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– An experiment in Austria and Sweden

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Social preferences during childhood and the role of gender and age

– An experiment in Austria and Sweden*

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Abstract: We examine social preferences of Swedish and Austrian children and adolescents using the experimental design of Charness and Rabin (2002). We find that difference aversion decreases while social-welfare preferences increase with age.

Keywords: social preferences; children; adolescents; distributional experiment; Austria; Sweden.

JEL classification: C91; D63; D64.

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1 Introduction

The literature on social preferences has grown recently and there are theories as well as empirical evidence that human behavior cannot be fully explained by pure selfishness (e.g., Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Charness and Rabin, 2002; Engelmann and Strobel, 2004). However, there is still only little work done to understand social preferences among children and adolescents, although there are some recent studies indicating that social preferences as opposed to selfish ones become more important with age. Harbaugh et al. (2003), who study 310 subjects aged 7 to 18, find that young children behave more selfishly in dictator games than do older subjects. The same pattern is found for second-mover behavior in trust games – where second movers play basically a dictator game – by Sutter and Kocher (2007). Fehr et al. (2008) show in an experiment with 229 children that inequality aversion develops strongly between the ages of 3 and 8.. Previous research has thus shown that social preferences gain importance at the expense of selfishness as children grow older. However, social preferences is a broad term and little progress has been made so far in identifying and classifying different kinds of social preferences among children and adolescents. A recent exception is Almås et al. (2010), who study 486 subjects aged 10 to 19 and find that while the youngest children are mostly egalitarian and the older ones are more efficiency oriented, there is no change in selfishness from mid-childhood to late adolescence. In the present paper, we explore differences in social preferences among three different age groups using the experimental design and classification of preferences according to Charness and Rabin (2002). Such a theory-driven experiment has not yet been performed with children and adolescents, as far as we know.

Charness and Rabin (2002) find that university students are to a larger extent driven by social-welfare preferences than by difference aversion. Running the same dictator games as they did, but with 650 children and adolescents aged 10-15 in Sweden and in Austria, we find that these types of preferences differ substantially across different age groups. The youngest

children are to a larger extent driven by difference aversion, a preference that becomes significantly less important with age. The opposite is true for social-welfare preferences, which gain importance with age. Moreover, we find a clear gender difference: boys are more concerned with social welfare, while girls are more inequality averse (by reducing payoff differences). In addition, we observe that the Swedish subjects are significantly less difference averse, but instead more social-welfare oriented, than Austrian participants.

2 Experimental design

We use the same six dictator games as in Charness and Rabin (2002); these are summarized in Table 1. In each of the six games, the subject is told to act as person B although they would randomly be selected as A or B for payments. In the first game she is asked to choose between allocation Left with 4 euro to person A and 4 euro to person B (i.e. to herself) or allocation Right, which yields 7.5 euro to Person A and 4 euro to herself. The same interpretation applies to the other five games. To avoid order effects, half of the subjects were presented with the games in the opposite order. The six games serve as a basis for classification of four preference types: self-interest, social welfare, difference aversion, and competitive (all according to the notions of Charness and Rabin, 2002, where a more detailed discussion of the different preference types and the resulting predictions for the games illustrated in Table 1 is provided). If a subject holds social-welfare preferences, she is altruistic and her utility increases in the other person's income, irrespective of whether it is higher or lower than her own. A subject with difference aversion preferences prefers equal payoffs and her utility only increases in the other's payoff if it is lower than her own; if it is higher, she is envious and the other's payoff reduces her utility. Competitive preferences apply if a subject wants to do as well as possible compared to the other subject. [1]

[1] Note that the predictions in Table 1 for social-welfare, difference aversion and competitive preferences depend on the weights given to one's own vs. the other person's payoff.

