Replication Study:
Alexandra Scacco, Shana S. Warren,
"Can Social Contact Reduce Prejudice and Discrimination? Evidence from a Field Experiment in Nigeria" (2018)

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1 Summary of Paper

We summarize the results of the paper by Alexandra Scacco and Shana S. Warren, "Can Social Contact Reduce Prejudice and Discrimination? Evidence from a Field Experiment in Nigeria" (American Political Science Review, 112(3), August 2018).

The authors conducted an RCT in Kaduna, Nigeria, giving young men from different religions a sixteen-week vocational training course, the Urban Youth Vocational Training (UYVT) program, for the treatment group. Kaduna is a segregated city with Christian and Muslim residents, and has been a conflict zone until recent years. The main aim of the study was to investigate how social contact between conflicting group individuals would change prejudice and discriminatory behavior.

With this aim, the treatment group was further divided into religiously homogenous classes and heterogeneous classes (this is the main comparison of the study), and the heterogeneous class was divided into students with co-religious in-class partners and non-co-religious partners, to compare whether the extent of exposure had an effect. After the treatment was completed, the authors measured the degree of prejudice against the non-co-religious group in treatment and control using a survey, and measured the degree of discriminatory behavior through a dictator game (the player decides by himself how to divide money between another player) and a destruction game (the player decides whether to destroy the other's bill with a much smaller reward).

The following results were obtained:

- There are no significant reductions in prejudice due to either the UYVT program or social contact with the out-group.

- Assignment to a heterogeneous class does not lead to an additional significant increase in generosity (on average, in the two games played), compared to the homogenous class.

- But assignment to a heterogeneous class significantly reduces discrimination against the out-group, compared to the homogeneous class.

- Comparing this result with the non-UYVT control group, the effect was driven by a large increase in the discriminatory behavior of the homogenous class.

The authors interpret the results as in-group bonding leading to discriminatory behavior, instead of out-group contact reducing discriminatory behavior.

2 Replication of the Results

We replicated the analysis in the paper, using data published at Harvard Dataverse[1]. The results (2 figures and 6 tables) matched those in the paper. (The authors of the paper have their stata code published along with their data, whereas the replication was done in R)

3 Extensions to Analysis

Given the results of the paper, we could expect in-group bonding leading to out-group discriminatory behavior in other situations. In particular, the dictator game and the destruction game in the study provides a way to test this, albeit under a short-term low-level in-group interaction.

The dictator game and the destruction game were conducted 10 times each, and each time having in-group opponents and out-group opponents at random (these were recognizable by the player by the opponents' names). Playing with an in-group opponent could be thought of as a low-level form of in-group bonding, which we would expect to affect the later results of the game. That is, if the opponent of the game was an out-group individual, the player that experienced the bonding should take more discriminating behavior.

Following the analysis in the paper, we model the effect as follows, adding the in-group bonding effect:

$$
\begin{aligned}
\text{Action}_{i,r} = {} & \alpha + \beta_1 \text{Treatment}_i + \beta_2 \text{PlayOutGroup}_{i,r} + \beta_3 \text{InGroupContact}_{i,r} \\
& + \beta_4 \text{Treatment}_i \times \text{PlayOutGroup}_{i,r} + \text{Treatment}_i \times \beta_5 \text{InGroupContact}_{i,r} \\
& + \beta_6 \text{PlayOutGroup}_{i,r} \times \text{InGroupContact}_{i,r} \\
& + \beta_7 \text{Treatment}_i \times \text{PlayOutGroup}_{i,r} \times \text{InGroupContact}_{i,r} + \gamma_r + \epsilon_{i,r},
\end{aligned}
$$

$\text{Action}_{i,r}$ is the bills given (dictator game) or whether the bills were destroyed (destruction game), i is the individual, r is the round of play. Treatment_i is different for the specific treatment status in the original study (although we may want to drop this factor since the number of interactions will lead to low power, we cannot exclude the term because these are the levels of randomization). $\text{PlayOutGroup}_{i,r}$ is the opponent player dummy, and $\text{InGroupContact}_{i,r}$ is the new dummy factor we introduce. The coefficients of interest in this situations would be β_6 or β_7, depending on whether we want to see the effect of the study treatment. γ_r gives game-round fixed effects.

