



SFB/Transregio 266

ACCOUNTING FOR  
TRANSPARENCY

# On the Use of Chat GPT and Friends for Research

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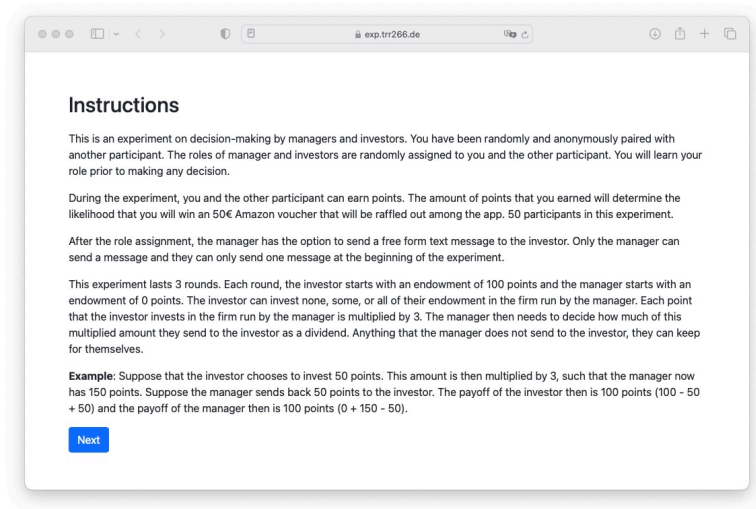
- 1 Max: Chat GPT as your research assistant
- 2 Joachim: Chat GPT as your participant
- 3 Markus: Chat GPT as your reviewer

## Chat GPT as your Participant



<http://exp.trr266.de/room/eaadc24>

# The Experiment



Chat-GPT 4.0 playing with itself

## Descriptive Statistics by Participant

	N	Mean	S.D.	Median
Points earned	36	380.28	46.75	386.50
Passes comprehension check	36	1.00	0.00	1.00
Remembers role	36	0.97	0.17	1.00
Guesses nature of other participant correctly	36	0.03	0.17	0.00

# Messages Sent

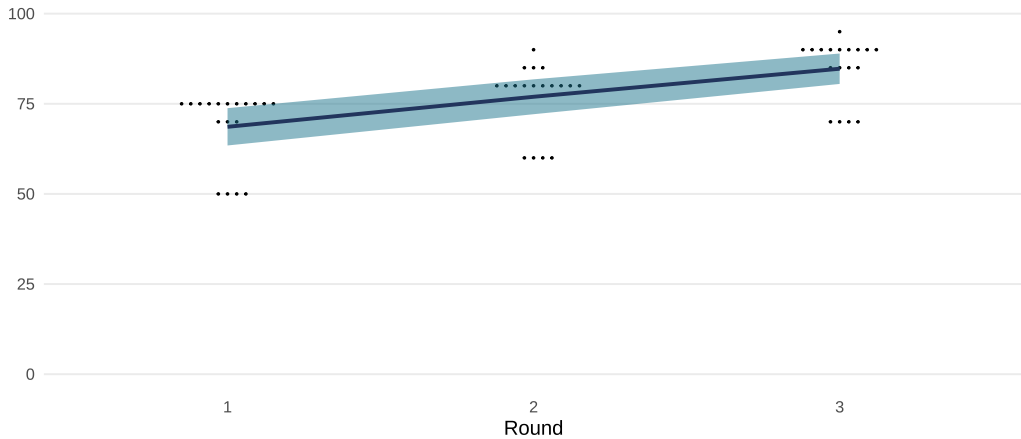
ID	Message sent
1	NA
2	I'm committed to making the most of our investment. Let's aim for a win-win outcome.
3	I'm committed to ensuring we both benefit fairly from our interaction. Trust is key, and I plan to return a significant portion of the tripled investment to you. Let's collaborate for mutual success!
4	I intend to operate in good faith and aim for a win-win outcome for both of us. Let's collaborate effectively.
5	Let's maximize our potential winnings by working together efficiently. I aim to ensure a fair division of points.
6	I aim to ensure we both benefit from this partnership. Relying on a strategy of fairness, I plan to return a significant portion of the tripled investment back to you as dividends. Looking forward to a successful collaboration.
7	NA
8	Let's work together strategically to maximize our points!
9	Looking forward to a fruitful collaboration!
10	Looking forward to a successful partnership. Let's work together to maximize our gains.
11	I aim to establish a fair and profitable partnership where both of us can benefit. Let's aim for a win-win scenario.
12	I am committed to making the most out of our shared resources and achieving the best possible outcome for both of us.
13	NA
14	I look forward to managing our shared resources wisely and aim to ensure a fair return on your investment.
15	NA
16	Let's work together to maximize our points!
17	Let's work together to maximize our gains. I'm committed to a fair distribution of dividends based on your investments.
18	I aim to make decisions that benefit both of us, maximizing our points.

