

Elicited beliefs and social information in modified dictator games

Iriberri, N. & Rey-Biel, P., *Quantitative Economics* 4 (2013), 513-547

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- **Introduction**
- **Experimental Design**
- **Empirical Model**
- **Experimental Results**

In literature, the existence of “social preference” has already been proved. Different types has been proposed:

- **Selfish**
- **Social Welfare Maximizing**
- **Inequity Averse**
- **Competitive**

Attitude toward other’s payoff is the key.

Research Questions:

1. 4 types really nontrivially exist?
2. **“Types” vs. “Beliefs”?**
3. **“Social Information”, “Repeated Play”?**

Modified Dictator Game

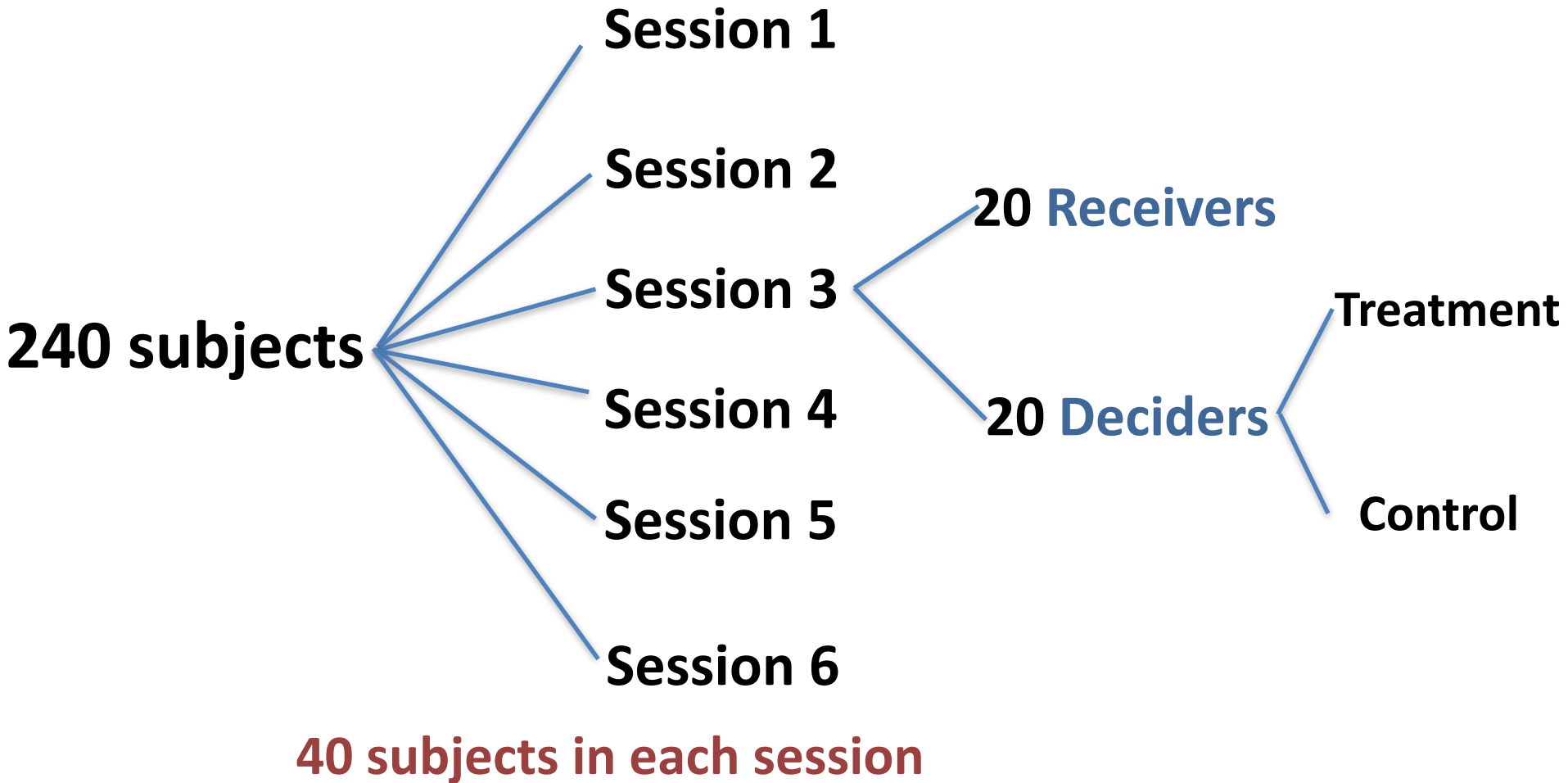
Table 2 ($s = 5$)	Option 1	Option 2	Option 3
Decider	16	17	16
Receiver	3	8	13

The choice set is **discretized**! Thus the options are now meaningful, which helps us to identify the “type” of each subject.

