Beyond Outcomes: The Influence of Intentions and Deception

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Abstract

To what extent do people care about the intentions behind an action? What if the intentions can be deceptive? We conducted two experiments to complement previous evidence about the roles of outcomes and intentions in economic games. The results of Experiment 1 indicate that both outcomes and intentions affect players' responses. Moreover, unkind intentions are punished but kind intentions are hardly rewarded. In Experiment 2, intentions are stated as opposed to observed. Participants misstate their intentions frequently, thereby undermining the credibility of the statements. As a result, perceived honesty modulates players' responses.

Keywords: Intentions; outcomes; preferences; deception; punishment; reward; experimental game.

Introduction

To what extent do people care about the intention behind the action of someone else? What if intentions can be deceiving? In economic theory, the utility functions constructed to describe revealed preferences (Samuelson, 1938) can incorporate anything, including perceived intentions. In practice, models of utility tend to boil down to a single element: one's own income. Guided by experimental evidence and a rapprochement of economics and psychology, some scholars constructed formal models of social preferences that move beyond individual income and incorporate preferences over monetary distributions (Bolton & Ockenfels, 2000; Fehr & Schmidt, 1999). Although these theories of fairness are different from pure income-maximization models, they remain concerned with outcomes, namely distributions of payoffs. A third generation of models goes further still and adds perceived intentions to the utility function (Charness & Rabin, 2002; Dufwenberg & Kirchsteiger, 2004; Falk & Fischbacher, 2006). We investigated experimentally the role of intentions and outcomes in two versions of a sequential 2-player game.

Previous studies on the role of intentions in economic games have employed different experimental designs and have reached different conclusions. A first group of studies compares responses to intentional actions against the responses to random events, whereby the intentional choices and the random events have identical monetary consequences. Falk, Fehr, and Fischbacher (2008) find that rejection rates in an ultimatum game (Güth, Schmittberger, & Schwarze, 1982) are significantly lower when the offers are determined randomly by a computer, as opposed to set intentionally by a person. In contrast, Stanca (2010) finds that intentions are irrelevant in a within-subject comparison between random and intentional first-moves of a gift-exchange game. A second group of studies (e.g. Falk, Fehr, & Fischbacher, 2003; McCabe, Rigdon, & Smith, 2003) finds an effect of intentions by comparing responses to identical actions that have been selected from different sets of alternative actions. In an ultimatum game, for instance, a disadvantageous offer is more likely to be rejected when the alternative is an equal split, as opposed to an even less advantageous offer. A third group of studies (Charness & Levine, 2007; Cushman, Dreber, Wang, & Costa, 2009) compares responses to identical outcomes that were reached by different combinations of intentional choices and chance. These studies can also be interpreted as modeling an imperfect correlation between intentions and outcomes. In many cases, intentions and consequences match, that is, the consequences of an action are those that were intended. But in our fundamentally noisy and complex environment, this need not be the case, so intentions and outcomes can sometimes diverge.

Both Cushman et al. (2009) and Charness and Levine (2007) find an effect of intentions, but the relative importance of intentions versus outcomes differs widely between their studies. Cushman et al. conclude that "accidental outcomes guide punishment" whereas Charness and Levine report that "intention appears to be a stronger force than distribution". Our basic research design follows the general approach of Charness and Levine and Cushman et al. By combining what we see as the desirable features of both studies, we gauge the robustness of their results. Like Cushman et al., our design employs three levels of intentions and outcomes, allowing us to compare negative and positive reciprocity. Like Charness and Levine, however, we abstain from using the strategy method (Selten, 1967) and add realism by making responses costly.

In practice, the role of intentions is affected by the fact that we lack direct access to other people's intentions. In particular, statements of intention may be deceptive. Consider an example from the legal domain. A murderer may have a strong incentive to lie to the jury about her intention to kill her victim. As a result, the jury has good reason not to take the stated intention at face value. In business, negotiation and other social interactions, deceptive statements about intentions exist as well. It is reasonable to assume that people are sensitive to the incentives for and the presence of deception. We incorporate this feature in the second of our experiments and assess how it influences the effect of intentions in participants' responses. Could it be that intentions matter more when they are not subject to the possibility of deception? Notice that from the viewpoint of outcome-based utility, the absence or presence of deception should not matter because intentions are irrelevant.

