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Group Identity and the Formation of Conditional Social Preferences Among Chinese Youth

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Comments

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1 Introduction

The Chinese economic reforms of 1978 spurred an unprecedented migration from rural areas and small cities to larger urban areas (Liu et al., 2016; Ouyang et al., 2017). This exasperated social fissures arising from the modern Chinese household registration, or hukou, system. The hukou system has fostered distinct group identities within Chinese municipalities: locals - those whose hukous are registered with the city - and migrants - those who relocated to the municipality but whose hukous remain registered elsewhere (Zhang and Shunfeng, 2003). In the years immediately following the 1978 economic reforms, municipal governments fomented systemic prejudice toward migrants through widespread discriminatory access to services and civic benefits. Locals typically enjoyed relatively more civil privileges than migrants; some examples are better access to social insurance, education and healthcare (Chen and Liu, 2016). Despite another set of economic reforms in 2003, which reduced differential access to civil services, the history of institutional biases led to enduring preference-driven in- and out-group biases and associated conflicts (Cai, 2011; Yang and Guo, 2018; Chen et al., 2020).

A current-day hukou is a family-level document that identifies family members, their permanent home addresses and their national identification numbers.[1] A permanent home address resides within a specific municipality and determines eligibility for many of the public services and entitlements provided by that municipality. Changing one's permanent home address requires approval of the new municipality, of which many place strict limitations. Consequently, most major Chinese cities have experienced a large influx of migrants who do not have the local hukou forming a new out-group within their population.

The discrimination of migrants by locals is based on both material economic differences as well as psychological in-group and out-group biases. The preferred access to public services enjoyed by locals contributes to the gaps in education, healthcare, public housing, and social insurance (Liu et al., 2016; Ouyang et al., 2017; Nielsen et al., 2005; Wu, 2004). Beyond these material asymmetries, or perhaps in part driven by them, attitudinal biases have emerged (Orum et al.,

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[1]An additional important hukou attribute is its distinction as either being rural or urban. Historically, rural and urban hukous provided distinct civil rights. For example, a rural hukou provides the family with access to an agricultural land plot, while an urban hukou is typically associated with better-funded public resources. Since 2014, these differential rights have been gradually reformed (Chen et al., 2016; Bai et al., 2014; Andreas and Zhan, 2016). Many academic studies have focused on the social problems experienced by the two group identities forged by the rural-urban distinction (Chen and Liu, 2016; Hao and Tang, 2015; Zhu, 2007). In the current study, we focus on the local-migrant dichotomy as this distinction is more salient given the prevalence of a distinct local language and set of customs to our study location.

2009; Zavoretti, 2017). Locals frequently hold the negative belief that migrants are the cause of social ills such as crime, congestion and excessive labour market competition (Solinger, 1999; Chen, 2013); as well as negative stereotypes regarding social behaviour and presentation (Gan, 2014). In contrast, migrants often report feelings of alienation and scorn (Keung Wong et al., 2007). Li (2006) finds that these factors contribute to resentment of the local group. Lan (2014) notes this discrimination may be a longer-term phenomenon, as second-generation migrants struggle against the uneven distribution of economic opportunities and hierarchical recognition of differences from locals.

We view these biases, particularly behavioural ones, as at least partially arising from group-conditional social preferences. Traditionally, social preferences measure one's welfare based upon one's own and others' material consumption. We take a revised perspective that one's social preference can be conditional upon the relative group identity of the others whose consumption is considered (Benjamin et al., 2010; Chen and Li, 2009). Our primary concern is the nature of these group-conditional social preferences in urban Chinese youth. We are also concerned with how these behavioural biases and the corresponding social preferences are shaped. Specifically, how are they influenced through intergroup contact in schools? How does the joint effect of one's age and the duration of this type of intergroup contact impact them? And to what extent are they transmitted from their parents? Answers to these questions can inform whether conflicts between locals and migrants will persist longer term.

In this paper, we report on an experiment deploying a set of three allocation tasks suitable for young children developed by Fehr et al. (2008). Every decision involves a pair of participants, one participant is the dictator and the other is the receiver - in our experiment we use neutral labels for the two roles. In each decision, the dictator chooses between a pair of monetary payment profiles. A profile prescribes one payment for the dictator and one for the receiver. Such decision tasks are typically called Dictator games in the behavioural economics literature.[2] We conducted our experiment in a primary school (participants from grades 3 and 5), middle school (grades 7 and 8) and high school (grades 10 and 11), all of which are located in the municipality of Xiamen, China. In conjunction with these experiments, we also asked the subjects' parents to complete a survey with hypothetical versions of the three dictator tasks.

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[2]The Dictator game, introduced by Forsythe et al. (1994), is a well-established paradigm for measuring social preferences. Engel (2011) and Cochard et al. (2021) conduct meta-analyses on the results of Dictator game experimental studies. They find a considerable share of people behave pro-socially.

types between parents and their children. Migrants show transmission of all social preference types for both the in- and out-group. Both groups show transmission of the preferences for the out-group. A notable exception is for the Spiteful preference of locals; there is a negative correlation which is stronger for their out-group than the their in-group. This suggests that negative outgroup bias may generationally diminish faster among locals than among migrants.

