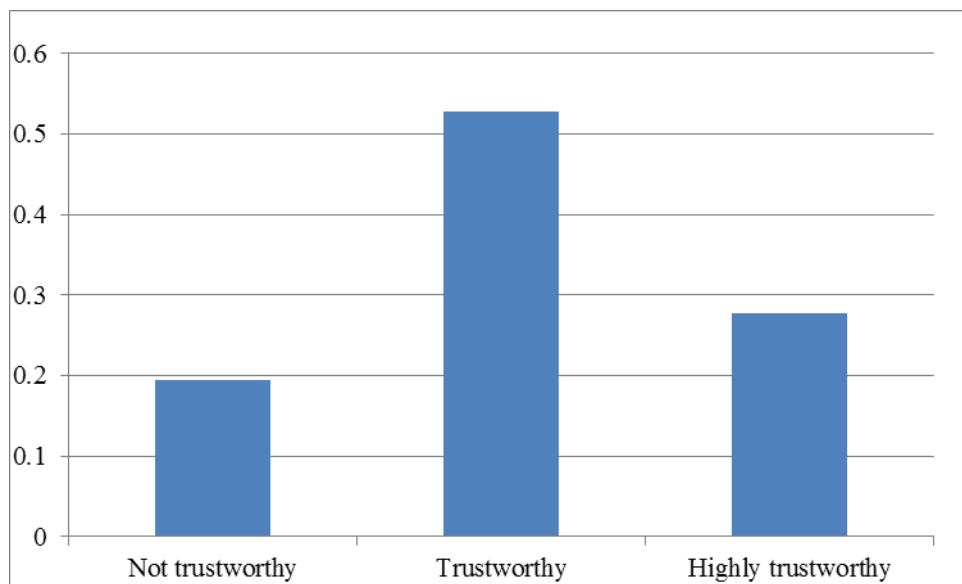


Figure 2: Distribution of the Categories of Trustworthiness of Player 2

Most of the players in our sample sent back more than $\frac{1}{3}$ and less than $\frac{2}{3}$ in the Trust Game and were therefore categorized as trustworthy. About 20 % of all second players were categorized as not trustworthy. The rest of the second players (27.77 %) were categorized as highly trustworthy. Using this classification of trustworthiness we created a group variable. This variable is the dependent variable in a probit regression analysis.

Since research shows that perceived trustworthiness can be influenced by a persons’ attractiveness, we conduct a correlation analysis between the attributes trustworthiness and attractiveness. We can show that in our data sample they are statistically significantly related (Pear-

son's $r = 0.3308$; $p < 0.01$). Therefore, we tested for multicollinearity before the estimation.¹³ Table 4 shows the results of the probit estimation. Players that were evaluated as more trustworthy did not behave significantly more trustworthy in the Trust Game. Interestingly, players that were rated as more attractive sent significantly less back. Lastly, older subjects also returned higher amounts and therefore acted in a more trustworthy manner.

Variable	Coefficient	Z
St. Attractiveness	-0.1470	-1.68*
St. Cooperativeness	-0.0033	-0.02
St. Trustworthiness	0.0091	0.05
Female	-0.1363	-0.50
Semester Economics	-0.0768	-0.82
Age	0.0711	2.13**
Sent Fair	0.0640	1.47
N	73	
Log Pseudo-likelihood	-66.4312	
Pseudo R ²	0.0837	

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; ****

Table 4: Probit Estimation with Categories of Behavior as Dependent Variable

Since the direction of the influence of coefficients in probit models is more difficult to interpret (compared to beta coefficients of ordinary least square estimation), we analyzed the marginal effects of the included variables for the three possible outcomes. Table 5 shows that the factor Age's pathway proceeds upwards. Furthermore, it can be observed that the probability of players sending back less than one third significantly increases if they were rated as more attractive. Additionally the likelihood that subjects send back more than two third of the received amount decreases nearly around 5 % if the factor attractiveness increases by one standard deviation. In our results we see a clear direction and thus these indicate an explicit pathway.

¹³ The assessment of multicollinearity showed relatively high values for trustworthiness and attractiveness. However, the squared values were far below the limit of 0.8 (see Menard, 1995), so both variables can be added to the estimation.