Experiment 1

The central building block of our experiments is a sequential, probabilistic allocator-responder game with three choice alternatives and three outcomes (cf. Figure 1, left panel). First, the "selector" chooses one of three random devices dubbed "wheels of fortune". Then nature (alias the computer) determines the outcome of the wheel of fortune. Outcomes refer to divisions of 30 tokens (≈£1) between the selector and the responder. The responder is informed about the selector's choice and the wheel's outcome. Finally, the responder can subtract or add between -15 and +15 from the selector's payoff, whereby for 3 tokens added or subtracted she has to give up one of her own tokens.[1] The core idea of this design is that the selector's wheel choices signal her intention towards the responder, who can reciprocate intentions and/or adjust outcomes by adding or subtracting tokens. The probabilities of the wheels and the monetary divisions associated with the outcomes are summarized in Table 1.

Table 1: Wheels of fortune: Probabilities and outcomes.

Probability	Wheel 1	Wheel 2	Wheel 3	Payoff
Outcome 1	60%	20%	10%	20 | 10
Outcome 2	30%	60%	30%	15 | 15
Outcome 3	10%	20%	60%	10 | 20

Note. Payoffs (Selector | Responder) in experimental tokens.

Each wheel choice can result in any of the three outcomes, but the wheels differ in the probabilities of yielding a particular outcome. Wheel 1 has a high probability of allocating 20 tokens to the selector and 10 tokens to the responder. Wheel 2 has a high probability of an equal split of the 30 tokens. Wheel 3 has a high probability of allocating 10 tokens to the selector and 20 to the responder. We follow Cushman et al. in labeling both the outcomes and intentions "stingy", "fair" or "generous". In the experimental instructions, however, we avoided such terms and used neutral language.

The experiment consisted of two parts. In Part A, the wheel of fortune game was played 16 times under a protocol of random matching with anonymity. The roles of selectors and responders were assigned randomly and remained fixed throughout Part A. In Part B, all 16 participants of a session acted as responders. Participants were asked to indicate their responses to all nine possible combinations of intentions and outcomes, which were presented in random order. This resembles the strategy method in that responses are collected for all possible first moves, while the sequential presentation reduces cognitive demands.

Participants were informed that their responses in Part B had no effect on actual payoffs. Part B allowed us to collect

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[1] The cost ratio of 1:3 for adding or subtracting tokens coincides with the ratio used in experiments on altruistic punishment (Fehr & Gächter, 2002) and is comparable in magnitude to the 1:4 ratio employed in Charness and Levine (2007).
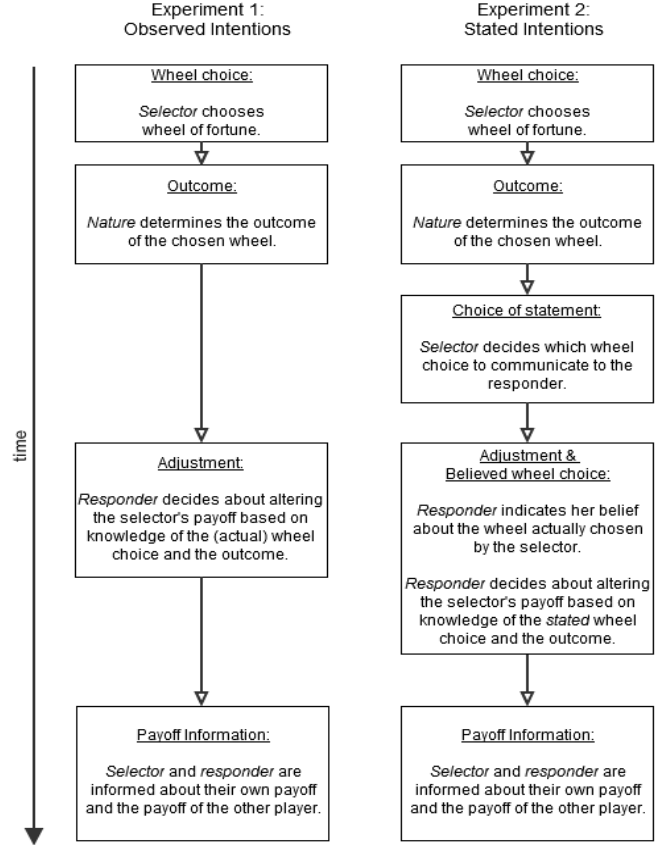

