

SOCIAL COMMUNICATION AND DISCRIMINATION: A VIDEO EXPERIMENT

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ABSTRACT

In this paper we experimentally study social effects of communication on donations towards and discrimination between potential receivers. Our experimental design eliminates strategic factors by allowing two receivers to unilaterally communicate to an anonymous dictator before the latter decides on her gifts. We use three communication setups: none, audio, and audio-visual. We clearly find social effects of communication. Generally, adding communication channels leads to higher donations, but also to more discrimination between potential receivers. The social processes invoked are heterogeneous and communicator-specific but not irregular.

Keywords: bargaining, communication, discrimination, n-person dictator game, video experiment

JEL Classification: C72, C91, D64

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I INTRODUCTION

Face-to-face communication is usually effective in inducing cooperation between players (Dawes 1990, Frohlich and Oppenheimer 1998). In bargaining experiments, the implications are more equal splits and therefore fewer disagreements (Roth 1995, Schmidt and Zultan 2005).

One explanation claims that communication causes preference changes, triggered by acquaintance with attributes of others. Examples are group identity or empathy.¹ Another explanation sees pre-play communication effects caused by strategic aspects: since verbal and non-verbal channels of communication eliminate anonymity, players confront something like a repeated game where their reputation is at risk. Thus promises, threats, or coordination proposals become strategically meaningful.

Roth (1995) refers to these explanations as the *Uncontrolled Social Utility Hypothesis* and the *Communication Hypothesis*. In an ultimatum bargaining experiment with two conditions of pre-play face-to-face communication – unrestricted and restricted to non-game topics – both were equally successful in inducing nearly equal splits. Thus, the *Communication Hypothesis* was rejected.² On the other hand, Brosig, Ockenfels, and Weimann (2003) found in 4-person public goods experiments, that pure lifting of anonymity (via video screen) does not enhance contributions, thus denying explanations by *Social Utility*.

In our view, both interpretations are plausible, but are not beyond questioning. On the one hand, even under restricted bilateral communication, strategic effects of non-verbal communication and reputation concerns may still be present in ultimatum and public good games. On the other hand, social utility theories require more than pure visual identification to stimulate social processes.

In this paper, we concentrate on the *social* effects of pre-play communication on donations towards and discrimination between potential receivers. We allow for discrimination using a three-person dictator game, and eliminate strategic factors by allowing for unilateral video messages from receivers to dictators only.³ Thus the "dummies", who have no strategic power, can make no strategic communication (such as threats), neither explicitly nor implicitly, and

¹See Dawes (1990) for experiments on group identity and cooperation.

²In a similar setup, but using the strategy method, Schmidt and Zultan (2005) show that responders' strategies are less cooperative in a unrestricted treatment than in a non-communication treatment.

³We assume that communication effects are not restricted to actual face-to-face encounters, but can also be attained by video-mediated communication (Brosig et al. 2003).

dictators are not susceptible to reputation effects. Hence, all communication effects obtained in this design can be construed as pure social effects.

We distinguish three communication treatments: a no-communication baseline, a video-only treatment where both dummies are seen, but not heard by the dictator, and an audio-visual treatment where additionally one dummy is heard, but not the other. To control for social perceptions, we elicit ratings of dummy communicators in the communication treatments utilizing the semantic differential of activity, evaluation, and potential (Osgood, Suci, and Tannenbaum 1957).

According to our experimental results donations generally increase when adding communication channels starting from the baseline over the visual to the audio-visual treatment. Compared to no communication these results are significant for dictators and talking receivers in the audio-visual treatment, and – when controlling for pair-specific effects – also for pure visual exposure.⁴ Discrimination between dummies is significantly higher in the audio-visual treatment than in the other treatments. However, we find no evidence for preferential treatment of the talking dummy. Increased allocations to one dummy affect the dictator’s self allocation, and not the other dummy’s share.

Social ratings of dummies show high correlations with generosity towards them and discriminate both within and between dummy pairs in the visual and audio-visual treatment. However, the ratings’ variances do not differ significantly between treatments. When looking at specific dummy pairs, results are quite heterogenous but not irregular. Most dummies avoid referring to the experimental game.

Thus, purely social factors play a role in communication in bargaining, at least when strategic issues are absent. Unilateral communication generates social ties towards communicators, even when the audio channel is omitted. These ties translate to significantly higher donations to dummies, but in a discriminative way.

The paper proceeds as follows: Section II introduces our experimental design and procedures in detail. Section III presents our results on average data, evaluations and specific dummy pairs, and Section IV concludes.

⁴Bohnet and Frey (1999) conducted dictator game experiments in the classroom, varying the degree of social distance. In their experiment, one-way visual exposure of receivers increased, although not significantly, dictator donations compared to anonymity. One-way identification including self-presentation of receivers, two-way identification, and free communication yielded significant increases, but the donations in these three treatments did not differ significantly from each other.

II EXPERIMENTAL DESIGN AND PROCEDURES

Studying how different communication possibilities affect sharing and induce discrimination requires at least three parties, one who allocates and two who may be treated differently. Relying on this minimal group size, our working horse is a three-person dictator game. Dictator X can distribute a "pie" of 17 Euros between himself and two "dummies" Y and Z (with Y being the "talking" dummy, see below), who have no strategic influence and can merely hope that the dictator may be generous. The possible allocations (x, y, z) with $x, y, z \geq 0$ and $x + y + z = 17$ are additionally restricted by $x \in \{0, 2, 4, 6, 8, 10, 12, 14\}$ and $y, z \in \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$. Of the altogether 40 possible allocations (x, y, z) the dictator must select one, which forces X to prefer one dummy and excludes the equal split between all three participants. Therefore, if dictators favor one dummy more than the other, this should show up in our data, while indifference between dummies should average out.