Variable	Effect Sig. ($p < 0,1$)	Decision of Player 2		
		Send back less than 1/3	Send back between 1/3 and 2/3	Send back more than 2/3
St. Attractiveness	Yes	0.0032	-0.0168	-0.0486
St. Cooperativeness	No	0.0035	0.0019	-0.0054
St. Trustworthiness	No	-0.0047	-0.0026	0.0073
Female	No	0.0283	0.0152	-0.0436
Semester Economics	No	0.0175	0.0092	-0.0263
Age	Yes	-0.0162	0.0087	0.0250
Fair Amount Sent	No	-0.0135	-0.0072	0.0208
N	73			
Pseudo R ²	0.084			

Table 5: Marginal Effects of Probit Estimation

There is research on the influence of attractiveness in bargaining games. In several studies a so-called beauty premium was detected (Rosenblat, 2008; Wilson and Eckel, 2006; Solnick and Schweitzer, 1999). However, more attractive participants did not exclusively benefit from their physical appearance. Higher attractiveness leads to higher expectations of cooperative behavior of the counterpart in the game. If these expectations were not fulfilled by more attractive trustees, those were in the following significantly stronger penalized compared to counterparts with less attractive physical appearance (Wilson and Eckel, 2006). In our setting subjects were only asked to rate the attractiveness of persons and not to state their expectations about those persons future behavior in the Trust Game. Recall, that in our case the ratings were done by a third person and not by the counterpart in the game. Thus, our results add to this research stream that persons with more attractive physical appearance act in a more opportunistic manner. Here, attractiveness is based on robust ratings by several different third persons.

4.2. Behavior in the Trust Game

We now present more detailed descriptive results on the behavior in the Trust Game. In the Trust Game trust and trustworthiness are measured using the amount sent by Player 1 and the amount returned by Player 2 respectively. The mean amount Player 1 sends to Player 2 is 5.9

ET, thus the tripled amount Player 2 receives is 17.7 ET. The mean amount Player 2 returns to Player 1 is 8.9 ET, thus the average return is slightly more than half of the amount received. There is a higher variance in the amounts returned compared to the amounts sent, in the amounts returned the standard deviation is 4.03 ET.

Subjects were also asked to state their beliefs about the behavior of their counterpart, i. e. for the Player 2 which amount Player 1 will send to her or for Player 1 which amount Player 2 will return. First players expected on average a return of 8.37 ET. This is approximately equal to the amount subjects in the role of Player 1 assessed as fair (this was asked in the questionnaire). Thus, Player 1 expected players in the role of Player 2 to act fair respectively trustworthy. Overall subjects in the role of Player 1 expected subjects in the role of Player 2 to return slightly less than the half of the tripled amount (the joint gain). For Player 1 there is no notable variance between the expectations and the behavior, therefore one can assume that Players 1 follow a fairness norm.

Also for Player 2 we elicited the belief about the behavior of Player 1 (amount sent) and the assessment of what would be a fair amount to send. Finally, the questionnaire included the hypothetical question which amount Player 2 would have had sent if she would have been in the role of Player 1 in the experiment. The average amount Player 2 would send to her counterpart if being in the role of Player 1 is 6.45 ET. This amount is slightly higher than the amount which they expect to receive from Player 1 (their belief) and also higher than the actual amount sent. Furthermore this amount (the hypothetical sent) is also by 2 ET higher than their assessment of what would be a fair amount sent.

