Socioeconomic stratification and stereotyping: Lab-in-the-field evidence from Colombia

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Motivation

- The socio-economic stratification (SES) system in Colombia labels households (1, 2, … 6) to cross subsidize public utilities;
- The introduction of a SES related discourse and the critiques: is it driving discrimination? Is it potentially driving segregation? (this has never been tested)
- Does it generates a in group bias (as the literature suggests) or feed stereotyping?

Setting

- Lab-in-the-field experiment in Bogotá (Colombia);
- Randomized assignment to a strategic and a distributive decision with SES contingent decisions and 50000 COP endowment;
- Results:
  - We could not find any in group bias (contrary to the literature);
  - Transfers are consistent with preferences for redistribution;
  - There is stereotyping of low SES;
  - There are no differences in trustworthiness across income level

The SES in Colombia

- Introduced in the 1980s as a system of classification for lack of data (rank dwellings based on the surroundings);
- Increased coverage of public services;
- Critiques:
  - Inflexible (upgrade is politically costly);
  - It enters the public discourse (SES -1 & SES 1000)
- Especially in Bogotá, considered a driver of discrimination driven segregation. In the literature this has been suggested by Schelling (1971).

The economics of discrimination

- Taste based discrimination (Becker, 1959; Arrow, 1973): utility driven discrimination;
- Belief based discrimination (Arrow, 1973; Moro, 2008; Moro and Norman, 2004);
- Empirical testing of discrimination:
  - *Audit Method* (evaluation and critique in Heckman and Siegelman, 1993);
  - Curricula method (Bertrand and Mullanaithan, 2004);
  - *"Discrimination in a segmented society"* (Fershtman and Gneezy, 2001), trust game & dictator game to identify taste based versus belief based discrimination

Fershtman and Gneezy (2001)'s design

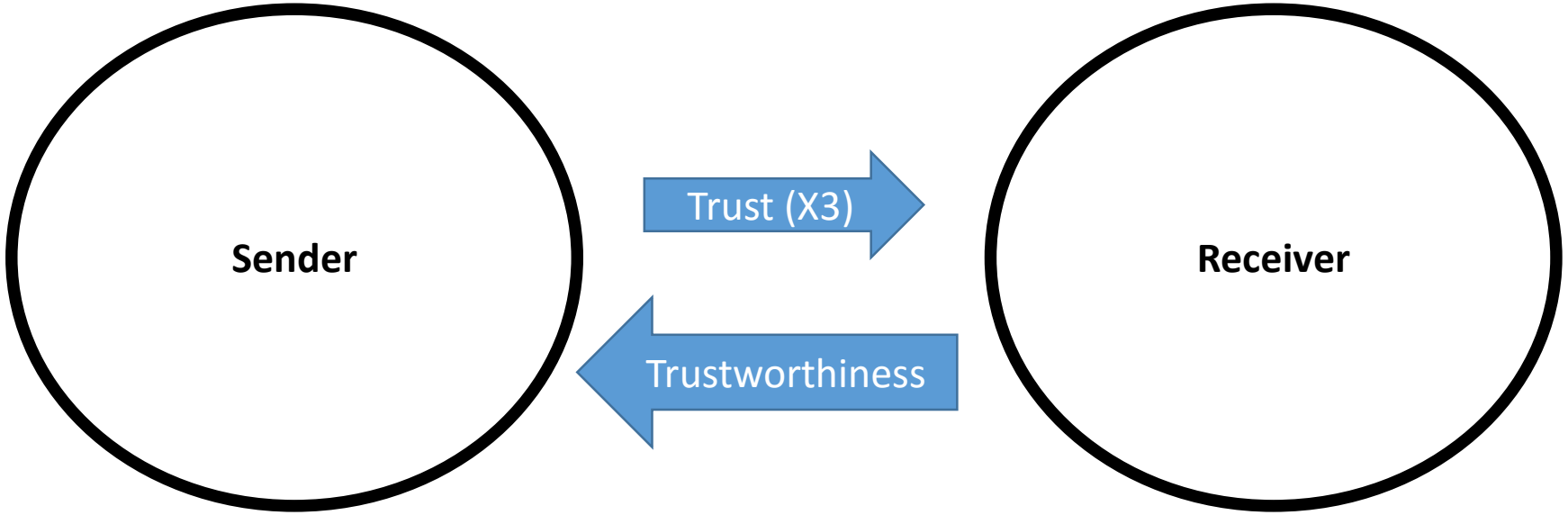
- Israel: Askenazi versus Oriental immigrants (recognizable through surnames);

