Lying Aversion and Vague Communication: An Experimental Study

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Vague communication

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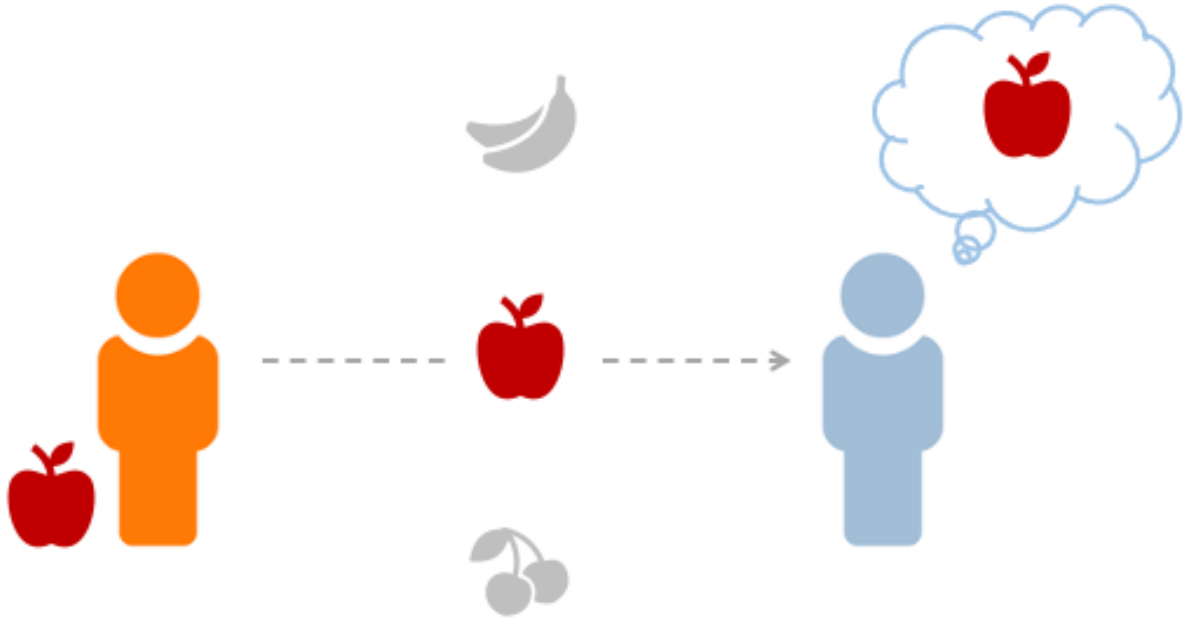

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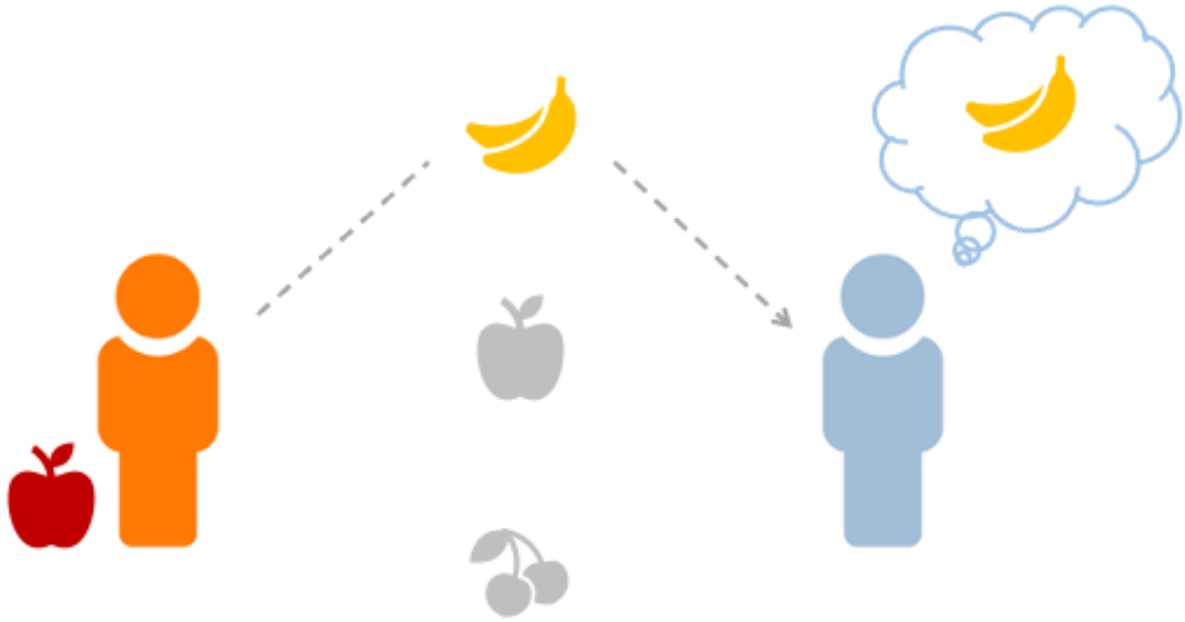