We find two additional major results regarding unconditional behavioural norms and social preferences. First, concerning age effects, we find that Spiteful social preferences becomes less frequent, and the incidence of Generous social preferences increases with the school level. Second, concerning gender, we find that migrant girls exhibit more envy than migrant boys. This leads them to more often have Egalitarian social preferences, and less often have Generous ones.

Our results speak to the literature that examines how intergroup contact can diffuse out-group biases in the Chinese local-migrant context. Public schooling provides one of the largest scale interventions of having members of different groups extensively interact in productive and pleasant activities which according to the Allport contact hypothesis (Hewstone and Swart, 2011) breaks down negative out-group prejudice (Nieuwenhuis and Shen, 2023). We find the lack of such biases by local students but the presence of such biases by migrant students as a partial success for such contact. This suggests that more directed efforts to establish productive contact may be more successful, as suggested in the studies of Wang et al. (2016); Xue (2018); Gu et al. (2016); Liu et al. (2020) and Zhou et al. (2022).

2 Social preference formation: hypotheses on development, intergroup contact and familial transmission

We develop a set of testable hypotheses for behaviours and social preference classification by examining three possible channels for the formation of social preferences. First, we formulate hypotheses on general age trends in our student subjects' responses through induction on existing patterns documented in the experimental literature. Second, we develop a hypothesis on group conditional differences based on theories and empirical results on the impact of intergroup contact through schools. Finally, we develop hypotheses from previous investigations of intergenerational transmission of social preferences.

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A large literature studying the development of social preferences in children started with the introduction of the trio of Dictator allocation tasks by Fehr et al. (2008).[3] This literature up to 2018 is well summarized in a survey of economic experiments with children by Sutter et al. (2019) - particularly relevant is Table 4 pp. 108–109 - with more recent studies included in the survey article by Schunk and Zipperle (2023) - in this case Table 1 is particularly relevant. We discuss the results that are consistent across studies with participants in a similar age range, eight to seventeen years old, as in our study. Fehr et al. (2013) find that Egalitarian social preferences diminish and Generous social preferences grow in our common age bracket. Almås et al. (2010) find in a Norwegian cohort between the ages of ten and 18 that they have consistently high Egalitarian social preferences, but the trend is toward a weaker form of this preference as sharing behaviour diminishes. This finding is very similar in an Austrian sample with a common age range to the current study (Sutter, 2007). These studies all find that females more frequently exhibit Egalitarian preferences. The predominance of the literature exploring the development of social preferences through childhood and adolescence considers samples mostly from the United States and Europe. Two recent studies highlight comparative results for Chinese youth. Zhang and Benozio (2021) observe that seven-year-old Chinese children exhibit less Envious behaviour than found in studies of American children of the same age (just below the youngest participants in our samples). However, Li et al. (2022) found in their subsample of seven to 12-year-old Chinese similar levels of Envy as the same-age children in the West. This leads to our first two hypotheses.

Hypothesis 1. *Egalitarian preferences increase with school level.*

Hypothesis 2. *Females exhibit more Egalitarian preferences and less Generous behaviour than males.*

Next, we formulate hypotheses concerning the group conditionality of behaviour and social preferences. At the core of these differences is the assumption that locals enjoy the stronger set of social and institutional preferential standing. It is argued that intergroup contact between individuals can positively shift attitudes not only toward the involved individual but also toward their group. (Allport, 1954). Hewstone and Brown (1986) pioneered the hypothesis this contact effect must be both pleasant and productive. Schools that integrate pupils from different identity groups have long been studied to validate such interventions. These examples have considered racial desegregation (Binder et al., 2009; Carrell et al., 2019; Billings et al., 2021), gender

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[3]This original study conducted with children aged three to eight years old

(Martin et al., 2017; Halim et al., 2021; Dhar et al., 2022) and immigrant status (Vezzali et al., 2012; Schachner et al., 2019; Barron et al., 2021; Holmlund et al., 2023).

Several studies have examined the impact of local and migrant intergroup contact within urban Chinese schools. Nieuwenhuis and Shen (2023) find a positive correlation between school integration and contact with the attitudes of locals toward migrants, and this correlation increases with the intensity and duration of contact. In contrast Zhang (2018), without interventions, find migrant students' group identity solidified and grew as an obstacle to intergroup contact with local students. In a randomized control intervention within a Xiamen (China) middle school Gu et al. (2016), studying a population similar to this study, a pleasant and productive contact intervention resulted in significantly improved out-group attitudes for both local and migrant students. Outside of the Chinese youth context, experimental studies have found a dearth of out-group biases and group-conditional social preferences in Austria Fehr et al. (2013); Bindra et al. (2020) and Spain Cobo-Reyes et al. (2020). From this literature on the effect of intergroup contact between local and migrant students in the urban Chinese school context, and that our experiment does not include an intervention, we propose the following hypotheses.