Figure 1: Sequence of events in both Experiments.

an equal number of observations for all nine combinations of intentions and outcomes. We included it as an additional check on the results from Part A, in which we had no control over the number of observations per cell.

Method

Participants and materials The experimental session was conducted at the Centre for Economic Learning and Social Evolution (ELSE) of University College London. 16 participants (11 female) were recruited through the ELSE subject pool. The median age was 22.5 years ($SD = 2.88$). The experiment was programmed with the software package z-Tree (Fischbacher, 2007).

Procedure Instructions for Part A were read aloud by the experimenters and questions related to the instructions were answered in private. After Part A, instructions for Part B were read out aloud and questions answered in private. Before each of the two parts, a comprehension check had to be passed. At the end of the experiment, the participants' earnings were paid out to them in private. Average earnings were £10.91 ($SD = 0.84$), including a show-up fee of £5. The experiment lasted 60 minutes.

Results

Selectors' wheel choices and ex-post profitability The fair wheel was the most common choice ($n = 60$), followed by the stingy ($n = 53$) and the generous wheel ($n = 15$). Due to responders' adjustments, the stingy wheel earned less on
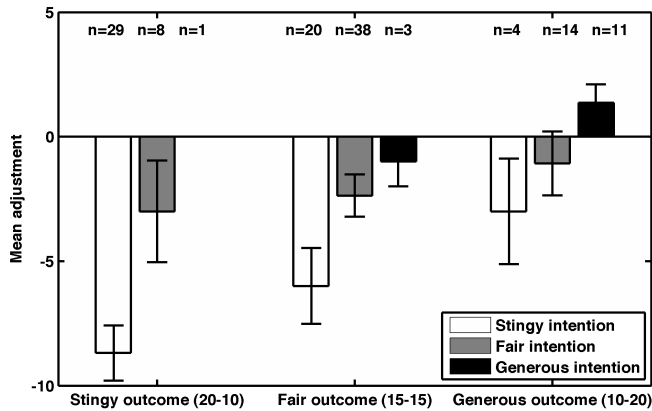
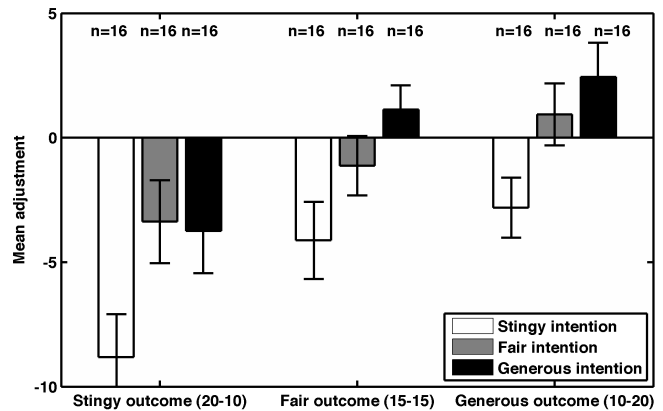Figure 2: Mean adjustments by intention and outcome (Exp 1, Part A).

Figure 3: Mean adjustments by intention and outcome (Exp 1, Part B).

average than the fair wheel (10.11 vs. 12.35 tokens), which in turn earned a little less than the generous wheel (12.47).

