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## ABSTRACT

### **Are Happier People Less Judgmental of Other People's Selfish Behaviors? Laboratory Evidence from Trust and Gift Exchange Games\***

What determines people's moral judgments of selfish behaviors? Here we study whether people's normative views in trust and gift exchange games, which underlie many situations of economic and social significance, are themselves functions of positive emotions. We used experimental survey methods to investigate people's moral judgments empirically, and explored whether we could influence subsequent judgments by deliberately making some individuals happier. We found that moral judgments of selfish behaviors in the economic context depend strongly on other people's behaviors, but their relationships are significantly moderated by an increase in happiness for the person making the judgment.

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In a seminal study of moral judgments in economics, Cubitt and co-authors (2011) show, using experimental survey methods, that free riding in public-good games is typically judged to be morally reprehensible by impartial observers, except when it is carried out in response to previous free riding by the other co-player.

Cubitt et al.'s study is one of the first to offer economists important insights into the formation of moral judgments of free riding. It also calls for further investigations into the moral foundations of behaviors in other economic contexts. For example, research in the laboratory and in the field has shown that, when firms offer employees a wage above that of the competitive equilibrium level, workers will typically reciprocate positively by exerting higher effort levels even when they are not contractually obligated to do so (Fehr et al., 1993; Charness and Kuhn, 2011; Kube et al., 2012). Such positive reciprocal behaviors, which may arise not necessarily because actors expect future material benefits from their action but as a response to other people's friendly gestures, are well documented in the economics literature (for a comprehensive review, see Fehr and Gächter, 2000). However, it does not automatically follow that a worker's decision *not* to reciprocate positively to the firm's "gift" would have been deemed morally wrong by an impartial observer. On the contrary, a nonreciprocal action might have even been deemed morally acceptable in the eyes of self-interest – or in moral psychology, egotistical – agents (Sanders, 1988). A similar argument can be made to describe the typical behaviors in experimental trust games (Berg et al., 1995; Camerer, 2003; McCabe et al., 2003). Would it be considered morally wrong for subjects *not* to trust or reciprocate trust in an anonymous exchange setting? Because empirical evidence in this area is currently scarce, little is understood about the constructs of moral judgments of selfish behaviors in economics.

A related question of interest is whether moral judgments of selfish behaviors in economics, like many other types of judgments on typical ethical dilemmas studied in moral psychology, are subject to emotional influences. While rationalist models of moral judgments have long dominated the field of moral psychology (Kohlberg, 1969; Turiel, 1983), research by psychologist Jonathan Haidt has provided convincing evidence that moral judgments may not have been the outcome of reasoning and reflection. Rather, perceived moral violations tend to invoke specific negative feelings such as contempt, anger, or disgust, and it is these emotional processes that influence the way we ultimately form our intuitive moral judgments (Haidt et al., 1993; Haidt, 2001; Haidt and Hersh, 2001). Figure 1 provides a simple graphical illustration of the various processes through which individuals may arrive at their moral judgments in rationalist and emotionalist models.

[Insert Figure 1 about here.]

Haidt's research has also influenced the development of the "dual process" theory of moral judgment, in which, perhaps because of earlier evolutionary development, characteristically deontological moral judgments (e.g., judgments associated with concerns for "rights" and "duties") are driven by automatic emotional responses, whereas characteristically utilitarian or egoistic moral judgments (e.g., judgments aimed at promoting the "greater good" or "individual self-interest") are driven by more controlled cognitive processes (Green, 2007; Greene et al., 2001, 2004, 2008).

Whereas these emotional and cognitive processes often work in unison to arrive at a decision that satisfies the goals of both, many decisions in economics require individuals to endorse violation of potentially deontological moral codes in order to satisfy an individual's self-interest. For example, recipients in trust and gift exchange games will have to forego reciprocity in order to maximize their financial payoff. However, laboratory evidence suggests that nonreciprocity rarely happens, even though it may seem logical from the selfish agent's point of view to do so.<sup>1</sup> One reason for this may be that the thought of not reciprocating triggers activation in emotion-related brain centers, which in turn elicits automatic negative reactions that appear designed to inhibit such morally reprehensible acts. In other words, if we can somehow suppress our automatic negative emotional reaction to nonreciprocity, then it may be possible for us to feel reasonably "okay" about other people's selfish behaviors in general (Green et al., 2004).

Given these findings, recent research in psychology suggests that it may be possible to influence an individual's moral judgment through the manipulation of his or her affects. Because affective states act as momentary informational signals regarding the environment (Schwarz and Clore, 1996), social psychologists such as Valdesolo and DeSteno (2006) propose that environment-induced feelings of positivity at the time of judgment may reduce the perceived negativity, or aversion "signal," of any potential moral violation, thereby subconsciously allowing individuals to become less judgmental when forming their

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<sup>1</sup> This is similar to the responses received on the well-known footbridge dilemma in which the lives of five people can be saved through sacrificing another person by pushing a large man off a footbridge to stop a runaway trolley before it kills the five. Most people believe it wrong to push him, even though not pushing him will result in a greater number of deaths (Green et al., 2004).

normative attitudes toward consequentialist behaviors such as actions that only satisfy their own self-interests or well-being.<sup>2</sup>

The current study contributes to the literature in two important ways. First, we extended Cubitt et al.'s work on free riding and conducted experimental surveys on the normative attitudes of impartial observers toward selfish behaviors in trust and gift exchange games. We asked: If judgment is not confounded with self-interest from being an affected party, are other people's self-interest behaviors in trust and gift exchange games still judged to be wrong? If so, what factors influence how severe a transgression it is seen as?

Our second contribution to the economics literature lies in testing whether moral judgments of selfish economic behaviors are, like moral judgments typically studied in other disciplines, functions of positive emotions. Specifically, we tested whether induced positive emotions in the laboratory can influence the treated subjects to become less judgmental of other people's selfish behaviors in trust and gift exchange games. Simply put, we experimentally investigated whether, compared to the controls, the treated individuals were more likely to view self-interested behaviors in others as morally acceptable once we were able to reduce any perceived negativity toward nonreciprocal actions by making them momentarily happier at the time of judgment. Our main conclusions are that (i) there is a moral element to others' nonreciprocal actions, and (ii) positive moods reduce subjects' tendency to judge harshly on others' egotistical behaviors.<sup>3</sup>

The paper is organized as follows. Section I describes the experimental design and hypotheses of the experiment. We analyze and report our findings in Section II. Section III concludes.

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<sup>2</sup> In their work, Valdesolo and DeSteno (2006) use survey experimental methods to demonstrate that participants responding to the footbridge dilemma tend to offer a more utilitarian response (i.e., killing one to save five) after watching a funny clip from the TV show *Saturday Night Live* as opposed to a neutral control clip.

<sup>3</sup> It should be noted that we are not the first to study the causal link between emotions and decision making in economically relevant contexts. For example, Kirchsteiger et al. (2006) demonstrate that, within a gift exchange game experiment, players with a bad mood tend to be more reciprocal in their behaviors, whereas players with a good mood tend to behave more generously and transfer more endowment to the other player. Studies have also found that happier individuals are typically healthier (Davidson et al., 2010), risk averse (Goudie et al., 2013), more patient (Ifcher and Zarghamee, 2011), more productive (Oswald et al., 2013), and earn more income (DeNeve and Oswald, 2012).