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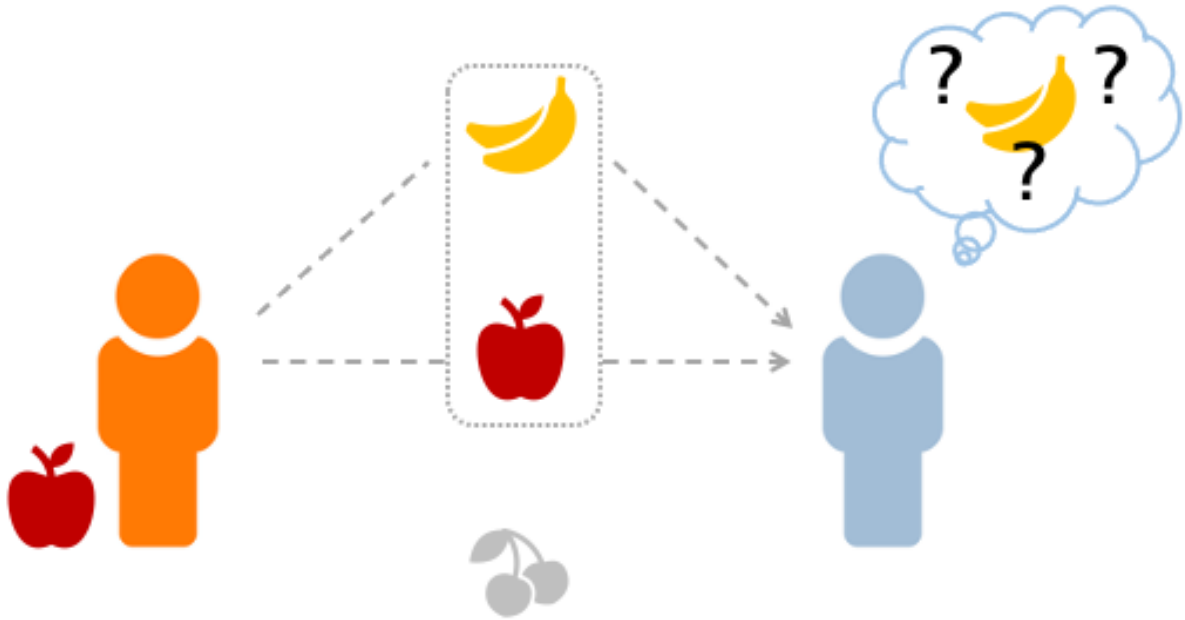

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- How would the two aspects of misleading/lying behavior affect people's sophisticated use of vague messages?

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2. Sophisticated exploitation of vagueness: truthful but vague
3. The way they use vague messages differs across the treatments:
   - 3.1 Subjects use vague messages **more** often when the social identity concern is relevant.
   - 3.2 Social identity concerns substantially affect the **length** and **patterns** of vague messages.