We test this hypothesis through 2 identifications of $\text{InGroupContact}_{i,r}$:

3.1 Short term effect

We consider the case in which we assume that the player exerts additional discriminatory behavior to out-group individuals when they had in-group contact in the previous game. That is, if the players played with an individual of status

$$\text{out, out, in, out, out, in, in, in, out, in,}$$

the $\text{InGroupContact}_{i,r}$ dummy would be

$$0, 0, 0, 1, 0, 0, 1, 1, 1, 0.$$

The results are shown in Table 1 and Table 2 for the dictator game and destruction game respectively (we also show results for each religion separately as in the paper. Note that the Treatment factor is different in content between the three large columns). The last two rows are the coefficients of interest. We find no significant results.

3.2 Lasting effect

We consider the case that one occasion of in-group game playing would lead to further discrimination against out-group for the rest of the game. That is, if the players played with

$$\text{out, out, in, out, out, in, in, in, out, in,}$$

the $\text{InGroupContact}_{i,r}$ dummy would be

$$0, 0, 0, 1, 1, 1, 1, 1, 1, 1.$$

The results are shown in Table 3 and Table 4 for the dictator game and destruction game respectively. We find a 10 percent significant effect for Muslims in the heterogenous class (with sign opposite of what we expect, $p = 0.074$), but given the number of coefficients we are examining, we should not interpret this as a meaningful result. The other coefficients do not reject the null.

4 Discussion

The results tell us that the effect seen in the original study (in-group bonding leading to discriminatory behavior) is at least not strong enough in the games to be detected by this sample size. If a larger sample size does not reject the null, it could mean the effect only manifests itself with long-term in-person bonding, or the contact is too low-level in the games to ignite discriminatory behavior.

Table 1: Dictator game with in-group bonding in previous game

	UYVT/non-UYVT			homogenous/heterogeneous class			co-religious/non-co-religious partner		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	Muslim	Christian	All	Muslim	Christian	All	Muslim	Christian
Treatment	0.461***	0.506***	0.411**	−0.173	0.007	−0.348	0.347	0.029	0.680**
	(0.135)	(0.186)	(0.199)	(0.174)	(0.248)	(0.244)	(0.228)	(0.317)	(0.331)
Out-group	−0.240***	−0.314***	−0.151	−0.595***	−0.559***	−0.630***	−0.219*	−0.441**	0.033
	(0.077)	(0.101)	(0.114)	(0.111)	(0.173)	(0.140)	(0.115)	(0.169)	(0.154)
Bonding	−0.061	−0.013	−0.126	−0.044	0.122	−0.200	−0.037	−0.278*	0.212
	(0.097)	(0.138)	(0.134)	(0.111)	(0.170)	(0.142)	(0.131)	(0.164)	(0.209)
Treatment × Out-group	−0.055	−0.117	−0.008	0.407***	0.152	0.664***	0.040	0.043	0.006
	(0.102)	(0.142)	(0.146)	(0.138)	(0.211)	(0.179)	(0.180)	(0.255)	(0.252)
Treatment × Bonding	0.028	−0.063	0.141	−0.004	−0.321	0.299	0.115	0.236	−0.024
	(0.121)	(0.170)	(0.169)	(0.146)	(0.210)	(0.202)	(0.213)	(0.265)	(0.335)
Out-group × Bonding	0.130	−0.039	0.319	0.101	−0.071	0.264	0.101	0.328	−0.152
	(0.144)	(0.192)	(0.211)	(0.183)	(0.258)	(0.258)	(0.203)	(0.284)	(0.294)
Treatment × Out-group × Bonding	−0.090	0.109	−0.320	−0.024	0.285	−0.331	−0.136	−0.220	−0.009
	(0.186)	(0.249)	(0.272)	(0.239)	(0.327)	(0.347)	(0.347)	(0.438)	(0.539)
Observations	7,920	3,980	3,940	5,150	2,520	2,630	3,040	1,540	1,500
R²	0.014	0.021	0.012	0.008	0.013	0.008	0.012	0.009	0.028
Adjusted R²	0.012	0.017	0.008	0.005	0.007	0.002	0.007	−0.001	0.017