Before the dictator makes her allocation decision the dummies may unilaterally communicate to her by the means of a video message. We distinguish three treatments:

- **Treatment N (no communication):** the dictator X just chooses an allocation.
- **Treatment V (visual communication):** before selecting the allocation the dictator sees a video of both dummies without hearing them.
- **Treatment AV (audio-visual communication):** the dictator sees both dummies and hears one of them, namely Y , before deciding.

We used the same dummies (video messages) in all treatments, allowing for statistically more powerful within-subjects comparisons. Corresponding to the treatment, the audio was turned off for both dummies (dummy Z only) in treatment V (AV).

Discrimination in the no-communication treatment would be completely arbitrary and is therefore unexpected. When both dummies are seen but not heard differential treatment would reveal that dictator participants establish one-sided empathy relations purely based on appearance.⁵ Thus only in the audio-visual treatment substantive arguments can matter.

⁵We assume that lipreading is not feasible, as dummy pictures on the video screens were rather small, taking only one quarter of the screen size, and both dummies move their mouths simultaneously in treatments V and AV. However, we cannot exclude this possibility completely.

By keeping dictator anonymity our experimental scenario excludes strategic aspects of communication, allowing us to interpret resulting effects as being purely social. However, this does not preclude *strategic use* of social communication, as communicators might hint at emotional reactions and dissatisfaction that might affect dictator participants.

The experimental sessions took place in the video laboratory of the Max Planck Institute in Jena, Germany.⁶ Participants were only female students from universities in Jena. Out of about 20.000 students living in the city, about 650 female students were registered in the laboratory’s subject pool. From these a random draw of 332 subjects was invited (dictators and dummies separately) using an Online Recruitment System (Greiner 2004).

We used the same 16 dummies for all treatments. Dummies were matched to pairs, and in each treatment 8 dictators decided subsequently for all 8 dummy pairs in the same order. In all treatments, each dummy pair was randomly matched with one dictator for payment after the experiment. Dictators were paid according to the allocation choice for their dummy pair. Dummies received the average of their selected allocations in the three treatments.⁷ This design (including the existence of different treatments) was commonly known.

Upon arrival each participant was led to one of eight sound-proof booths, each equipped with computer, computer screen, video camera, video screen and microphone. Dummies arrived and played in two cohorts of 8 subjects each. They received the instructions which were (announced to be) the same for all treatments and roles, and were told that they will be either in role *Y* or *Z*. After reading their instructions they had 10 minutes to prepare their talk. Dummies had to record their message twice. Each time, they had 2 minutes to speak freely into the video camera. We imposed no restriction on what to say. Without having seen the messages, dummies decided which of them should be used for the remaining procedure.

The experimenters edited the recorded video messages according to the conducted treatment. For this, we formed 8 dummy groups, which remained constant for the rest of the experiment.⁸ To avoid effects of the video position, we altered the position of the talking dummy in each round, such that in half of

⁶Instructions and transcripts can be found in the appendix.

⁷Thus, dictators increased a dummy’s outcome by 1/3 Euro with each Euro given away.

⁸The matching could not be made purely randomly, as some subjects had stopped talking a short time into the 2 minutes video recording. These subjects were assigned to the non-talking role, creating some a-priori asymmetry between the two roles. Furthermore we tried to match equally attractive dummies. Note, however, that this asymmetries are constant across treatments, and do not affect the following within-subjects comparisons.

FIGURE 1
EXAMPLE OF THE VIDEO SCREEN WITH A DUMMY PAIR



the dummy groups the talking dummy's screen was on the left resp. right side.

On the next day, dictator participants arrived and played in cohorts of 4 subjects. Dictators received the same instructions as the dummies. They were informed about their role and treatment, i.e. whether or not they see the videos and hear one dummy. After the instruction phase, dictators played 8 rounds, one for each dummy pair. In each round, first the prepared video was played, where the communication was channelled according to treatment. Second, the dictator chose the allocation (x, y, z) on a computer screen. Third, dictators rated the dummies they saw. In the control treatment N, the first and third step were left out.

The ratings were elicited by bipolar scales: active - passive and lively - dull, attractive - unattractive and pleasant - unpleasant, strong - weak and influential - uninfluential corresponding to the three factors of the semantic differential – activity, evaluation, and potential (Osgood et al. 1957). Following the bipolar ratings, the dictators were asked to note for each dummy whether they have seen her before or know her personally.⁹

After playing all eight rounds, payoffs were calculated as described above. Dictator participants were immediately paid in cash and left the laboratory whereas dummy participants were paid later.¹⁰ The sessions lasted on average

⁹Of the 256 different dictator-dummy combinations in the two communication treatments, only one dictator indicated personal acquaintance once, and 15 noted to have seen the dummy before (1 talking and 5 non-talking dummies in treatment V, 1 talking and 8 non-talking dummies in treatment AV). However, these dummies did not receive significantly more or less than the average in their treatment.