Literature

- Signaling game: Crawford and Sobel (ECMA 1982)
- Psychological game: Geanakoplos, Pearce, and Stacchetti (GEB 1989), Battigalli and Dufwenberg (JET 2009)
- Lying in economics
  - Fischbacher and Föllmi-Heusi (JEEA 2013)
  - Abeler, Nosenzo, and Raymond (ECMA 2019)
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- Vague communication in various games
  - Public good provision: Serra-Garcia, van Damme, and Potters (GEB 2011)
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$$U(i, J, t) = \underbrace{\bar{\pi}(J)}_{\text{monetary payoff}} \underbrace{- \mathbb{1}(i \notin J)\,[t + c(\pi(\{i\}), \bar{\pi}(J))]}_{\text{internal guilt}} + \underbrace{\gamma \rho(J)}_{\text{external social identity}}$$

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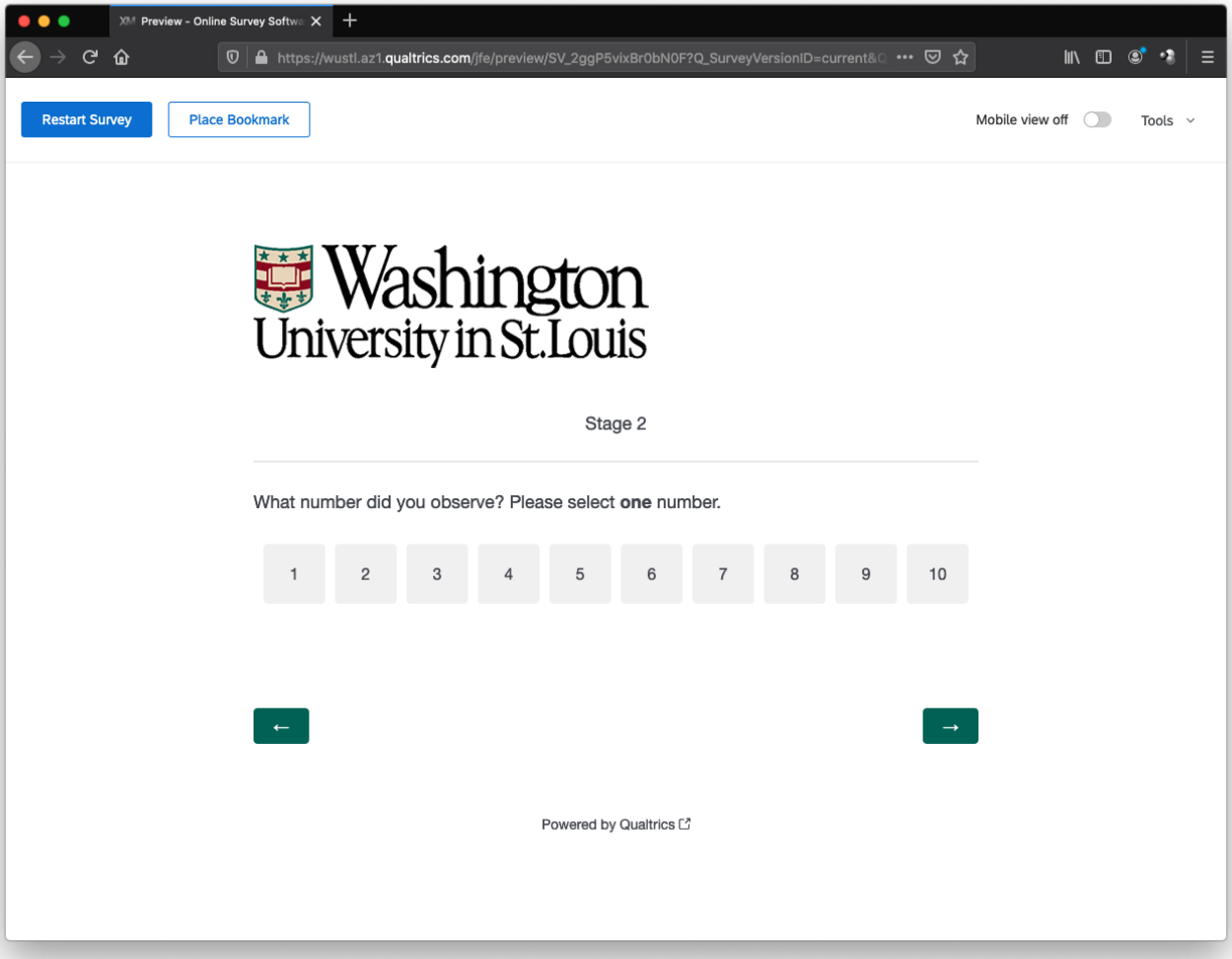
- One shot; no repeated interaction

