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Exploring Social Preferences Formation in Young Children Using a Longitudinal Survey from Thailand*

Suparee Wisawapipat Boonmanunt[a], Wasinee Jantorn[b],

Varunee Khruapradit[b], Weerachart T. Kilenthong[b]

[a] Department of Clinical Epidemiology and Biostatistics, Faculty of Medicine Ramathibodi Hospital, Mahidol University

[b] Research Institute for Policy Evaluation and Design (RIPED), University of Thai Chamber of Commerce (UTCC)

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Abstract

This study investigates children's social preferences and their associated factors using a longitudinal dataset from an ongoing early childhood panel in rural Thailand with rich information on children, family structure, caregivers, and households. We find several factors, from internalizing behavior problems and child order to family structure and household donation decisions, are correlated with children's social preferences, whereas other variables, such as screen time, socialization activities, and caregivers' characteristics, are not.

JEL: C93, D64, J12, J13, J24

Keywords: Children, Family structure, Lab-in-the-field experiment, Skill formation, Social preferences

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1. Introduction

Social preferences or other-regarding preferences, a concern for the welfare of others, are important for human social interaction and cooperation, even with strangers (Bowles, 2004; Boyd & Richerson, 2005), which then influences how a society functions (Fehr & Fischbacher, 2004; Fehr et al., 2002; Gintis et al., 2008). More specifically, social preferences are strongly correlated with willingness to cooperate (Charness & Rabin, 2002), success in school, and juvenile offending (Fehr et al., 2013), political attitudes, and the shape of a society's social and political institutions (Kerschbamer & Müller, 2020), and labor market behavior and outcomes (Dohmen et al., 2009; Fehr & Charness, 2023).

It is evident that economic preferences, including social preferences, are formed during childhood (Fehr et al., 2008) and relatively stable in adulthood (Carlsson et al., 2014). There has been a trend of research on how social preferences are formed during young ages and about their contributing factors (see, e.g., Bauer et al., 2014; Falk et al., 2021; Fehr et al., 2008; Fehr et al., 2013). Fehr et al. (2008) was the first to conduct a series of incentivized allocation tasks to elicit children's social preferences. Fehr et al. (2008) conducted these tasks with 229 Swiss children aged between 3 and 8 years old and found that the egalitarian type increases with age, while the opposite is true for the spitefulness. These findings led them to conclude that social preferences remained malleable at a young age and that children likely learned about sociality in schools. Along the same line, Bauer et al. (2014) found a similar trend in comparable experiments (with a modification) involving 438 Czech children aged 3-10 years. For a little older children and adolescents, 8-17 years old, Fehr et al. (2013) also found that spitefulness decreases with age, as well as the egalitarian, which is different from the results found for the younger ones (Bauer et al., 2014; Fehr et al., 2008).

Several factors may contribute to children's social preferences, including those of the children themselves, their parents, caregivers, family, and household characteristics. Fehr et al.

(2008) found that "being an only child" is associated with more sharing than children who had siblings, but the difference faded with age. Among children with siblings, the youngest one shared less than the other siblings. In addition, Fehr et al. (2013) found that girls were more egalitarian than boys. Regarding parental or family background, Bauer et al. (2014) found that low parental education is associated with more selfishness, less altruism, and more spitefulness in children. Falk et al. (2021) reached a similar conclusion, using a German sample and a different definition of family background, indicating low or high socioeconomic status.

To our knowledge, previous studies have covered a limited range of factors and have been conducted in the context of Western or developed countries. It is important to investigate the formation of social preferences in a developing country with a richer set of potential factors. This study aims to explore children's social preferences in rural Thailand using the RIECE panel sample.

A distinctive feature of this dataset relative to the Western context is that approximately 47% of children in this setting live in households without the permanent presence of either parent. While in the Western context, children usually live with one or both parents. Therefore, we can investigate the formation of children's social preferences in a unique sample and setting. Furthermore, we can include a more comprehensive set of potential contributing factors related to children, parents, caregivers, family, and household characteristics than in previous studies.

An additional contribution to the literature is that our experiment differed slightly from previous ones in that we asked the children before performing the tasks whether they preferred to play with their partners, who were randomly assigned to them. This information allows us to investigate how affection affects other-regarding decisions.