## I. Experimental Design and Hypotheses

### *A. Experimental Design*

The main goal of our experiment was to investigate how moral judgments in trust and gift exchange games are formed and whether they are functions of changes in positive emotions. In this section, we present the design used to address our research questions.

The experiment consisted of two treatments: the “Happy-treatment” (H-treatment) and the “Neutral-treatment” (N-treatment). The H-treatment and the N-treatment differ only with respect to the manipulation of individuals’ emotional states. Subjects in each treatment were required to complete two sets of identical questionnaires: once before receiving the relevant treatment, and once directly after.

We were also interested in eliciting individual’s moral judgments as impartial observers of other people’s behaviors in two economic conditions, namely, in the trust game (TRUST) and in the gift exchange game (GEG). This gave us a  $2 \times 2$  experimental design, i.e., (N-treatment, TRUST condition), (H-treatment, TRUST condition), (N-treatment, GEG condition), and (H-treatment, GEG condition).

At the beginning of each session, subjects were asked to rate on a seven-point scale their current emotional states, with the scale ranging from “1 – no intensity at all” to “7 – high intensity.” We elicited six emotions: happiness, envy, anger, boredom, contentment, and irritation. As mentioned, our focus is on the interaction between positive emotions (namely, happiness and contentment) and moral judgments.

Similar to Cubitt et al.’s work, the moral judgment questionnaire asked subjects to rate, as an impartial observer, the actions of others in either a trust game or a gift exchange game. It principally described a decision problem for two fictitious players, named Person A and Person B, then gave some possible endings, each of which specified players’ choices and their consequences. Each questionnaire consisted of five scenarios with the same decision problem, but different endings. Within each questionnaire, the behavior of Person A varied across scenarios, but Person B was always selfish. After each ending, subjects were asked to rate the morality of Person B. We measured moral ratings on a scale from  $-50$  (extremely bad) to  $+50$  (extremely good).

To assess the impact of induced positive emotions on moral judgments, we used a methodological approach common in psychology whereby external stimuli (such as a short

video clip) are employed to induce particular feelings (Westermann et al., 1996).<sup>4</sup> For the H-treatment, subjects watched a short video clip where passengers were dancing in a train station.<sup>5</sup> This “Happy” video clip was meant to induce participants’ positive emotional states. For the N-treatment, subjects watched a short video clip depicting sea waves. This film is considered “neutral” by social psychologists, and its purpose was not to alter participants’ moods.<sup>6</sup> After mood induction had taken place, subjects were asked to respond to the same questionnaire that they had received before the video clip. The experiment was concluded by the completion of a postexperimental questionnaire, where we collected data on the subjects’ demographic characteristics. The order of the tasks that subjects were required to perform within a condition is summarized in Figure 2.

[Insert Figure 2 about here.]

By analyzing the link between subjects’ self-reported positive emotions and moral judgments at the start of the experiment (before the video clip), we can assess whether these two responses are interrelated. By comparing the differences in induced self-reported positive emotional ratings within a given condition (before and after the mood induction process), we can make causal inferences on whether differences in moral judgments can be attributed to individuals’ shift of self-reported positive emotions. Below, we present in detail the specifics of each questionnaire in the TRUST and the GEG condition, separately.

*Questionnaire for the TRUST Condition.*—Under this condition, fictitious players in the hypothetical scenarios are paired up. Person A, who moves first, must decide how much money is to be given to Person B, the second mover. The amount sent is multiplied by a factor of 3, and Person B must decide how much money is to be sent back to Person A. The first mover’s action to send money to the second mover measures trust, whereas the amount returned by the second mover to the first mover measures trustworthiness. The actual description of the decision situation in the TRUST condition, along with the first scenario, is shown below.

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<sup>4</sup> Exposing subjects to short video clips has been suggested as one of the most successful emotion-induction procedures and to minimize experimenter demand effects (e.g., Clark, 1983; Martin, 1990).

<sup>5</sup> The happy video clip was part of T-Mobile’s advertisement campaign and can be found online at [www.youtube.com/watch?v=VQ3d3KigPQM](http://www.youtube.com/watch?v=VQ3d3KigPQM)

<sup>6</sup> The neutral video clip was “Waves” on the Stanford Psychophysiology Laboratory resources’ website (<http://spl.stanford.edu/resources.html>).

*Imagine a group that consists of two members, Person A and Person B. Person A receives an endowment of 20 pounds and has to decide how many pounds to keep for himself and how many to transfer to Person B. The amount of pounds that Person B receives from Person A is tripled. Then Person B has to decide how many pounds from this tripled amount to send back to Person A. The total income of Person A is his endowment of 20 pounds minus the amount of pounds he transfers to Person B plus the amount of pounds he receives back from Person B. The total income of Person B is the amount of pounds he receives from Person A multiplied by 3 minus the amount of pounds he sends back to Person A. Assume that Person A decides first and Person B observes Person A's choice before making his own decision.*

*A) Assume that Person A transfers 0 pounds to Person B and Person B sends back 0 pounds to Person A. Therefore, as a result of their decisions, Person A's total income is 20 pounds and Person B's total income is 0 pounds. How do you rate **Person B's** morality?*

Over the other four remaining scenarios, Person A becomes more trusting of Person B, and his transfer increases to £20 in increments of £5. Person B is always selfish and returns £0. Because Person A's trust is not reciprocated by Person B's action, the payoff gap between the two players increases. In the first scenario, Person A earns more than Person B, because both players behave in a selfish way. In the second scenario, both players earn exactly the same amount of money: £15. For the remaining three scenarios, Person A continues to increase the amount of money he is transferring to Person B, thus increasing the income gap as we move toward the last scenario.

*Questionnaire for the GEG Condition.*—Again, fictitious players in the hypothetical scenarios are paired up, with one receiving the role of the “Employer” (first mover) and the other the “Employee” (second mover). The first move involves the employer setting the employee's wage level, and the second move involves the employee choosing an effort level to contribute to the firm. The trust and the gift exchange game have similar aspects in their structure, in the sense that the first mover shows trust to the second mover. Yet the description of the gift exchange game adds more social context in the decision situation facing each player, as opposed to the case of the trust game, where the actual framing of the scenarios is more neutral. The description of the decision situation in the GEG condition, along with the first scenario, is shown below.

*Imagine a group that consists of two members, Person A and Person B. Person A, who is in the role of Employer, decides to offer a wage to Person B, who is in the role of Employee. Person A can choose a wage of 5, 10, 15, 20 or 25 pounds. Then Person B has to decide how much effort to spend. Person B can choose an effort level of 1, 2, 3, 4 or 5. The total income of Person A is the effort level spent by Person B multiplied by 25 minus the amount of wage he offers to Person B. The total income of Person B is the amount of wage he receives from Person A minus the cost of his effort level, which is equal to the effort level he chose. Assume that Person A decides first and Person B observes Person A's choice before making his own decision.*

*A) Assume that Person A offers a wage of 5 pounds to Person B and Person B chooses an effort level equal to 1. Therefore, as a result of their decisions, Person A's total income is 20 pounds and Person B's total income is 4 pounds. How do you rate Person B's morality?*

The scenarios differ from each other only in Person A's behavior. Person A's wage offer is £5 (as shown) in the first scenario, rising to £25 in increments of £5 over the other four scenarios. Again, the judged player, Person B, does not reciprocate back (by always choosing the lowest possible effort level) toward the nonjudged player, Person A. As a result of their decisions, the income for Person A is greater than that of Person B for the first two scenarios, whereas the income for Person B is greater than that of Person A in the last three scenarios.