Experimental design: Restricted vs Unrestricted Communication

- Online Experiment
  - Zoom meetings for instructions
  - Qualtrics for the main experiment
- Subjects first observe a random number between 1-10 on their web browser
- Subjects report the number to the experimenter by clicking boxes on screen.
- Two stages: within-subject analysis
  - Restricted: can select only one box at a time (precise only)
  - Unrestricted: can select multiple boxes at a time (both precise & vague)
- Randomized order of the two stages

Experimental design: restricted vs unrestricted



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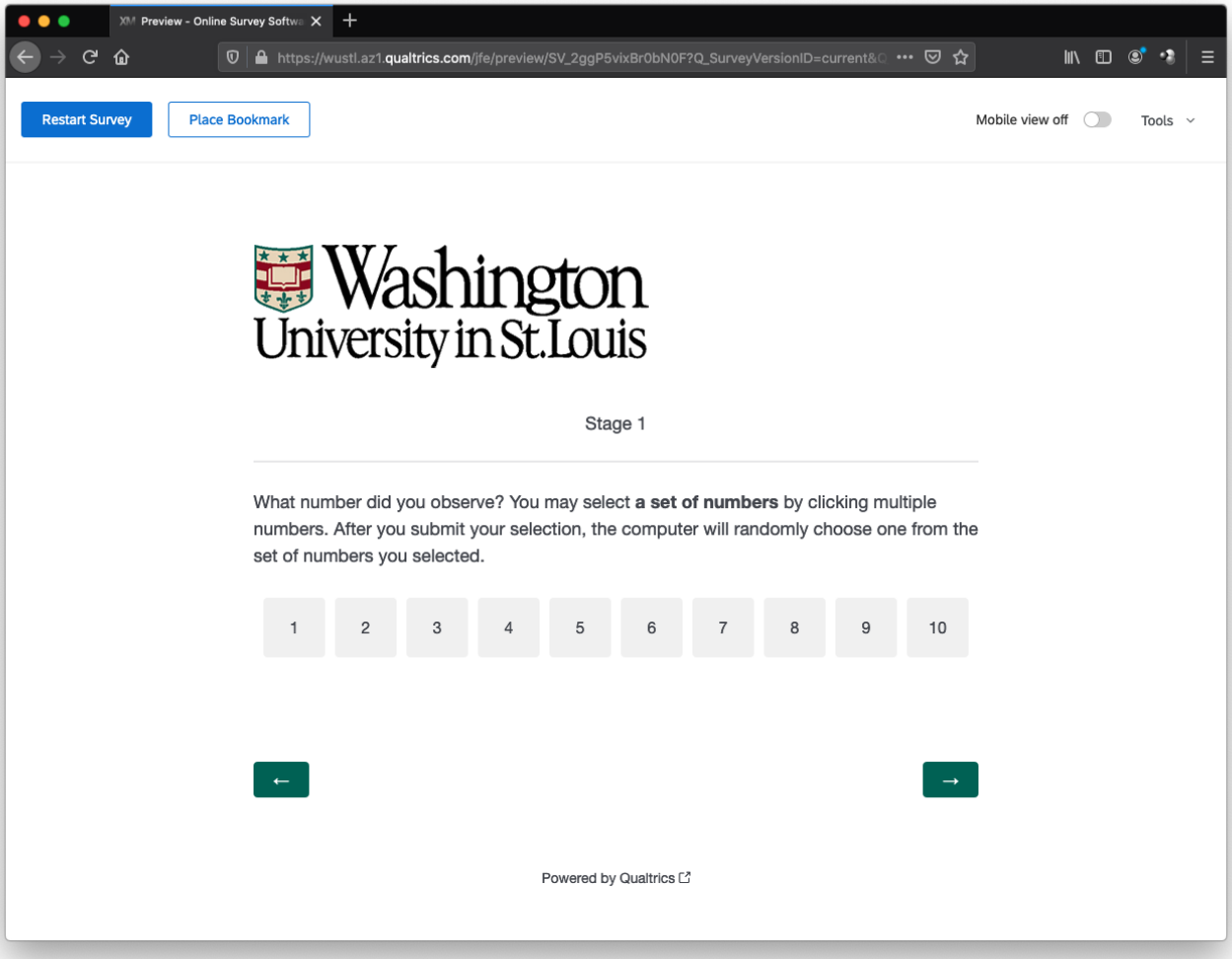