In the Trust Game Player 2 returns an average 8.9ET to Player 1. In our classification this corresponds to trustworthy (label 2), but not to highly trustworthy. We now compare this to the self-perception of the players. In the questionnaire subjects were asked to explain their main decisions, i. e. for Player 1 the amount sent and for Player 2 the amount returned. We offered a list with different possible reasons and also the opportunity to state their own reasoning (see Appendix B). Two of the possibilities were that players perceive themselves as trustworthy respectively not trustworthy. The majority of over 61 % of the participants perceived themselves as trustworthy, while only around 6 % of the subjects perceived themselves

as not trustworthy. Based on their actual decisions we classified around 20% of the subjects as not trustworthy (see Figure 2 above).¹⁴

4.3. Refusing to Be Photographed

Lastly, we investigate whether participants that refused to have their picture taken acted less trustworthy in the Trust Game. Since these subjects were not willing to be photographed it could be possible that these participants perceived the decision about the photo as an issue of trust towards the experimenters, and thus generally trust others less. The group of participants that refused to take pictures is relatively small. Only ten players in the role of Player 1 were not willing to be photographed. However, by comparing this group with subjects that were willing to take pictures notable differences can be observed. Subjects who refused to be photographed sent to Player 2 on average an amount which is about 15 % lower than the amount other subjects sent. Furthermore, the standard deviation differs about 5 %. Nevertheless, these differences are not statistically significant (no significant results using a t-test and a nonparametric Kruskal-Wallis test).

5. Conclusion

We have investigated trustworthiness, especially focusing on the research question of detecting trustworthiness, i. e. in our experiment whether persons are able to predict trustworthiness of other persons by merely looking at a picture of their faces. The results of the ordered probit model show that there is no statistically significant interrelation between the behavior in the Trust Game and the trustworthiness ratings of the participants. Surprisingly, subjects that were rated as more attractive acted significantly less trustworthy in the Trust Game. Previous studies detected a positive linear interrelation between physical attractiveness and perceived trustworthiness of persons. In our data sample we can show this interrelation as well, however the impact of the rated trustworthiness and the rated attractiveness on the dependent variable trustworthiness are considerably different. It seems that asking persons to rate the trustworthiness of an unknown third person while having no other information than a picture of this person induces to cogitate on likely behavior patterns of the persons. Assessments about physical appearance do not include such considerations. Therefore, deviations in statistical estimations are likely to occur despite the detected significant interrelation of these two variables. In our

¹⁴ Note that players that perceive themselves as not trustworthy were also rated as being less trustworthy in the second stage of the experiment. On the 11 item scale, those players were on average rated 0.5 points lower than players that perceive themselves as trustworthy or were indifferent.

design we use a classical Trust Game and participants in the Trust Game are not provided with any information about their counterpart, they do not see their counterpart and they do not see a picture of their counterpart. We use the Trust Game to especially measure trustworthiness of our subjects. Therefore, with this unaltered setting our study provides new insights into the (in)capability of predicting trustworthiness.

The results of the statistical estimations showed that prediction of trustworthiness were not accurate. From an evolutionary point of view the decision of whom to trust is important, as in early ages there were no legal frameworks that protected individuals and even no societal norms on trust. In this context it is important to be able to detect trustworthiness as the decision whether or not to trust someone has to be taken quickly. This is one reason why one could expect people to a certain degree to be able to predict trustworthiness using others' faces.

As a higher trustworthiness of employees can lower transaction costs for companies and as trust in general fosters economic transactions, this research question is highly relevant from an economic point of view. Companies should preferably choose trustworthy employees, since workers in guard positions can cause substantial damage as well as because costs can increase through dismissals. Due to the results of our estimations it can be derived that companies have to be cautious of a bias in favor of more attractive applicants. The physical appearance might have an impact on the perceived trustworthiness, nevertheless hiring more attractive candidates can lead to opposite outcomes as well.

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Appendix A: Experimental Instructions

The instructions and texts were translated from the original German.

A.1 General Instructions

Welcome!

You will now participate in a scientific experiment. In the following we will explain the rules and procedures of the experiment to you. You have the opportunity to earn cash during this experiment. At the end of the experiment participants will be drawn by lot for the payment (see section lottery). The amount of your payment depends on your decisions and the decisions of other participants. Every participant received the same printed instructions. Please take your time and read these instructions carefully.

No communication with other participants.

Please turn off your mobile and your computer.

It is not allowed to communicate with other participants during the entire experiment. Otherwise, we will have to exclude you from the experiment. In this case you will be excluded from the experiment and will not receive any payment. Should you have any questions, please raise your hand. One of the experimenters will come to you and answer your question privately.