Modified Dictator Game

Table 2 ($s = 5$)	Option 1 Welfare-Destroying	Option 2 Selfish	Option 3 Welfare-Creating
Decider	16	17	16
Receiver	3	8	13

The choice set is **discretized**! Thus the options are now meaningful, which helps us to identify the “type” of each subject.



The experiment consists of three parts:

- Part One: **Classification**

Part One: Classification

Table 1 ($s = 7$)	Option 1	Option 2	Option 3
Decider	7	7	8
Receiver	10	24	17

- 1. Identify IA**
(ahead? behind?)
- 2. Test consistency**
(the price s)

Table 2 ($s = 5$)	Option 1	Option 2	Option 3
Decider	16	17	16
Receiver	3	8	13

The experiment consists of three parts:

- Part One: **Classification**
- Part Two: **Elicit the “Beliefs”**
- Part Three: Repeat the part one again
 - **Control:** Without Social Information
 - **Treatment:** Informed the distribution

The Empirical Model: Linear utility function

$$u_D(\pi_{Rta}, \pi_{Dta}) = (\rho r + \sigma v)\pi_{Rta} + (1 - \rho r - \sigma v)\pi_{Dta}$$

	ρ	σ
Selfish	$\rho = 0$	$\sigma = 0$
Social Welfare Maximizing	$\rho > 0$	$\sigma > 0$
Inequity Averse	$\rho > 0$	$\sigma < 0$
Competitive	$\rho < 0$	$\sigma < 0$

Part One: Descriptive Statistics

	Decider's Position									Total
	Overall			Ahead			Behind			
	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>	
Number of actions	1383	376	161	655	246	59	728	130	102	1920
Average by subject	11.53	3.13	1.34	5.46	2.05	0.49	6.07	1.08	0.85	16
Stand. dev.	(2.59)	(2.31)	(1.58)	(2.76)	(2.59)	(1.35)	(2.38)	(1.87)	(1.77)	
Frequency of play	0.72	0.20	0.08	0.68	0.26	0.06	0.76	0.14	0.11	

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Part One: Classification

	Decider's Position								
	Overall			Ahead			Behind		
	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>
SF	0.97	0.02	0.01	0.98	0.01	0.01	0.97	0.02	0.01
SW	0.37	0.57	0.05	0.32	0.64	0.04	0.43	0.51	0.06
IA	0.59	0.32	0.08	0.42	0.55	0.03	0.77	0.09	0.13
CP	0.52	0.08	0.40	0.57	0.10	0.32	0.46	0.06	0.47
Total	0.72	0.19	0.08	0.69	0.25	0.06	0.76	0.14	0.10

Part One: Classification

	Decider's Position								
	Overall			Ahead			Behind		
	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>
SF	0.97	0.02	0.01	0.98	0.01	0.01	0.97	0.02	0.01
SW	0.37	0.57	0.05	0.32	0.64	0.04	0.43	0.51	0.06
IA	0.59	0.32	0.08	0.42	0.55	0.03	0.77	0.09	0.13
CP	0.52	0.08	0.40	0.57	0.10	0.32	0.46	0.06	0.47
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	Overall			Ahead			Behind		
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SF	0.97	0.02	0.01	0.98	0.01	0.01	0.97	0.02	0.01
SW	0.37	0.57	0.05	0.32	0.64	0.04	0.43	0.51	0.06
IA	0.59	0.32	0.08	0.42	0.55	0.03	0.77	0.09	0.13
CP	0.52	0.08	0.40	0.57	0.10	0.32	0.46	0.06	0.47
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SF	0.97	0.02	0.01	0.98	0.01	0.01	0.97	0.02	0.01
SW	0.37	0.57	0.05	0.32	0.64	0.04	0.43	0.51	0.06
IA	0.59	0.32	0.08	0.42	0.55	0.03	0.77	0.09	0.13
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SF	0.97	0.02	0.01	0.98	0.01	0.01	0.97	0.02	0.01
SW	0.37	0.57	0.05	0.32	0.64	0.04	0.43	0.51	0.06
IA	0.59	0.32	0.08	0.42	0.55	0.03	0.77	0.09	0.13
CP	0.52	0.08	0.40	0.57	0.10	0.32	0.46	0.06	0.47
Total	0.72	0.19	0.08	0.69	0.25	0.06	0.76	0.14	0.10