- Dictator game (with tripled transfers) and trust game, to isolate the effect of beliefs (and potential stereotyping);

Task: Trust game

SES contingent:

- SES 1-2 (Low)
- SES 3-4 (Middle)
- SES 5-6 (High)

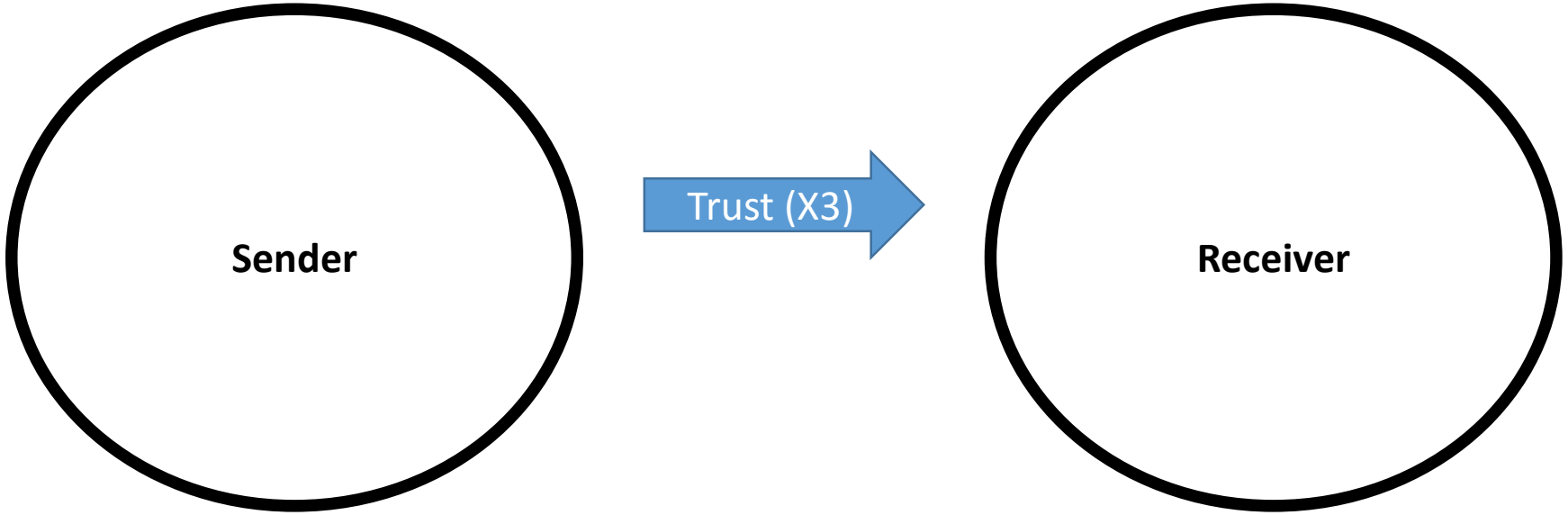


Endowment: 50000 COP

Task: Dictator game

SES contingent:

- SES 1-2 (Low)
- SES 3-4 (Middle)
- SES 5-6 (High)



Endowment: 50000 COP

The predictions from a Charness and Rabin (2002) type of model

$$\max_{x} u_1(1 - x + 3xp) + u_2(3x(1 - p)|\vartheta)$$

$$\max_{p} u_1(3x(1 - p)) + u_2(1 - x + 3xp|\vartheta)$$

- Transfer to dictator game reflects differences in tastes and/or correlated characteristics (in group bias, preferences for redistribution and discrimination of low SES are posible);
- Unless E[p]=0 transfer under the trust condition should be higher tan in the dictator. E[p]=0 is stereotyping driven discrimination;
- If p is different across SES (by concavity of u-function), than stereotyping is an equilibrium phenomenon (statistical discrimination)