Hypothesis 3a. *Migrant students have an out-group bias for Envy and more Spiteful social preferences concerning locals than other migrants.*

Hypothesis 3b. *Local students will not exhibit group-conditional behaviour or have group-conditional social preferences.*

There is widespread experimental evidence that, regardless of culture, there is intergenerational familial transmission of standard economic preferences such as risk and intertemporal consumption (Heinrich and Shachat, 2020; Andreoni et al., 2019; Zumbuehl et al., 2021; Samek et al., 2021; Brenøe and Epper, 2022).[4] With respect to social preferences, there is evidence that Prosocial and unselfish behaviour is transmitted from parent to child. Cappelen et al. (2020) demonstrate this by introducing a one-year compensated parenting program in early childhood which increases their children's likelihood to exhibit unselfish behaviours. In a study that examines the correlations between child and parent preferences as they relate to socioeconomic status and other household factors, Falk et al. (2021) finds a greater transmission for those with higher socioeconomic status markers. In a longitudinal study within Germany, Kosse

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[4]The positive correlation between parent and child risk preferences in Heinrich and Shachat (2020) is particularly relevant, as that study was conducted with a different sample of participants from the same Xiamen school district we sample from.

et al. (2020) finds a strong transmission of prosocial behaviour between mothers and their children, which is enhanced by socioeconomic status and the intensity of mother-child interaction. Chowdhury et al. (2022) explore the intergenerational transmission of economic preferences, including social ones, in a sample of rural Bangladesh communities, in contrast to the western samples of previous studies, and find transmission of prosocial and spiteful preferences. But these are not correlated with socioeconomic status. Our study will allow for an assessment of intergenerational transmission and its correlation with socioeconomic status.

Hypothesis 4. *There is a positive correlation between parent-child social preference types. These correlations are independent of local and migrant identity.*

3 Experimental design and procedures

Our study collates three data sources: a choice experiment with children, information on students reported by their schools and a parents' survey. We conducted all experimental sessions at primary, middle and high schools in Xiamen, China. There were 266 student participants, 131 boys and 135 girls enrolled across grades three, five, seven, eight, ten and eleven.

The core task in our experiment is the sequence of three binary Dictator allocation tasks: Pro-social, Envy, and Sharing. In all three Dictator tasks, the first alternative payment profile provides equal payments of (20,20).[5] We label this Profile A and the other Profile B. The names we associate with each Dictator task suggest the behavioural norm it tests. In the Pro-social task, Profile B is (20,0), which indicates that the decision maker's payment is twenty and the counterpart's is zero. A choice of Profile A is consistent with a pro-social norm, as they are opting not to impose a costless penalty on their counterpart. In the Envy task, Profile B is (20,40). When choosing Profile A the decision maker prevents their counterpart from having a larger payment than their own. In the Sharing task, Profile B is (40,0). A choice of Profile A demonstrates positive regard for their counterpart's payment to the extent they prefer a 50-50 share of a fixed size reward to taking the whole reward for themselves. Table 1 summarizes the potential payoff profiles in experimental currency for each task.

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[5]The payments given are in units of an experimental currency. We give the conversion rates to Chinese Renminbi shortly.

Table 1: Dictator allocation tasks

Allocation task	Profile A	Profile B
Pro-social	(20, 20)	(20, 0)
Envy	(20, 20)	(20, 40)
Sharing	(20, 20)	(40, 0)

Payments are given in experimental currency units. The first payment in each tupel goes to the decision maker.

Our key treatment variables are the hukou status profiles of the Dictator and Receiver. allowing us to assess the extent local and migrant Dictators' behaviours, and then social preferences, are conditional upon the in-group and out-group status of the Receiver. We implemented this 2×2 design of in- and out-group conditions across subjects by implementing four pairings (Dictator, Receiver): (local, local), (local, migrant), (migrant, migrant) and (migrant, local). The first two pairs allow assessment of the group conditional behavioural biases for local dictators, and the latter two pairs allow the same for migrants.

In all experimental sessions, the lead experimenter read the experimental instructions aloud. She stressed that we wanted the participants to understand all procedures and encouraged questions. The lead experimenter and her assistants then made sure to answer all arising questions thoroughly. She also made clear that choices had to be made individually and that talking to other students was forbidden. To verify the participants' understanding of the instructions, they all had to successfully answer two control questions to demonstrate their comprehension. Their answers were checked by the assistants before the experiment continued. Any subject who did not answer these questions correctly or showed a lack of understanding during the conversation with the assistants was excluded from our data analyses.[6] Students then made their choices noting them in a paper booklet that contained the different Dictator tasks.[7] To control for potential effects on the ordering of the Dictator tasks, we adopted two randomly assigned sequences of tasks. The Normal sequence is Pro-social, Envy and then Sharing. The Reverse sequence reverses this order. We did not provide feedback on the outcomes of the decision until all tasks were completed.

Students' payments were determined at the end of the experiment by randomly selecting one of the Dictator tasks for payment. The selected task was the same for all participants in a

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[6]Overall 266 participants were recruited for the experiment. A grade 8 participant is excluded from our analysis because they could not correctly answer the control questions. A grade 11 participant was excluded because they did not complete the Envy task

[7]We provide an English translation of these booklets in the appendix.

Table 2: Experiment details

School	Exchange rate	Hukou status	Children (N)	Parents (N)
Primary	1x	Local	47	-
	1x	Migrant	48	-
Middle	2x	Local	40	32
	2x	Migrant	48	39
High	3x	Local	34	34
	3x	Migrant	45	44

The exchange rate gives the multiplier to convert experimental currency units to RMB. Hukou status refers to the decision maker's hukou as provided by the schools.

session and was determined by a drawing from a bingo cage. After the task was determined, the assistants approached the students one by one and determined their payment in the selected task. Due to age differences, we varied the exchange rates between the experimental currency and Chinese Reminbi payments. In order to make payoff incentives similar across age groups we used the payoff factors for primary, middle and high school participants of one, two and three respectively. This information is summarized in Table 2.

