Background

From the point of view of game theory, "talk is cheap" if it does not have payoff consequences.

A message may be useful if it signals the intent to coordinate on a particular equilibrium

The same is not true in social dilemmas or if it against their material incentives.

Promises — Charness and Dufwenberg (2006)

Examine the impact of communication on trust and cooperation.

Their design attempts to observe and tease apart the effect of promises, lies and beliefs.

Their emphasis is to determine whether individuals are motivated by aversion to guilt

- i.e. decision makers experience guilt if they believe they let others down.
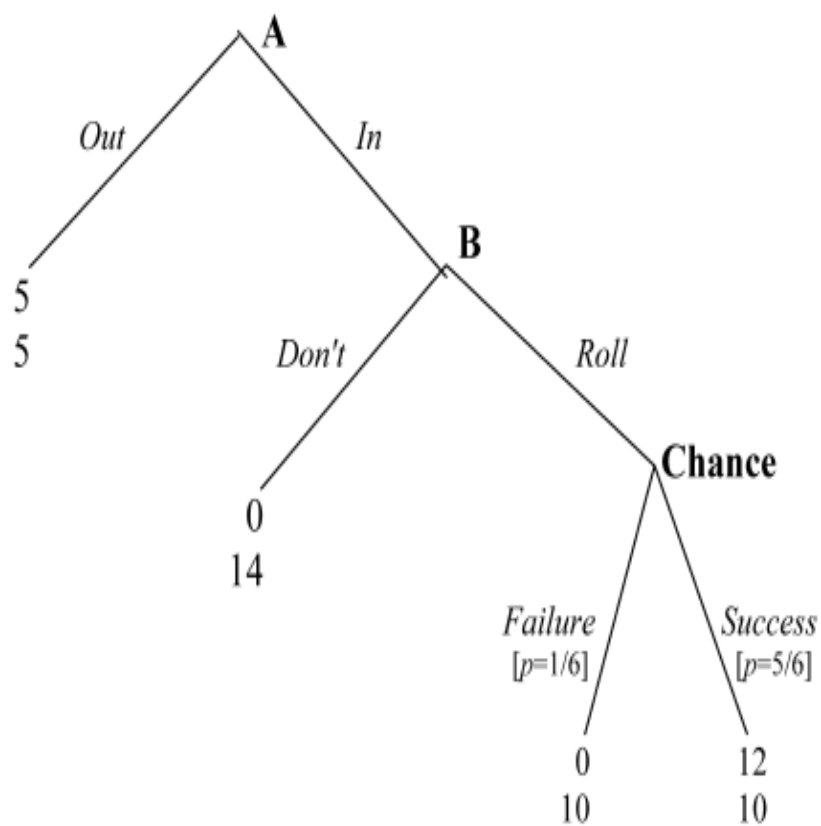
Promises — Charness and Dufwenberg (2006)

This approach leads to a nonstandard concept of utility (from the viewpoint of traditional game theory)

A player's preferences over strategies depend on his beliefs about the beliefs of others, even if there is no strategic uncertainty.

In this connection, messages gain cutting power by shaping beliefs that influence motivation.

They examine, in particular, the role of promises in this connection.

Promises — Charness and Dufwenberg (2006)

Promises — Charness and Dufwenberg (2006)

Think of A and B as a principal and an agent.

- ▶ The two consider forming a partnership in which a project is carried out.

If no partnership is formed, then no contract is signed and no project is carried out

- ▶ The two parties get an outside option of 5

Promises — Charness and Dufwenberg (2006)

If the project is carried out, then the contract specifies:

- ▶ A wage that the principal pays the agent
- ▶ A costly effort that the agent should exert.

Revenue is random, and depends on the effort by the agent.

- ▶ (In, Roll) would be the equilibrium outcome if effort was enforceable

Promises — Charness and Dufwenberg (2006)

However, the agent's effort is unobservable by the principal; the agent is free to exert less effort

The random outcome in case the principal forms a partnership conceptually represents the unobservability of effort by the agent.