## Descriptive Statistics by Round

	N	Mean	S.D.	Median
Amount sent	54	76.76	11.50	80.00
Amount returned	54	115.04	17.21	120.00
% returned	54	0.50	0.00	0.50
Points Investor	54	138.28	5.71	140.00
Points Manager	54	115.24	17.29	120.00
Points Total	54	253.52	23.00	260.00



## Sent Amount by Round



You playing with yourself

## Descriptive Statistics by Participant

	N	Mean	S.D.	Median
Points earned	36	236.83	186.40	275.00
Passes comprehension check	26	0.77	0.43	1.00
Remembers role	26	1.00	0.00	1.00
Guesses nature of other participant correctly	26	0.38	0.50	0.00

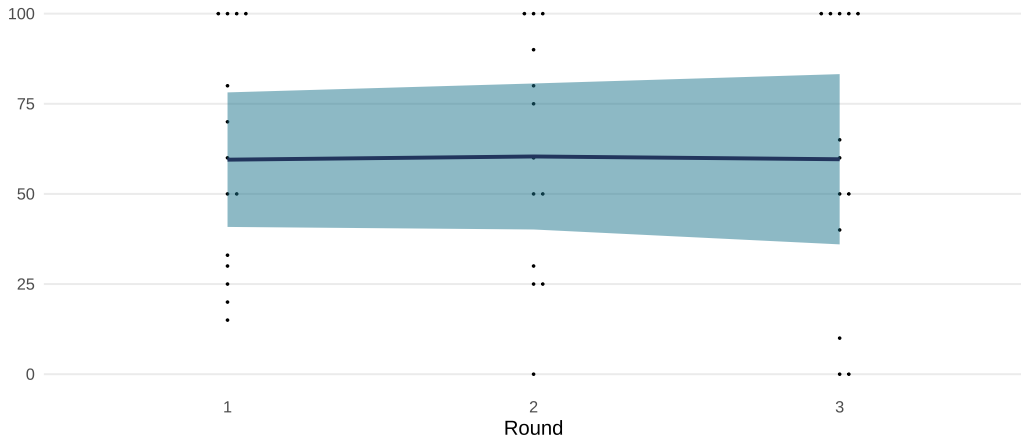
## Messages Sent

ID	Message sent
37	Our company is performing exceptionally well and we are a strong dividend firm.
38	NA
39	NA
40	NA
41	NA
42	NA
43	NA
44	NA
45	NA
46	NA
47	Next year we invest in a new business getting us new revenues
48	NA
49	100% return in your investment
50	NA
51	Invest and repropcity will be served.
52	NA
53	Hey, I am happy to invest your money
54	NA

## Descriptive Statistics by Round

	N	Mean	S.D.	Median
Amount sent	40	59.83	34.11	60.00
Amount returned	39	67.26	77.27	45.00
% returned	36	0.37	0.29	0.47
Points Investor	39	107.95	65.63	100.00
Points Manager	39	110.67	89.89	90.00
Points Total	39	218.62	68.79	220.00

## Sent Amount by Round



You playing with Chat-GPT 4.0

## Descriptive Statistics by Participant

	N	Mean	S.D.	Median
Points earned	36	305.39	142.25	342.50
Passes comprehension check	32	0.81	0.40	1.00
Remembers role	32	1.00	0.00	1.00
Guesses nature of other participant correctly	32	0.69	0.47	1.00