In this study, we incorporate two other data sources. First, the students' hukou statuses, grades and genders were provided by the schools' administrators. Second, we collected information by administering a survey to parents that included a parent's choices in the Dictator tasks with hypothetical payoffs.[8] For the parents we multiplied hypothetical payoffs by one thousand relative to those of primary school children to make payoffs more salient. Their treatment matched that of their child. The survey also asked for additional household information, including how many members of the household have a high school degree, how many have a university degree and the number of houses or apartments owned in the household .[9]

Each child received a questionnaire with instructions that one of their parents complete it. The questionnaire had to be placed in an envelope, sealed, and then signed by the parent. The teachers then collected the sealed envelopes from their students. For returning the questionnaire parents received RMB 40 (approximately US dollars 6.45 at the time). Note that we did not control which parent (or other adult family member) completed a survey, but we asked the respondent to provide their relationship to the child.[10] Unfortunately, we cannot include the

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[8]In the appendix, we provide an English translation of the main survey questions.

[9]We use this as a proxy of wealth as this is residential real estate is the primary store of wealth for Chinese citizens (Dong et al., 2021).

[10]To not discriminate in favour of two-parent households, we did not fix who had to answer the questionnaire. Therefore, we cannot exclude self-selection effects in parents' answers. Of course, we cannot also exclude the possibility that parents talked to their children about the answers to the survey.

survey responses of parents of primary school participants due to a critical data recording error. In total, we include the data from 145 parents: 84 mothers, and 59 fathers, and 8 non-parent relationships.[11] Table 3 reports summary statistics of student subjects and parent survey respondents.

Table 3: Summary statistics student subjects and parents

School	Student Subjects			Parents						
	N	Age	Female	N	Mother	Age	High Eduction		Properties	
							Migrants	Locals	Migrants	Locals
Primary	96	10.2	0.49	0	—	—	—	—	—	—
Middle	88	13.7	0.43	68	0.57	39.6	0.11	0.41	0.81	1.25
High	80	16.6	0.61	77	0.56	41.9	0.11	0.24	0.84	1.09
Total	264	13.3	0.51	145	0.57	40.8	0.11	0.32	0.83	1.17

4 Results

4.1 Behaviour: Choices in Dictator allocation tasks

We start by examining exhibited behaviour in the Dictator allocation tasks, test for in- and out-group biases within migrant and local students and then test for comparative in- and out-group biases across migrant and local students. We report this behaviour and testing by school level to evaluate development trends. Table 4 reports the percentage of Profile A choices in each of the three Dictator allocation tasks: Prosocial, Envy and Sharing. In columns two through five, we report migrant and local Prosocial behaviour and tests of statistical difference between them. The χ^2 test statistics in column four and associated p-values in column five inform the hypothesis test that the frequency of choosing profile A is the same for local and migrant students under the same school and group conditions. We fail to reject this hypothesis for all school levels and both in- and out-group conditions. However, in the Envy task, we do find that in the primary school level migrants have more Envious behaviour towards locals than locals have toward migrants. Further, Primary local students exhibit a marginally significantly higher level of sharing with migrant students (70%) than vice versa (42%). We state our first result.

Result 1. *Hypothesis 3a is partially supported. Migrants exhibit more Envious behaviour towards locals than vice versa, but only among Primary school participants.*

We now explore whether local or migrant students exhibit group conditional biases in behaviour.

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[11]Thirteen parents did not return the questionnaire, another six were not filled out completely.

Continuing with the contents of Table 4, consider the rows labelled χ^2 and p-value that follow the in- and out-group rows in each school section. These rows present the results of a hypothesis test that migrant (local) students have the same allocation behaviour to their in- and out-group. We find only two instances of such group-conditional behaviour. First, we find that local primary students exhibit significantly more Sharing behaviour towards migrants (70%) than other locals (40%). We discuss the potential reasons for this out-group favouritism in the concluding section. Second, we observe a marginally significant in-group Prosociality behaviour for local high school students. We state our second result.

Result 2. *Locals show a positive out-group bias toward migrants in Primary school and less Prosociality toward migrants than to other locals in the high school. Hypothesis 3b is not supported in terms of behaviour.*

We evaluate the development of student social behaviour and gender differences as well as out-group biases through Probit regressions on individual allocation decisions - the dependent variable is a choice of Profile A - in Table 5. Our first observation is the increasing trend in school level of Prosocial behaviour for both migrants and locals. We have several notable observations with respect to Envy. Envy is significantly greater for both migrants and locals in Primary school relative to Middle and High school. For migrants, there is a weakly significant greater Envy towards their out-group - locals. The only gender effect we find is that migrant females exhibit more Envy than their male counterparts. With respect to Sharing, migrants significantly choose to share less in High school and there is weakly significant amount more of Sharing in-group. Local students share more in both Primary and Middle schools. However, this only is towards migrants; as reflected in the significant coefficient on the in-group dummy variable being of similar magnitude but opposite sign. We summarize the following results on development and gender.