The pen and paper experiment involved a total of 650 children and adolescents from Austria and Sweden. Each child belonged to one of the three age groups 10/11, 12/13 and 14/15 years. The monetary payoffs shown in Table 1 are the amounts used in the oldest age group in Austria. The amounts were halved for the two younger age groups, which roughly corresponds to the relative differences in average pocket money among the three age groups.[2] The experiment in Sweden was conducted in Swedish kronor and was also adjusted for average pocket money. For payoffs, one of the six games was randomly selected. Subjects were randomly selected as person A or B and matched into pairs within the same age group, but with a subject from another class, i.e. there were both persons A and persons B getting paid in the same class (which indicated to subjects that participants in the role of person A did get paid). Payments were made in sealed envelopes several days after the experiment.

3 Experimental results

In Table 1, we show descriptive statistics of choices in the different games. A comparison of our results to the findings of Charness and Rabin (2002) at the aggregate level of the four different preference types is not possible as our subjects made decisions in all six games, whereas the subjects in Charness and Rabin (2002) only made decisions in a subset of one to four games. However, we can compare the behavior in single games. The choices among the oldest subjects are largely in line with the results of Charness and Rabin (2002), except for game 6 where a much larger fraction of subjects in Charness and Rabin (2002) are motivated by self-interest or competitive preferences.

Table 1 and Figures 1 – 4 about here

[2] Average pocket money was obtained at national level for the Swedish sample, and from a questionnaire that was filled out by all participants in Austria.

Figures 1 to 4 give a brief overview of the proportions of subjects who make consistent choices according to the four preference types separated by age group, gender and country. A subject is categorized as a certain type if she chooses the model's predicted allocation in all six games.[3] It is difficult to compare the relative frequencies across the different preference types, because for some games both choices are consistent with a given preference type (see Table 1), which obviously makes it more likely to show a consistent behavior with some types than with others. We therefore instead focus on age and gender trends as opposed to the relative importance of the different types. We find that our subjects become less difference averse and more concerned with social welfare with age. Competitive preferences and narrow self-interested behavior seem to be rather constant across different age groups.

To disentangle age, gender and country effects in a more rigorous way, we conduct four probit regressions where the dependent variables are coded 1 if the subject makes all her choices consistent with a specific type. To allow for non-linear age effects we use a dummy variable approach and to allow for different age effects between genders we create interaction effects between age groups and female. Table 2 presents the regression results. We test the null hypotheses of no overall gender effect, no gender effects in the three age groups, no overall age effect and no gender-specific age effects separately (see the lower part of Table 2).

Table 2 about here

The results confirm that competitive preferences and self-interest are stable across all age groups and are not significantly different between genders or countries. Table 2 reveals that, overall, we find a significant gender difference for difference aversion and social-welfare preferences. The gender difference is mainly found among the subjects aged 10/11 and 14/15, yet

[3] Note that 8% of our subjects give answers that can not be related to a specific type as we do not allow for errors. The proportion of such answers is not significantly different across age groups, though (p-value=0.685; χ^2-test).

the tendency is the same in each of the three age groups. Females tend to be more difference averse and less caring for social-welfare, i.e., more envious when the other player gets a larger payoff than herself. The extent to which difference aversion and social-welfare concerns are driving forces in the participants' decisions during the experiment is subject to country differences. Swedish subjects are significantly less difference averse, but instead more social-welfare oriented. Finally, we look at overall and gender-specific age trends. The difference aversion model loses overall predictive power from age 10 to age 15. This negative age trend is mainly driven by the female sample, although the trend is negative for both genders. The age pattern for social-welfare preferences is reversed. The tendency that social-welfare preferences become more important with age is found for both genders, although it is more pronounced in the female sample. The way in which social welfare and difference aversion are defined allows us to interpret this finding as a decline of children's (especially girls') disutility from having less than others with age.