Code: Your personal code is 306871.¹⁵ Please fill in this code whenever you are asked for it. Please keep this instruction for the lottery, which will be conducted at the end of the experiment, therewith you have your code at hand.

Game: You find the specific instructions on your table. Please read the instructions and then fill in your decisions on the decision sheet. In this game you will play together with another person in this room. This person is matched to you randomly.

Questionnaire: Please answer the questions on the corresponding sheet.

End of the experiment and payout: After you filled out all sheets, the experiment will be completed. Please stay quiet at your seat and wait for the respective announcement.

¹⁵ Every participant received a personal six-digit code which was printed on the instructions at this place. With this code we could identify the player role (last digit, in the example Player 1) and the id-number of the participant (digits two to four, in this example 068), all other digits were random numbers which we inserted as diversions such that subjects could not easily guess their ID or what the code connoted.

Lottery: Two participants will be drawn for the payment. For this reason you find two tickets in front of you. The tickets will be collected by the experimenters at the end of the experiment.

Thank you very much for your participation!

A.2 Instructions Trust Game

A.2.1 Instructions for Player 1

In this game you are *Player 1*. Another participant of the experiment has been matched to you at random, she has the role of Player 2. Both players receive 10 Experiment-Thaler, abbreviated as ET.

The game is short and simple: You have the opportunity to send part of your 10 ET to Player 2. Then Player 2 has the opportunity to send back part of this money. At the end of the experiment your Experiment-Thaler will be converted into real money, which we will pay out in cash if you will be drawn by lot for the payment. The exchange rate from Experiment-Thaler to Euro is $1 \text{ ET} = \text{€ } 10$.

In the following, the details of the game are explained: First you decide whether you want to send Player 2 any Experiment-Thaler and if so how many (in full Thaler). The amount of Thaler you send to player 2 will be tripled. Therefore Player 2 receives three Thaler for every Thaler you send to her. For example if you send 5 ET, Player 2 receives $3 \cdot 5 \text{ ET} = 15 \text{ ET}$.

After that Player 2 decides how much of the money she wants to send back to you. She can choose any amount between zero and the tripled amount you sent. In the example above Player 2 could choose any amount between 0 ET and 15 ET.

The game ends after the decision of Player 2. Your payment is calculated as follows: Your starting amount of 10 ET minus the amount you transferred to Player 2 plus the amount you received from Player 2. Provided you send 5 ET and player 2 sends 7 ET back, your payment in ET is calculated as $10 \text{ ET} - 5 \text{ ET} + 7 \text{ ET} = 12 \text{ ET}$. This 12 ET measure up to € 120.

This game is played exactly once.

If you have any questions, please raise your hand and one of the experimenters will come to you and answer your question personally.

A.2.2 Instructions for Player 2

In this game you are *Player 2*. Another participant of the experiment has been matched to you at random, he has the role of Player 1. Both players now receive 10 Experiment-Thaler, abbreviated as ET.

The game is short and simple: Player 1 has the opportunity to send you a part of his 10 ET. Then you will have the opportunity to send back a part of this money. At the end of the experiment your Experiment-Thaler will be converted into real money, which we will pay out in cash if you will be drawn by lot for the payment. The exchange rate from Experiment-Thaler to Euro is $1 \text{ ET} = \text{€ } 10$.

In the following the details of the game are explained: First Player 1 decides whether he wants to send you any Experiment-Thaler and if so how many (in full Thaler). The amount Player 1 sends to you will be tripled. Therefore you receive three Thaler for every Thaler you received from Player 1. If for example Player 1 sends 5 ET you receive $3 \cdot 5 \text{ ET} = 15 \text{ ET}$.

Then you have the opportunity to send back a part of this money to Player 1. You can choose any amount of money between zero and the whole tripled amount. Therefore in the example above you could choose any amount between 0 ET and 15 ET. The amount you send back will not be tripled.

The game ends after you have decided how much you want to send back to Player 1. Your payment is calculated as follows: Your starting amount of 10 ET plus the amount you received minus the amount you send to Player 1. Provided Player 1 sends you 5 ET and you send back 7 ET, your payment in ET is calculated as $10 \text{ ET} + 15 \text{ ET} - 7 \text{ ET} = 18 \text{ ET}$. The 18 ET measure up to € 180.