The findings from this study contribute to the related literature and shed light on how, and perhaps when, social preferences (which would be beneficial for later-life outcomes or society) could be fostered. We find that both costly and costless sharing increase with age and

also with affection towards the randomly assigned partner. In addition, costless sharing is negatively associated with the number of parents living at home, and internalized problems. Costly sharing is also associated with household donation, showing the environmental influence. Moreover, firstborn and only children shared more at cost compared to later-born. Finally, the only (positively) associated factor to envious option is internalized problems.

The remainder of the paper is organized as follows. In Section 2, we describe the sample, the elicitation method and procedure, the potential contributing factors, and the analysis. Section 3 provides the experimental results. In Section 4, we discuss the results.

2. Methodology

2.1. Sample: RIECE panel data

This study utilizes early childhood panel data, the RIECE panel data, which is an early childhood panel data set from rural North-eastern Thailand. The annual panel survey officially began in June 2016, initially targeting children aged one to four years across 21 sub-districts in Mahasarakham province and two sub-districts in Kalasin province.[2] RIECE panel data provide rich and comprehensive background information on children, their caregivers and parents, households, and schools and classrooms, allowing us to control for individual heterogeneity more than previous studies.[3]

2.2. Elicitation of children's social preferences

In addition to the regular annual RIECE survey, social preference elicitation tasks were conducted with all children we could follow-up in two consecutive survey years of 2018 and 2019. See the details of each task below. In total, 1,165 children aged 3-9 years old were tested

[2] See details about RIECE panel data at https://riped.org/data/riece-panel-data/.

[3] Some children in this sample were exposed to RIECE Thailand curriculum. Out of 1318 children in this study, 98 attended the child centers with RIECE-trained teachers in 2015 and 2016, 189 attended the child centers with RIECE teachers only in 2015, while 326 attended the child centers with RIECE teachers only in 2016.

in the 2018 survey year, and 1,286 children aged 4-10 years old were tested in the 2019 survey year.

Incentivized social preference elicitation task

Social or other-regarding preferences of children were elicited using a series of incentivized economic experiments, i.e., prosocial, envy, and sharing games (Fehr et al., 2008).

Before the experiment started, a participating child was randomly matched with a classmate. We showed a picture of the matched classmate and asked whether he/she knew and liked to play with this classmate. In each game, a participant will choose between two options, specifying a different allocation of their favorite item between them and their matched partner. The random partners were not informed (at least by us) who allocated those pieces to them. The rules in each game were as follows.

Prosocial game

Children had to choose between two allocation options: (i) one unit of the favorite item for themselves and one unit for the partner (1,1) and (ii) one unit for themselves and the partner gets nothing (1,0). In this game, there is no cost to allocate one unit to the partner. Choosing the *prosocial option (1,1)* could be driven by the equality motive, the maximization of the partner's payoff, or the joint payoff.

Envy game

Children had a choice between two allocation options: (i) one unit for themselves and one unit for the partner (1,1) and (ii) one unit for themselves and two units for the partner (1,2). Choosing the *non-envy option (1,2)* incurs no additional cost for them in giving two units instead of one to the partner. The non-envy option can be driven by the motive to maximize the partner's or joint payoff. This option, however, creates more inequality.

Sharing game

Children could choose between two options: (i) one unit for themselves and one unit for the partner (1,1) and (ii) two units for themselves and nothing for the partner (2,0). In this game, allocating one unit to the partner is costly. This game, therefore, measures altruism as defined in evolutionary biology. Choosing the *altruistic option (1,1)* comes from pure other-regarding preference.

Rewards: The children received their own favorite pieces in a bag immediately after the activity, while their partner received the allocated pieces in another bag with a different color, labeled with the partner's name after the activity as well.

Data collection and experimental procedure

The experiments were conducted in a prepared room in children's schools. Two or three children entered the room around the same time, then sat separately and sufficiently apart, and faced a corner or wall so they could not hear or see others' decisions. The choices were made privately, with only the experimenter present (see Figure 1). In addition, the order of the games and the sides of the choices remained the same.

Figure 1: Presentations of the choices in the experiments to children

Before the tasks began, children were asked to choose their favorite item from the following options: various types of sweets (e.g., chocolate, marshmallows, jelly) and stationery

(e.g., pencils, colored pencils, erasers). Then, they were explained the rules of the games and asked test questions. If the child answered correctly, they could proceed with the task. If not, interviewers explained the entire task to the child again (up to 3 times).

2.3. Potential Contributing Factors

The following potential factors were retrieved from the RIECE panel annual survey.