¹⁰Dummy participants could collect their payments either at the institute's office, the next time they participated in an (other) experiment, or by meeting with the experimenters at a specific time at the university.

about 60 minutes for dictators and 45 minutes for dummies. The average earnings per play were 15 Euros for dictators, 7.20 Euros for talking dummies Y and 6.80 Euros for the non-talking dummies Z . All numbers include a show-up fee of 4 Euros.

III RESULTS

Due to our experimental design, in each treatment we collected 8 independent observations for each of the 8 dummy pairs. We start with the overall effects of communication channels, averaged over all dummy pairs. Next, we review the social ratings provided by dictators. Finally, we analyze allocations in specific dummy pairs and take a look at the dummies' ways of arguing.

III.A Communication channel effects

Table 1 lists the average relative shares of the pie for all treatments and roles. Additionally, results of non-parametric tests on overall treatment effects are reported. Self-allocations of dictators decrease and correspondingly donations to both dummies increase when adding communication channels starting from the baseline over the visual to the audio-visual treatment. The effects observed are significant only for dictators' average self-allocation and the donations to talking dummies when comparing treatments N and AV. When looking at dummy pairs, we find that 13 out of the 16 dummies received more in treatment V than in the baseline. When comparing treatments V and AV, 6 out of 8 talking and 6 out of 8 non-talking dummies get more in the latter than in the former.¹¹

Result 1 *Exposure in form of one-sided communication limits the self-serving behavior of dictators. The evidence for this effect is stronger for the audio-visual communication than for the silent video.*

We consider two levels of discrimination in donations. Dictators might discriminate a) within dummy pairs, and b) between dummy pairs. Allocations to talking and non-talking dummies do not differ significantly in treatments V and AV (see Table 1, last two rows). In 84.4% (82.8%) of all decisions in treatment N (V) dictators chose a pie distribution with minimum payoff difference between the two dummies (i.e. a difference of 1 Euro or 5.9 percent of the pie). This tendency was significantly lower in treatment AV (57.8%, Chi-Square test, two-tailed, $p < 0.01$). Correspondingly, the absolute differences between allocations

¹¹Unfortunately, we cannot use these numbers for statistical tests for reasons of dependency of observations.

TABLE 1
 AVERAGE RELATIVE SHARES AND VARIANCES OVER ALL DUMMY GROUPS,
 AND TESTS ON TREATMENT DIFFERENCES AND DISCRIMINATION

Treatment	x/p	y/p	z/p	$ \frac{y-z}{p} $	$\sigma_x^2 \cdot 10^2$	$\sigma_y^2 \cdot 10^2$	$\sigma_z^2 \cdot 10^2$
<i>Averages</i>							
N	.71	.14	.16	.085	.735	.387	.466
V	.63	.18	.18	.086	.338	.341	.324
AV	.57	.23	.19	.125	.895	.768	.587
<i>Mann-Whitney-U tests</i>							
V vs. N	-	-	-	-	-	-	-
AV vs. V	-	-	-	.023**	.008***	.025**	.027**
AV vs. N	.034**	.011**	-	.011**	-	.013**	.085*
<i>Wilcoxon Matched Pairs Signed Ranks tests</i>							
V y vs. z	-	-	-	-	-	-	-
AV y vs. z	-	-	-	-	-	.078*	-

x/p , y/p , and z/p denote the average relative allocation to players X, Y, and Z, respectively. $|\frac{y-z}{p}|$ denotes the average total difference between y/p and z/p . Tests are one-sided. '-' means non-significant, *, **, *** indicates significance on the 10%, 5%, 1% level, respectively.

to the talking and the non-talking dummy in treatment AV are significantly higher than in the other two treatments (Table 1, 4th data column).

A measure of the dictators' discrimination between dummy pairs are the average variances of allocations between individual dummy groups, which are reported in the right part of Table 1. Variances in allocations are significantly higher in treatment AV than in treatment V and (except for x) in treatment N, while the latter two do not differ significantly.

Result 2 *Adding the audio channel with its verbal content significantly increases discrimination both within and between dummy pairs, but not necessarily to the advantage of the talking dummy. Such an effect is not observed for pure visual exposure.*

III.B Dictators' Evaluations of Dummies

A series of principal-components analyses on the dictators' ratings of dummies yielded an identical factor solution with two factors: The first factor (Eigenvalues around 3.5) includes the scales corresponding to the 'potency' and 'activity' factors. The second factor (Eigenvalues exceeding 1.0) corresponds to 'evaluation'. Table 2 lists the average ratings given to the dummies. We report the same statistical tests as for allocations.

In treatment V, talking dummies were rated (weakly significantly) higher

TABLE 2
AVERAGE RATINGS ON THE POTENCY/ACTIVITY AND THE EVALUATION
FACTOR, AND TESTS ON TREATMENT DIFFERENCES AND DISCRIMINATION

Treatment	PA_y	PA_z	E_y	E_z	$\sigma_{PA_y}^2$	$\sigma_{PA_z}^2$	$\sigma_{E_y}^2$	$\sigma_{E_z}^2$
<i>Averages</i>								
V	.70	-1.39	.56	1.41	26.72	26.84	4.39	5.88
AV	3.02	-2.00	1.05	1.22	25.49	33.56	4.56	4.96
<i>Mann-Whitney-U tests</i>								
AV vs. V	.040**	-	-	-	-	-	-	-
<i>Wilcoxon Matched Pairs Signed Ranks tests</i>								
V y vs. z	.082*		.008***					
AV y vs. z	.004***				.055*			
<i>Pearson correlations with corresponding allocations</i>								
V		.311***		.337***				
AV			.359***	.473***		.597***		

$PA_y, PA_z (E_y, E_z)$ denote the average rating on the potency/activity (evaluation) factor for dummies Y and Z , respectively. Tests are one-sided, Pearson correlations are two-sided. '-' means non-significant, *, **, *** indicates significance on the 10%, 5%, 1% level, respectively.

on the potency/activity factor,¹² while non-talking dummies scored higher on the evaluation factor. In treatment AV, talking dummies Y were perceived as more active/potent than the non-talking dummies Z and than in treatment V, while there was no difference in the evaluation ratings. Looking at variances and results on the dummy pair level reveals quite some heterogeneity between dummy pairs. However, variances in ratings did not differ significantly between treatments and roles.