Overall pattern of responses Despite the monetary disincentive against adjustments, the average cost of adjustments each responder incurred was significantly different from zero ($M = 1.48$; Wilcoxon signed-rank test $Z = -2.37$, $p = .018$). 7 out of 8 responders made at least one adjustment in the game. In most cases (72/128), however, responders left the selector's earnings unchanged. With a ratio of negative to positive adjustments of 7:1 and a mean adjustment of -3.91 ($SD = 6.18$), responses were skewed towards subtraction. The costs incurred for adjustments did not drop in later periods, indicating that adjustments were not made strategically.

Analysis of responses: Outcomes versus intentions To evaluate the effects of intentions and outcomes in the game (Part A), we regressed responders' adjustments on dummy-coded predictors for intentions and outcomes with "fair intention-fair outcome" as the reference category, using random intercepts for each subject (Table 2).[3]

With the present number of observations only the predictor for stingy intentions is significant at the conventional level ($\beta = -3.96$; $t = -4.03$; $p = .000$). Stingy intentions seem to elicit a strong negative response, with an estimated parameter that is considerably larger in absolute terms than the parameter estimate for generous intentions (2.17) and more than three times as large as the parameter estimate for a stingy outcome (-1.17). The similarity between mean adjustments in Part A and Part B (cf. Figures 2 and 3) suggests that the presence or absence of monetary stakes had no discernible effect on participants' responses. Interestingly, however, adjustments in Part B were significantly more negative for participants who had been responders in Part A ($M = -4.67$), as opposed to selectors ($M = 0.33$; Mann-Whitney test $Z = 4.47$, $p = .000$). Consistent with the regression results from Part A, a repeated-measures ANOVA of Part B reveals significant main effects of intention $F(2, 30) = 11.72$, $p = .000$ and of outcome $F(2, 30)$

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[3] A fixed intercept model was rejected in favor of random effects ($\chi^2 = 25.71$; $df = 1$; $p = .000$, likelihood-ratio test).

$= 17.35$, $p = .000$, but no interactions $F(4, 60) = 1.16$, $p = .336$. The more powerful analysis for Part B indicates that on top of the effect of stingy versus fair intentions, there were significant differences in the responses to stingy versus fair outcomes $F(1, 15) = 10.97$, $p = .005$, as well as fair versus generous outcomes $F(1, 15) = 7.15$, $p = .017$.

Discussion

Why is it that intentions mattered more in our experiment than in Cushman et al. (2009), or in Stanca (2010), where they had little or no effect on choices? We suggest that the discrepancy could be due to a methodological difference in the elicitation of responses. Whereas our study used the more conventional direct-response method, both Cushman et al. and Stanca (2010) relied on the strategy method, in which participants make contingent decisions for all possible situations that may occur in the interaction. This method is advantageous in terms of data collection but may alter cognition and behavior. Thinking hypothetically through all possible situations may induce a different style of thinking and elicit different responses than in an actually experienced situation, especially if the behavior is related to visceral and emotional responses. Although in some studies the two methods do produce similar results, this seems *not* to hold for decisions related to punishment (Brandts & Charness, 2003), as in the present case. Moreover, the mere fact that the game was played repeatedly, albeit with different interaction partners, may have triggered a higher evaluation of intentions.

A second noteworthy result from Experiment 1 is the asymmetry in the responses to stingy and generous

Table 2: Regression results (Exp 1, Part A).

	β	t	p
Intercept	-2.48	-1.91	.056
Stingy intention	-3.96	-4.03	.000
Generous intention	2.17	1.48	.140
Stingy outcome	-1.17	-1.11	.269
Generous outcome	1.32	1.15	.251

$N = 128$, $R^2 = .259$

intentions: stingy intentions were punished fairly heavily but generous intentions were hardly rewarded. This asymmetry was also found by Cushman et al. and fits with a picture of negative reciprocity looming larger than positive reciprocity (Offerman, 2002). Offerman notes that in his study, asymmetric behavioural reciprocity correlated with an asymmetry in reported positive and negative emotions. Although both unintended and intended favorable outcomes elicited positive emotions, intended unfavorable outcomes provoked much stronger negative emotions than unintended unfavorable outcomes. The relation between emotions and responses to intentional actions is a subject for further study.