Note: *p<0.1; **p<0.05; ***p<0.01

Table 2: Destruction game with in-group bonding in previous game

	UYVT/non-UYVT			homogenous/heterogeneous class			co-religious/non-co-religious partner		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	Muslim	Christian	All	Muslim	Christian	All	Muslim	Christian
Treatment	−0.063*	−0.035	−0.096*	0.053	0.018	0.087	−0.001	−0.096	0.094
	(0.034)	(0.045)	(0.052)	(0.042)	(0.056)	(0.063)	(0.055)	(0.071)	(0.085)
Out-group	0.003	0.010	−0.004	0.056	0.021	0.090*	0.021	0.023	0.022
	(0.025)	(0.032)	(0.039)	(0.037)	(0.049)	(0.054)	(0.035)	(0.045)	(0.054)
Bonding	−0.011	−0.074*	0.049	0.006	−0.026	0.039	−0.031	−0.046	−0.015
	(0.032)	(0.040)	(0.050)	(0.035)	(0.054)	(0.046)	(0.040)	(0.052)	(0.062)
Treatment × Out-group	0.013	0.011	0.015	−0.059	0.002	−0.121*	−0.073	−0.007	−0.143*
	(0.031)	(0.041)	(0.048)	(0.043)	(0.058)	(0.064)	(0.049)	(0.062)	(0.075)
Treatment × Bonding	−0.007	0.054	−0.063	−0.029	0.018	−0.075	0.021	0.074	−0.032
	(0.038)	(0.049)	(0.058)	(0.044)	(0.065)	(0.060)	(0.057)	(0.075)	(0.085)
Out-group × Bonding	0.003	0.061	−0.055	0.007	0.038	−0.024	0.033	0.020	0.041
	(0.046)	(0.058)	(0.071)	(0.057)	(0.083)	(0.079)	(0.060)	(0.080)	(0.088)
Treatment × Out-group × Bonding	0.026	−0.048	0.098	0.024	−0.050	0.099	0.015	−0.058	0.103
	(0.056)	(0.074)	(0.085)	(0.071)	(0.100)	(0.099)	(0.089)	(0.119)	(0.132)
Observations	7,920	3,980	3,940	5,150	2,520	2,630	3,040	1,540	1,500
R²	0.227	0.271	0.193	0.210	0.260	0.171	0.198	0.232	0.177
Adjusted R²	0.225	0.268	0.190	0.207	0.255	0.166	0.194	0.224	0.168