Children characteristics

This study considers a comprehensive list of child characteristics, including age (in months), gender, being the only child, being the firstborn child, number of siblings, number of children in the household, screen time (hours per week, age-standardized and median-split dichotomized), time spent on interactive activities with other people, i.e., roleplaying and field trip (days per week), and non-cognitive skills, i.e., patience (from the delay gratification task described in Boonmanunt et al. (2025)) and behavioral problem indices (BPIs) as internalizing and externalizing BPIs with higher values indicating higher respective problems. In addition, classroom and school-related variables included the number of classmates and the number of years the child had been attending school (including preschool years).

Parent, caregiver, and household characteristics

The set included whether one or both parents live in the household, whether parents were divorced, the caregiver's age, gender, and years of education, the number of household members, and household wealth. In addition, to investigate whether there is evidence of the transmission of other-regarding preferences, the household's expenditure on donations (averaged over 2016-2018 or 2016-2019, depending on the year of the experiment) was included in the model.

2.4. Statistical analysis

Summary statistics were reported as mean and standard deviation (SD) or median and interquartile range (IQR) for continuous variables, and as percentages for categorical variables.

To assess the association between the elicited child social preferences in each game and potential associated factors, multivariable linear probability and multivariable probit models were employed, since the outcome is binary. Data for both survey years were pooled. Standard errors are clustered on the child level.

3. Results

3.1. Sample characteristics

The age distribution of all 1,165 children in the survey year 2018 and 1,286 children in the survey year 2019 is shown in Table 1.

Table 1: Age distribution of the sample

Survey year	**2018**		**2019**	
Age (years)	**Frequency**	**Percent**	**Frequency**	**Percent**
3	10	0.86	-	-
4	172	14.76	16	1.24
5	260	22.32	179	13.92
6	327	28.07	266	20.68
7	249	21.37	370	28.77
8	142	12.19	282	21.93
9	5	0.43	165	12.83
10	-	-	8	0.62
Total	**1165**	**100**	**1286**	**100**

Because the number of children aged 3 and 9 years old in the survey year 2018 were only 6 and 8 children, and the number of children aged 4 and 10 years old in the survey year 2019 were only 16 and 8, we decided to include only children aged 4 – 8 in the survey year 2018 (n=1150) and aged 5-9 in the survey year 2019 (n=1262). As a result, 1,056 and 1,255 children who passed the test questions in the survey years 2018 and 2019 were included in the main sample. The summary characteristics of the main sample are described in Table 2.

For further analysis, screen time, roleplay, and field trip were age-standardized, then median-split dichotomized. Internalized and externalized BPI scores were calculated using the item response theory (IRT) method (Birnbaum, 1968; Rasch, 1960) and then standardized

across the main sample to have mean of zero and standard deviation of one. The household wealth index was standardized across the main sample as well.

Table 2: Summary characteristics of the main sample

Variables	2018		2019	
	Mean (SD)/ median (IQR)/ n (%)	N	Mean (SD)/ median (IQR)/ n (%)	N
Children characteristics				
Age (months)	72.13 (13.91)	1056	83.98 (14.68)	1255
Female (1=yes)	517 (49.0%)	1056	615 (49.0%)	1255
Patience (from time preference task)	601 (57.2%)	1050	874 (69.9%)	1250
Internalized behavior problems index (standardized)	-0.01 (1.00)	1056	-	0
Externalized behavior problems index (standardized)	-0.020 (1.00)	1056	-	0
Only child (1=yes)	661 (62.6%)	1056	748 (59.6%)	1255
Firstborn (1=yes)	157 (14.9%)	1056	199 (15.9%)	1255
Number of siblings	0.53 (0.65)	1056	0.59 (0.69)	1255
Number of children (0-12 yo) in the HH	0.81 (0.81)	1056	1.77 (0.80)	1255
Screen time (minutes per week)	797.00 (632.63)	1056	877.05 (651.50)	1255
Fieldtrip (days per week)	0 (0, 0.33)	1056	0 (0, 0.375)	1255
Roleplay (days per week)	5.33 (4, 7)	1056	5.25 (3.75, 7)	1255
Number of classmates	21.39 (7.92)	1037	21.04 (9.27)	1233
Number of years attending school	3.17 (1.04)	1056	3.20 (1.20)	1255
Parent characteristics				
Living with parents		1056		1255
no parent	495 (46.9%)		574 (45.7%)	
one parent	230 (21.8%)		264 (21.0%)	
both parents	331 (31.3%)		417 (33.2%)	
Parents are divorced (1=yes)	315 (29.8%)	1056	419 (33.4%)	1255
Caregiver characteristics				
Caregiver's age (years)	49.54 (13.23)	1056	50.73 (13.15)	1250
Caregiver's gender (1=female)	979 (92.7%)	1056	1125 (89.6%)	1255
Caregiver's education (years)	7.04 (3.57)	1053	7.14 (3.71)	1250
Household characteristics				
Number of HH members	4.91 (1.65)	1056	4.87 (1.62)	1255
HH Wealth index	-0.086 (1.17)	1046	-0.04 (1.27)	1247
HH expenditure on donation (average between 2016-2018/19)	152.8 (97.2, 250)	1043	145.8 (92.2, 239.6)	1232
Log of HH expenditure on donation	5.04 (0.83)	1039	4.95 (0.85)	1229