This game is played exactly once.

If you have any questions, please raise your hand and one of the experimenters will come to you and answer your question personally.

A.3 Decision Sheet Trust Game

A.3.1 Sheet of Player 1

Please fill in your decisions. You find the instructions for the game on the separate sheet *Instructions – Game*.

Your Code: _____

In this game you are *Player 1*.

1) Your decision

I am sending ____ ET to Player 2 (amounts from 0 ET up to 10 ET, in whole Thaler).

2) Player 2 decides what she sends back to you. In the meantime please answer the following questions: Please fill in the tripled amount Player 2 receives: ____ ET.

What do you think, which amount will player 2 send back to you? ____ ET.

A.3.2 Sheet of Player 2

Please fill in your decisions now. You find the instructions for the game on the separate sheet *Instructions – Game*.

Your Code: _____

In this game you are *Player 2*.

1) Player 1 decides how many Experiment-Thaler he sends to you. In the meantime, please answer the following question: What do you think, which amount will player 1 send to you? ____ ET.

2) Your decision: Please decide (for every listed possible case) how many Experiment-Thaler (in whole Thaler) you send back to player 1.

0) You receive 0 ET. – No decision.

1) You receive 3 ET: I am sending ____ ET (amounts from 0 ET up to 3 ET) to Player 1.

2) You receive 6 ET: I am sending ____ ET (amounts from 0 ET up to 6 ET) to Player 1.

3) You receive 9 ET: I am sending ____ ET (amounts from 0 ET up to 9 ET) to Player 1.

4) You receive 12 ET: I am sending ____ ET (amounts from 0 ET up to 12 ET) to Player 1.

- 5) You receive 15 ET: I am sending ____ ____ ET (amounts from 0 ET up to 15 ET) to Player 1.
- 6) You receive 18 ET: I am sending ____ ____ ET (amounts from 0 ET up to 18 ET) to Player 1.
- 7) You receive 21 ET: I am sending ____ ____ ET (amounts from 0 ET up to 21 ET) to Player 1.
- 8) You receive 24 ET: I am sending ____ ____ ET (amounts from 0 ET up to 24 ET) to Player 1.
- 9) You receive 27 ET: I am sending ____ ____ ET (amounts from 0 ET up to 27 ET) to Player 1.
- 10) You receive 30 ET: I am sending ____ ____ ET (amounts from 0 ET up to 30 ET) to Player 1.

A.4 Questionnaire

A.4.1 Identical Questions for Player 1 and 2

Please fill out or tick off all boxes. All given information will be stored anonymously and will not be shared with any other third party.

Your code: ____ ____ ____ ____ ____ ____

Age: ____ ____ years

Gender: Female ☐ Male ☐

Nationality: _____

Average score of high school graduation: ____ , ____

Course of studies: _____

Attempted degree: Bachelor ☐ Master ☐

Subject-related semester: _____

The game you have just played is called Trust Game. Do you know this game?

Yes ☐ No ☐

Have you ever played this game before?

Yes ☐ No ☐

A.4.2. Specific Questions Player 1

Regarding the game:

What do you think, which is the minimal amount that Player 2 should send back to you to be fair? ____ ET of the ____ ET (fill in the tripled amount) which I sent to her.

Please explain your decision in the role of Player 1 (multiple answers possible).

I decided to send this specific amount of ET to Player 2 because

... I want to maximize my own payment. ☐

... I trust Player 2. ☐

... I do not trust Player 2. ☐

... I always trust people. ☐

... I never trust people. ☐

... I wanted to be kind to Player 2. ☐

... the amount of ET will be tripled so that we both (can) get more. ☐

... I am afraid that Player 2 will not send back (enough). ☐

... I think you have to act this way. ☐

Other reason: ☐ _____

Assuming that you would have taken the role of Player 2, which amount of ET would you have sent back to Player 1?

0) You receive 0 ET. – No decision.

1) You receive 3 ET: I send ____ ET (amount from 0 ET to 3 ET) to Player 1.

