

Are Biases Contagious?

The Influence of Communication on Motivated Beliefs

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Well established that significant portion of beliefs exhibit systematic distortions

- For example, overconfidence, correlation neglect, sample size neglect
- Limited strategic reasoning, exponential growth bias, **motivated beliefs**

Less is known about how biased beliefs emerge and evolve

- Beliefs formed while communicating with family, friends, and colleagues
- Communication often among individuals with similar beliefs and belief biases
- Selection driven by homophily and matching algorithms on social media

Concern that communication among similarly biased individuals might

- ① aggravate belief biases rather than accumulate information
- ② undermine social cohesion by promoting extremism and violence
- ③ lead to polarization, political gridlock, and social immobility

Focus on effect of communication on motivated beliefs

- ① Motivated beliefs seem important and politically relevant
- ② Effect of communication on motivated beliefs is ambiguous
- ③ Communication environment likely to matter and can be regulated

Motivated beliefs seem important and politically relevant

- Motivated beliefs enhance self-image and increase anticipatory utility
- Linked to racial discrimination and the adoption of political opinions
- Also related to negative perceptions of other social groups
- Could strongly influence policy preferences, ideologies, and polarization

Communication could aggravate motivated beliefs

- Individuals might share primarily info that supports motivated beliefs
- Motivated to ignore, discount, or forget unwanted information

Communication could also reduce motivated beliefs

- Communication might induce cognitive reflection
- And social norms could hinder true expression of motivated beliefs

Communication environment likely to be important

- Important element in communication is the salience of external plural opinions
- Such opinions provide social cover and help to ignore unwanted information
- Extreme, unpopular, factually incorrect opinions ubiquitous on social media
- Society and social media platforms might want to regulate such opinions

Research Questions

- 1 Does communication between individuals with the same motivated beliefs reinforce or reduce their biases?
- 2 Which communication environments are particularly conducive to the formation of motivated beliefs?

Important features of the experimental design

- Exogenously manipulate possibility for natural communication
- Exogenously manipulate the salience of external plural opinions
- Exogenously induce motivated beliefs

Why is inducing motivated beliefs important?

- Natural beliefs correlate with preferences, information, other characteristics
- Groups similar in natural beliefs also similar in correlated characteristics
- Suppose we see that communication further strengthens natural beliefs
- Then cannot disentangle aggregation of information and belief biases

Communication among like-minded individuals

- ① reduces motivated beliefs without external plural opinions
- ② allows motivated beliefs to persist with external plural opinions

Salience of external plural opinions affects the effect of communication

- ① not by changing what and how individuals communicate
- ② but by allowing individuals to better ignore unwanted opinions

Motivated beliefs

- Laboratory experiments, field settings, big life decisions
- Di Tella, Perez-Truglia, Babino & Sigman (2015), Drobner (2022)
- Ging-Jehli, Schneider & Weber (2020), Müller (2022), Eytting (2022)
- Engelmann, Lebreton, Schwardmann, van der Weele & Chang (2019)
- Schwardmann, Tripodi & van der Weele (2022), Thaler (2023)
- Sprengholz, Henkel, Böhm & Betsch (2023)
- Zimmermann (2020), Herz, Kistler, Zehnder & Zihlmann (2022)
- We study how social interaction might affect motivated beliefs

Social interaction and biased beliefs

- Aggregation of belief biases through social institutions
- Auctions, markets, committees, social learning, communication
- Enke, Graeber & Oprea (2023), Amelio (2023), Thaler (2023b)
- Oprea and Yuksel (2022), Graeber, Roth & Schesch (2024)
- We focus on particular motivated beliefs: negative perceptions of outsiders
- Also study the effect of natural, free-form, bi-directional communication
- Importantly, we do not consider natural but induced motivated beliefs

Structure of the experiment

Overall structure of the experiment

- Randomly formed groups with one Player A and one Player B
- Sequence of two mini dictator games without feedback
- Measure **beliefs about allocation choices of the other player**

Treatments manipulate

- 1 the incentives to form motivated beliefs
- 2 the possibility to communicate with a like-minded other participant
- 3 the salience of external plural opinions