The average age of participating children in survey year 2018 and 2019 was around six and seven years old, respectively, with 49% of girls in both years. The proportion on only children was 62.6% in 2018 and decreased to 59.6% in 2019, corresponding to an increase of first-born children from 14.9% to 15.9%. The percentage of children whose parents live outside the household was quite stable, namely 46.9% and 45.7% in 2018 and 2019, respectively. While the percentage of children whose parents were divorced increased from 29.8% to 33.4%. In addition, the median of average household expenditure on donation from 2016 onwards was 152.8 Baht in 2018 and 145.8 Baht in 2019.

3.2. Decisions in the games: descriptive analysis

Table 3 describes children's decisions in the three games, separately for the type of the randomly matched partner (liked or not-liked to play with). The proportions of choosing (1,1) in all three games were quite similar in both survey years. Around 68-69% of the main sample liked to play with their partner in both survey years, while around 31-32% did not. Higher proportions of prosocial and sharing options for liked partners compared to non-liked partners can be observed in both survey years.

Table 3: Summary statistics regarding the decisions in the game

	2018		2019	
Choosing (1,1) in …	Liked (n= 723)	Not-liked (n=326)	Liked (n= 844)	Not-liked (n= 395)
Prosocial game , n(%)	555 (77%)	220 (68%)	616 (73%)	269 (68%)
Envy game, n(%)	351 (49%)	164 (50%)	403 (48%)	202 (51%)
Sharing game, n(%)	182 (25%)	63 (19%)	214 (25%)	65 (17%)

We start the analysis by exploring the age trend of decisions in the games. Figure 2 shows that sharing in the sharing game [(1,1) vs (2,0)] (when sharing is costly) is substantially lower than in the prosocial game [(1,1) vs (1,0)] (when sharing is at no cost) for all ages and in both survey years. While the envy option in the envy game [(1,1) vs (1,2)] is at around 50% in

both survey years. This could even be a random choice. The age trend is clearly seen from age six years onwards for all games and both survey years.