Strong (Pearson) correlations were found between the dictators' perception of the dummies, as reflected in the ratings, and the share of the pie allocated to them, throughout scales, roles and treatments. The only exception is the potency/activity rating for the talking dummy in treatment AV. This is consistent with the observation that the higher activity due to the speaking role did not translate to higher allocations on average.

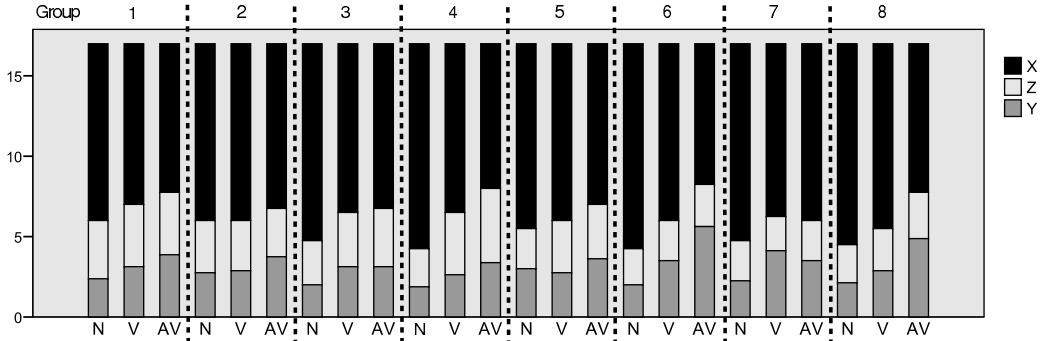
In treatment V, but not in treatment AV, the potency/activity factor was strongly correlated with dummy's evaluation factor (Pearson $R=.360$, $p<.001$). The ratings between the two dummies were correlated in treatment AV only (Pearson $R=.304$, $p<.050$). However, one dummy's allocation was not found to be correlated with the other's ratings. Since the ratings were obtained after the dictator's allocation decision, one cannot exclude that evaluations were driven

¹²This difference could be attributed to the matching procedure described above. However, this did not translate to discrimination in allocation decisions in treatment V.

by the allocation decision, and not vice versa.

Result 3 *The social perception of a dummy by the dictator is correlated with her share. Preferences between dummies already exist in treatment V. With the additional communication channel in treatment AV, talking dummies are rated higher at the potency/activity scale, while evaluation ratings were more stable.*

FIGURE 2
AVERAGE ALLOCATIONS TO DICTATOR X , TALKING DUMMY Y AND NON-TALKING DUMMY Z , FOR EACH DUMMY PAIR AND TREATMENT



III.C Pair specificity and dummies' argumentation

As the effects of communication are likely to depend on the specific encounter, we take a closer look at the individual dummy pairs. Our experimental design enabled us to obtain 8 independent observations for each pair in each of the three treatments. Figure 2 shows pair-specific average allocations in our three treatments, and Table 3 shows the results of tests on treatment effects and discrimination.¹³ Significant changes in distributions between treatments are found for three dummy pairs, and are of two distinct types. In dummy pair 4, the non-talking dummy received on average a significantly larger share in treatments V and AV than when she was not seen. This increase does not come at the expense of the other dummy, but rather at the dictators' own cost. The pattern observed with dummy pairs 6 and 8 is somewhat different. In both cases the talking dummy received a significantly larger share when she was heard in treatment AV, and once more this increase came from the dictators' own share.

To complete this analysis we run a regression of individual donations to dummies and their ratings where we allow for the pair specificities found in the

¹³Although dummies were anonymous in the baseline treatment, we still use the individual pair's allocations in our comparisons to control for order effects.

TABLE 3
TREATMENT EFFECTS ON ALLOCATIONS, SEPARATELY FOR DUMMY PAIRS

	Dummy Group											
	1			2			3			4		
	x_1	y_1	z_1	x_2	y_2	z_2	x_3	y_3	z_3	x_4	y_4	z_4
V vs. N	-	-	-	-	-	-	-	-	-	<*	-	>**
AV vs. V	-	-	-	-	-	-	-	-	-	-	-	-
AV vs. N	-	>**	-	-	-	-	<**	-	-	<***	-	>***
V y vs. z		<*										<***
AV y vs. z		-										-
	5			6			7			8		
	x_5	y_5	z_5	x_6	y_6	z_6	x_7	y_7	z_7	x_8	y_8	z_8
V vs. N	-	-	-	-	-	-	-	-	-	-	-	-
AV vs. V	-	-	-	<*	>**	-	-	-	-	<*	>**	-
AV vs. N	-	-	-	<***	>***	-	-	-	-	<***	>***	-
V y vs. z		-			>*							-
AV y vs. z		-			>***							>***