Result 3. *For both groups, Prosocial behaviour increases with the school level, Envy diminishes after primary school, and Sharing decreases in High school. This lends support to the hypothesis 1.*

Result 4. *Female migrant students exhibit more Envy than male migrant students, female local students do not exhibit more Envy than male local students.*

Table 5: Probit regressions with choice of Profile A as the dependent variable with the base treatment High school male in-group

	Migrants			Locals		
	Pro-social	Envy	Sharing	Pro-social	Envy	Sharing
Primary	-0.697***	0.921***	0.032	-0.592***	0.378***	0.430***
	(0.042)	(0.095)	(0.052)	(0.085)	(0.004)	(0.026)
Middle	-0.192***	-0.065	0.107	-0.397***	-0.108***	0.327***
	(0.045)	(0.069)	(0.069)	(0.088)	(0.011)	(0.035)
Out-group	-0.006	0.292*	-0.139*	0.116	-0.258	0.470**
	(0.150)	(0.174)	(0.076)	(0.370)	(0.186)	(0.211)
Female	-0.056	1.054***	0.376	0.048	0.296	0.098
	(0.190)	(0.291)	(0.233)	(0.506)	(0.280)	(0.312)
Constant	1.267***	0.169	-0.380***	1.373***	0.023	-0.126*
	(0.170)	(0.212)	(0.129)	(0.241)	(0.162)	(0.072)
N	142	142	142	122	122	122

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The baseline is High school - male - out-group condition

We next evaluate, and report in Table 6, the nature of the parents' allocation behaviour and whether they exhibit out-group biases based upon their hypothetical allocations using the same analysis as reported in Table 4 for the student subjects. We observe both local and migrant parents have similar and high degrees of Prosocial and non-Envious behaviour. There is an interesting difference in sharing behaviour. Local parents show low levels of in-group Sharing in both Middle and High school samples, but Primary school parents show a high level of Sharing with migrants. Again, we find an ly favourable out-group bias of high status to low status.

Table 6: Parent hypothetical behavioural choices in allocation tasks with χ^2 tests for equal proportions

Percentage choosing Profile A

	Prosocial task				Envy task				Sharing task			
	Migrant	Local	χ^2	p-value	Migrant	Local	χ^2	p-value	Migrant	Local	χ^2	p-value
Middle												
In-group	94.12	64.71	4.497	0.034	76.47	70.59	0.151	0.697	64.71	23.53	5.846	<u>0.016</u>
Out-group	94.74	80.00	1.754	0.185	73.68	73.33	0.001	0.982	57.89	60.00	0.015	0.901
χ^2	0.007	0.922			0.037	0.030			0.175	4.394		
p-value	0.935	0.337			0.847	0.863			0.676	<u>0.036</u>		
High												
In-group	86.36	75.00	0.796	0.372	72.73	87.50	1.216	0.270	36.36	25.00	0.554	0.457
Out-group	86.36	76.47	0.637	0.425	86.36	70.59	1.464	0.226	59.09	35.29	2.174	0.140
χ^2	0.000	0.010			1.257	1.411			2.277	0.414		
p-value	1.000	0.922			0.262	0.235			0.131	0.520		
Total												
In-group	89.74	69.70	4.586	<u>0.032</u>	74.36	78.79	0.194	0.659	48.72	24.24	4.569	0.033
Out-group	90.74	78.13	2.063	0.151	80.49	71.88	0.746	0.388	58.54	46.88	0.982	0.322
χ^2	0.006	0.598			0.431	0.418			0.775	3.640		
p-value	0.941	0.440			0.512	0.518			0.379	<u>0.056</u>		

A dashed underline indicates 10% level of significance, a single underline indicates 5% level of significance and a double underline indicates 1% level of significance.

4.2 Social preference type analysis

A decision maker's choices in the three Dictator tasks form a triple that identifies their social preference type. Each of the eight possible choice triples is classified as one of the following four social preference types: Egalitarian, Generous, Spiteful, or Other. One's behavioural norms and social preference type can be conditional upon whether the counterpart is a member of the decision maker's in- or out-group. Table 7 presents the social preference partition of allocation choice sequences.[12]

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[12]We adopt a coarser definition of categories than the original paradigm introduced by Fehr et al. (2008) which used the additional categories of Weakly Egalitarian and Weakly Generous.

Table 7: Classification of preferences based on individual behaviours in all three games

Social preference type	Consistent choice sequences		
	Pro-social	Envy	Sharing
Egalitarian	(20, 20)	(20, 20)	(20, 20)
	(20, 20)	(20, 20)	(40, 0)
Generous	(20, 20)	(20, 40)	(20, 20)
	(20, 20)	(20, 40)	(40, 0)
Spiteful	(20, 0)	(20, 20)	(40, 0)
Other	(20, 0)	(20, 20)	(20, 20)
	(20, 0)	(20, 40)	(20, 20)
	(20, 0)	(20, 40)	(40, 0)

In Table 8, we report the frequencies of children classified to the Egalitarian, Generous and Spiteful social preference types. We do this by group, school level, and in- or out-group treatment. We find no evidence for group conditional social preferences, none of the column χ^2 tests is significant. There is one instance, a row χ^2 test, in which we can reject that the proportion of social preference types is the same for migrant and local children. Local Primary school students have a greater proportion of the Generous social preference type than their migrant counterparts in the out-group treatment.