Promises — Charness and Dufwenberg (2006)

C&D use pre-play communication to explore the extent to which players are motivated by guilt aversion.

A guilt-averse player suffers from guilt to the extent he believes he hurts others relative to what they believe they will get.

- ▶ He is motivated by his beliefs about others' beliefs

Guilt Aversion

Let $0 \leq \tau_A \leq 1$ be the probability that player A (initially) assigns to B choosing Roll.

When B moves he has a belief about τ_A; let τ_B be that belief about τ_A.

- τ_B is a measure of player B's belief about how much trust player A has in player B.

- τ_B can be used to define how much B believes he hurts A if he does not roll, as well as B's associated guilt

Guilt Aversion

If B chooses Don't Roll, A gets 0

B believes A believes A will get $\tau_B[(5/6) \times 12 + (1/6) \times 0] = 10\tau_B$

$10\tau_B - 0$ measures how much B believes he hurts A, relative to what A believes she will get if he chooses Don't Roll

If B chooses Don't Roll, he therefore experiences guilt in proportion to $10\tau_B$.
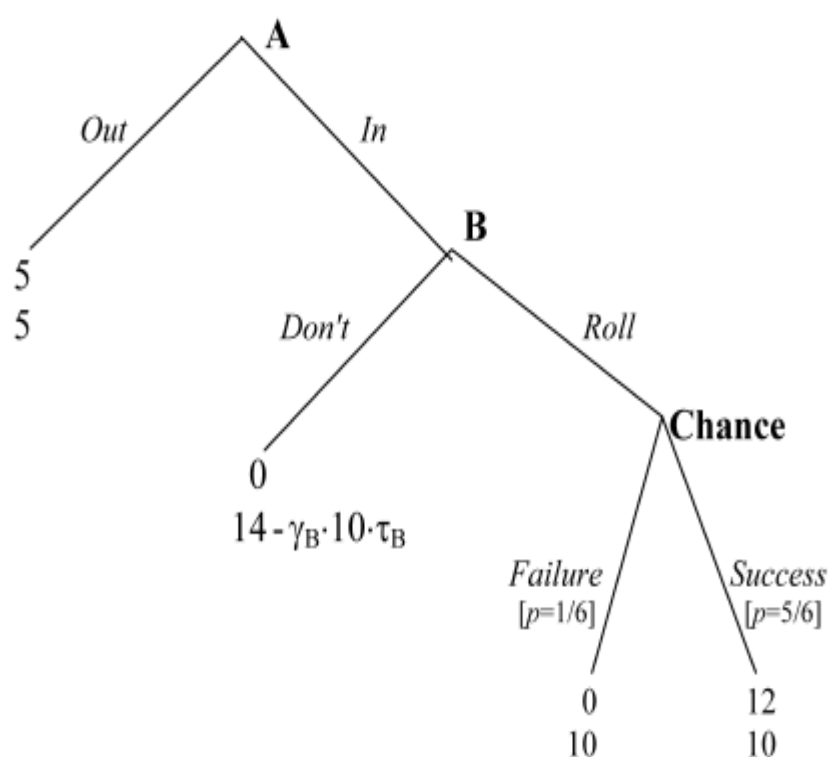
Promises — Charness and Dufwenberg (2006)

FIGURE 2.—Psychological game Γ_2.

Guilt Aversion

Guilt aversion provides an avenue by which communication may influence behavior.

- By promising to Roll, B may strengthen A's belief that B will Roll
- If B believes the promise will be plausible to A, that will increase B's guilt if he decides Not Roll.

Charness and Dufwenberg — Experimental Design

Treatment 1 — No messages allowed (Control)

Treatment 2 — Player B can send a free-form message to A before A chooses In or Out

- ▶ Player B could decline to send a message

Treatments 3&4 — Same as T1&2, but the Out payoffs were $(7,7)$ rather than $(5,5)$

Treatment 5 — Same as T2, but the message is send by Player A to Player B.

Charness and Dufwenberg — Experimental Design

In addition to the actions, C&D measured τ_A and τ_B.