One-sided Mann-Whitney-U tests to compare allocations x , y , and z between treatments N, V and AV, and one-sided Wilcoxon Matched Pairs tests to compare between dummy allocations y and z in treatments V and AV. '<' and '>' show the direction of the relation, '-' means non-significant, *, **, *** indicates significance on the 10%, 5%, 1% level, respectively.

non-parametric analysis. As independents we used the following dummy variables: *video* (equals 1 in treatments V and AV),¹⁴ *audio* (being 1 in treatment AV only), *seen before* and *known before* (being 1 when the dictator has indicated to have seen the dummy before or to know the dummy personally, respectively), and *audio*talking* (being 1 for the talking dummy when in audio treatment). Furthermore we added dummy variables for talking and non-talking recipient for each of the three group specific effects discussed above.

Table 4 shows the regression results. The regression reveals that the main difference in dummy donations from none over video to audio-visual communication is achieved between treatments N and V. Note, that this is still consistent with our non-parametric analysis above where we found that overall donations are increasing but only significantly when comparing treatments N and AV. For the ratings we find no general treatment effects, but that the talking dummies are rated significantly higher on the potency/activity scale and lower on the evaluation scale when they are heard. There seems to be no effect of whether the dictator has seen the person before or not.

The regression also replicates the group specific effects discussed above: an increase in the allocation to the non-talking dummy when the video is seen

¹⁴As ratings are not elicited in treatment N, only observations from treatments V and AV enter the regression of ratings, and the independent *video* is not included.

TABLE 4
LINEAR REGRESSIONS OF DONATIONS AND RATINGS

Independent	y, z	E_y, E_z	PA_y, PA_z
Const	2.500 (0.150)***	0.797 (0.219)***	-0.703 (0.502)
Video	0.527 (0.217)**		
Seen before	0.742 (0.461)	-0.639 (0.642)	0.289 (1.476)
Know good	0.535 (1.811)	1.337 (2.526)	2.613 (5.805)
Audio	0.218 (0.293)	0.500 (0.408)	-0.675 (0.938)
Audio * Talking	0.332 (0.363)	-1.074 (0.506)**	3.444 (1.163)***
Video * Group 4	1.068 (0.450)**	2.118 (0.628)***	5.210 (1.443)***
Video * Group 4 * Talking	-1.370 (0.625)**	-0.753 (0.872)	-4.891 (2.004)**
Audio * Group 6	-0.779 (0.689)	-1.634 (0.961)*	-6.235 (2.209)***
Audio * Group 6 * Talking	2.828 (0.948)***	5.536 (1.322)***	11.544 (3.039)***
Audio * Group 8	-0.555 (0.654)	-0.637 (0.912)	-4.570 (2.097)**
Audio * Group 8 * Talking	1.854 (0.924)**	2.039 (1.288)	6.504 (2.960)**
N	384	256	256
Residual StdErr	1.693	2.361	5.426
Multiple R^2	0.135	0.140	0.208
Adjusted R^2	0.110	0.105	0.175
F-statistic	5.287	3.988	6.424
P-value	0.000	0.000	0.000

Standard deviations in brackets. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

in dummy group 4, and for groups 6 and 8 higher donations to the talking dummy when she is heard, with no effect on the outcome of the respective dummy partner. The regressions of the ratings show that these changes are accompanied with higher activity ratings for the non-talking dummy in group 4, and with higher potency/activity (evaluation) ratings for the talking dummy in groups 6 and 8 (6).

Result 4 *An increase in the allocation of a dummy depends on the specific characteristics of the dummy. The influence of the communication can be conveyed either by verbal or by non-verbal channels. When dictators give more to one dummy and therefore discriminate, they reduce their own allocation rather than the gift to the other dummy.*

Lastly we turn to examine the argumentation used by dummies. Most of the dummy subjects avoided appealing to the dictator. In fact, 10 of the 16

dummies completely refrained from mentioning the game, talking only about themselves, their hobbies, their last vacation, etc. Of the remaining six dummies, one merely described the rules, and two mentioned that they would prefer the dictator role. So only three dummies actually made any reference to possible pie distributions. One (talking dummy in pair 4) just asked for money, saying she needed it. Another (talking dummy in pair 6) remarked that sometimes outcomes of such experiments are not just, and that she hoped this will not be the case here. She also mentioned not to prefer the dictator role. The last (talking dummy in pair 2) stated that she is curious about the dictator's decision, but that she herself always favors an even distribution. For the latter three subjects, the time spent on this content accounted for less than 20 seconds of the 2 minutes.

Apparently, our dummies believed that direct ways of persuasions would not be effective, and instead preferred to make the best general impression on the dictator. Only one of the dummies who made an attempt to influence the dictator choice (although in a somewhat indirect way), namely the talking dummy in pair 6, did significantly better than other talking dummies. However, 16 independent observations of dummy talk are too few to draw reliable conclusions about arguments and their effects on donations. We defer this to a further experimental study.

IV CONCLUSIONS

Unilateral communication in the three-person dictator game inspires generosity of dictators. The effect is significant for audio-visual communication, and – when controlling for pair specific effects – also for pure visual exposure (including body gestures, facial expressions, etc.). This replicates the findings of Brosig et al. (2003) in video experiments and Bohnet and Frey (1999) in classroom games. However, the social effects of audio-visual communication are rather small when compared to the effects observed in experiments where communicators have strategic power, as public good or ultimatum games.