Table 8: Social preference classifications for children with χ^2 tests for equal proportions

Social preference type

	Egalitarian				Generous				Spiteful			
	Migrant	Local	χ^2	p-value	Migrant	Local	χ^2	p-value	Migrant	Local	χ^2	p-value
Primary												
In-group	58.33	56.00	0.027	0.869	16.67	16.00	0.004	0.950	25.00	24.00	0.007	0.935
Out-group	62.50	47.83	1.023	0.312	4.17	34.78	7.111	0.008	33.33	17.39	1.570	0.210
χ^2	0.087	0.321			2.009	2.254			0.403	0.317		
p-value	0.768	0.571			0.156	0.133			0.525	0.572		
Middle												
In-group	44.00	33.33	0.545	0.460	40.00	42.86	0.038	0.845	12.00	23.81	1.108	0.293
Out-group	52.17	47.37	0.096	0.757	34.78	42.11	0.237	0.627	8.70	10.53	0.0405	0.841
χ^2	0.321	0.819			0.139	0.002			0.140	1.219		
p-value	0.571	0.366			0.709	0.963			0.708	0.270		
High												
In-group	65.22	64.71	0.001	0.973	21.74	35.29	0.901	0.343	8.70	0.00	1.556	0.212
Out-group	65.22	41.18	2.283	0.131	26.09	41.18	0.102	0.314	8.70	11.76	0.102	0.749
χ^2	0.000	1.889			0.120	0.125			0.000	2.125		
p-value	1.000	0.169			0.730	0.704			1.000	0.145		
Total												
In-group	55.56	50.79	0.306	0.580	26.39	30.16	0.236	0.627	15.28	17.46	0.117	0.732
Out-group	60.00	45.76	2.609	0.106	21.43	38.98	4.748	0.029	17.14	13.56	0.314	0.575
χ^2	0.287	0.309			0.480	1.051			0.091	0.353		
p-value	0.593	0.578			0.486	0.305			0.763	0.553		

A dashed underline indicates 10% level of significance, a single underline indicates 5% level of significance and a double underline indicates 1% level of significance.

We perform Probit regressions to explore other factors that are correlated with a child's social preference classification. We report these results in Table 9. We run three regressions for each of the migrant and local subsamples. In each regression, the assignment of an individual to a particular social preference type is the dependent variable. With respect to development trends, both migrants and locals show a shift towards Generous and away from Spiteful preferences as the school level increases, but there is no trend in Egalitarian preferences. With respect to group-conditional preferences, the only significant result is that migrants have more Egalitarian preferences toward their out-group. With respect to gender difference, we only find that female migrants are more likely to have Egalitarian preferences and less likely to have Generous preferences than male migrants. These observations allow us to state the following results.

Result 5. *We find, in opposition to Hypothesis 1, Egalitarian preferences do not increase with*

school level. However, Generous (Spiteful) preferences do increase (decrease) with school level.

Result 6. *We find partial support for Hypothesis 2. Only migrant female students exhibit a higher frequency of Egalitarian preferences and less Generous ones than migrant males.*

Table 9: Probit regressions with social preference types as the dependent variables

	Migrants			Locals		
	Egalitarian	Generous	Spiteful	Egalitarian	Generous	Spiteful
Primary	0.005	-0.820***	0.811***	-0.023***	-0.378***	0.719***
	(0.057)	(0.064)	(0.017)	(0.008)	(0.004)	(0.067)
Middle	-0.280***	0.156***	0.104***	-0.315***	0.108***	0.597***
	(0.066)	(0.048)	(0.019)	(0.007)	(0.011)	(0.064)
Out-group	0.135***	-0.238	0.061	-0.130	0.258	-0.128
	(0.041)	(0.200)	(0.132)	(0.268)	(0.186)	(0.304)
Female	0.662**	-0.984***	0.002	0.321	-0.296	-0.188
	(0.277)	(0.222)	(0.074)	(0.246)	(0.280)	(0.544)
Constant	0.037	-0.253	-1.331***	-0.159	-0.0227	-1.513***
	(0.190)	(0.203)	(0.103)	(0.244)	(0.162)	(0.288)
N	135	135	135	129	129	129
Pseudo-R^2	0.05	0.08	0.06	0.07	0.11	0.07

Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

We turn to the social preference type frequencies for the Middle and High school parent respondents. Table 10 presents the results of the same classification exercise and hypothesis tests for parents as those presented for children in Table 8. We find no significant evidence for group-conditional social preferences in this analysis for either parent group. However, we do find some significant differences between the migrant and local parents' social preferences in the in-group treatment. First, migrant parents have a significantly higher frequency of Egalitarian preferences. Also, local parents have a significantly higher level of Spiteful social preferences for the Middle school sample, this result remains significant when the Middle and High school samples are pooled.

Table 10: Social preference classification of parents with χ^2 tests for equal proportions

Social preference type

School	Egalitarian				Generous				Spiteful			
	Migrant	Local	χ^2	p-value	Migrant	Local	χ^2	p-value	Migrant	Local	χ^2	p-value
Middle												
In-group	70.59	35.29	4.250	0.039	23.53	29.41	0.151	0.697	5.88	35.29	4.480	0.034
Out-group	68.42	53.33	0.808	0.369	26.32	26.67	0.001	0.982	5.26	20.00	1.754	0.185
χ^2	0.020	1.054			0.037	0.030			0.007	0.922		
p-value	0.888	0.305			0.847	0.863			0.935	0.337		
High												
In-group	59.09	62.50	0.045	0.832	27.27	12.50	1.216	0.270	9.09	25.00	1.763	0.184
Out-group	72.73	52.94	1.632	0.201	13.64	23.53	0.637	0.425	13.64	17.63	0.119	0.731
χ^2	0.910	0.308			1.257	0.674			0.226	0.267		
p-value	0.340	0.579			0.262	0.412			0.635	0.606		
Total												
In-group	64.10	48.48	1.778	0.182	25.64	21.21	0.194	0.659	7.69	30.30	6.176	0.013
Out-group	70.73	53.13	2.391	0.122	19.51	25.00	0.316	0.573	9.76	18.75	1.230	0.267
χ^2	0.400	0.140			0.431	0.131			0.107	1.169		
p-value	0.527	0.708			0.512	0.717			0.744	0.280		

