

# Identity Display, Group Selection and Cooperation: A Public Goods Experiment under the Chaoshan and Hakka Culture in China

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## Abstract

Culture can deeply affect economic behaviors, economists and sociologists have expounded the relevant views for a long time. Under the background of high-level globalization, it is important to understand the relationship between cultural differences and social preferences. This paper uses the method of laboratory experiment, and compares the behavioral differences in cooperation between Chaoshan and Hakka culture in Guangdong, China. As a multi-national country, China always holds the cultural concept of "harmony in diversity". In order to promote multi-national integration and common development, this paper contributes to find an effective coordination mechanism of cooperation in the context of cultural diversity, and therefore introduces two mechanisms of identity display and group selection into the game of public goods. The experiment finds that both identity display and group selection have positive and effective effects on promoting cooperation. When social cooperation is carried out within groups with the same cultural identity, it is of great significance to display culture identity in the cooperation. While when group selection is ensured to be realized, adding a segment of group selection may further promote social cooperation. In general, under the diverse cultural background in China, we can achieve a higher level of social cooperation with the help of culture identity. This research helps to improve the system construction, as well as promote social cooperation and common development in multi-cultural areas.

## Experimental Design

### Settings:

- **Subjects:** 96 undergraduates from South China Normal University; real cultural identity is Chaoshan or Hakka
- **Tasks:** standard public goods game; two phases with 10 periods each
- **Incentives:** show-up fee(10 yuan)+return in experiment(4 tokens=1 yuan)
- **Support:** computer lab with z-tree

### Treatments:

- **Baseline Treatment:**
  - ✓ subjects play a linear public goods game in groups of 2 players; simultaneously decide how much of 10 endowment tokens to keep or invest into the public good in each period.
  - ✓ payoffs are determined by  $\pi_i = 10 - x_i + 0.7 \sum_{i=1}^2 x_i$  where  $x_i$  is subject  $i$ 's contribution to the public good, and 0.7 is the marginal per-capita return of contributing to the public good.
  - ✓ subjects are also asked to predict the contribution of the other player in the group, and the accuracy determines the payoffs in the part of predictions.
- **Identity Display Treatment:**
  - ✓ on the basis of baseline treatment, the real cultural identity of both players in a group display on the decision-making interface and profit interface.
- **Group Selection Treatment:**
  - ✓ on the basis of identity display treatment, a group selection segment is added before decision-making interface where subjects can choose whether he wants to enter a same identity group or a mixed group.

## Results II

- Third, whether the group selection is successful or not affects cooperation differently.

**Table III. Group Selection in Different Situations**

Dependent variable:	Provision of public goods	
	Group Selection Successful	Group Selection Failed
Group Selection	1.120*** (0.357)	-1.011 (0.652)
Cultural Identity	0.474 (0.319)	-0.398 (0.415)
Group Type	2.108*** (0.362)	1.095** (0.444)
Observations	878	562
F-statistic	14.54***	2.34*

## Mechanism

- Identity display affects cooperation not only because the treatment changes subject's cooperation preference, but also because it changes the subject's belief of his partner's provision of public goods.

**Table IV. Mediating Effect Test of Identity Display**

Dependent variable:	Provision of public goods		Prediction (Belief)	
	Same Identity Group		Same Identity Group	
Identity Display	0.760*** (0.238)		1.457*** (0.308)	
Cooperation Belief		1.011*** (0.0568)		
Cultural Identity		-0.558** (0.224)		-0.629** (0.245)
Observations	712		712	
F-statistic	157.68***		13.51***	

- Group selection doesn't influence subject's preference. The treatment promotes cooperation by enhancing subject's prediction of others' behavior.

**Table V. Mediating Effect Test of Group Selection**

Dependent variable:	Provision of public goods		Prediction (Belief)	
	Group Selection Successful	Group Selection Successful	Group Selection Successful	
Group Selection	0.200 (0.220)		0.701*** (0.267)	
Cooperation Belief		1.160*** (0.0530)		
Cultural Identity		-0.361* (0.218)		0.945*** (0.237)
Group Type		0.725*** (0.231)		1.519*** (0.269)
Observations	878		878	
F-statistic	147.87***		15.47***	

## Literature

### Empirical Researches:

- Cultural diversity proxy
  - ✓ Ethnic composition of regional population
- Provision of public goods index
  - ✓ Expenditure of public education, road construction, etc. (Poterba,1994; Alesina et al.,1999)
- Weakness – mechanisms? why?

### Experimental Researches:

- Cross-cultural comparative experiment
  - ✓ Same experiment implemented in different cultural environments (Barr et al., 2009; Henrich et al., 2001)
- Cross-cultural interaction experiment
  - ✓ Introduce subjects from different culture and construct cultural diversity in experimental environment (Ferraro and Cummings, 2007; Griffin et al., 2012; Cox et al., 2020)

### Our Research:

- Follow cross-cultural interaction experiment
- Take Chaoshan subjects and Hakka subjects into the laboratory and play public goods game

## Results I

- First, the two mechanisms of identity display and group selection both help to promote cooperation.

**Table I. Effects of Two Mechanisms**

Dependent variable:	Provision of public goods	
	Baseline + Identity Display	Identity Display + Group Selection
Treatment	1.497*** (0.291)	0.779** (0.344)
Cultural Identity	-0.845*** (0.259)	0.852*** (0.324)
Group Type		1.828*** (0.358)
Observations	960	960
F-statistic	17.86***	11.48***

- Second, identity display has different marginal effects on cooperation between same identity group and mixed group.

**Table II. Identity Display in Different Groups**

Dependent variable:	Provision of public goods	
	Same Identity Group	Mixed Group
Identity Display	2.189*** (0.366)	0.784** (0.342)
Cultural Identity	-1.086*** (0.311)	-0.556** (0.251)
Observations	712	728
F-statistic	22.78***	5.18***

## Conclusions

- Both Identity Display and Group Selection have **positive and effective effects** on promoting cooperation.
- The marginal effect is much more striking **within in-group**, no matter the identity is primed by Identity Display or Group Selection.
- Identity Display changes **both cooperation preference and belief**, whereas Group Selection **only influences cooperation belief**.

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