The variance in allocations seems to depend on social evaluation of the receivers. In the ratings of the dummies, discrimination is already existent in our video-only treatment V. Adding the audio channel in treatment AV strengthens most ratings and increases allocations to dummies, but in a discriminative way both within and between dummy groups.¹⁵ Mostly just one dummy gains significantly, always at the expense of the dictator.

¹⁵Bolton, Katok, and Zwick (1998) also observed that dictators who played sequentially with 10 different, anonymous receivers allocated different amounts to recipients.

Given the effects of social communication and the correlations of donations with social evaluations, it seems to be a reasonable tactic not to refer to the game when given the unrestricted opportunity to speak to the only powerful player. Discussing pie distribution and raising fairness issues in a self-serving way may provoke the dictator to assume a self-serving attitude as well, and it may be better to appear as a friendly and congenial partner. Indeed most of our participants avoid to mention the game, possible distributions and fairness issues in their talk.¹⁶

Overall, the contribution of our paper to the literature is the following. We introduce an experimental paradigm which rules out strategically but not socially relevant communication, and allows for discrimination between receivers. We provide unobscured evidence for positive social effects of communication on dictator donations even in our minimal paradigm, thereby replicating and clarifying earlier results. Furthermore we find that additional communication channels increase variance in allocations, both between and within dummy pairs. That means that the richer the information, the more it affects the decisions, leading to preferential attitudes and actions. We provide first evidence on the strategic use of social communication.

¹⁶Schmidt and Zultan (2005) report that most responders in an ultimatum experiment refer to possible pie distributions and engage in threats and promises in their unilateral pre-play communication. However, as noted above, our 16 communicators are not enough of a sample to draw reliable conclusions. A separate project of the authors studies the issue in greater detail.

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APPENDIX

A EXPERIMENT INSTRUCTIONS

(translated from German)

Welcome and many thanks for your participation in this experiment. **Please do not touch any of the equipment before we ask you to do so.** If you have problems with the equipment or other questions, please use the microphone, or ask one of the experimenters. Please read the following instructions carefully. Instructions are identical for every participant. You are able to earn money during the experiment. The amount you earn depends on your own decisions and the decisions of other participants of the experiment.

1. The experiment

The rules of the experiment are very simple. There are three Persons X, Y and Z. There is a certain amount of money to distribute, which size is 17 Euros. In the experiment, Person X decides how she wants to divide the money. When doing so she is restricted to some rules, which are described in section 2. Before Person X decides about the distribution, she watches a video tape, which was recorded before with Persons Y and Z. Details about this are described in section 3. Exactly as Person X proposed, the amount of money will be distributed and paid out according to the rules in section 4. The procedure of this experiment requires, that the participants in the roles of X, Y and Z participate in the experiment at different dates. Specifically, the participants Y and Z are invited first, while the participants in the role of Person X participate in the experiment at a later date.

2. Rules for distribution

Person X is bound to the following rules for the distribution of the amount of money:

- a) The sum of allocations to the three persons must be 17 Euros.
- b) Person Y and Z may only get either 1, 2, 3, 4, 5, 6, 7, 8, or 9 Euros.
- c) Person X may only get either 0, 2, 4, 6, 8, 10, 12, or 14 Euros.

Therefore, there are 40 distribution possibilities. These are listed in a table at the end of these instructions.

3. Video recording

In the experiment, persons in the role of Y and Z will be given the opportunity to one-sidedly communicate to the person in the role of X. They have 10 minutes to prepare for this. After the preparation time, participants in the roles of Y and Z have two minutes to record a video message. During this time Persons Y and Z are allowed to speak freely about everything, including the experiment. Before her decision the videos of Person Y and Z are presented to Person X. There are three possibilities: 1.

Person X sees and hears none of the two Persons Y and Z. 2. Person X sees Person Y as well as Person Z, but cannot hear any of the two. 3. Person X sees Person Y as well as Person Z, but can hear either only Person Y or only Person Z.

4. Calculations of payoffs

Every participant in the role of Y makes up a pair with exactly one participant in the role of Z. The recorded video of this pair will be shown to exactly 24 different participants in the role of X. Every Person X sees 8 different pairs. She decides for every pair which she sees about the distribution of the amount of money. After the experiment one of the 8 pairs will be randomly selected for each Person X. Then, Person X gets the amount which she allocated to herself. Person Y and Z get the average of the amounts, which 3 persons in the role X have allocated to them. Due to the experimental procedure, participants in the role of Y and Z cannot be paid out immediately after the experiment, because their specific payoff can only be calculated after the participants in the role X have participated in the experiment. To handle the payoffs, one experimenter will be at the university at different times in the following week. The specific dates and locations will be sent early enough by e-mail. However, to pick up your payoff in cash you might come directly to the institute on every working day in the same or the following week, from 9am to 4pm. Participants in the role of X are paid out in cash immediately after the experiment.

If you have any questions regarding these instructions, please ask one of the experimenters.

The 40 different distribution possibilities

x	0	0	2	2	2	2	4	4	4	4
y	9	8	9	8	7	6	9	8	7	6
z	8	9	6	7	8	9	4	5	6	7
x	4	4	6	6	6	6	6	6	6	6
y	5	4	9	8	7	6	5	4	3	2
z	8	9	2	3	4	5	6	7	8	9
x	8	8	8	8	8	8	8	8	10	10
y	8	7	6	5	4	3	2	1	6	5
z	1	2	3	4	5	6	7	8	1	2
x	10	10	10	10	12	12	12	12	14	14
y	4	3	2	1	4	3	2	1	2	1
z	3	4	5	6	1	2	3	4	1	2

B INSTRUCTIONS FOR THE QUESTIONNAIRE

(translated from German)

In the following, we will ask you for your evaluation of the persons viewed.