A dashed underline indicates 10% level of significance, a single underline indicates 5% level of significance and a double underline indicates 1% level of significance.

4.3 Parent-child social preference transmission

In this subsection, we investigate intergenerational social preference transmission by examining the correlation between the preferences of both Middle and High school participants and their parents. First, we examine the simple correlations between parent-child social preferences. If we set aside group conditionality by pooling the in- out-group treatments, but still separately analyzing migrants and locals, we find the Spearman's Rho correlation for migrants and locals are 0.338 and 0.257 with p-values 0.002 and 0.039 respectively. This evidence supports the intergenerational transmission conjecture.

However, disaggregating the data sets by in- and out-group treatments reveals strong evidence that this correlation is largely derived from out-group conditional preferences. Table 11 present an array of contingency tables. The left column presents migrant decision-maker tables, and the right column local decision-maker tables. The top row presents tables for the in-group treatment, and the bottom row for the out-group treatment. Noting the lower number of observations in this data partitioning, we observe that the correlations for in-group conditional social preferences are not significant for migrants or locals. However, social preferences conditional on the out-

group are signficant; the Spearman's Rho are 0.484 and 0.364 with p-values 0.002 and 0.039 for migrants and locals respectively. We find this transmission of preferences towards the out-group is evidence that the household is more influential than latent contact in schools.

Table 11: Contingency tables for social preferences by children and parents

		Parent									
		Migrant					Local				
	In-group										
student		E	G	S	O	T	E	G	S	O	T
	E	16	3	1	1	21	9	1	6	0	16
	G	5	6	1	0	12	7	6	1	0	14
	S	3	0	1	0	4	0	0	3	0	3
	O	1	1	0	0	2	0	0	0	0	0
	T	25	10	3	1	39	16	7	10	0	33

Spearman's Rho 0.196, p-value $= 0.232$ Spearman's Rho 0.145, p-value $= 0.420$

		Migrant					Local				
	Out-group										
student	E	22	0	2	0	24	9	4	1	0	14
	G	5	8	0	0	13	7	3	3	0	13
	S	1	0	2	0	3	1	1	2	0	4
	O	1	0	0	0	1	0	0	0	1	1
	T	28	8	4	0	41	17	8	6	1	32

Spearman's Rho 0.484, p-value $= 0.001$ Spearman's Rho 0.364, p-value $= 0.041$

Finally, we evaluate the degree of inter-generational transfer of social preferences through a series of Probit regressions in Table 12. The dependent variable for each regression model is an indicator function of the parent and child having the same social preference categorization. In model (1) we regress on the type of social preference and a dummy variable for the out-group. In model (2) we add a dummy variable for Middle school and two socioeconomic markers; Education is an indicator variable for whether at least one parent has an undergraduate college degree, and Properties is an ordered categorical variable for the number of residential properties owned by the household.

Migrants show significant intergenerational transmission of Egalitarian preferences for the in-group treatment. However, in the out-group treatment, the transmission of Egalitarian and Generous preferences is significant. Given the magnitude of the estimated Spiteful coefficient (-0.840) and of the out-group coefficient (0.560) we cannot reach a clear conclusion. When we add controls for school level and our two socioeconomic factors the in-group significance of the Egalitarian preference type is only marginal. However, out-group transmissions remain highly significant.

surprising features of social preference transmission that we summarize in our final results.

Result 7. *We find mixed support for Hypothesis [4] as there is strong evidence for some transmission of social preference types, but the types and extent of the transmission strength differ between the High- and Low-status group and the conditionality of the preference.*

Migrant families are only transmitting Egalitarian in-group preferences, but are strongly transmitting all three social preference types in the out-group condition. This suggests migrant out-group biases will have strong cross-generational persistence. On the other hand, locals with low educational achievement are the ones transmitting the preferences. Highly educated households are only negatively transmitting, i.e. children rebel against Spiteful social preferences. The out-group effect is also largely negative. We think this suggests a positive development that local out-group bias will experience generational dampening.

5 Conclusion

We report on an experimental study that assesses the propensity of alternative sharing behavioural norms and their underlying social preferences with participants in the eight to seventeen age bracket. Participants were students from the Xiamen (A second-tier Chinese City) school district. Our experimental treatments are the four possible Dictator-Receiver combinations of local and migrant hukou holders. This allows us to assess the in- and out-group biases of both the higher-status local and lower-status migrant groups. Further, our age range and non-WEIRD (Western, Educated, Industrialized, Rich and Democratic) country allows for assessment of similar development patterns of behaviour and preferences in other studies. Finally, we can also contribute to the small but important literature on the transmission of social preferences, particularly group conditional ones, in the Chinese context.