Part Two: Descriptive Statistics

	Decider's Position								
	Overall			Ahead			Behind		
	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>
Average	0.73	0.15	0.11	0.72	0.17	0.1	0.74	0.13	0.12
Stand. dev.	(0.21)	(0.15)	(0.14)	(0.22)	(0.18)	(0.13)	(0.22)	(0.15)	(0.17)
	0.72	0.20	0.08	0.68	0.26	0.06	0.76	0.14	0.11

Part Two: False Consensus Bias

	<i>S</i>	<i>C</i>	<i>D</i>
SF	0.89 (0.13)	0.07 (0.09)	0.05 (0.08)
SW	0.55 (0.18)	0.31 (0.17)	0.14 (0.12)
IA	0.64 (0.16)	0.22 (0.13)	0.14 (0.14)
CP	0.61 (0.20)	0.13 (0.10)	0.26 (0.15)
Average	0.74 (0.21)	0.15 (0.15)	0.11 (0.14)

Part Two: False Consensus Bias

	<i>S</i>	<i>C</i>	<i>D</i>
SF	0.89 (0.13)	0.07 (0.09)	0.05 (0.08)
SW	0.55 (0.18)	0.31 (0.17)	0.14 (0.12)
IA	0.64 (0.16)	0.22 (0.13)	0.14 (0.14)
CP	0.61 (0.20)	0.13 (0.10)	0.26 (0.15)
Average	0.74 (0.21)	0.15 (0.15)	0.11 (0.14)

Part Two: “Types” vs “Beliefs”

Preferences Types	Belief Types				Total
	Belief Type 1 (0.99, 0.00, 0.00)	Belief Type 2 (0.80, 0.13, 0.07)	Belief Type 3 (0.59, 0.40, 0.02)	Belief Type 4 (0.53, 0.19, 0.28)	
SF	28	18	4	5	55
SW	0	5	7	10	22
IA	1	7	6	10	24
CP	1	4	0	10	15
Total	30	34	17	35	116

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CP	1	4	0	10	15
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Part Three: Descriptive Statistics

	Decider's Position									Total
	Overall			Ahead			Behind			
	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>	
With Social Information										
Number of actions	716	183	61	342	114	24	374	69	37	960
Average	11.93	3.05	1.02	5.7	1.9	0.4	6.23	1.15	0.62	16
Stand. dev.	(5.12)	(4.75)	(2.79)	(2.8)	(2.7)	(1.29)	(2.59)	(2.33)	(1.63)	
Frequency of Play	0.75	0.19	0.06	0.71	0.24	0.05	0.78	0.14	0.08	
Without Social Information										
Number of actions	740	137	83	369	89	22	371	48	61	960
Average	12.33	2.28	1.38	6.15	1.48	0.37	6.18	0.8	1.02	16
Stand. dev.	(4.36)	(3.62)	(2.88)	(2.41)	(2.35)	(1.02)	(2.52)	(1.58)	(2.12)	
Frequency of play	0.77	0.14	0.09	0.77	0.19	0.05	0.77	0.1	0.13	

Part Three: Descriptive Statistics

	Decider's Position									Total
	Overall			Ahead			Behind			
	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>	
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Stand. dev.	(5.12)	(4.75)	(2.79)	(2.8)	(2.7)	(1.29)	(2.59)	(2.33)	(1.63)	
Frequency of Play	0.75	0.19	0.06	0.71	0.24	0.05	0.78	0.14	0.08	
Without Social Information										
Number of actions	740	137	83	369	89	22	371	48	61	960
Average	12.33	2.28	1.38	6.15	1.48	0.37	6.18	0.8	1.02	16
Stand. dev.	(4.36)	(3.62)	(2.88)	(2.41)	(2.35)	(1.02)	(2.52)	(1.58)	(2.12)	
Frequency of play	0.77	0.14	0.09	0.77	0.19	0.05	0.77	0.1	0.13	

Distributional Difference between Treat./Con.