2) You receive 6 ET: I send ____ ET (amount from 0 ET to 6 ET) to Player 1.

3) You receive 9 ET: I send ____ ET (amount from 0 ET to 9 ET) to Player 1.

- 4) You receive 12 ET: I send ____ ____ ET (amount from 0 ET to 12 ET) to Player 1.
- 5) You receive 15 ET: I send ____ ____ ET (amount from 0 ET to 15 ET) to Player 1.
- 6) You receive 18 ET: I send ____ ____ ET (amount from 0 ET to 18 ET) to Player 1.
- 7) You receive 21 ET: I send ____ ____ ET (amount from 0 ET to 21 ET) to Player 1.
- 8) You receive 24 ET: I send ____ ____ ET (amount from 0 ET to 24 ET) to Player 1.
- 9) You receive 27 ET: I send ____ ____ ET (amount from 0 ET to 27 ET) to Player 1.
- 10) You receive 30 ET: I send ____ ____ ET (amount from 0 ET to 30 ET) to Player 1.

A.4.3. Specific Questions Player 2

Regarding the game:

What do you think, which is the minimal amount that Player 1 should send to you to be fair?

____ ____ ET

Please explain your decision in the role of Player 2 (multiple answers possible).

I decided to send back this specific amount of ET to Player 1 because

... I want to maximize my own payment. ☐

... I wanted to act in a trustworthy manner towards Player 1. ☐

... I always act in a trustworthy manner. ☐

... Player 1 was fair. ☐

... Player 1 made it possible that we both got more. ☐

... it is Player 1's own fault if he trusts me with so much money. ☐

... I do not care about Player 1. ☐

... I wanted to be kind to Player 1. ☐

... I think you have to act this way. ☐

Other reason: ☐ _____

Assuming that you would have taken the role of Player 1, which amount would you have sent to Player 2? _____ ET

Appendix B: Survey

B.1 Welcome Text

Questionnaire to evaluate personality traits 2016

Dear students,

Dear Sir or Madam,

The Institute for Organisational Economics of the University of Münster kindly asks you to participate in a research project.

The questionnaire is anonymous and your answers will be exclusively used for the purpose of scientific work.

The completion of the questionnaire will take no more than 10 minutes.

We ask you to evaluate different persons referring to a criterion. Please note that there are no right or wrong answers. The only thing that matters is your personal evaluation.

Sincere thanks for your participation!

Prof. Dr. Alexander Dilger, Dr. Julia Müller and Michael Müller, M. Sc.

If you have any questions, please contact:

michael.mueller.io@uni-muenster.de

B.2 Questionnaire

Questionnaire to evaluate personality traits 2016



How would you rate this person with regard to ...

... his / her trustworthiness*: (0 = not trustworthy at all, 10 = very trustworthy)

0 1 2 3 4 5 6 7 8 9 10

0 0 0 0 0 0 0 0 0 0 0

* In total we had three different attributes. For the other two attributes the word trustworthiness was replaced by either attractiveness or cooperation, correspondingly the adjective trustworthy in the description of the scale was replaced by either attractive or cooperative.

Diskussionspapiere des Instituts für Organisationsökonomik

Seit Institutsgründung im Oktober 2010 ist monatlich ein Diskussionspapier erschienen. Im Folgenden werden die letzten zwölf aufgeführt. Eine vollständige Liste mit Downloadmöglichkeit findet sich unter <http://www.wiwi.uni-muenster.de/io/de/forschen/diskussionspapiere.html>

- DP-IO 2/2017** Is Trustworthiness Written on the Face?
Alexander Dilger/Julia Müller/Michael Müller
Februar 2017
- DP-IO 1/2017** Physical Constitution Matters for Athletic Performance and Salary of NBA Players
Linn-Brit Bakkenbüll
Januar 2017
- DP-IO 12/2016** Übereinstimmung von Entsprechenserklärungen und Erklärungsentsprechen bei Abfindungen
Ute Schottmüller-Einwag
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November 2016
- DP-IO 10/2016** 6. Jahresbericht des Instituts für Organisationsökonomik
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Alexander Dilger
März 2016



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