**Procedures:** The experiment was conducted in the Centre for Experimental Economics (EXEC) laboratory at the University of York, UK. We recruited participants from a university-wide pool of undergraduate and postgraduate students who had already indicated their willingness to participate in economic experiments. The experiment was computerized, and the subjects were recruited using the ORSEE software (Greiner, 2004). All sessions used an identical protocol. Upon arrival, subjects were randomly assigned a computer screen. They were informed that the session consisted of two sections. However, they were not told what would happen in the second section, to reduce the possibility for having wrong expectations about the nature of the experiment. The set of instructions for both sections was displayed on their computer screens. Subjects were allowed to ask questions by raising their hands and speaking to the experimenter in private. They were not allowed to communicate with one another throughout the session.

Subjects were randomly allocated into different treatments and conditions. Each subject could participate in only one session, which consisted of two identical questionnaires. Therefore, our design also allowed us to perform within-subjects tests (i) for the impact of the video clip (either happy or neutral) on self-reported positive emotions and (ii) for differences in moral judgments before and after subjects had been exposed to the video clip.

In our experiment, we could not incentivize task-responses, although we could incentivize participation. Because our objective was to study subjects' impartial moral attitudes, a questionnaire-based approach was appropriate for this purpose because any means of tying payments to subjects' responses could confound the way they report their attitudes (Cubitt et al., 2011). Given the absence of task-related incentives, we paid subjects a show-up fee of £5. The payment of a fixed amount of money to participants is common practice in survey-based experiments. No session lasted more than 30 minutes. In total, 237 subjects took part in our experiment: 129 subjects participated in the H-treatment, and 108 subjects participated in the

N-treatment. Table 1 shows the number of subjects in each treatment and condition separately.

[Insert Table 1 about here.]

## II. Results

### *A. How do People Judge Selfish Behaviors in Others?*

Prior to examining the impact of happiness on moral judgments, we first explore how people rated the scenarios in each condition separately. Recall that in each scenario, the judged player is always acting selfishly, whereas his co-player's behavior is becoming increasingly prosocial. To understand how individuals morally rate the selfish actor when they are initially faced with a decision situation, we focus on the initial phase of moral judgment elicitation. Because it may be that different moral judgments are expressed across treatments and within conditions, we first determine whether there are any differences in moral judgments between the H- and the N-treatment. A rank-sum Wilcoxon test produces statistically insignificant differences within a given condition between the H- and the N-treatment both for the TRUST condition ( $p$ -values  $> 0.332$ ) and for the GEG condition ( $p$ -values  $> 0.108$ ). We therefore pool these two treatments in the analysis of this section.

The main tool for our analysis is the mean evaluation function (MEF), which gives the average moral ratings that subjects assigned to the judged player as a function of the behavior of the nonjudged co-player. Figure 3 shows the MEF for each of our two conditions. In all graphs, the horizontal axis indicates the behavior of the nonjudged player (Person A). For the TRUST condition, the horizontal axis indicates the amount of pounds sent by Person A to Person B, whereas, for the GEG condition, the amount of wage paid by Person A to Person B is indicated on the horizontal axis. In both games, Person B is selfish, and the average moral ratings that subjects assigned to Person B are shown on the vertical axis. Ratings below (above) 0 indicate a morally blameworthy (praiseworthy) action, and ratings of 0 indicate that the action is perceived to be of no moral significance.

[Insert Figure 3 about here.]

Two striking observations emerge from Figure 3. First, the MEF in both conditions is generally downward sloping. This suggests that as Person A became increasingly prosocial, subjects became increasingly condemning toward Person B's selfish actions. Second, subjects

morally perceived selfishness on a known selfish actor as being morally praiseworthy. This pattern is observed in both TRUST and GEG conditions. In particular, when Person A sends either £0 or £5 to Person B, subjects perceived not returning anything back as not being immoral. In addition, choosing the lowest possible effort level is morally acceptable when the wage offered by the employer (Person A) is the minimum one.

As a further step to better understanding how subjects assigned their moral ratings, we divide their response patterns into three categories: (i) negatively sloped MEFs; (ii) flat MEFs; and (iii) other MEFs, which include positively sloped and nonmonotonic MEFs. The proportions of subjects that belong to one of these three categories in each condition are shown in Table 2.

[Insert Table 2 about here.]

A common pattern of judgment that emerges from Table 2 is that the overwhelming majority of subjects have a negatively sloped MEF. This implies that subjects became increasingly more condemning toward Person B when Person A became more prosocial and Person B observed Person A's action. Yet only a small percentage of subjects passed judgments on Person B that are independent of Person A's behavior. Our evidence clearly indicates that subjects perceived selfish behaviors as immoral acts, except when a selfish action was known to the judged co-player (in which case, selfishness was perceived to be morally acceptable). In addition, subjects did not assign neutral moral ratings in the vast majority of cases, indicating that they perceived selfish actions as having a moral dimension. These two observations agree with earlier experimental investigations that elicited individuals' impartial moral judgments in social dilemma games using hypothetical scenarios (see Cubitt et al., 2011). We summarize our first finding below.

*Finding 1.*—On average, subjects perceived acting in a selfish manner as having a moral dimension. Most subjects increased their moral condemnation toward the selfish actor the more prosocial his co-player became.

### *B. What are the Relationships Between Emotions and Moral Judgments?*

In this section, we analyze associations at the cross section between emotions and moral judgments. We first look at some descriptive statistics of each of the six self-reported emotions we elicited at the beginning of a session. Recall that emotions were elicited on a seven-point scale, with 1 indicating no intensity at all, and 7 indicating high intensity. Table 3

reports the average levels and standard deviation for each treatment and emotion, separately. Note that the emotions with the highest levels are happiness and contentment both in the TRUST condition (4.906 and 4.530, respectively) and in the GEG condition (5.058 and 4.333, respectively). The emotion with the lowest intensity was anger: Subjects reported a value of 1.897 in the TRUST condition and 1.842 in the GEG condition.

[Insert Table 3 about here.]

We next assess whether there are significant associations between positive emotional responses and moral judgments in the directions that are consistent with the dual-process theory of moral judgments, i.e., happy people are expected to be less morally condemning toward other people's egotistical behaviors. Because happiness and contentment were assigned the highest values, and thus indicated as the positive emotions triggered mostly, we consider both of these positive emotions in our ordinary least-squares regression analyses (Table 4). In these regressions, the dependent variable is the moral rating assigned by a subject to a given scenario. As independent variables, we include four dummy variables, which take the value 1 for a given scenario (our baseline category, which is excluded from the regressions, is scenario 1), the self-reported levels of happiness and contentment, subject's gender (1 if female, 0 if male), field of study (1 if they study economics, 0 otherwise), and nationality (1 if British, 0 otherwise). Robust standard errors are reported in Table 4 in parentheses.