Experiment 2

The design of Experiment 2 was identical to Experiment 1 except for one feature: wheel choices were not directly observed by responders (cf. Figure 1). Instead, selectors communicated an intention after observing the outcome of the wheel. So for example, a selector could choose the stingy wheel and communicate a fair intention after having observed the outcome, which by chance, could have been generous. We expected selectors to make use of this possibility of deception. Both selectors and responder knew that the stated wheel choices needed not be the actual choices. Responders were also asked to indicate which wheel they believed had been actually chosen. As in Experiment 1, participants first played the game for 16 times in Part A and then indicated their hypothetical responses to all nine possible combinations of stated choices and outcomes in Part B.

Participants and procedure The 16 participants of Experiment 2 were recruited from the same subject pool as for Experiment 1. 13 of them were female and the median age was 22.5 years ($SD = 2.88$). Procedures were identical to Experiment 1. Experiment 1 and 2 were conducted on the same day in the same facilities. Average earnings were £11.88 ($SD = 1.20$), including a show-up fee of £5.

Results

Selectors' wheel choices and statements Table 3 shows the frequencies of actual and stated wheel choices and the mean profits associated with them. Unlike in Experiment 1, selectors predominantly chose the stingy wheel ($n = 104$), followed by the fair wheel ($n = 21$) and only three choices of the generous wheel. These actual wheel choices contrast with the statements selectors made. Only in 34 of 128 cases did selectors state their true choice. In 90 cases they overstated their intentions, that is, they stated a less benign choice than they had actually made. There were 4 cases of understatements. Only in 19 cases did selectors state a stingy choice. Most of the time, they claimed to have chosen the fair wheel ($n = 86$) or the generous wheel ($n = 23$). In other words, selectors made use of the possibility to deceive about their intentions. Selectors not only overstated their intentions, but did so in a way that takes the credibility of their statements into account. For example, a stated generous wheel choice is more credible if the outcome of

Table 3: Frequency and ex-post profitability of wheel choices and statements (Exp 2, Part A).

Actual wheel choice	Stated wheel choice	Mean Profit [tokens]	n
Stingy	Stingy	15.00	15
Stingy	Fair	18.07	69
Stingy	Generous	14.05	20
Fair	Stingy	17.67	3
Fair	Fair	14.88	17
Fair	Generous	15.00	1
Generous	Stingy	20.00	1
Generous	Fair	-	0
Generous	Generous	10.00	2

the stingy wheel is generous rather than stingy. Indeed, for stingy wheel choices the proportion of stated generous choices increased for a fair or generous outcome ($\chi^2 = 11.13$; $df = 2$; $p = .004$).

Stated and believed intentions Knowing about the possibility of deception, we expected responders to treat selectors' statements with caution. In fact, according to their indicated beliefs, responders did not believe the stated intention in 62.5% of all cases. How good were responders at estimating selectors' actual wheel choices? With 57.8% correct beliefs, responders were more accurate than expected by naive random guessing (expected hit rate of 1/3) and about as accurate as expected by always "going with the outcome" (expected hit rate of 0.6). In fact, responders' believed intention did concur with the outcome in 57.0% of the cases. As it turns out, responders would have had the highest rate of correct beliefs (81.3%) by always assuming the stingy wheel was chosen. In summary, although responders did not take stated intentions at face value, they underestimated the proportion of stingy wheel choices.

Overall pattern of responses The mean adjustment of -0.75 (SD = 3.30) was considerably smaller in absolute terms than in Experiment 1 (Mann-Whitney test, $Z = -3.86$; $p = .000$). As in Experiment 1, responders left the selector's payoff unchanged in most cases (81/128), but a majority of responders (6 of 8) did make an adjustment at least once throughout the game. Also as in Experiment 1, adjustments were negatively skewed (30 negative vs. 17 positive adjustments) and there was no apparent drop in adjustment costs incurred in later periods, indicating non-strategic use of adjustments. There were also no clear temporal patterns of choices, statements or beliefs.