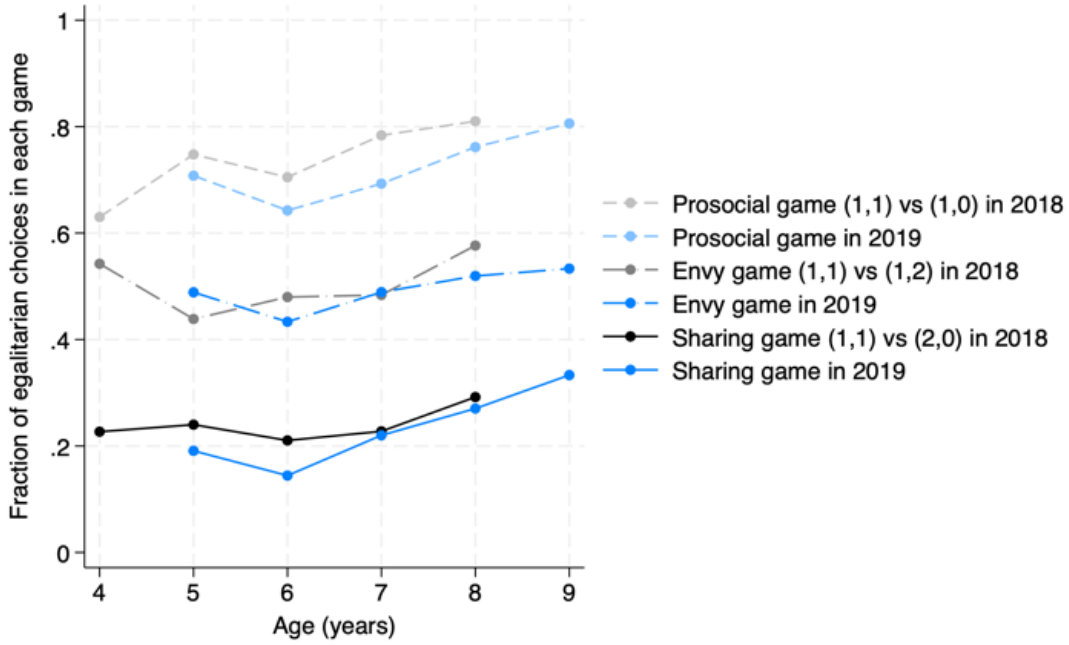
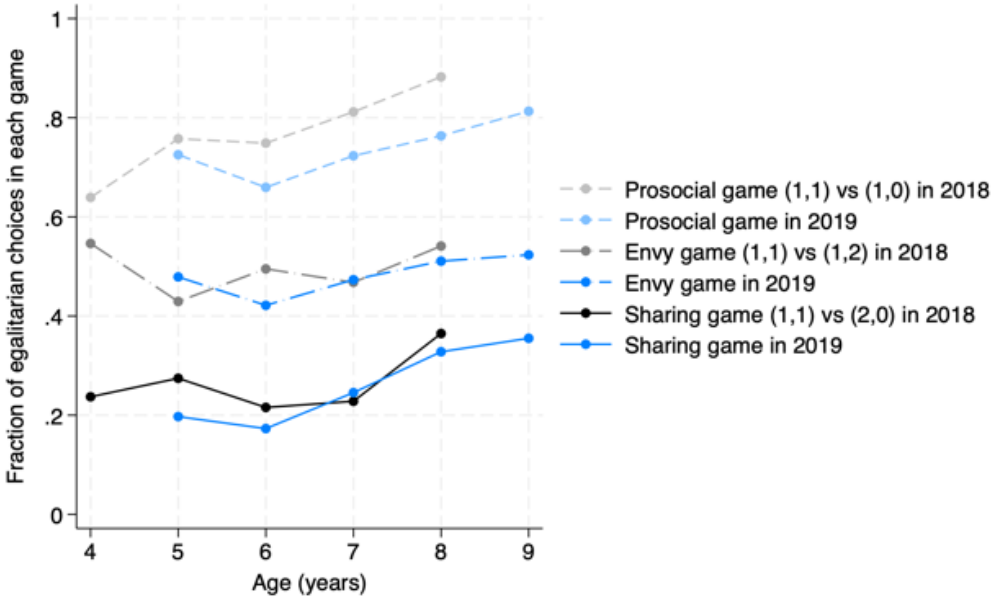
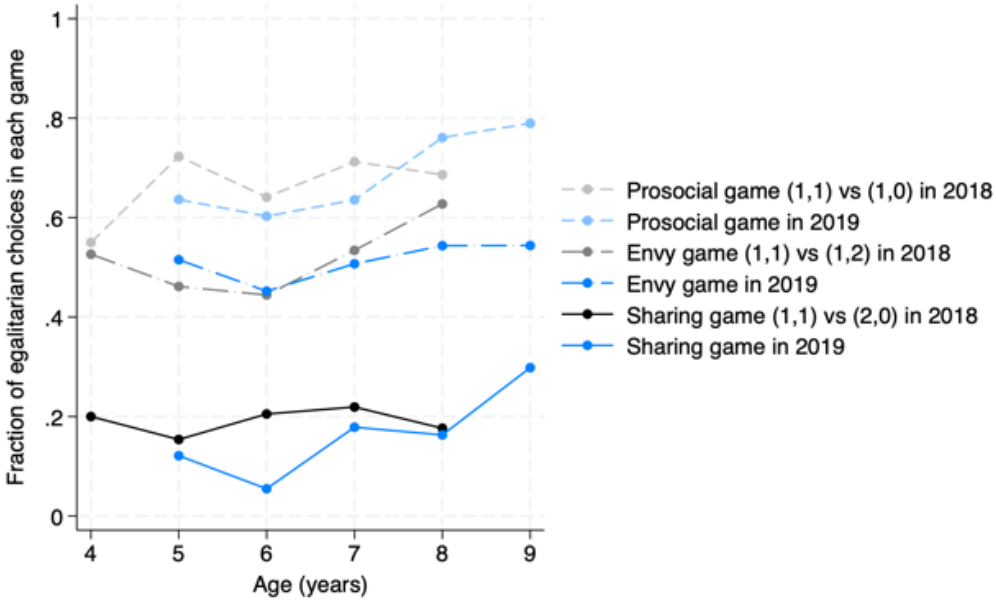