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Experiment design: anonymity and observability

- Anonymity of agents: between-subject analysis
  - Non-anonymous: real name, student ID, video on, email payment
  - Anonymous: screen name, no student ID, video off, double-blind payment
- Observability of the true state
  - Observable: the random number is generated inside the software and the experimenter can observe the true state.
  - Unobservable: the random number is generated outside the experiment software.

Data Summary / Results

	Restricted	Unrestricted			#
	Average	Average	Vague (%)	Length	
Non-anon.&Unobs.	7.000	8.282	75%	2.810	79
Anon.&Unobs.	8.163	8.490	51%	2.054	55
Anon.&Obs.	7.619	8.132	48%	2.103	97

- 231 subjects recruited.
- 8 Anonymous-Observable sessions,
  6 Anonymous-Unobservable sessions
  and 10 Non-anonymous-Unobservable sessions,
  with the average size of 12.3, 9.1, and 8.2 subjects in each session, respectively.
- No subject participated to more than one session.
- Each session lasted approximately 30 minutes.

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Hypothesis 1.

In all treatments with unrestricted communication (NA-UR, A-UR, AO-UR), agents use vague messages.

- In the NA-UR environment, 59 out of 79 subjects (74.7%) used a vague message.
- In the A-UR environment, 28 out of 55 subjects (50.9%) used a vague message.
- In the AO-UR environment, 47 out of 97 subjects (48.4%) used a vague message.

Result 2: People exploit vagueness

Hypothesis 2.

In the anonymous environment, less agents lie when allowed to use vague messages while reporting higher on average.

- Three types of subjects
  1. Truth-tellers (52.58%): always report truthfully
  2. Liars (26.8%): always lie
  3. Conditional liars (16%): switch from lying to truth-telling when allowed to be vague

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- more subjects lied when communication is restricted (43.3% in AO-R and 30.9% in AO-UR);
- almost all subjects who were truthful in AO-R remained truthful in AO-UR
- subjects reported higher on average when communication is not restricted (7.619 in AO-R and 8.282 in AO-UR);

Result 3-1: Impact of Anonymity on average reports

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Hypothesis 3.

Agents earn more monetary payoff on average in the anonymous environment.