Analysis of responses: Outcomes versus stated intentions Figure 4 shows mean adjustments by outcome and stated intention in Part A. Comparing with Experiment 1 (Figure 2), we note that overall less tokens were subtracted and the effect of intentions seems to be different in the two experiments. A 3-way ANOVA confirms that there is an overall difference between experiments $F(1, 246) = 7.60$, $p = .006$ and an interaction between intentions and experiment
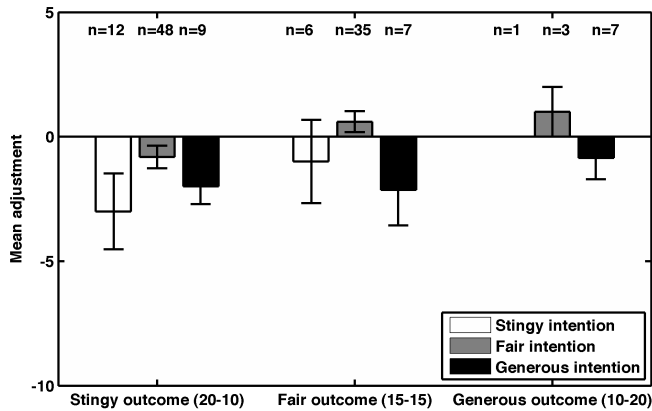
Figure 4: Mean adjustments by stated intention and outcome (Exp 2, Part A).

Figure 5: Mean adjustments by stated intention and outcome (Exp 2, Part B).

$F(2, 246) = 4.14$, $p = .017$. No difference in the effect of outcomes is found between experiments $F(2, 246) = 0.41$, $p = .664$. As for Experiment 1, we regressed adjustments on dummy-coded predictors for stated intentions and outcomes, with "stated fair intention-fair outcome" as the reference category and random intercepts for each subject (Table 4).[4]

Compared to statements of fair intention, both stingy *and* generous statements are estimated to lower adjustments by about 2 tokens, a negative effect larger than the effect of a stingy outcome (-1.28) but smaller than the effect of a stingy intention in Experiment 1 (-3.96). Generous outcomes have no significant effect on responses ($p = .601$). Looking only at stingy outcomes, the response to a stingy intention is less negative when the intention was *stated* as opposed to *observed* (Mann-Whitney test, $Z = -2.64$; $p = .009$). In contrast for generous outcomes, stated – unlike observed – generous intentions are punished because such statements are met with suspicion (the difference, however, is not significant $p = .126$, $Z = -1.81$, Mann-Whitney test). In summary, the two experiments differ in the overall level of adjustments and the effect of intentions in Part A.

The diverging effect of intentions in the two experiments becomes more pronounced in Part B (Figure 5). Unlike in Experiment 1, the response patterns in Part B look different from Part A. Curiously, the responses of (former) selectors are significantly more negative ($M = -3.25$) than the responses of former responders ($M = -.67$; Mann-Whitney $Z = -2.97$, $p = .003$). As suggested by graphical comparison and consistent with Part A, a mixed 3-way ANOVA (Intention x Outcome x Experiment) reveals that the effect of intention in Part B differs between the experiments $F(2, 60) = 14.11$, $p = .000$ but not the effect of outcome $F(2, 60) = 1.54$, $p = .226$. For stingy and fair outcomes, kinder stated intentions lead to more subtractions, whereas kinder observed intentions lead to less subtractions. With stated intentions, even generous outcomes elicit subtractions. In contrast, *observed* generous intentions were rewarded

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[4] A fixed intercept model was rejected in favor of random effects ($\chi^2 = 8.91$; $df = 1$; $p = .003$, likelihood-ratio test).
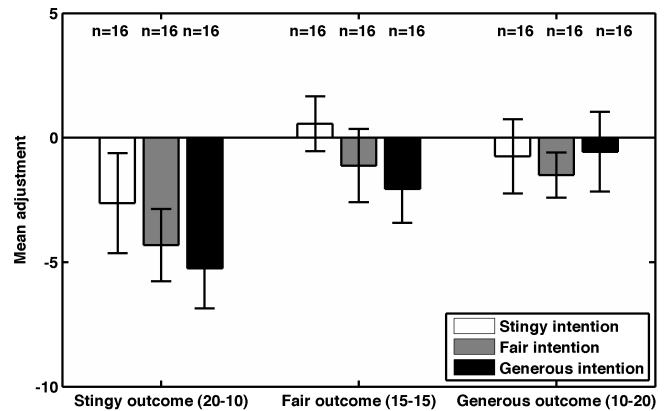
when the outcome was generous. Once again we find that intentions influence adjustments, but the direction of the effect is overturned due to a lack of credibility of stated fair or generous intentions.