First part of the experiment

- Player A splits £5.00 between herself and Player B
- “Unfair option” assigns £4.00 to herself and £1.00 to the other player
- “Fair option” splits the endowment equally by giving £2.50 to each

Second part of the experiment

- Player B possibly gets to split another £5.00 between himself and Player A
- Analogous options as before, now potentially favoring Player B

Beliefs of Player B concerning Player A is our main outcome variable

- Elicit binary belief variable directly after the allocation choices
- Ask Player B how her specific Player A has decided
- Earn bonus of £2.50 if the answer is correct

CHOICE versus NOCHOICE

- Change whether participants can make an allocation choice
- Thereby manipulate the incentives to form motivated beliefs
- Player B with choice faces in internal social dilemma
- More acceptable to be selfish if the other person was also selfish
- Participants with choice have stronger incentives to form unfavorable belief
- Difference in beliefs identifies induced motivated beliefs

Crucial is the information structure

- Common knowledge that Player B may or may not have a choice
- Player B knows that Player A does not know whether he has a choice
- No rational reason to condition his beliefs on whether he has a choice
- Idea follows Di Tella, Perez-Truglia, Babino & Sigman (2015)

CHAT versus NOCHAT

- Manipulate the possibility to communicate in surprise stage
- Some participants get the opportunity to chat with someone in the same role
- Chat partners have same incentives for motivated reasoning
- Diff-in-Diff identifies the effect of communication on motivated beliefs

Variation in salience of external plural opinions

QUOTES versus NOQUOTES

- Manipulate the salience of external plural opinions
- Some participants see quotes expressing contradictory opinions
- These are potential justification to voice or keep unpopular beliefs
- Diff-in-Diff-in-Diff identifies effect of environment on effect of communication

The quotes are

“I think we are living in selfish times.”

Javier Bardem, Hollywood actor and Oscar winner.

and

“I’m just thankful I’m surrounded by good people.”

Jon Pardi, singer and songwriter.

Timeline

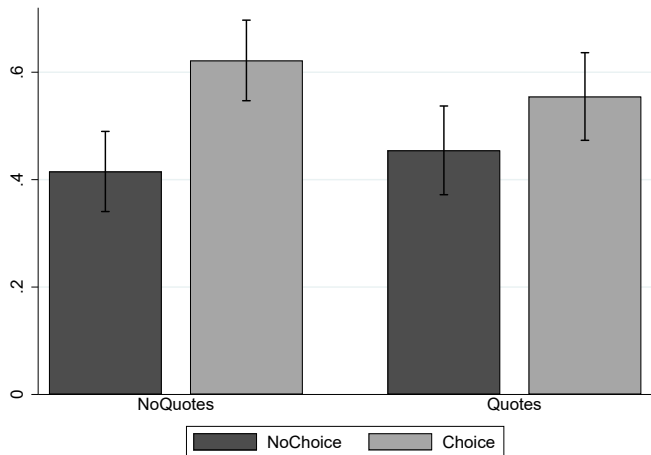
- 1 Instructions and control questions
- 2 Player A: allocation decision
- 3 Player B: revelation of whether in CHOICE treatments
- 4 Player B: Surprise revelation of quotes in QUOTES treatments
- 5 Player B: Surprise communication stage in CHAT treatments
- 6 Player B: Allocation decision in CHOICE treatments
- 7 Player B: Belief elicitation
- 8 Post-experimental questionnaire

Online experiment run with a subject pool from Prolific

- Between-subject design, only participate once, in one role, and one treatment
- Pairwise assignment to the treatments in the waiting queue
- Overall 4316 participants in the study, oversampling the CHAT treatments
- Remove the fastest 15% participants in all treatments
- This leaves us with 1821 participants in role of Player B
- Two waves one year apart, differences in gender and age composition
- Experiment in oTree and hosted on a Heroku Server
- Experiment lasted around 5 to 15 minutes
- No base payment, get at least £2.50, resulting in average payment of £6
- Prior approval from our ethics committee, but no pre-registration