Design

Condition		First decisión	Second Decision	Belief
T1	Explanation and Comprehension Qs	Trust-Sender SES contingent (low, middle, high)	Trust- Receiver Strategy Method	Receiver
T2		Trust- Receiver Strtagey Method	Trust-Sender SES contingent (low, middle, high)	Receiver
T3		Dictator-Sender		
T4		Dictator-Receiver		Receiver

The sample: 1055 valid data points

SES	Obs
1-2	35.45%
3-4	35.54%
5-6	29.01%

The sample

Condition	Trust Game	Dictator Game
Gender (F):	61.71%	60%
Age:	Min: 25 Max: 78 Mean: 42.87 Median: 43	Min: 25 Max: 86 Mean: 43.71 Median: 43
Education:	Primary: 14.39 Secondary: 22.44	Primary: 17.23 Secondary: 23.76
Married:	55.37%	62.17%
Household size:	Min: 1 Max: 12 Mean: 3.6 Median: 3	Min: 1 Max: 12 Mean: 3.64 Median: 4
HHPCE (monthly USD)	Min: 15.95 Max: 2606.59 Mean: 321.65 Median: 167.56	Min: 18.61 Max: 2606.59 Mean: 309.42 Median: 167.56
Emergency:	22.48%	20.98%
Observation	410	645

Behavioural Choices

	Trust	Dictator
Transfer to low SES	Mean: 56.82 SD: 22.65	Mean: 54.93 SD: 24.05
Transfer to middle SES	Mean: 42.39 SD: 23.71	Mean: 34.13 SD: 22.94
Transfer to high SES	Mean: 30 SD: 30.71	Mean: 18.95 SD: 25.71
Return (20% transfer)	Mean: 44.55 SD: 20.55	
Return (40% transfer)	Mean: 42.92 SD: 14.56	
Return (60% transfer)	Mean: 43.30 SD: 14.94	
Return (80% transfer)	Mean: 43.63 SD: 14.46	
Return (100% transfer)	Mean: 43.33 SD: 16.06	
Expectation	Mean: 51.85 SD: 27.67	Mean: 46.97 SD: 27.49

Diagnostics

- Sociodemographics are balanced across conditions;
- There is no order effect in the trust game;
- There is no effect of experimental assistant;

Transfer in the dictator game

		Target			
		Low SES	Middle SES	High SES	Aggregate
Participant	Low SES	50.16 (20.92)	25.40 (20.08)	13.11 (21.93)	29.56 (17.56)
	Middle SES	56.63 (24.64)	37.38 (23.16)	20.56 (26.41)	38.19 (20.79)
	High SES	59.15 (26.24)	41.68 (22.72)	24.63 (28.08)	41.82 (21.22)
	Aggregate	54.93 (24.05)	34.13 (22.94)	18.95 (25.71)	36.00 (20.39)

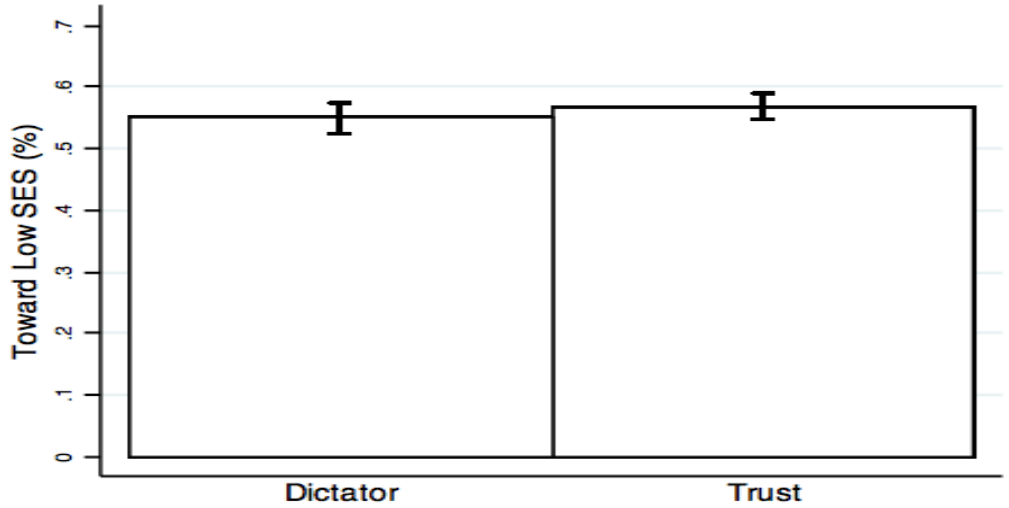
Result 1: transfer are consistent with preferences for redistribution