Discussion

In the introduction, we stated our hypothesis that the behavioural relevance of intentions might be affected by uncertainty about intentions, and in particular, the possibility of deceptive statements. Did intentions matter less in Experiment 2, which involved stated as opposed to observed intentions? Not quite. In fact, intentions again had a larger effect than outcomes in the game. More specifically, there appears to be a positive premium for (alleged) honesty and a negative premium for (alleged) dishonesty. Stated stingy intentions were punished less than observed stingy intentions. In other words, responders seem to credit selectors for "at least being honest" when going for the stingy wheel. On the other hand, adjustments were less positive for stated generous intentions than for observed generous intentions. Given that these statements were seen as largely implausible, we can interpret this difference as a punishment for an attempt to deceive. This interpretation is corroborated by the fact that in Part B, former selectors subtracted more than former responders, arguably because having overstated their intentions themselves in Part A, they interpreted statements in Part B as deceptive. Note that responders could never be certain that stated generous intentions were actually a lie. Still, mean adjustments in these cases were negative, suggesting that the desire to

Table 4: Regression results (Exp 2, Part A).

	β	t	p
I tercept	0.52	1.07	.285
Stingy stated intention	-1.95	-2.43	.015
Generous stated intention	-1.89	-2.37	.018
Stingy outcome	-1.28	-2.15	.032
Generous outcome	0.59	.52	.601

$N = 128$, $R^2 = .109$

punish dishonesty overrode concerns to avoid potentially unfair punishment (cf. Huck, 1999). The result is in line with a previous study by Brandts and Charness (2003), who found that participants punish deceptive messages about intended play in a simultaneous two-player game with pre-play messages. In contrast to our experiment, statements of intended play were made before an action was taken, not after, and deceptive statements were revealed by observable choice. In our experiment, deception was never revealed but could only be conjectured with uncertainty. How the possibility of a deceptive statement being revealed affects the credibility of statements as well as responses is an interesting question for future research.

Conclusion

In addition to a concern for their own payoffs, participants in our experiments expressed a concern for intentions and honesty that was at least as large as their concern over distributional outcomes. In Experiment 1, the punishment of stingy intentions had a larger effect on adjustments than either outcomes or generous intentions. In other words, negative reciprocity loomed larger than positive reciprocity and distributional preferences per se. An asymmetry in negative and positive reciprocity has been observed before and may be connected to an asymmetry in emotional reactions. The general importance of intentions is in line with a study by Charness and Levine (2007), somewhat different from the low relevance of intentions found by Cushman et al. (2009) and at odds with the irrelevance of intentions found by Stanca (2010). To disentangle the precise design factors that influence the role of intentions is a task for future research. We suggest that the use of the strategy method and the absence of repetition may decrease the relevance of intentions.

In Experiment 2, when choices were no longer observed but merely stated, the perceived honesty of statements moderated the effect of intentions. Stated stingy intentions were punished less than observed stingy intentions, indicating an appreciation for "at least being honest". Conversely, stated generous intentions were punished, indicating a dislike for conjectured attempts to deceive. Indeed, selectors routinely overstated the kindness of their intentions. Although responders did not take statements at face value, they underestimated the frequency of stingy choices. Having lied themselves, Part A selectors were particularly negative in their responses to fair or generous statements in Part B. Overall, stingy choices were more common in Experiment 2 than in Experiment 1, indicating that selectors understood the relevance of intentions and took advantage of their non-observability. The differences in response patterns between Experiment 1 and Experiment 2 underline the importance of non-outcome related factors to participants' behavior.

Acknowledgements

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