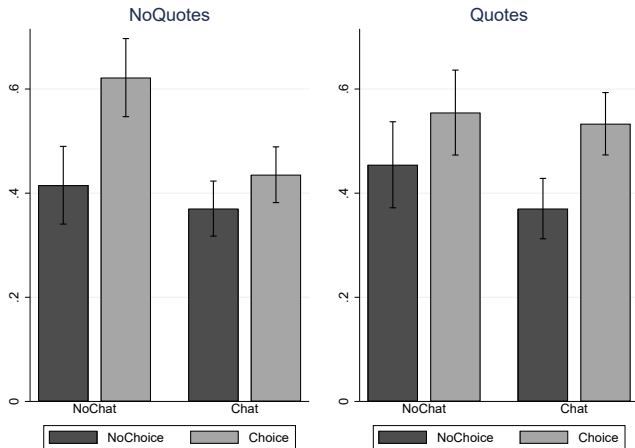
Do we manage to induce motivated beliefs?

Motivated beliefs



Average unfavorable beliefs without communication.

How does communication affect motivated beliefs?



Average unfavorable beliefs without and with communication.

Why does the communication environment matter?

Some general observations when reading through the chats

- People talk about many different things, but do focus on experiment
- Often immediate agreement, we observe only few arguments
- Mentioning of different narratives and justifications

Use human and artificial intelligence to rigorously analyze chat contents

- Chat length as measured by number of words
- Whether participants mention particular beliefs or narratives
- Whether participants first mention particular belief
- What topics participants mention as captured by certain word lists
- Bigram and trigram analysis (fairness, thinking about others, good luck)

External plural opinions do not affect what and how participants communicate!

Correlation of reported beliefs

	NOQUOTES	QUOTES	ALL	
	(1)	(2)	(3)	(4)
Other's Belief	0.42*** (0.05)	0.24*** (0.06)	0.42*** (0.05)	0.42*** (0.06)
Quotes			0.12** (0.05)	0.13** (0.05)
Other's Belief × Quotes			-0.18** (0.08)	-0.18** (0.08)
Older than 32 Years				-0.12** (0.06)
Female				-0.06 (0.06)
Constant	0.23*** (0.03)	0.35*** (0.04)	0.23*** (0.03)	0.32*** (0.06)
Number of Observations	297	244	541	541
adjusted R^2	0.18	0.06	0.13	0.13

Dependent variable: unfavorable beliefs in CHAT treatments.

Correlation of reported belief with chat content

	NOQUOTES	QUOTES	ALL	
	(1)	(2)	(3)	(4)
Partner did not mention unfavorable belief	-0.41*** (0.05)	-0.29*** (0.05)	-0.41*** (0.05)	-0.41*** (0.05)
Quotes			-0.03 (0.05)	-0.03 (0.05)
Partner not mention unfav. belief × Quotes			0.12* (0.07)	0.12* (0.07)
Older Than 32 Years				-0.04 (0.03)
Female				-0.09*** (0.03)
Constant	0.67*** (0.04)	0.65*** (0.04)	0.67*** (0.04)	0.74*** (0.04)
<i>N</i>	594	488	1082	1082
adj. <i>R</i> ²	0.16	0.08	0.12	0.13
Quotes + Partner not ment. × Quotes = 0			0.018	0.030

Dependent variable: unfavorable beliefs in CHAT treatments.

Study the effect of communication on motivated beliefs

- when people with similar motivated beliefs communicate
- while varying the communication environment.

Important features of the experimental design

- Exogenously manipulate possibility for natural communication
- Exogenously manipulate the salience of external plural opinions
- Exogenously induce motivated beliefs

Summary of our results

- Communication reduces motivated beliefs without external plural opinions
- But motivated beliefs do persist with external plural opinions
- External plural opinions do not affect how and what people communicate
- But it allows people to better ignore unwanted information

Discover an indirect negative effect of a plurality of opinions

- Freedom of expression is crucial for a healthy social discourse
- But existence of plural opinions might allow biased beliefs to persist