Figure 2: Age trend of the decisions in social preference games

We then look at this age trend separately for the cases where children were randomly partnered with a classmate whom they liked to play with (liked partner) and the cases where they were randomly paired with a classmate whom they did not like to play with (not liked partner). The age trend is clearer for the 'liked partner' group than for the 'not-liked partner' group. The trend is more visible from age six onwards across all three games, especially in the survey year 2019. Panel (A) of Figure 3 shows that the age trend in prosocial and sharing games is clearer compared to the envy game for the 'liked partner' case: the proportion of (1,1) choice increases with age in both games. However, Panel (B) of Figure 3 shows a clearer age trend in envy choice than Panel (A), beginning at age six as well.



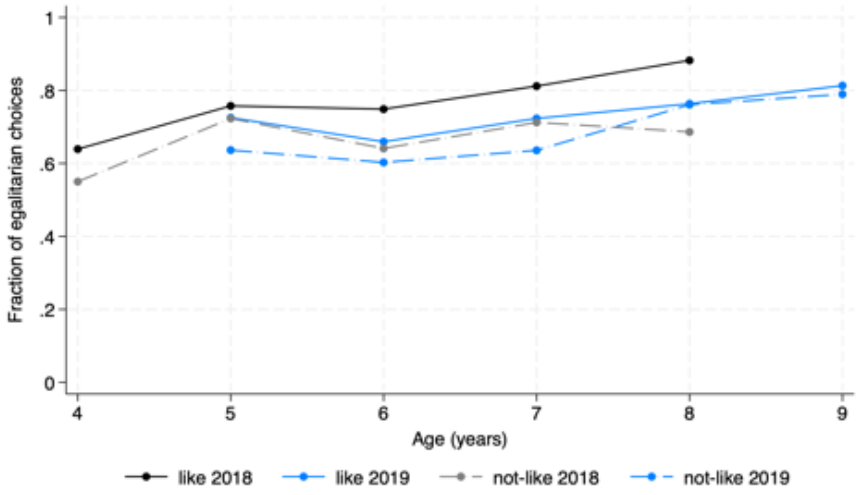
(A) liked partner



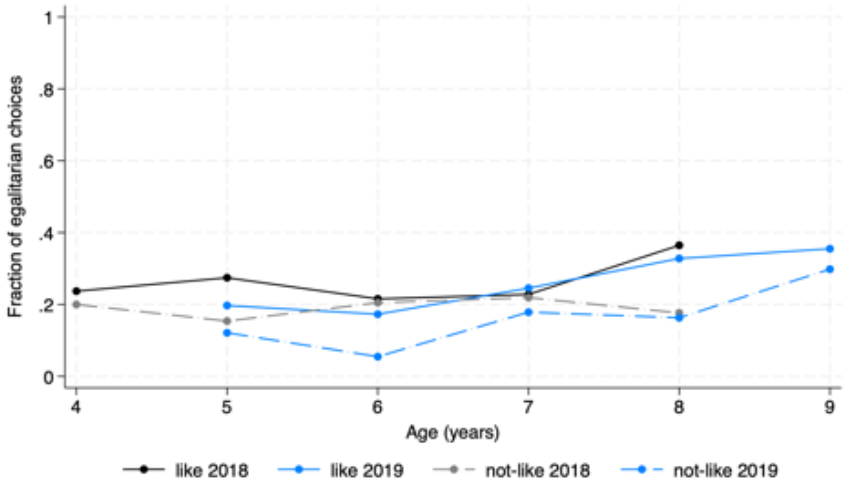
(B) not-liked partner

Figure 3: Age trend of the decisions in social preference games separated for 'liked partner' and 'not liked partner' cases