	Repeated Play With Social Information			Repeated Play Without Social Information		
	Number of Individuals	Frequency	$\bar{\epsilon}_k$	Number of Individuals	Frequency	$\bar{\epsilon}_k$
SF	32	0.55	0.04	32	0.54	0.03
SW	9	0.16	0.17	8	0.14	0.24
IA	11	0.19	0.26	9	0.15	0.21
CP	6	0.10	0.20	10	0.17	0.29
Total	58	1		59	1	

Frequency of different types

Preference Type	Decider's Position								
	Overall			Ahead			Behind		
	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>	<i>S</i>	<i>C</i>	<i>D</i>
With Social Information									
SF	0.98	0.02	–	0.98	0.02	–	0.98	0.02	0.01
SW	0.22	0.78	–	0.19	0.80	–	0.25	0.75	–
IA	0.64	0.28	0.08	0.47	0.47	0.06	0.81	0.09	0.10
CP	0.55	0.01	0.44	0.60	0.02	0.38	0.5	–	0.5
Without Social Information									
SF	0.98	0.02	–	0.98	0.02	–	0.99	0.01	0.01
SW	0.46	0.53	–	0.42	0.58	–	0.5	0.5	–
IA	0.58	0.35	0.07	0.42	0.57	0.01	0.75	0.13	0.13
CP	0.51	0.06	0.43	0.70	0.05	0.25	0.33	0.06	0.61
Total	0.76	0.16	0.07	0.74	0.21	0.05	0.78	0.12	0.10

Frequency of different types

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	Overall			Ahead			Behind		
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IA	0.64	0.28	0.08	0.47	0.47	0.06	0.81	0.09	0.10
CP	0.55	0.01	0.44	0.60	0.02	0.38	0.5	–	0.5
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IA	0.58	0.35	0.07	0.42	0.57	0.01	0.75	0.13	0.13
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SF	0.98	0.02	–	0.98	0.02	–	0.98	0.02	0.01
SW	0.22	0.78	–	0.19	0.80	–	0.25	0.75	–
IA	0.64	0.28	0.08	0.47	0.47	0.06	0.81	0.09	0.10
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SW	0.46	0.53	–	0.42	0.58	–	0.5	0.5	–
IA	0.58	0.35	0.07	0.42	0.57	0.01	0.75	0.13	0.13
CP	0.51	0.06	0.43	0.70	0.05	0.25	0.33	0.06	0.61
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SF	0.98	0.02	–	0.98	0.02	–	0.98	0.02	0.01
SW	0.22	0.78	–	0.19	0.80	–	0.25	0.75	–
IA	0.64	0.28	0.08	0.47	0.47	0.06	0.81	0.09	0.10
CP	0.55	0.01	0.44	0.60	0.02	0.38	0.5	–	0.5
Without Social Information									
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SW	0.46	0.53	–	0.42	0.58	–	0.5	0.5	–
IA	0.58	0.35	0.07	0.42	0.57	0.01	0.75	0.13	0.13
CP	0.51	0.06	0.43	0.70	0.05	0.25	0.33	0.06	0.61
Total	0.76	0.16	0.07	0.74	0.21	0.05	0.78	0.12	0.10

Preferences-type classification in Part 1 & 3

Preferences Types Part 1	Preferences Types Part 3				Total
	SF	SW	IA	CP	
Repeated Play With Social Information					
SF	22	0	0	1	23
SW	2	8	5	0	15
IA	4	1	6	3	14
CP	3	0	0	2	5
Total	31	9	11	6	57
Repeated Play Without Social Information					
SF	25	4	0	2	31
SW	1	3	2	1	7
IA	4	1	4	0	9
CP	2	0	1	6	9
Total	32	8	7	9	56

Preferences-type classification in Part 1 & 3

Preferences Types Part 1	Preferences Types Part 3				Total
	SF	SW	IA	CP	
Repeated Play With Social Information					
SF	22	0	0	1	23
SW	2	8	5	0	15
IA	4	1	6	3	14
CP	3	0	0	2	5
Total	31	9	11	6	57
Repeated Play Without Social Information					
SF	25	4	0	2	31
SW	1	3	2	1	7
IA	4	1	4	0	9
CP	2	0	1	6	9
Total	32	8	7	9	56

Research Questions:

1. 4 types really nontrivially exist?

Answers to Research Questions:

1. Yes! SF, SW, IA, and CP nontrivially exist!

Research Questions:

1. 4 types really nontrivially exist?
2. **“Types”** vs. **“Beliefs”**?

Answers to Research Questions:

1. Yes! SF, SW, IA, and CP nontrivially exist!
2. Different preferences types hold different beliefs about other's actions.
(**False Consensus Bias**)

Research Questions:

1. 4 types really nontrivially exist?
2. **“Types” vs. “Beliefs”?**
3. **“Social Information”, “Repeated Play”?**

Answers to Research Questions:

1. Yes! SF, SW, IA, and CP nontrivially exist!
2. Different preferences types hold different beliefs about other's actions.
(**False Consensus Bias**)
3. Type classification is robust in “repeated play” and “with(out) social information”

Thank you for your attention!