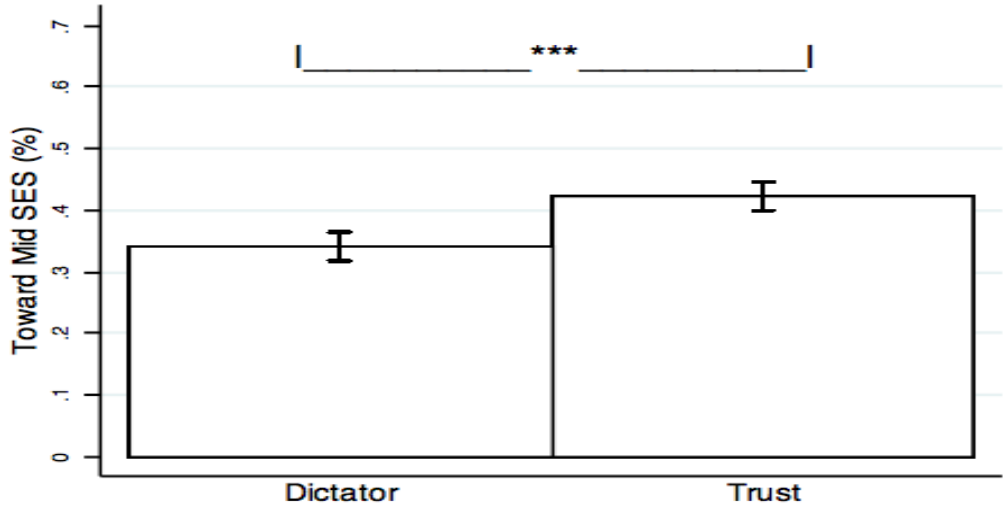
- Transfers are systematically different across the SES of the recipient (Wilcoxon Signed Rank test, all pairwise comparison p<.000);
- Transfers are systematically different across SES of the sender (Kruskal Wallis, T/Low p=.029; T/Middle p<.000; T/Highp<.000);
- There is no in-group bias:
  - Transfer to Low SES is higher than transfer to Own SES in both Middle and High SES (one sided median test, p=1 for both)

Result 2: there is stereotyping of Low SES

- Difference between trust and dictator game (assignment is random)
  - T/low SES MWW p=.14;
  - T/middle SES MWW p=.00;
  - T/high SES MWW p=.00

- The stereotyping is present in all SES, including Low SES:
  - By low SES: MWW p=.65;
  - By middle SES: MWW p=.13
  - By high SES: MWW p=.89