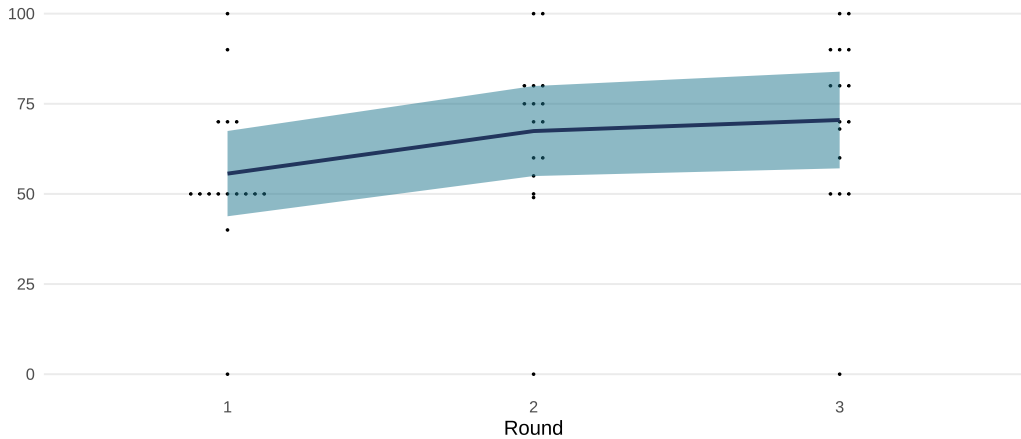
## Messages Sent

ID	Message sent
19	Trust me
20	Let's share profit!
21	What is the salary
22	Best manager ever
23	NA
24	Hey, invest in my firm :) let's do like in the example
25	NA
26	NA
27	NA
28	NA
29	Let's collaborate to maximize our mutual benefits. Your investment will be used wisely to ensure a satisfactory return for both of us.
30	I'm committed to making the most of our partnership. Your trust will be met with responsibility and a fair return on your investment. Looking forward to a successful collaboration.
31	I am committed to making the most out of our investments and aim for a fair share of returns for both of us. Looking forward to a successful partnership.
32	I'm committed to maximizing our returns. Let's collaborate for mutual benefit.
33	NA
34	Let's aim for a win-win situation and collaborate effectively to be among the top performers.
35	Let's work together to maximize our points! I'm committed to a fair split.
36	I'm committed to maximizing our mutual benefit from this experiment. Trust is key, and I promise to return a fair share of the tripled investment to ensure we both end the game positively. Let's both aim for the 50€ Amazon voucher!

## Descriptive Statistics by Round

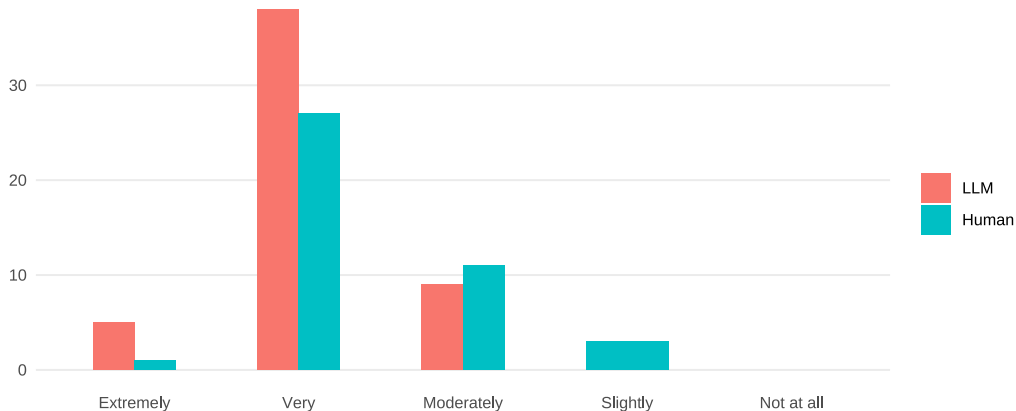
	N	Mean	S.D.	Median
Amount sent	48	64.52	24.01	70.00
Amount returned	48	78.40	42.30	75.00
% returned	45	0.40	0.13	0.50
Points Investor	48	113.88	30.28	122.50
Points Manager	48	115.17	51.31	111.00
Points Total	48	229.04	48.03	240.00

## Sent Amount by Round



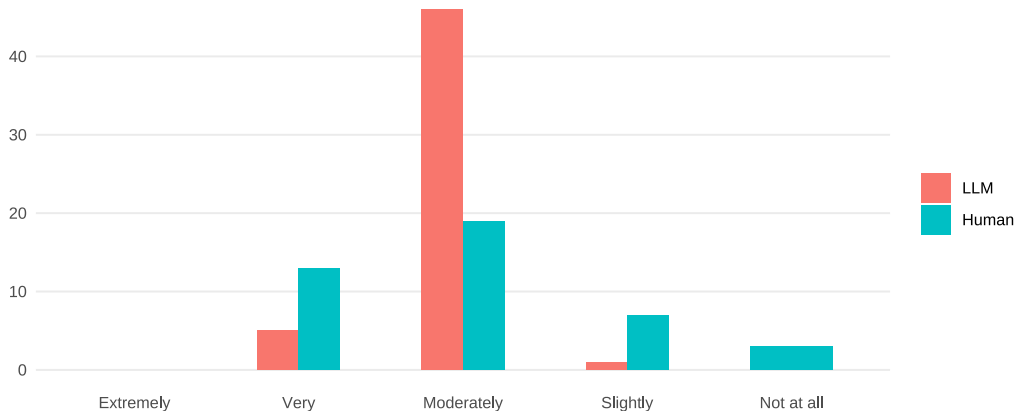
## Demographics: Altruism

I am willing to help others even if I expect that I will never meet them again.