They did so by asking subjects to guess the choices of their counterparts

- ▶ Player As were asked to guess the proportion of Bs who chose Roll
- ▶ Player Bs were asked to guess the average guess made by Player As

Charness and Dufwenberg — Hypotheses

H1 (Guilt Aversion): Roll choices occur more often when τ_B is high.

H2 (Role of Communication): In and Roll choices are more common in the message treatments.

H3 (Message Content): Promises and statements of intent will influence the frequency of In and Roll choices, as well as estimated τ_A and τ_B.

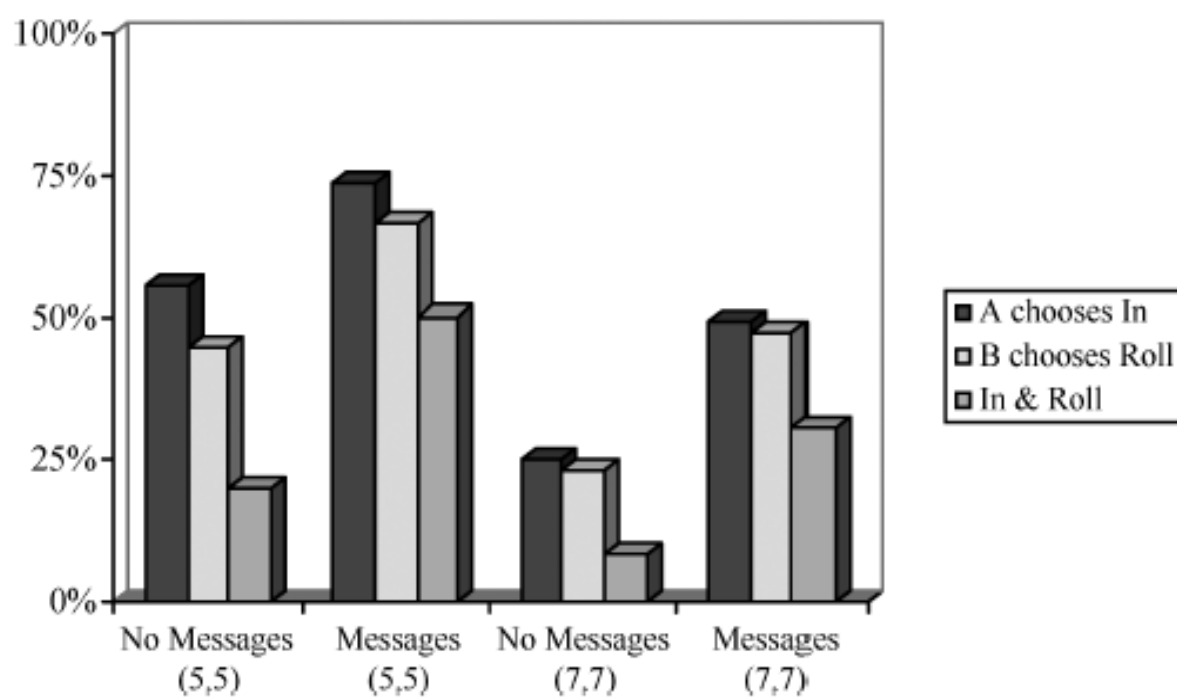# Promises — Charness and Dufwenberg (2006)

FIGURE 3.—The effect of messages from B.

Promises — Charness and Dufwenberg (2006)

TABLE I

TESTS FOR THE EFFECT OF COMMUNICATION[a]

Treatment	A's *In* Rate			B's *Roll* Rate			(*In, Roll*)		
	M	NM	Z Stat	M	NM	Z Stat	M	NM	Z Stat
(5, 5)	31/42	25/45	1.78**	28/42	20/45	2.08**	21/42	9/45	2.94***
B Messages	(74%)	(56%)		(67%)	(44%)		(50%)	(20%)	
(7, 7)	23/49	11/48	2.48***	24/49	12/48	2.44***	15/49	4/48	2.76***
B Messages	(47%)	(23%)		(49%)	(25%)		(31%)	(8%)	
(5, 5)	31/46	25/45	1.16	18/46	20/45	−0.51	12/46	9/45	0.69
A Messages	(67%)	(56%)		(39%)	(44%)		(26%)	(20%)	

[a]M/NM means that messages/no messages were feasible. The Z stat reflects the test of proportions for the two populations (see Glasnapp and Poggio (1985)). ** and *** indicate $p < 0.05$ and 0.01, respectively, one-tailed tests. Note that the NM data from the (5, 5) case are used as the control in both the first and third rows.