[Insert Table 4 about here.]

A first observation from our regression analysis is that the scenario dummies have negative and statistically significant coefficients different from zero (with the only exception that of the dummy for scenario 2 in the regression of the TRUST condition). This implies that the MEF is on average negatively sloped in both conditions, with the size of the coefficients increasing as we move to scenario 5. We also find evidence suggesting that happiness and contentment explain how subjects morally judged Person B's selfish actions. More specifically, people who reported higher levels of happiness assigned significantly higher moral ratings (the coefficient of the variable "happiness" is positive and statistically significant at the five percent level), indicating that, at the cross section, happier people tend to judge others' egotistical behaviors less harshly. A similar conclusion carries over when we look at the regression model for the GEG condition. Here, the coefficient of the variable

“contentment” is positive and significant at the five percent level. The results are robust to regression models that replace the four scenario dummy variables with one variable that takes the value of the amount sent/wage (depending on the condition) offered by Person A in each scenario separately.<sup>7</sup> It is also interesting that nationality is a determinant of how subjects morally evaluated selfishness. In both regression models, British subjects were significantly more judgmental than non-British subjects. We summarize our second finding below.

*Finding 2.*—There are significant cross-sectional links between positive emotions and moral judgments. Subjects who reported to be happier and more content typically assigned higher moral ratings toward a selfish actor.

### *C. The Impact of Induced Positive Emotions*

*Was the Happy Video Successful at Inducing Positive Emotions?*—We ran the following regressions to test whether watching the “Happy” video clip significantly improved individuals’ happiness:

$$(1) \quad Hb_{ij} = \alpha_{0j} + \beta_{0j}H\_treatment_{ij} + \varepsilon_{0ij},$$

$$(2) \quad Ha_{ij} = \alpha_{1j} + \beta_{1j}H\_treatment_{ij} + \varepsilon_{1ij},$$

$$(3) \quad (Ha_{ij} - Hb_{ij}) = \alpha_{2j} + \beta_{2j}H\_treatment_{ij} + \varepsilon_{2ij},$$

where  $i = 1, \dots, N$  and  $j = 1, \dots, J$ ;  $Hb_{ij}$  and  $Ha_{ij}$  are self-reported happiness (or a proxy for positive emotion) of individual  $i$  in treatment  $j$  before and after watching the video clip, respectively; and  $H\_treatment_{ij}$  is a dummy variable with a value of 1 if the subject watched the “Happy” video (the H-treatment) and 0 if the subject watched the “Neutral” video (the N-treatment). The parameters  $\alpha_{0j}$ ,  $\alpha_{1j}$ , and  $\alpha_{2j}$  represent the happiness of the control group before watching the neutral video, after watching the video, and the within-person difference pre- and post-watching the neutral video, respectively. While the parameters  $\beta_{0j}$  and  $\beta_{1j}$  measure the respective pre- and post-video differences in self-reported happiness between the

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<sup>7</sup> From these regressions (reported in Table A.1, Appendix A), we find that the coefficient of the variable “amount sent by Person A” is significantly and negatively correlated with moral ratings, suggesting that, as the amount Person A sent to Person B in the TRUST condition increased, subjects became increasingly condemning toward Person B. We reach the same conclusion for the GEG condition: Subjects were more condemning toward Person B when Person A offered a higher wage.

control group and the treated group, respectively, the parameter  $\beta_{2j}$  captures the treatment effect of the “Happy” video on the happiness of the treated.

Table 5 presents, for both conditions, ordinary least-squares estimates on the happiness equations. Both columns indicate that there was virtually no difference in the means of happiness between the control and the treated group before watching the assigned video clip in either of the two conditions; the coefficients on H-treatment are statistically insignificantly different from zero in the Hb equations. After watching the clip, however, there was a marked difference in the average happiness (i.e., Ha): Subjects in the H-treatment group reported, on average, an approximately 0.8-point higher level of happiness on the seven-point happiness-intensity scale than the control group. For example, in the TRUST condition, the average happiness for the control group was approximately 4.833, and the coefficient on the H-treatment was 0.135, i.e., the average happiness for the treated group pretreatment was approximately  $4.833 + 0.135 = 4.968$ . The average happiness for the control group remained approximately the same at 5.028 after the video clip (Ha), whereas the average happiness for the treated was approximately  $5.028 + 0.940 = 5.968$ . The coefficient on H-treatment in the Ha – Hb equation then represents the treatment effect on the treated subjects. For example, the TRUST condition indicates that watching the “Happy” video clip resulted in a *net* increase in the happiness level of the treated by  $0.940 - 0.135 = 0.805$ , which is statistically significant at the one percent level. The same qualitative findings apply for the GEG condition.<sup>8</sup>

[Insert Table 5 about here.]

In short, we can conclude from this analysis that the “Happy” video was successful at inducing a significant increase in the positive moods for the treated. The question is: Will we be able to observe significant changes to how people rate moral judgments in different scenarios alongside these changes in positive moods?

*Can Induced Positive Emotions Explain Differences in Moral Judgments across Treatments?*—We start by looking at differences in moral judgments in the TRUST condition. First, we provide the average moral judgments for each of the two conditions

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<sup>8</sup> When we perform the same econometric analysis including “contentment” as the dependent variable in the regression models of Table 5, we find similar results to those reported in the case of happiness. The only difference is that the coefficient of the H-treatment in the third equation is only marginally statistically insignificant (p-value = 0.107).

across treatments and then compare them (using a Wilcoxon signed-rank test) to determine any differences before and after the video clip. Figure 4 illustrates the average moral ratings as a function of each scenario separately before and after the video clip was shown to subjects. We observe that all four moral evaluation functions (before and after the video clip) are negatively sloped: The more prosocial Person A became by sending to Person B higher amounts as we moved toward scenario 5, the more strongly Person B's behavior was judged as morally wrong. In particular, before (after) the neutral video clip was shown, average moral judgments started at a level of 7.259 (12.185) in scenario 1 and became -37.241 (-37.537) in scenario 5. The same pattern was observed in average moral judgment before (after) the happy video clip was shown. Another feature of the moral evaluation functions in the TRUST condition is that, in the first two scenarios (where Person A sends £0 and £5 to Person B, respectively), Person B's behavior was perceived to be morally praiseworthy, irrespective of whether the neutral or the happy video clip was shown.

[Insert Figure 4 about here.]

We next tested for any differences in moral judgments between treatments. Figure 4 indicates that, in the TRUST condition, subjects' moral ratings were similar in the N-treatment before and after watching the video clip, but that they became less judgmental in their ratings in the H-treatment after they had been exposed to the happy video clip. To assess whether differences were statistically different, we performed a Wilcoxon signed-rank test for the equality of matched pairs of observations (within-subjects test). Table 6 reports the corresponding p-values from the pairwise comparisons of each of the five scenarios before and after the video clip for each treatment, separately. Our analysis reveals that, on average, subjects in scenarios 1, 2, and 5 reported moral judgments that were not statistically significantly different from each other either before or after the video clip had been shown. In contrast, in scenarios 3 and 4, subjects reported similar moral judgments toward Person B after they watched the neutral video, but they became significantly less judgmental by rating Person B's action in a less reprehensible manner after they watched the happy video.