Toward Low SES (%)
0
.1
.2
.3
.4
.5
.6
.7
Dictator
Trust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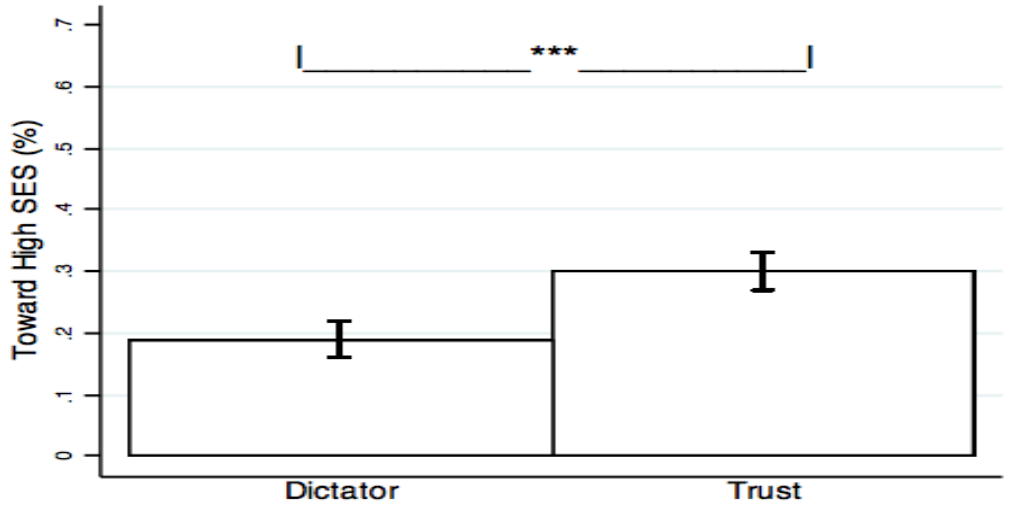
Toward Mid SES (%)
0
.1
.2
.3
.4
.5
.6
.7
Dictator
Trust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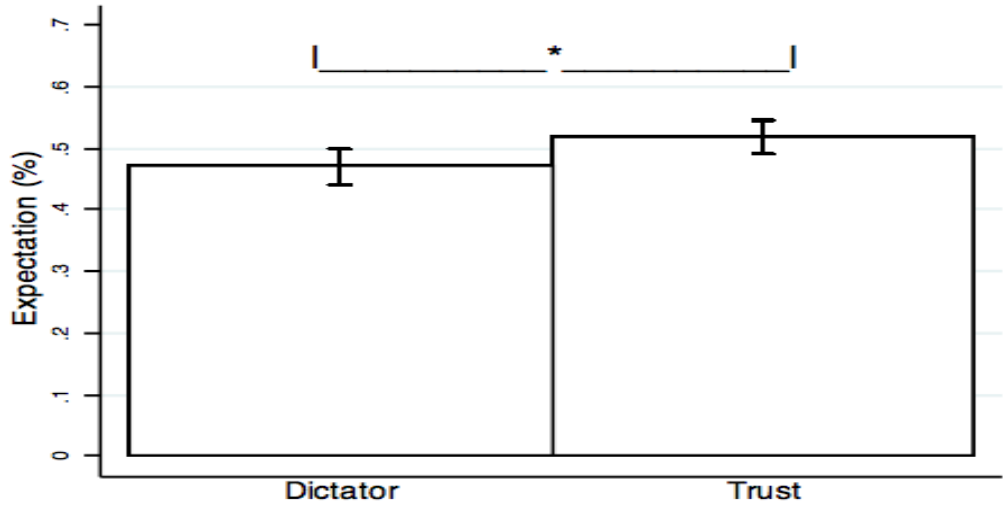
Toward High SES (%)
0
.1
.2
.3
.4
.5
.6
.7
Dictator
Trust


*
Expectation (%)
0
.1
.2
.3
.4
.5
.6
.7
Dictator
Trust

Result 3: The transfer in the trust game is consistent with preferences for redistribution.

- Transfers are systematically different across the SES of the recipient (Wilcoxon Signed Rank test, all pairwise comparison p=.00);
- Transfers are systematically different across SES of the sender (Kruskal Wallis, T/Low p=.000; T/Middle p<.000; T/High p<.000);
- There is no in-group bias:
  - Transfer to Low SES is higher than transfer to Own SES in both Middle and High SES (one sided median test, p=1 for both)

Transfer in the trust game

		Target			
		Low SES	Middle SES	High SES	Aggregate
Participant	Low SES	50.30 (18.57)	33.78 (21.56)	25.60 (29.37)	36.56 (18.79)
	Middle SES	60.51 (23.31)	44.67 (24.28)	28.70 (31.26)	44.63 (22.16)
	High SES	59.19 (24.38)	48.70 (22.70)	36.29 (30.64)	48.06 (20.28)
	Aggregate	56.82 (22.65)	42.39 (23.71)	30.00 (30.71)	43.07 (21.04)

Result 4: Trustworthiness does not exhibit systematic variance correlated with SES.