Promises — Charness and Dufwenberg (2006)

TABLE II

BELIEFS AND BEHAVIOR[a]

Treatment	A's Average Guess			B's Average Guess		
	In	Out	Z Statistic	Roll	Don't	Z Statistic
(5, 5) no messages	51.3	28.2	2.55***	54.2	39.6	1.99**
(5, 5) B messages	65.4	42.5	2.02**	73.2	45.1	3.20***
(5, 5) A messages	56.7	35.4	2.65***	69.6	50.0	2.80***
(7, 7) no messages	35.7	31.8	1.06	69.4	41.7	3.08***
(7, 7) B messages	70.0	45.3	3.00***	66.9	36.9	3.52***

[a]The Z statistic reflects the Wilcoxon–Mann–Whitney rank sum test for the two populations compared (see Siegel and Castellan (1988)). *, **, and *** indicate $p < 0.10, 0.05$, and 0.01, respectively, one-tailed tests.

Promises — Charness and Dufwenberg (2006)

TABLE III

PROMISES AND BEHAVIOR[a]

Treatment	A's *In* Rate			B's *Roll* Rate			(*In, Roll*)		
	P	NP	Z Stat	P	NP	Z Stat	P	NP	Z Stat
(5, 5)	22/24	9/18	3.04***	18/24	10/18	1.32*	16/24	5/18	2.49***
B messages	(92%)	(50%)		(75%)	(56%)		(67%)	(27%)	
(7, 7)	16/24	7/25	2.71***	20/24	4/25	4.71***	14/24	1/25	4.13***
B messages	(67%)	(28%)		(83%)	(16%)		(58%)	(4%)	
Pooled	38/48	16/43	4.07***	38/48	14/43	4.49***	30/48	6/43	4.73***
	(79%)	(37%)		(79%)	(33%)		(62%)	(14%)	

[a]P/NP means that a promise/no promise was sent or received. The Z stat reflects the test of proportions for the two populations compared. *, **, and *** indicate $p < 0.10, 0.05$, and 0.01, respectively, one-tailed tests.

Promises — Charness and Dufwenberg (2006)

TABLE IV
PROMISES AND BELIEFS[a]

Treatment	Average A Guess			Average B Guess		
	P	NP	Z Stat	P	NP	Z Stat
(5, 5)	65.8	50.0	1.63*	66.2	59.9	1.10
B messages	(24)	(18)		(24)	(18)	
(7, 7)	63.1	50.9	1.44*	59.6	51.0	1.17
B messages	(24)	(25)		(24)	(25)	
Pooled	64.4	50.5	2.24**	63.1	54.7	1.74**
	(48)	(43)		(48)	(43)	

[a]P/NP means that a promise/no promise was sent or received. The number of observations is in parentheses. The Z stat reflects the Wilcoxon rank sum test for the two populations. * and ** indicate $p < 0.10$ and 0.05, respectively, one-tailed tests.

Why do People Keep Their Promises
Vanberg (2008)

Vanberg (2008) notes that there are two potential explanations for the C&D result.