[Insert Table 6 about here.]

We next examine for potential changes in moral judgments in the GEG condition. As shown in Figure 5, the descriptive features of the MEF in this condition are similar to those observed in the TRUST condition. First, the shape of the MEF in all four combinations

(before and after the video clip) is negatively sloped, implying that subjects became increasingly judgmental of Person B for choosing the lowest possible effort as Person A increased the wage. Second, choosing the lowest effort level was considered to be a praiseworthy action, conditional on Person A choosing a low wage (equal to either £5 or £10). In these two scenarios, in most cases average moral ratings were above zero. In addition, the MEF in the H-treatment is always above the corresponding MEF in the N-treatment. Table 7 reports the average moral ratings along with the corresponding p-values from a nonparametric Wilcoxon signed-rank test for each scenario comparison and treatment, separately.

[Insert Figure 5 about here]

[Insert Table 7 about here]

In all scenarios, subjects were assigning higher moral ratings toward Person B, thus indicating that they became less judgmental of Person B's egotistical behaviors immediately after watching the happy video clip. The differences between scenarios were statistically significant at the one percent level in all cases, except for scenario 5, in which average moral ratings were similar before and after the happy video clip. To test whether these differences can be attributed to the manipulation of positive moods, we also performed pairwise comparisons across scenarios after subjects watched the neutral video clip. Our analysis indicates that average moral ratings were statistically insignificant in most scenarios (namely, scenarios 3–5). Regarding scenarios 1 and 2, significant differences in moral judgments were observed at the five percent level. We summarize our third finding below.

*Finding 3.*—The differences in induced positive emotions can explain differences in moral judgments: Induced positive emotions led to subjects assigning less judgmental moral ratings both in the TRUST and in the GEG condition.

### **III. Conclusions**

This study experimentally investigated the links between positive emotions and moral judgments in trust and gift exchange games. These games have played a central role in the social preference literature, and their frequent occurrence in real-world economic and social phenomena makes them fruitful for the empirical analysis of moral judgments. In particular, the relationship between employers and employees in labor markets is characterized by

positive reciprocity incentives: Employees who perform their jobs satisfactorily are rewarded with higher wages. We examined the extent to which violation of the wage–effort hypothesis (by having one player always choosing the minimum effort level, irrespective of the wage offered by the employer) and trust is perceived to be morally condemning by impartial observers, and examined how positive emotions affect how moral appraisals of a given situation are expressed.

Our main findings indicate that, on average, subjects perceive selfish behaviors to have a moral dimension. In particular, most subjects increase their moral condemnation toward the selfish actor the more prosocial the behavior of his co-player becomes. Interestingly, if an employer offers a low wage to the employee, shirking is perceived to be morally praiseworthy.

We also observe that positive emotions are linked with moral judgments: (a) Subjects who report to be happier and more content make less negative moral appraisals for a given scenario; and (b) induced positive emotions lead subjects to arrive at less negative moral conclusions of selfish behavior.

Our findings provide a number of implications and indicate future research avenues. First, we provide evidence that selfishness is typically considered by an average impartial observer as a morally reprehensible act, and increasingly so as the other player becomes increasingly more prosocial toward the selfish actor. This increasing moral condemnation may be a motive behind the choice of employees to spend high effort levels when they receive higher wages. The extent to which moral judgments and actual behavior is linked is an open empirical question for further studies seeking to bridge the gap between moral psychology and applied economics. A second implication is that moral judgments appear to be themselves functions of positive emotions. This finding adds to the existing strand of literature that highlights the importance of emotions in economic decision making. Third, induced positive affects moderate the moral judgments of other people’s selfish behaviors in a certain direction: They lead subjects to make less negative moral appraisals. Whether induced negative emotions would generate the opposite effect is an interesting challenge for future research.

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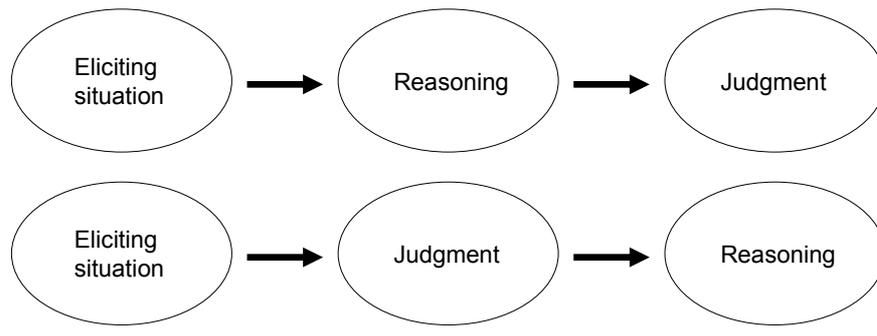
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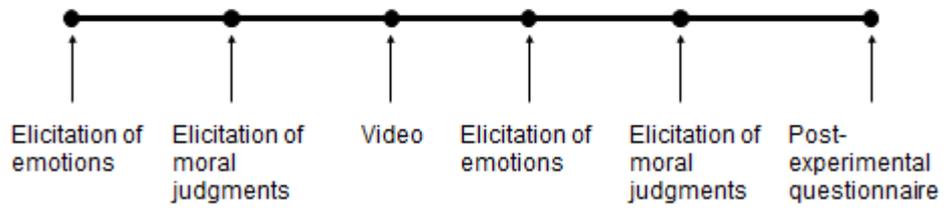
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**Figure 1: Reason-based vs. Emotion-based model**