- This is in contrast with the existing literature (e.g. Falk and Zehnder, 2007)

	(1)	(2)	(3)	(4)	(5)
	Trustworthiness 20%	Trustworthiness 40%	Trustworthiness 60%	Trustworthiness 80%	Trustworthiness 100%
Mid SES	0.00378	-0.00948	0.0113	0.00172	0.0206
	(0.0282)	(0.0192)	(0.0196)	(0.0186)	(0.0204)
High SES	-0.0224	-0.0155	-0.0133	-0.0262	-0.0172
	(0.0400)	(0.0290)	(0.0275)	(0.0276)	(0.0297)
Sociodem.	Yes	Yes	Yes	Yes	Yes
Design	Yes	Yes	Yes	Yes	Yes
Income	Yes	Yes	Yes	Yes	Yes
Observations	410	410	410	410	410

Other measures of income

- Using HHPCE: KW 20% trust, p=.409; 40% trust, p=.908; 60% trust, p=.884; 80% trust, p=.676; 100% trust, p=.630;
- Using Emergency: KW 20%, p=.769; 40%, p=.376; 60%, p=.261; 80%, p=.181; 100%, p=.091

Other results: Trust

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Low SES	Low SES	Low SES	Med SES	Med SES	Med SES	High SES	High SES	High SES
Mid SES	0.0950***	0.0863***	0.0869***	0.106***	0.104***	0.106***	0.0224	0.00444	0.00897
	(0.0282)	(0.0287)	(0.0279)	(0.0327)	(0.0328)	(0.0323)	(0.0652)	(0.0663)	(0.0655)
High SES	0.0370	-0.00968	0.00234	0.0989**	0.0859*	0.0977**	0.0998	0.0852	0.109
	(0.0401)	(0.0468)	(0.0463)	(0.0406)	(0.0467)	(0.0467)	(0.0759)	(0.0841)	(0.0845)
Sociodem	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Design		Yes	Yes		Yes	Yes		Yes	Yes
Income			Yes			Yes			Yes
Observations	410	410	410	410	410	410	410	410	410
Test Med SES = High SES	2.23	4.77**	3.75*	.04	.21	.04	1.47	1.32	1.94

Other results: Dictator

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Low SES	Low SES	Low SES	Med SES	Med SES	Med SES	High SES	High SES	High SES
Mid SES	0.0599*	0.0511	0.0496	0.133***	0.124***	0.122***	0.135*	0.127*	0.127*
	(0.0361)	(0.0351)	(0.0359)	(0.0360)	(0.0352)	(0.0357)	(0.0735)	(0.0728)	(0.0736)
High SES	0.0704	0.0185	0.0220	0.170***	0.118**	0.118**	0.187**	0.166	0.166
	(0.0536)	(0.0611)	(0.0606)	(0.0478)	(0.0517)	(0.0517)	(0.0939)	(0.105)	(0.103)
Sociodem	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Design		Yes	Yes		Yes	Yes		Yes	Yes
Income			Yes			Yes			Yes
Observations	324	324	324	324	324	324	324	324	324
Test Med SES = High SES	.05	.33	.24	.73	.02	.01	.42	.18	.18

Other results: Expectation

- People do expect to be transferred more in the trust game than in the dictator game (MWW p=.01)

Other results: Expectation

	(1)	(2)	(3)	(4)	(5)	(6)
	Belief [Trust]	Belief [Trust]	Belief [Trust]	Belief [Dictator]	Belief [Dictator]	Belief [Dictator]
Mid SES	-0.0466	-0.0509	-0.0421	-0.0208	-0.0107	-0.00927
	(0.0398)	(0.0416)	(0.0412)	(0.0425)	(0.0421)	(0.0422)
High SES	-0.0536	-0.0654	-0.0470	0.0359	0.0443	0.0714
	(0.0551)	(0.0553)	(0.0558)	(0.0572)	(0.0578)	(0.0591)
Sociodem	Yes	Yes	Yes	Yes	Yes	Yes
Design		Yes	Yes		Yes	Yes
Income			Yes			Yes
Observations	410	410	410	321	321	321
Test Med SES = High SES	.02	.08	.01	1.16	1.08	2.21

Conclusions

- The lack of in group bias and the lack of differences in trustworthiness are novel results;
- There is no taste based discrimination, but stereotyping;
- Threats:
  - Internal validity: Own neghborhood - > trust (SES contingent decisions & type of task to detect in group versus high numbered effect);
  - External validity: this is the first study that covers high SES. Are trust and dictator good to measure trust and altruism? Limited problem because we care about the difference (strategic versus dstributive);
  - Experimenter effect: randomization of the task plus very high incentives