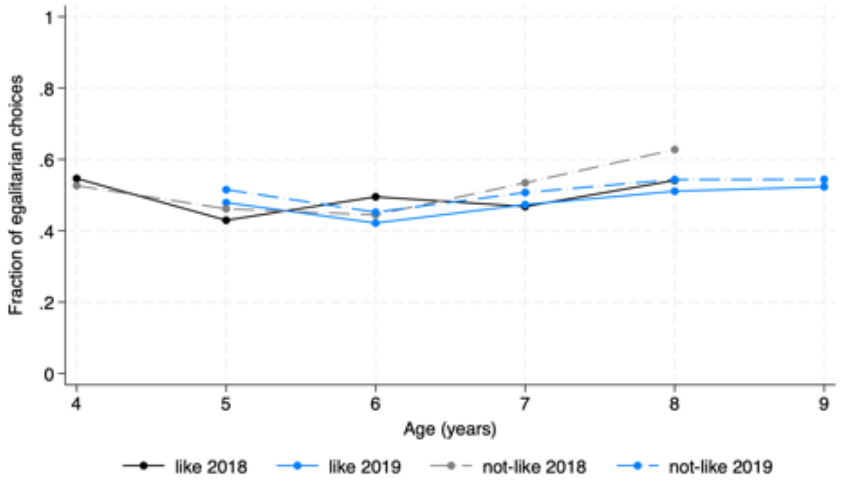
In addition, the proportions of sharing choices (1,1) are, on average, lower in the 'not liked partner' case than in the 'like partner' case for prosocial (Panel A) and sharing games (Panel B), which are expected, but the difference is not clear for the envy game (Panel C). This may suggest that decision-making in the envy game may not be simple or straight-forward for these participants. See Figure 4.



(A) Prosocial game (1,1) vs (1,0)



(B) Sharing game (1,1) vs (2,0)



(C) Envy game (1,1) vs (1,2)

Figure 4: Comparing the decisions between 'liked partner' and 'not-liked partner' cases in all games

3.3. Regression analysis of decisions in the games

For decisions in the social preference games, we estimate the following model:

$$Y_i^c = \propto_0 + \propto_1 \boldsymbol{X}_i + \varepsilon_i$$

where Y_i^c is the child's choice to (1,1) in each game; X_i is a vector of potential contributing factors. Multivariable linear probability and probit regressions are used. Data from both survey years are pooled. Standard errors are clustered on the child level.

Table 4 presents the probit regression results for choosing (1,1) in each game, controlling for all variables described in Table 2. The effects of age and 'liked partner' align with Figure 4: They are correlated with decisions in the prosocial and sharing games, but not in the envy game. These indicate that both costless and costly sharing increase with age, and that children were more likely to share with a liked partner than with a not-liked partner.

The other associated covariates with decisions in the game are as follows. For the prosocial game, in which sharing is costless, children whose one or two parents were present at home chose the prosocial option (1,1) less often than children with no parent present. In addition, the child with a higher internalized BPI (more internalized behavior problems) was less likely to choose the prosocial option.

For the sharing game, in which sharing is costly, the likelihood of choosing the sharing option (1,1) instead of (2,0) increases with household expenditure on donations (averaged from 2016 to either 2018 or 2019). This indicates that household donation behaviors which should reflect costly sharing preferences of the household might be transferred to the children or simply have influence on children's sharing preferences. In addition, children who are the only child or first-born are more likely to share in the sharing game than later-born children. Furthermore, in the envy game, the child with higher internalized BPI (more internalized behavior problems) is more likely to choose the envious option (1,1). Linear probability models yield similar results, see the Appendix.