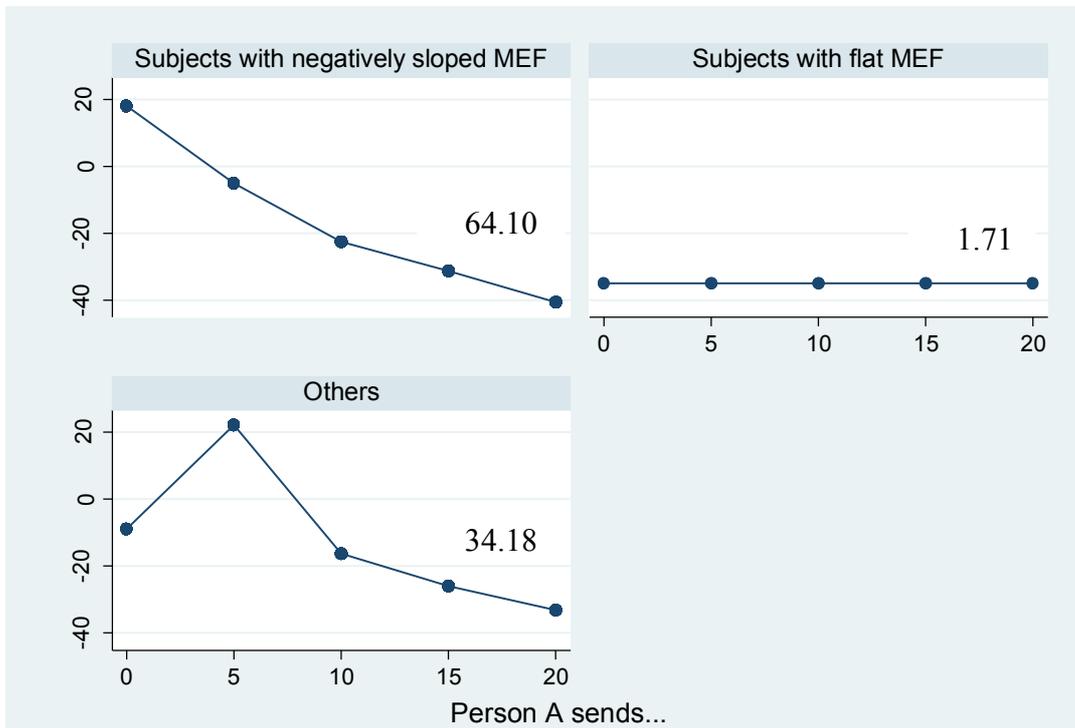
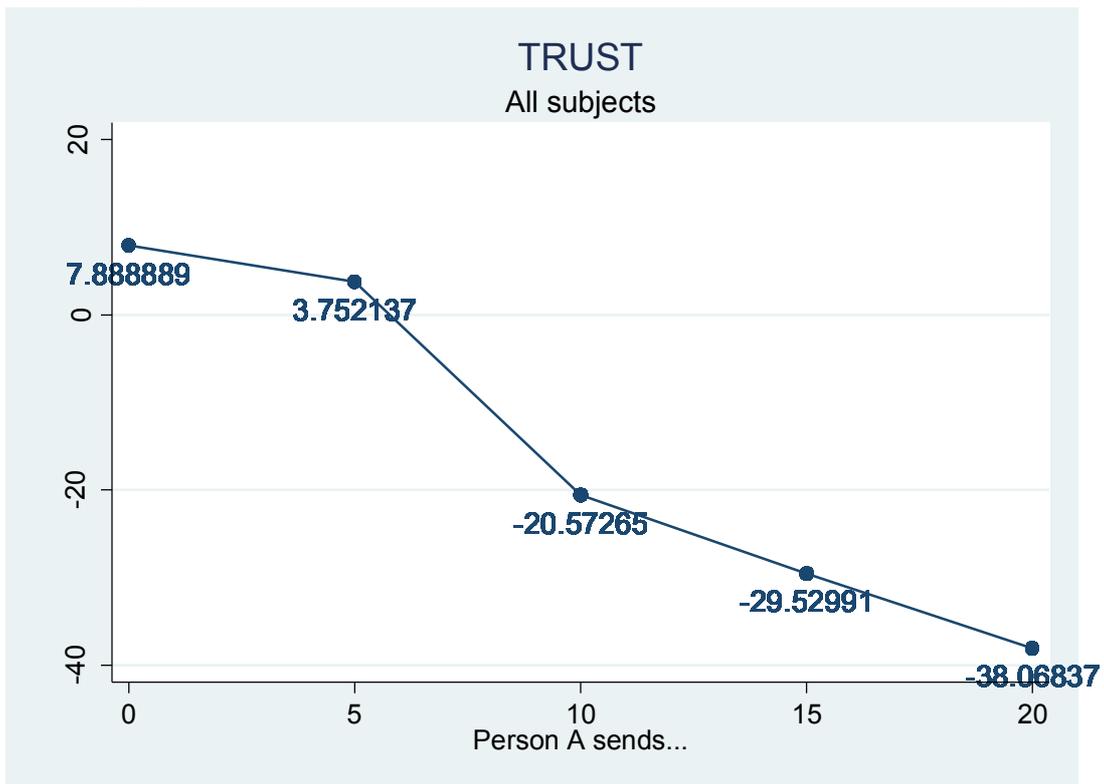
**Figure 2: Timeline of tasks within a condition**



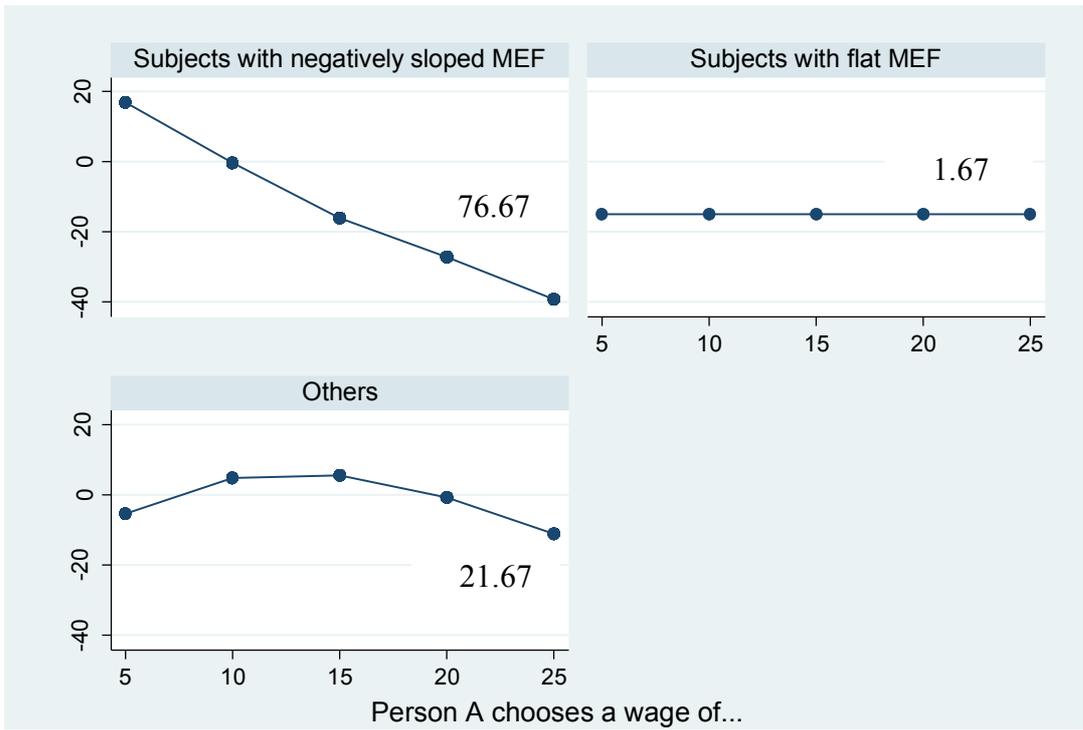
**Table 1:** Number of participants in each treatment and condition

	H-treatment	N-treatment
TRUST	63	54
GEG	66	54
Total	129	108

**Figure 3:** The moral evaluation function condition before the video clip



(a) TRUST condition



(b) GEG condition

**Table 2:** Proportion of subjects in each category and treatment before the video-clip

	Subjects with negatively sloped MEF	Subjects with flat MEF	Others
TRUST	64.10%	1.71%	34.18%
GEG	76.67%	1.67%	21.67%

Note: We divide subjects into three categories (response patterns): (1) subjects with a negatively sloped MEF, (2) subjects with a flat MEF and (3) "Others", including non-monotonic subjects and subjects with a positively sloped MEF.