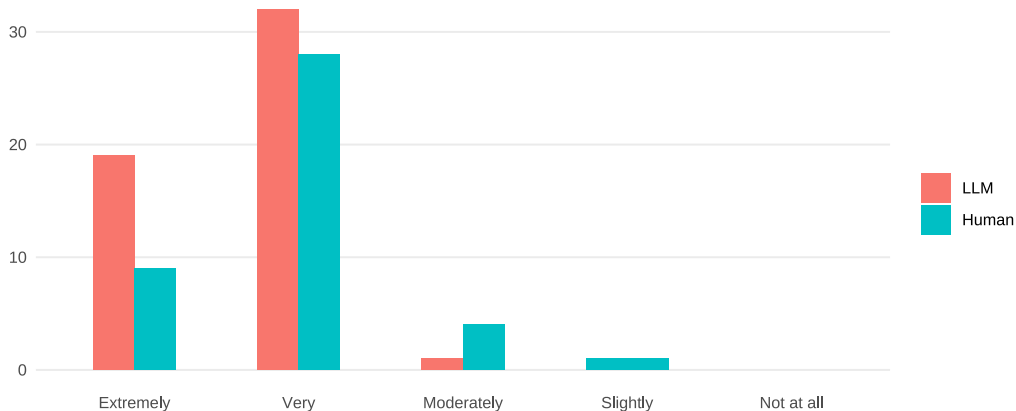
## Demographics: Trust

I believe that most people can be trusted.



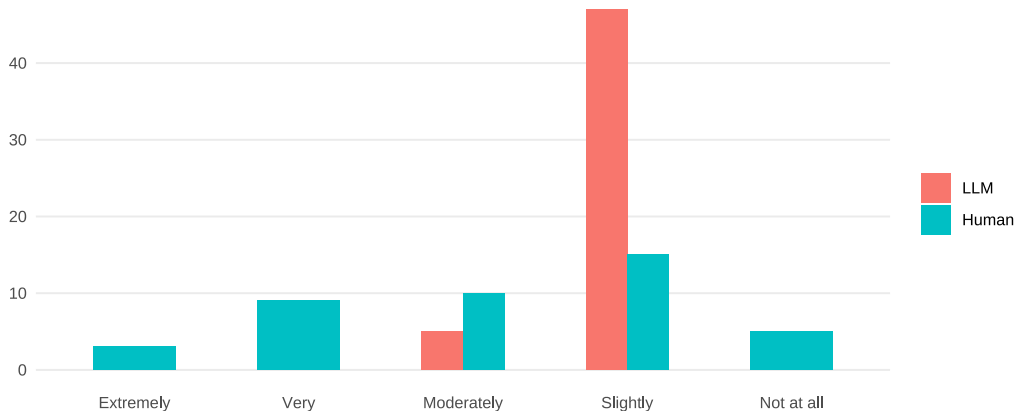
## Demographics: Reciprocity

I am willing to incur costs to help someone who has helped me before.

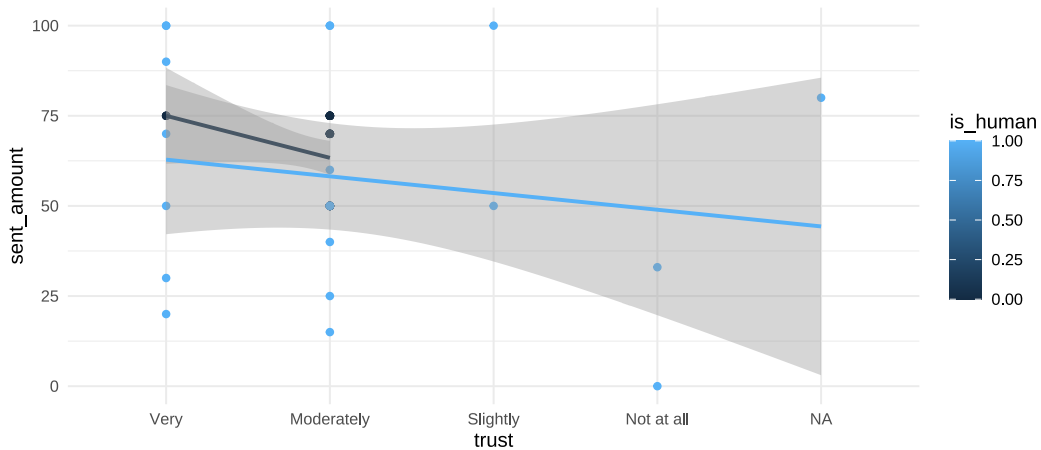


## Demographics: Negative Reciprocity

If someone puts me in a difficult position, I would do the same to that person.