1. Subjects could be motivated by guilt aversion

2. Subjects could have a preference for upholding their promises.
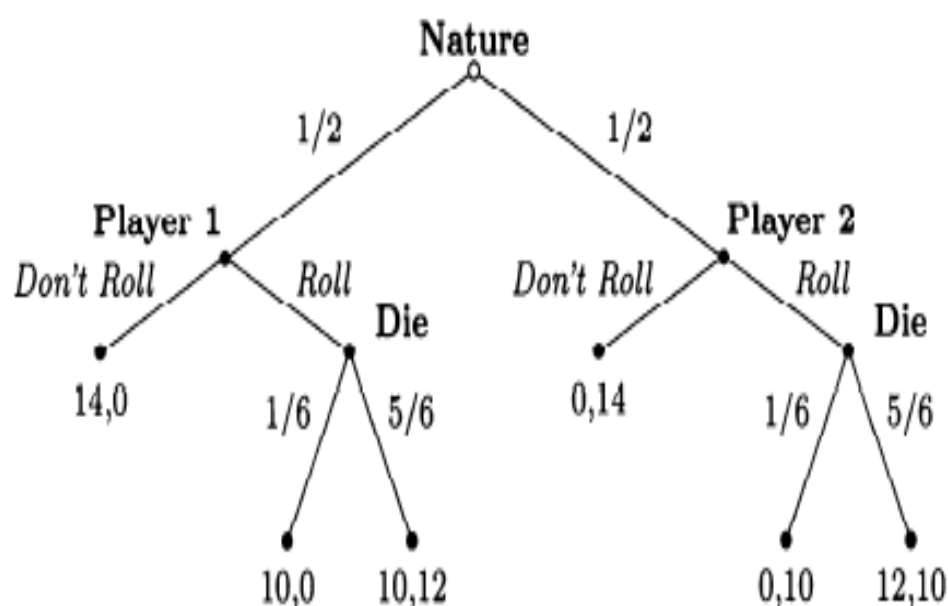
Why do People Keep Their Promises
Vanberg (2008)

FIGURE 1.—Mini dictator game with random dictatorship.

Why do People Keep Their Promises
Vanberg (2008)

Before Nature's move, subjects are allowed to send a message to their counterpart in the game.

- ▶ Most subjects use the message to convey promises about choosing Roll if they are Player 1 (Dictator)

Two treatments:

- ▶ Control: Game works as described.
- ▶ Treatment: Subjects are re-matched with different counterparts after the chatting stage.

Why do People Keep Their Promises
Vanberg (2008)

In the treatment condition, subjects in the role of dictators are told the message their new partner received in the chat stage.

The treatment in this experiment works as a test of promise-keeping preferences, because re-matched dictators are no longer beholden to their promises.

However, they are aware of the expectations of the recipients (who are unaware that the re-matching took place)

Why do People Keep Their Promises
Vanberg (2008)

TABLE I

The Effects of Partner Switching[a]

	No Switch	Switch	Z Stat
Average second-order belief	0.76	0.71	$Z = 1.48$
	(0.26)	(0.28)	$(\bar{p} = 0.14)$
Fraction of subjects choosing *Roll*	69%	54%	$Z = 2.20$
	(0.02)	(0.03)	$(p = 0.03)$

[a]Pooled data from all sessions, all rounds. Each cell $N = 384$. Standard errors in parentheses. The Z statistic reflects Wilcoxon signed-rank tests using session level *Roll* rates and average second-order beliefs.

Why do People Keep Their Promises
Vanberg (2008)

TABLE II

PROMISES AND SECOND-ORDER BELIEFS[a]

	Average Second-Order Belief (All Sessions)		
		Switch	
	No Switch	Partner Received a Promise	Partner Received No Promise
Dictator promised	0.80 (0.23)	0.76 (0.25)	0.62 (0.31)
Dictator did not promise	0.60 (0.33)	0.70 (0.31)	0.58 (0.29)

[a] Pooled data from all sessions, all rounds. Standard errors in parentheses.

Why do People Keep Their Promises
Vanberg (2008)

TABLE III

PROMISES AND BEHAVIOR[a]

| | Fraction of Subjects Choosing Roll (All Sessions) | | |
| | No Switch | Switch | |
		Partner Received a Promise	Partner Received No Promise
Dictator promised	227/309	129/238	29/56
	(73%)	(54%)	(52%)
	[0.03]	[0.03]	[0.07]
Dictator did not promise	39/75	30/56	19/34
	(52%)	(54%)	(56%)
	[0.06]	[0.07]	[0.09]

[a] Pooled data from all sessions, all rounds. Standard errors in brackets.