With respect to the development of social preferences in the 8 to 17 age range, the stylized fact from WEIRD country samples is that Egalitarianism has already emerged or emerges soon after the earlier age range. Part of the distribution then gives way to less envious and more efficient allocations. In the two previous studies, we found a similar setting in the Chinese context. There was disagreement on the findings of the development of Envy. In our experiment, we found a similar pattern or Envy development as found in WEIRD samples. We contribute evidence that this pattern of social preference development is more universal than thought.

As noted previously, school integration facilitates (forces?) intergroup contact and has long

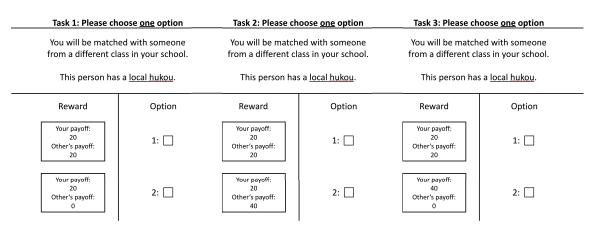# A Primary school decision booklet (translated from Mandarin)

Task 1: Please choose <u>one</u> option		Task 2: Please choose <u>one</u> option		Task 3: Please choose <u>one</u> option	
You will be matched with someone from a different class in your school.		You will be matched with someone from a different class in your school.		You will be matched with someone from a different class in your school.	
This person has a <u>local hukou</u>.		This person has a <u>local hukou</u>.		This person has a <u>local hukou</u>.	
Reward	Option	Reward	Option	Reward	Option
Your payoff: 20 Other's payoff: 20	1: ☐	Your payoff: 20 Other's payoff: 20	1: ☐	Your payoff: 20 Other's payoff: 20	1: ☐
Your payoff: 20 Other's payoff: 0	2: ☐	Your payoff: 20 Other's payoff: 40	2: ☐	Your payoff: 40 Other's payoff: 0	2: ☐

Figure A1: Booklet with local receiver

Task 1: Please choose <u>one</u> option		Task 2: Please choose <u>one</u> option		Task 3: Please choose <u>one</u> option	
You will be matched with someone from a different class in your school.		You will be matched with someone from a different class in your school.		You will be matched with someone from a different class in your school.	
This person has a <u>non-local hukou</u>.		This person has a <u>non-local hukou</u>.		This person has a <u>non-local hukou</u>.	
Reward	Option	Reward	Option	Reward	Option
Your payoff: 20 Other's payoff: 20	1: ☐	Your payoff: 20 Other's payoff: 20	1: ☐	Your payoff: 20 Other's payoff: 20	1: ☐
Your payoff: 20 Other's payoff: 0	2: ☐	Your payoff: 20 Other's payoff: 40	2: ☐	Your payoff: 40 Other's payoff: 0	2: ☐

Figure A2: Booklet with migrant receiver

B Experimental Protocol (translated from Chinese)

Materials

- Participant lists with seat numbers, sender's hukou status and receiver's hukou status
- Booklets (normal and reverse)
- One bingo cage with 9 balls numbered 1 to 9
- Big envelopes for the questionnaire("To the parents - Please answer before [date two schools days after the experiment]; Student name: _____; Student ID: _____)
- One receipt per class
- Pens
- Session sheet to note the selected task, duration, special occurrences etc. in each session.
- Money for subject payments

Experiment

PREPARATION

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Task 1: Please choose <u>one</u> option   **Task 2: Please choose <u>one</u> option**   **Task 3: Please choose <u>one</u> option**

This person has a <u>local hukou</u>.   This person has a <u>local hukou</u>.   This person has a <u>local hukou</u>.

Reward	Option	Reward	Option	Reward	Option
Your payoff: 1000 Other's payoff: 1000	1: ☐	Your payoff: 1000 Other's payoff: 1000	1: ☐	Your payoff: 1000 Other's payoff: 1000	1: ☐
Your payoff: 1000 Other's payoff: 0	2: ☐	Your payoff: 1000 Other's payoff: 2000	2: ☐	Your payoff: 2000 Other's payoff: 0	2: ☐

Figure C3: Booklet with local receiver

Task 1: Please choose <u>one</u> option   **Task 2: Please choose <u>one</u> option**   **Task 3: Please choose <u>one</u> option**

This person has a <u>non-local hukou</u>.   This person has a <u>non-local hukou</u>.   This person has a <u>non-local hukou</u>.

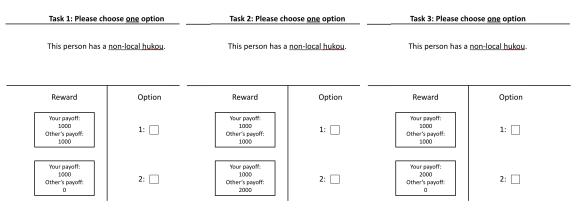| Reward	Option	Reward	Option	Reward	Option
Your payoff: 1000 Other's payoff: 1000	1: ☐	Your payoff: 1000 Other's payoff: 1000	1: ☐	Your payoff: 1000 Other's payoff: 1000	1: ☐
Your payoff: 1000 Other's payoff: 0	2: ☐	Your payoff: 1000 Other's payoff: 2000	2: ☐	Your payoff: 2000 Other's payoff: 0	2: ☐

Figure C4: Booklet with migrant receiver