Result 3-2: Impact of Anonymity on vague communication

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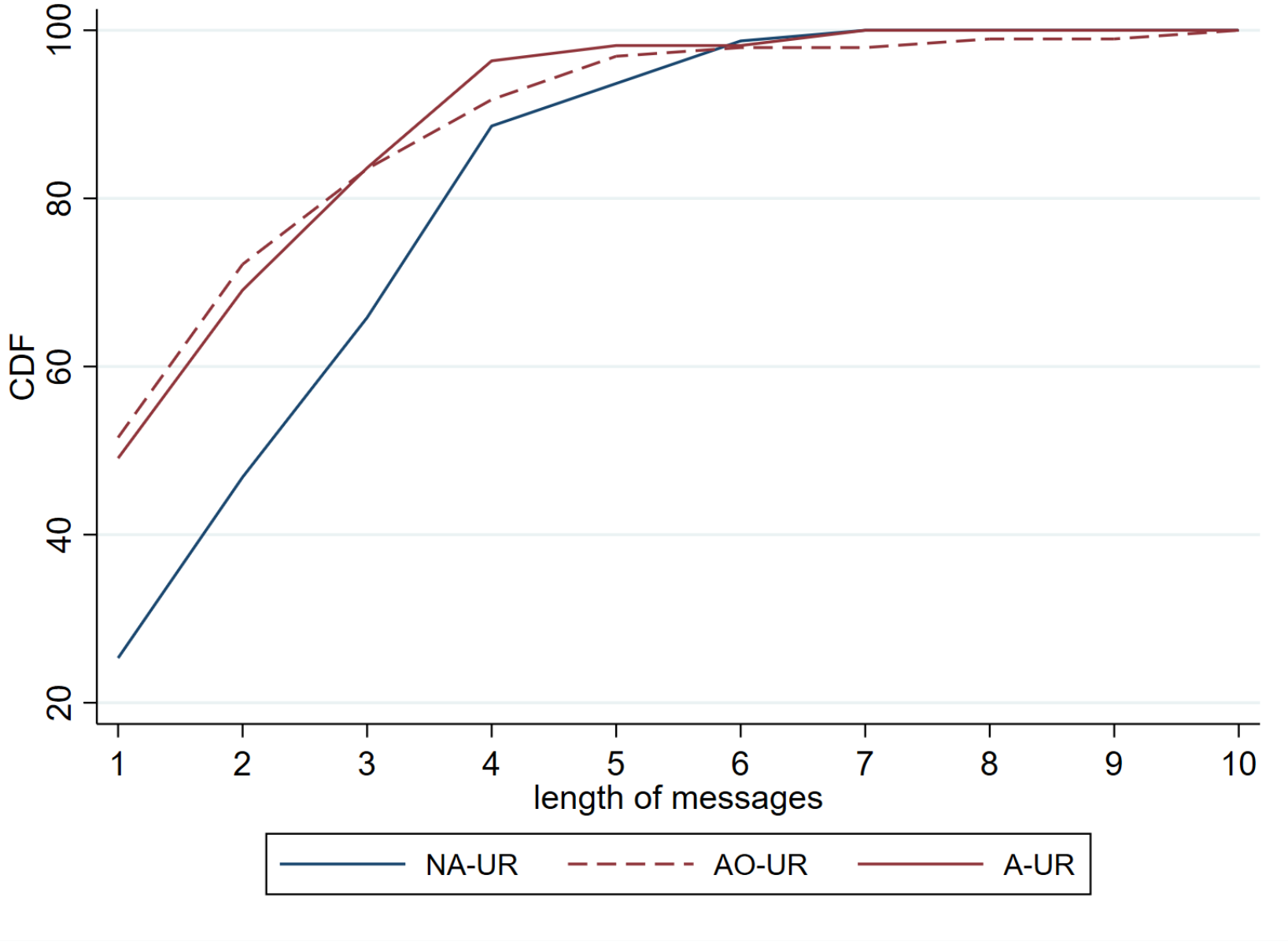
Agents in the Non-Anonymous treatment use more and longer messages.

Length of messages used



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Agents in the Non-Anonymous treatment use more and longer messages.

Agents use more obvious vague messages when Anonymous.

Summary

- We present a model of lying game (information transmission with lying costs) and test the theoretical predictions through an online experiment.
- Most subjects use vague messages and report higher on average when vague messages are allowed.
- Sophisticated exploitation of vagueness: subjects lie less in the anonymous treatments while reporting higher on average
- The way they use vague messages differs across the treatments:
  1. Subjects use vague messages more often in the NA treatments;
  2. Subjects use less obvious and longer messages in the NA treatments.

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