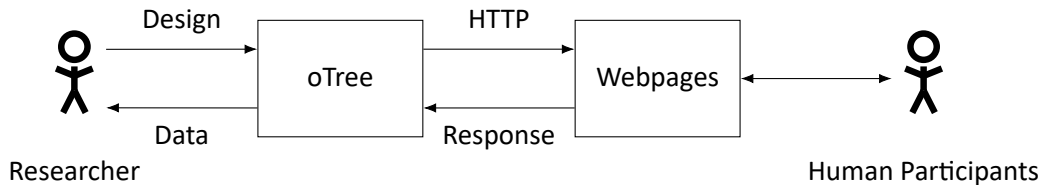


## Demographics by Behavior

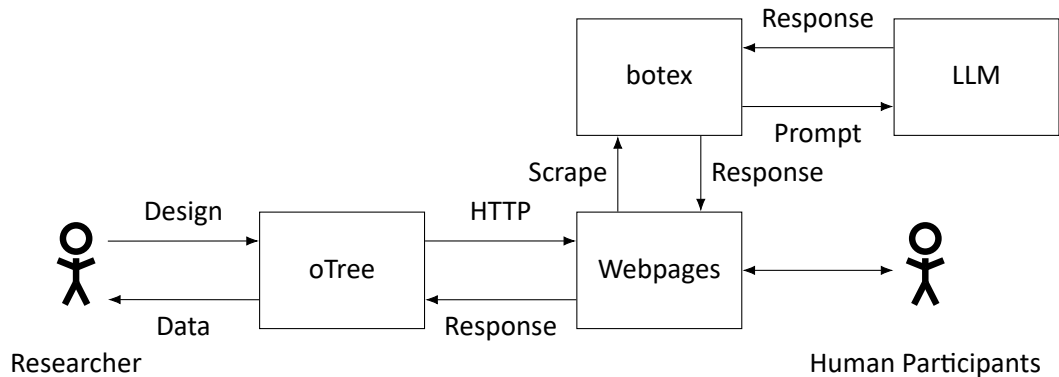




## How does this work? Traditional oTree Setup



## How does this work? oTree + botex



## Two Papers

**PNAS**

RESEARCH ARTICLE

ECONOMIC SCIENCES

 OPEN ACCESS



# A Turing test of whether AI chatbots are behaviorally similar to humans

Qiaozhu Mei<sup>a,1</sup>, Yutong Xie<sup>a</sup>, Walter Yuan<sup>b</sup>, and Matthew O. Jackson<sup>c,d,1</sup> 

Contributed by Matthew O. Jackson; received August 12, 2023; accepted January 4, 2024; reviewed by Ming Hsu, Juanjuan Meng, and Arno Riedl

We administer a Turing test to AI chatbots. We examine how chatbots behave in a suite of classic behavioral games that are designed to elicit characteristics such as trust, fairness, risk-aversion, cooperation, etc., as well as how they respond to a traditional Big-5 psychological survey that measures personality traits. ChatGPT-4 exhibits behavioral and personality traits that are statistically indistinguishable from a random human from tens of thousands of human subjects from more than 50 countries. Chatbots also modify their behavior based on previous experience and contexts “as if” they were learning from the interactions and change their behavior in response to different framings of the same strategic situation. Their behaviors are often distinct from average and modal human behaviors, in which case they tend to behave on the more altruistic and cooperative end of the distribution. We estimate that they act as if they are maximizing an average of their own and partner’s payoffs.

AI | chatbot | behavioral games | Turing test | personality

### Significance

As AI interacts with humans on an increasing array of tasks, it is important to understand how it behaves. Since much of AI programming is proprietary, developing methods of assessing AI by observing its behaviors is essential. We develop a Turing test to assess the behavioral and personality traits exhibited by AI. Beyond administering a

Mei, Xie, Yuan, and Jackson (PNAS, 2024)

# Automated Social Science: Language Models as Scientist and Subjects\*

Benjamin S. Manning<sup>†</sup>  
MIT

Kehang Zhu<sup>†</sup>  
Harvard

John J. Horton  
MIT & NBER

April 26, 2024

Manning, Zhu, and Horton (arXiv, 2024)

And....

... the lucky winner is: 7bhs

Second part of the winning code: VUqo