Here it is described how to use the scales. In case you are not sure how to fill out the questionnaire have a look at this instruction again.

In case you find a person to rate very similar to an attribute at the end of the scale, then check one of the following boxes

active	X	o	o	o	o	o	o	passive
active	o	o	o	o	o	o	X	passive

In case you find a person to rate quite similar to an attribute at the end of the scale, then check one of the following boxes

active	o	X	o	o	o	o	o	passive
active	o	o	o	o	o	X	o	passive

In case you find a person to rate lightly similar to an attribute at the end of the scale (but not really neutral), then check one of the following boxes

active	o	o	X	o	o	o	o	passive
active	o	o	o	o	X	o	o	passive

Naturally, the horizontal direction of your cross depends on which of the two attributes on the scale describes the person you are rating best.

When the person you are rating can be described neutral with regards to the two attributes, that means that both attributes apply to the person alike, you should mark the box in the middle.

active	o	o	o	X	o	o	o	passive
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Please mark down whether you knew the person you are rating before. Please mark whether you have just seen the person (e.g. at university) but not known her personally, or whether you know your partner personally.

C TRANSCRIPTS OF VIDEO SPEECHES OF TALKING DUMMIES

(translated from German)

These transcripts contain all verbal content which was heard by the dictators.

Talking dummy 1

"First of all I want to introduce myself, I am Carolin, I study in Jena like most of us here who come to this experiment. We are still on holidays and I find it great. I am actually in second semester and I remember my school days where we only had six weeks of holidays that passed by so quickly but three months is simply huge.

Within three months, actually in the last two so many things have happened: I worked for a while, and then I have moved and it takes so much time for such a thing but now I've been sitting here for already two weeks working on a seminar paper. In fact I should start today or tomorrow with the second one that has to be finished until the end of September and that's stressful. Nevertheless I like coming here again because it's interesting to participate in such experiments. The rooms are funny, I mean, you can look at such a wall, you get stupid, honestly, I mean we have already had 10 minutes to get ready, normally I always take a pen and lot's of other things with me, but I have forgotten that and now I have to do all that but it's ok. And actually I can tell you what I wanted, if I'm muted on your video, you can't hear me and I make of fool of myself, but it doesn't make any difference, I have to cope with it. Hmm, I don't know when the time is up? I don't know when the two minutes are over, I don't have a watch with me, well, I have to spend the time, that's actually stupid. I have read the instructions and I can even gab, what I want, you are in fact the "decision-maker", who decided how much everybody gets. Well, that seems funny to me, well, I'd like to be in your position because the X-Participant, he has huge advantages in this experiment, I guess, I am actually one of those who get less, anyway it's money, so ..."

Talking dummy 2

"Hi, dear X, you have apparently found your way through the tangled road works, I've got up early enough to be able to come here. I even didn't know where the building was and it's also my very first experiment at the Max Planck Institute, I wasn't either in the Goethe-Gallery, hence I am a little bit nervous. And that it will be done with a camera doesn't help one to calm down. I am

quite excited but it's enthralling to be here and what's enthralling as well is the question what you'll decide. Me, personally, if you allow me the comment, I always support a just and right distribution, but I think you will do the right thing. And up to this point I had prepared my notes for the first try, but then it has turned out, that 2 minutes are longer than what I thought, so now I have to figure out something. But it isn't so easy because one wants to say something good and right, anyway: what's good and right here? Therefore: since it will be relative uninteresting for you to look at me being quite, I simply start gabbing. Where should I start? Weather - mmh not that interesting, anyone's choice. Besides: it's smelling like plastic here, it's probably the sound cushion, and well, I think I prefer to stop now talking, because it doesn't come out anything good anymore. Have fun in the experiment." – 17 seconds silence

Talking dummy 3

"... just at the experiment, up to now I'm not sure how to manage this here. Unfortunately I don't have a monitor where I can see me, thus I will look straight into the camera. Well this is the first time I'm doing this, and it looks quite interesting, with a foam plastic wall and ... computers, ... and a mouse and a keyboard. Well, I've walked here with another girl who also wanted to take part in the experiment, we've gone twice around the same corner because they have construction works, and you know, we had to search a bit. Well, we've found someone who could give advice. Before I was at the tourist office and wanted to buy some tickets for SoulLounge. SoulLounge is in Weimar, on the 11th of September. They are the offspring of another band and are known to be quite good. There weren't any tickets anymore, alas! Previously I was in the university's library and surfed in the internet. I wanted to read a little bit in my newspaper that I bought today but with internet I didn't made it. I surfed around, looked for the train timetable to find the best way to get from Jena to Weimar, tomorrow in the morning I have to come again ..."