**Table 3:** Mean self-reported emotions before the video clip in the TRUST and the GEG condition

	TRUST	GEG
Happiness	4.906 (1.218)	5.058 (1.040)
Envy	2.329 (1.452)	2.383 (1.462)
Anger	1.897 (1.417)	1.842 (1.341)
Boredom	2.577 (1.406)	2.533 (1.289)
Contentment	4.530 (1.562)	4.333 (1.491)
Irritation	2.496 (1.563)	2.217 (1.271)
N	117	120

Note: Mean self-reported emotions (before the video clip) with the corresponding standard deviations (in parentheses) for each condition separately. The intensity for each emotion was recorded on a 7-point scale (1 = “not at all”, ... , 7 = “very much”).

**Table 4:** Emotions and moral judgments for each condition before the video clip was shown

VARIABLES	TRUST	GEG
	(1) Moral Judgment	(2) Moral Judgment
Scenario 2	-4.137 [3.278]	-10.908** [2.526]
Scenario 3	-28.462** [2.971]	-22.783** [2.651]
Scenario 4	-37.419** [2.881]	-32.633** [2.744]
Scenario 5	-45.957** [2.987]	-44.225** [2.958]
Happiness	1.738* [0.787]	-0.353 [0.845]
Contentment	-0.842 [0.572]	1.483* [0.596]
Gender (= 1 if female)	0.677 [1.996]	-2.415 [1.787]
Field of study (=1 if economics)	-3.779 <sup>+</sup> [2.234]	0.357 [2.600]
Nationality (= 1 if British)	-4.513* [1.884]	-5.952** [1.814]
Constant	5.169 [5.189]	11.031* [5.117]
N	585	600

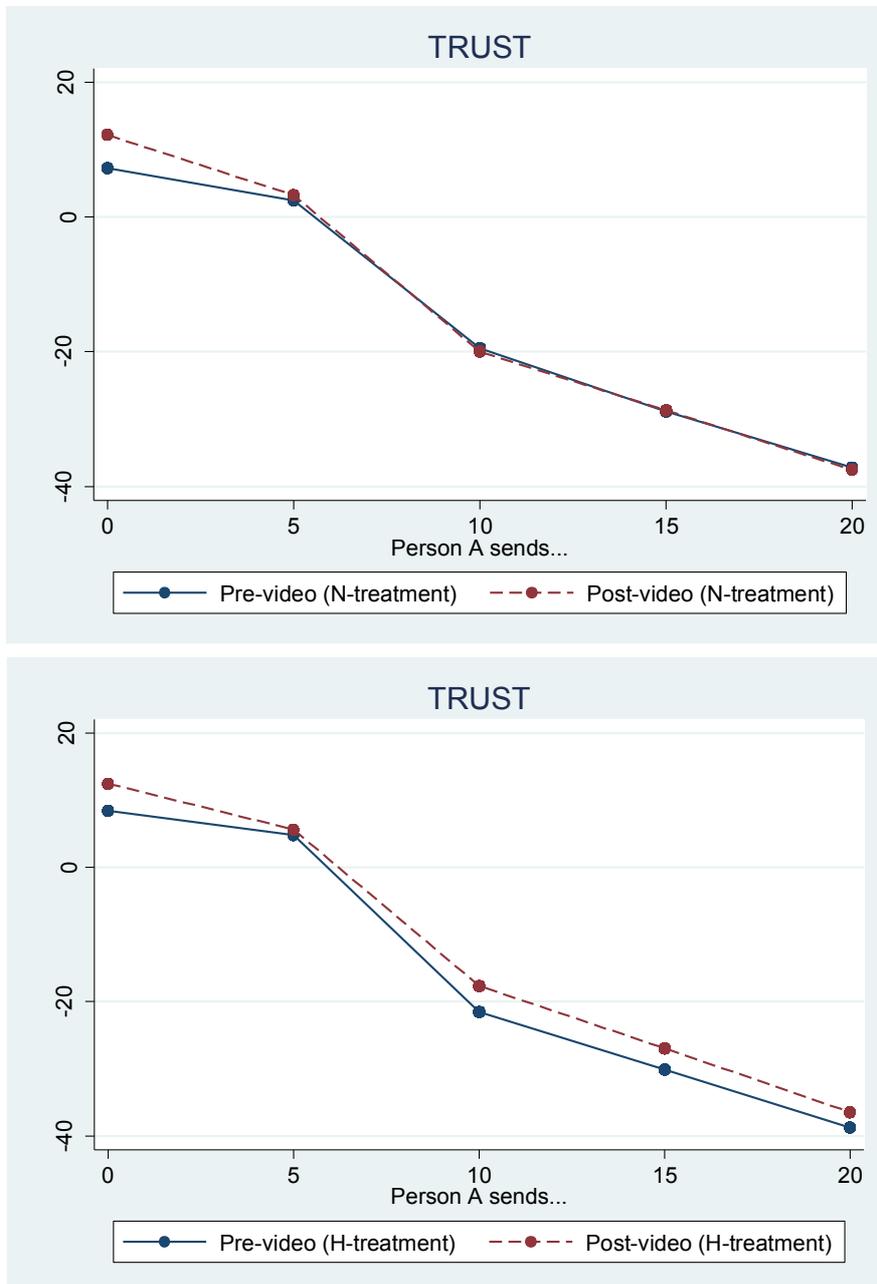
Note: OLS estimates. Robust standard errors are presented in square brackets. The dependent variable “Moral Judgment” denotes the moral rating that subjects assigned in a given scenario. The independent variables Scenario 2, Scenario 3, Scenario 4 and Scenario 5 take on the value “1” when Person A sends an amount (offers a wage) of £5 (£10), £10 (£15), £15 (£20) and £20 (£25) to Person B, respectively; 0 otherwise. The baseline category is Scenario 1 (Person A sends an amount (offers a wage) of £0 (£5) to Person B). +  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ .

**Table 5:** Differences in self-reported happiness before and after watching the video-clip across treatments

VARIABLES	TRUST	GEG
	(1)	(2)
	<b>Hb</b>	<b>Hb</b>
H-treatment	0.135	-0.130
	[0.230]	[0.191]
Constant	4.833**	5.130**
	[0.184]	[0.140]
VARIABLES	<b>Ha</b>	<b>Ha</b>
H-treatment	0.940**	0.827**
	[0.229]	[0.243]
Constant	5.028**	4.870**
	[0.191]	[0.181]
VARIABLES	<b>Ha-Hb</b>	<b>Ha-Hb</b>
H-treatment	0.806**	0.956**
	[0.182]	[0.234]
Constant	0.194	-0.259
	[0.130]	[0.185]
N	117	120

Note: OLS estimates. Robust standard errors are presented in square brackets. The dependent variable Hb (Ha) denotes the self-reported level of happiness before (after) the video clip is shown; whereas, the dependent variable Ha – Hb indicates the difference between the self-reported levels of happiness after and before the video clip is shown. The independent variable “H-treatment” takes on the value 1 if the “Happy” video-clip is shown and 0 if the “Neutral” video-clip is shown. +  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$

**Figure 4:** The mean moral evaluation function before and after the video-clip of the TRUST condition

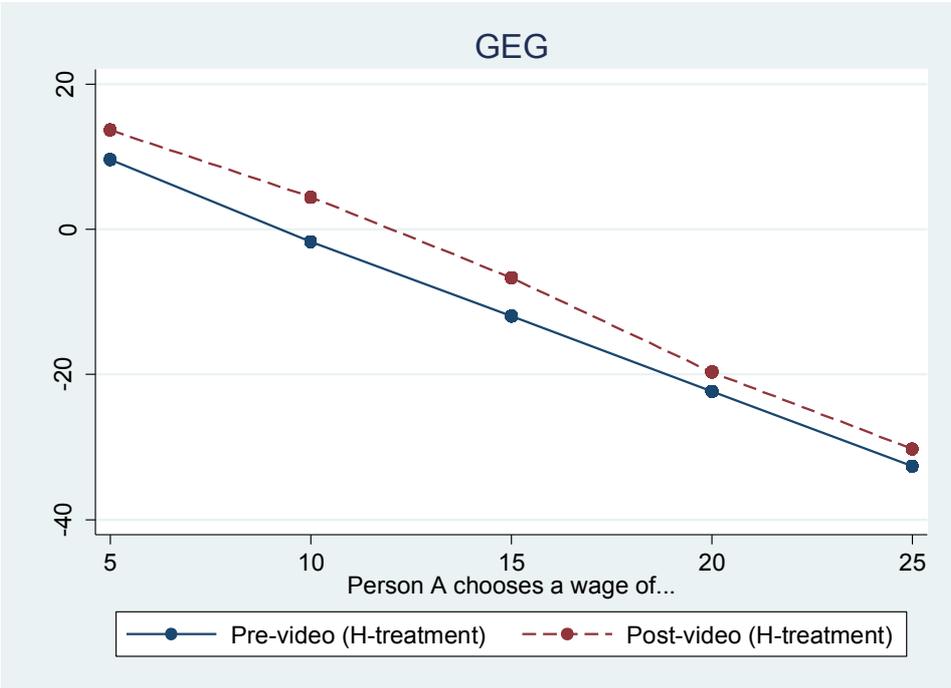
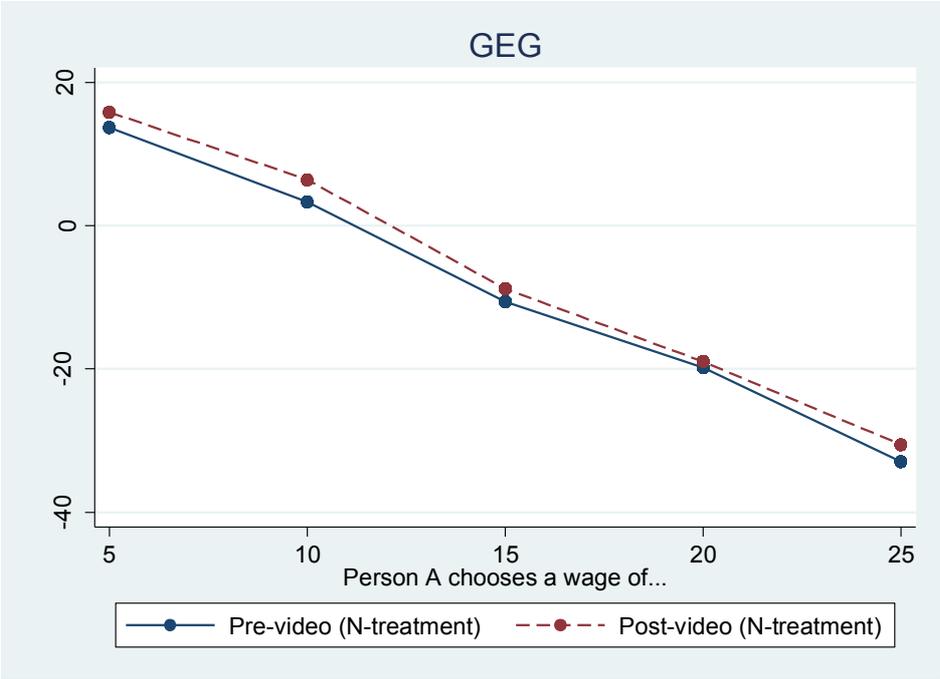


**Table 6:** Average moral ratings in the TRUST condition for each scenario and treatment

<b>N-treatment</b>					
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Before	7.259	2.481	-19.463	-28.852	-37.241
After	12.185	3.241	-19.981	-28.704	-37.537
p-value	0.1060	0.3123	0.3956	0.4914	0.9768
<b>H-treatment</b>					
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Before	8.429	4.841	-21.524	-30.111	-38.778
After	12.476	5.635	-17.651	-26.952	-36.460
p-value	0.1149	0.2308	0.0015	0.0113	0.1351

Note: p-values from a two-sided Wilcoxon sign-rank test are reported.

**Figure 5:** The mean moral evaluation function before and after the video-clip of the GEG condition



**Table 7:** Average moral ratings in the GEG condition for each scenario and treatment

<b>N-treatment</b>					
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Before	13.741	3.315	-10.593	-19.778	-32.944
After	15.852	6.426	-8.796	-18.963	-30.574
p-value	0.0223	0.0236	0.3322	0.5703	0.5693
<b>H-treatment</b>					
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Before	9.591	-1.712	-11.924	-22.318	-32.621
After	13.682	4.455	-6.652	-19.667	-30.273
p-value	0.0018	0.0001	0.0033	0.0045	0.2273

Note: p-values from a two-sided Wilcoxon sign-rank test are reported.

## Appendix A – Additional Regression Analysis

**Table A.1:** Emotions and moral judgments for each condition before the video clip was shown

VARIABLES	TRUST	GEG
Amount sent by Person A	-2.504** [0.132]	
Wage offered by Person A		-2.204** [0.128]
Happiness	1.738* [0.794]	-0.353 [0.843]
Contentment	-0.842 [0.573]	1.483* [0.595]
Gender (= 1 if female)	0.677 [2.010]	-2.415 [1.783]
Field of study (= 1 if economics)	-3.779 <sup>+</sup> [2.222]	0.357 [2.592]
Nationality (= 1 if British)	-4.513* [1.910]	-5.952** [1.810]
Constant	7.014 [4.885]	21.974** [5.189]
N	585	600

Note: OLS estimates. Robust standard errors are presented in square brackets. In all regressions, the dependent variable is “Moral Judgment” and denotes the moral rating that subjects assigned in a given scenario. The independent variable “Amount sent by Person A” (“Wage offered by Person A”) takes the value “x” when Person A sends an amount (offers a wage) of £x, where “x” takes on the values 0 (5), 5 (10), 10 (15), 15 (20), 20 (25). + p < 0.1; \* p < 0.05; \*\* p < 0.01