Table 4: Probit regression results of choosing (1,1) in each game

Variables	Prosocial		Sharing		Envy	
	(I)	(II)	(III)	(IV)	(V)	(VI)
Age (months)	0.003***	0.003**	0.003***	0.004***	0.001	0.002
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Liked partner (1=yes)	0.076***	0.078***	0.087***	0.091***	-0.019	-0.005
	(0.020)	(0.021)	(0.020)	(0.022)	(0.023)	(0.025)
Sweet as reward (1=yes)	0.008	-0.003	0.021	0.013	0.011	0.003
	(0.021)	(0.022)	(0.020)	(0.020)	(0.023)	(0.024)
Female (1=yes)	0.035	0.040	0.030	0.035	0.033	0.021
	(0.019)	(0.021)	(0.018)	(0.019)	(0.022)	(0.024)
HH wealth (standardized)	-0.003	-0.005	0.016	0.005	0.014	0.022
	(0.010)	(0.011)	(0.009)	(0.011)	(0.011)	(0.013)
HH donation (log)	0.014	0.013	0.028*	0.033**	0.012	0.010
(Average from 2016 to that year)	(0.012)	(0.013)	(0.011)	(0.013)	(0.013)	(0.014)
One parent at home (1=yes)	-0.055*	-0.069*	-0.019	-0.032	0.016	0.036
	(0.025)	(0.030)	(0.024)	(0.028)	(0.028)	(0.033)
Both parent at home (1=yes)	-0.069**	-0.076*	0.009	<0.001	-0.031	-0.010
	(0.023)	(0.031)	(0.022)	(0.029)	(0.027)	(0.035)
Parents are divorced (1=yes)	-0.003	0.001	-0.018	-0.013	<-0.0001	-0.002
	(0.023)	(0.025)	(0.022)	(0.024)	(0.026)	(0.028)
Internalized BPI (standardized)		-0.035*		-0.017		0.042*
		(0.016)		(0.016)		(0.018)
Externalized BPI (standardized)		<-0.0001		0.015		-0.023
		(0.016)		(0.015)		(0.017)
Only child (1=yes)		0.015		0.059*		0.009
		(0.027)		(0.027)		(0.030)
First-born child (1=yes)		0.017		0.102**		0.016
		(0.033)		(0.032)		(0.040)
Other controls	N	Y	N	Y	N	Y
Observations	2221	1941	2222	1942	2221	1941
Clusters(Children)	1321	1100	1321	1100	1322	1100

Notes: Other controls were included in the multivariable multinomial probit regressions. Marginal effects are reported. Other controls include delayed gratification, number of children aged under 12 years old in the HH, number of household members, number of years that the child has been to school, number of students in the same class, fieldtrip and roleplay days per week (age-standardized), caregiver's age, gender, and education (years in school), and interviewers. Standard errors clustered on the child level. * p<0.05, ** p<0.01, *** p<0.001.

4. Discussion

This study explores children's social preferences in rural Thailand with a unique setting embedded in an ongoing panel. The contributions of this study are three-fold. First, the social preference experiments were conducted over two consecutive years; therefore, we could increase our sample size and our model estimation contains less error than when we would have only one-time measure. Second, we were able to investigate the influence of affection on children's decisions by having information on whether the children liked to play with their randomly matched partner or not. Third, with more than 45% of children in this sample did not live with their parents, we could investigate the role of parental absence on children's social preferences. In addition, due to rich information on children, households, and family structure in the ongoing RIECE panel, this study could investigate a wider range of factors related to children's social preferences than the existing literature.

Based on the regressions, we find the following results that align with previous studies. Older children tend to share more, both with and without cost, aligning with Bauer et al. (2014) and Fehr et al. (2008). We also find that children who are the only child or first-born (costly) share more than the later-born children, aligning with Fehr et al. (2008). This could be because the first-borns were often taught to share with their younger siblings, while the only children might learn to share at a cost in order to have a larger social network to compensate for having no sibling.

Importantly, this study contributes to the literature with the following novel results. Children share, both costly and costless, more with those they liked playing with than with those they did not, which is expected. While affection did not play any role on envy decision. This may suggest that decision in the envy game may not be simple or straight-forward for these participants. Household donation expenditure is associated with children's costly sharing but not costless sharing or envy decisions. This shows evidence for the family influence or the

transmission of costly sharing decisions. Children with at least one parent present at home are less likely to share without cost than those with no parent at home. This might be because these children did not need to be as friendly as those without a parent at home, since they do not need to rely on others. Children with more internalizing behavior problems are less likely to choose a prosocial option and more likely to choose an envious option. This may suggest that children who show more distress tend to share less without cost and also tend to dislike inequality that favors others.

Other variables, such as screen time, socialization activities, the number of classmates, and caregivers' characteristics, are not significantly correlated with children's social preferences measured in the study.

This study has several strengths. First, we integrated the lab-in-the-field experiments in an ongoing panel. Therefore, we have a large set of variables on children, household, family, and school characteristics. We could therefore conduct social preference experiments with children in this panel over two consecutive years. This provided a larger sample size with less error for the data analysis. Second, the family structure of our sample differs from that in previous studies, with 47% of children without a parent living at home. This allowed us to investigate the role of family structure on children's social preferences. However, there may be other biases in the estimates due to omitted variables, despite a much richer set of controls than in previous studies.

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