Talking dummy 4

"... participant, you should give me all the 17 because I urgently need the money. Well, I've stood up at 7.00, ok, at 7.15, and at 8 o'clock I've cycled by bike for twenty minutes to the next train station, outside in the iciness, and then I had to wait ages for my train. Well, then I came here and it took me ages to find the institute, I had to cross the road works, well, now I'm here and it's cold and ... creepy, and ... well. Last week I took part in an experiment,

and just for that I had to come here from my home town, and I just got 3.60 for two long hours. This was so cool, and really worth doing it! Then I spent 2 for lunch, that means almost the whole money was away. Well, that really pissed me off, and that's the reason why I try it again today. Mmmh. Well, when I don't seat in an experiment, I study Pedagogy, Sociology and Phonetics. And I have to say, it's very interesting. For two years I'm trying hopelessly to learn standard German and moreover, ... well. I share a flat with three class mates, since December, nearly a year now, and it's really funny. Well, what else should I say? Give me the money, give me the money! Give me lots of money!" – Laugh –

Talking dummy 5

"Hello X, I'd like to present myself, I am twenty ... and a half and I'm studying Social Welfare at the Social Welfare Academy in Jena. It's great, we have really good professors, and in the classes there aren't so many people because the amount of students isn't that huge. We learn a lot of things like politics, law, psychology, sociology. We've got a little bit of everything and the whole makes a very versatile study. It is much related to practice, and in the fourth and fifth semester we must do a practical semester, that means we work in related areas. I'm in fifth semester now and I did an internship in the social work with young people in the fourth semester, it was great. I hope that the next will be interesting as well. Well, beside, when I don't have to study I spend my time with my hobbies like reading, writing, ... I am a great fantasy fan. Yeah, I'm always fiddling around with my website, using HTML. I'm trying to learn more of this to always adding something new. Well, last week was gorgeous, I was in London, for a whole year I saved money for this, and from the beginning I organized everything myself - accommodation, flight, and everything, what in fact took a lot of work. But it was great, although it was difficult to get used to everything. I'm somehow biased to small cities, so that the traffic and so many people frightened me a bit. Well, it was very funny and interesting to be able to see everything in real, all the monuments, which you've only seen on pictures before. They're actually smaller to what you've imagined, and also more expensive in the admissions. But I've noticed that with the English I learned in school, what I know for so many years ..."

Talking dummy 6

"Well, hello, I am Annekathrin, I am 22 years old and I am from Jena. I'm studying in the 7th semester, German language and literature as the main field,

intercultural Economic Communication and Ethnologies/Cultural History as minor fields. I'm quite happy with my studies, and my hobbies are travelling, foreign languages and reading, and, of course, going out with my friends and dance. I accidentally came to the experiments here at the Max Planck Institute two years ago, and regularly take part in the experiments. I find it very interesting, since firstly it allows you to earn money, and secondly because it is a good possibility to improve your skills, and to adopt the different roles in the particular experiments. Sometimes I have the feeling that it is a little bit unjust, but of course I hope that it isn't going to be the case in this experiment, and I'm also quite curious about the results of this experiment. But anyway, I'm happy that I don't have the role of Person X, because it's not always easy for me to quickly make a decision, and I think that it won't be easy for that person. At the moment I'm doing an internship at interculture.de, that is the junior company in the area of intercultural economic communication, and I prepare the biggest international congress, the intercultural summer academy, which will take place next week in Jena. I work here since March in the press and event management department. The work is so to say in it's final phase, and I've got a lot to do this week, and after the experiment I will go straight to the Intershop-Tower, because there ..."

Talking dummy 7

"Hi candidate X! I am oh ... am ... wait ... STEFFI, heeeloooo. And I've got a wait I've got a six year old brother, and I always sang and played for him. And this I'd like to show you now: Himpelchen and Pimpelchen sit on a biiiig mountain. Himpelchen was a Heinzelmännchen and Pimpelchen was a dwarf. They sat there for a loooong time, and bounced with their jelly bag caps. And after many, many weeks, they crawled into the mountain. There they sleep in privacy, please be quite and listen: Chrrrrrp, Chrrrrrp, Chrrrrrp. – Kikeriki, heissa heissa hopsassa, Himpelchen and Pimpelchen are back again! Now I have making a fool of myself, but what should I do? Maybe, you don't see me at all, or you can't hear me. Therefore I've drawn a picture for you, look at it. Hihi ... I'm done. What should I do now in the two minutes, in the remaining? Mmmhh. What can I still do? When a bird comes awaaaayyy ... Trtrtr ... I'm done!"

Talking dummy 8

"Hi, person X, my name is Sandra, and as you see, I'm sitting here in a little strange room, I mean with styrofoam at the walls, and you will probably get to

know it yourself if you come here to see all the recordings. Yeah, I think it's a pity, somehow, that we cannot sit in front of each other. I'd really have interest to know who sees the recordings. Yeah, and, this is a little unusual situation, and it feels like one would be in a job interview, or one would, something like, recording a coupling video for partner search or something like this. One doesn't know at all what the other one expects, whether he likes one or not, and whether that is possible at all in just two minutes of video recording, and so on. Well, what else to talk about? Like I said, this here is quite unusual to me, and I wouldn't be surprised if the door is opened and someone, dressed in white, comes in and says: everything will be ok, here take some pills ... Well, it is, yes, it is somehow a little bit nightmarish. Well, what else to talk about? Well, I'm jobbing a bit for a newspaper, and I find it's great. I'm seeing a lot, I can write a lot, of course, and get to know lots of new people, and that's a nice thing, and I think I'm quite open-minded. Well, one might not see this here, because, as I said, I don't have often to deal with styrofoam walls and a camera and so on. Anyway, I like going out with my friends, I like movies very much, and just last week I moved to Jena with my boyfriend. Well what else can I report?"