Note: *p<0.1; **p<0.05; ***p<0.01

Table 3: Dictator game with long in-group bonding memory

	UYVT/non-UYVT			homogenous/heterogeneous class			co-religious/non-co-religious partner		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	Muslim	Christian	All	Muslim	Christian	All	Muslim	Christian
Treatment	0.517***	0.619***	0.405*	−0.121	−0.038	−0.202	0.392*	−0.009	0.809**
	(0.143)	(0.186)	(0.219)	(0.176)	(0.239)	(0.259)	(0.230)	(0.291)	(0.356)
Out-group	−0.089	−0.176	0.011	−0.493***	−0.393*	−0.590***	−0.240	−0.671***	0.186
	(0.116)	(0.154)	(0.172)	(0.140)	(0.214)	(0.180)	(0.156)	(0.215)	(0.220)
Bonding	−0.065	0.173	−0.312	−0.027	0.165	−0.184	−0.109	0.169	−0.379
	(0.135)	(0.188)	(0.193)	(0.188)	(0.243)	(0.288)	(0.211)	(0.278)	(0.305)
Treatment × Out-group	−0.163	−0.306	−0.047	0.314*	−0.151	0.763***	0.102	0.036	0.120
	(0.146)	(0.197)	(0.213)	(0.181)	(0.266)	(0.240)	(0.258)	(0.337)	(0.375)
Treatment × Bonding	−0.067	−0.194	0.086	−0.073	−0.099	−0.047	−0.006	0.167	−0.194
	(0.109)	(0.157)	(0.149)	(0.140)	(0.204)	(0.195)	(0.170)	(0.243)	(0.238)
Out-group × Bonding	−0.132	−0.218	−0.028	−0.070	−0.258	0.108	0.090	0.467*	−0.268
	(0.149)	(0.206)	(0.217)	(0.186)	(0.270)	(0.251)	(0.201)	(0.260)	(0.307)
Treatment × Out-group × Bonding	0.100	0.321	−0.131	0.104	0.541	−0.315	−0.149	−0.104	−0.145
	(0.188)	(0.256)	(0.275)	(0.238)	(0.332)	(0.332)	(0.328)	(0.408)	(0.504)
Observations	7,920	3,980	3,940	5,150	2,520	2,630	3,040	1,540	1,500
R²	0.015	0.022	0.013	0.008	0.013	0.009	0.012	0.012	0.033
Adjusted R²	0.013	0.018	0.009	0.005	0.007	0.003	0.007	0.001	0.022

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4: Destruction game with long in-group bonding memory

	UYVT/non-UYVT			homogenous/heterogeneous class			co-religious/non-co-religious partner		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All	Muslim	Christian	All	Muslim	Christian	All	Muslim	Christian
Treatment	−0.046	−0.033	−0.064	0.025	−0.020	0.068	−0.024	−0.085	0.038
	(0.041)	(0.054)	(0.063)	(0.050)	(0.070)	(0.073)	(0.064)	(0.084)	(0.097)
Out-group	0.012	−0.003	0.033	0.038	0.022	0.055	−0.024	−0.013	−0.036
	(0.038)	(0.049)	(0.060)	(0.058)	(0.080)	(0.084)	(0.059)	(0.078)	(0.089)
Bonding	0.021	−0.017	0.061	−0.045	−0.069	−0.018	−0.029	−0.021	−0.041
	(0.040)	(0.048)	(0.066)	(0.053)	(0.073)	(0.077)	(0.062)	(0.080)	(0.094)
Treatment × Out-group	−0.012	0.010	−0.042	−0.053	−0.012	−0.095	−0.022	0.011	−0.053
	(0.049)	(0.065)	(0.074)	(0.069)	(0.095)	(0.100)	(0.080)	(0.109)	(0.119)
Treatment × Bonding	−0.027	0.023	−0.078	0.023	0.064	−0.016	0.043	0.019	0.064
	(0.033)	(0.045)	(0.050)	(0.040)	(0.061)	(0.053)	(0.050)	(0.071)	(0.073)
Out-group × Bonding	−0.013	0.046	−0.082	0.030	0.024	0.036	0.079	0.054	0.104
	(0.048)	(0.065)	(0.072)	(0.070)	(0.100)	(0.097)	(0.071)	(0.094)	(0.106)
Treatment × Out-group × Bonding	0.052	−0.022	0.135	0.003	−0.013	0.019	−0.060	−0.048	−0.067
	(0.061)	(0.084)	(0.089)	(0.084)	(0.119)	(0.117)	(0.099)	(0.136)	(0.145)
Observations	7,920	3,980	3,940	5,150	2,520	2,630	3,040	1,540	1,500
R²	0.227	0.270	0.193	0.210	0.260	0.171	0.198	0.232	0.176
Adjusted R²	0.226	0.267	0.190	0.207	0.255	0.166	0.194	0.224	0.167

Note: *p<0.1; **p<0.05; ***p<0.01