4 Conclusions

We report experimental results from six two-player games taken from Charness and Rabin (2002). Based on a subject pool of 650 Austrian and Swedish children and adolescents aged 10-15 years, we find that our oldest age group, i.e. 14-15 year olds, behaved largely similarly to the university students who participated in the study of Charness and Rabin (2002), except in one game where our subjects were less competitive or self-interested. Our results show that individuals' social preferences change, at the aggregate level, during childhood and adolescence. Difference aversion gets less prominent[4], and social-welfare preferences gain in relative importance. Thus, policies imposed by adults on young children and adolescents, based on adults' social preferences, are likely not to be in accordance with the social prefer-

[4] A similar finding for interactive games – a series of mini-ultimatum games – has been reported in Sutter (2007) where children have been found to be less tolerant of unequal payoffs than university students.

ences of the affected children and adolescents. This finding highlights a more fundamental issue, i.e., the generalizability of social preferences. Given that socio-demographics matter – as shown here for age, gender, and country – our paper implies that it may be problematic to generalize from the results of any particular social-preference experiment, as has been argued before (see, e.g., Levitt and List, 2007).

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Table 1. Experimental design.

	Pay-off		Predictions				Percentage choosing Right			
	Left (A, B)	Right (A, B)	Self-interest	Social-welfare	Difference aversion	Competitive	10/11	12/13	14/15	C&R*
Game 1	(4, 4)	(7.5, 4)	Left, Right	Right	Left	Left	40%	51%	61%	69%
Game 2	(4, 4)	(7.5, 3.7)	Left	Left, Right	Left	Left	27%	26%	42%	48%
Game 3	(0, 0)	(8, 2)	Right	Right	Left, Right	Left, Right	91%	94%	96%	100%
Game 4	(7, 5)	(3, 6)	Right	Left, Right	Left, Right	Right	57%	56%	56%	67%
Game 5	(2, 7)	(6, 6)	Left	Left, Right	Left, Right	Left	62%	60%	61%	73%
Game 6	(0, 8)	(4, 4)	Left	Left, Right	Left, Right	Left	55%	45%	57%	22%

* Data taken from Charness and Rabin (2002).

Table 2: Probit regressions on different types

Explanatory variables	Dependent variables Difference aversion	Competitive preferences	Social-welfare preferences	Self-interest
	Marginal effects	Marginal effects	Marginal Effects	Marginal effects
Age group 12/13	0.036	-0.013	0.003	0.031
	(0.076)	(0.051)	(0.076)	(0.063)
Age group 14/15	-0.128	-0.066	0.140*	0.023
	(0.078)	(0.050)	(0.078)	(0.064)
Female	0.257***	-0.033	-0.227***	-0.051
	(0.067)	(0.051)	(0.071)	(0.062)
Female*Age group 12/13	-0.159*	0.064	0.149	0.024
	(0.089)	0.079	(0.096)	(0.084)
Female*Age group 14/15	-0.080	0.029	0.091	0.033
	(0.099)	(0.078)	(0.101)	(0.086)
Sweden	-0.115**	0.021	0.098**	-0.039
	(0.045)	(0.034)	(0.046)	(0.037)
Observations	650	650	650	650
	P-values	P-values	P-values	P-values
H_0: no overall gender effect[A]	0.000	0.857	0.002	0.791
H_0: no gender effect in age group 10/11[B]	0.000	0.513	0.002	0.405
H_0: no gender effect in age group 12/13[C]	0.135	0.565	0.241	0.623
H_0: no gender effect in age group 14/15[D]	0.011	0.930	0.048	0.739
H_0: no overall age effect[E]	0.002	0.252	0.002	0.811
H_0: no male age effect[F]	0.077	0.414	0.109	0.881
H_0: no female age effect[G]	0.003	0.160	0.001	0.510

Notes: ***, ** and * denote significance at the 1%, 5%, 10% level; robust standard errors in parentheses. The hypothesis-testing was made using Wald-tests.

[A] H_0: $\beta_{female} = \beta_{female} + \beta_{female*agegroup12/13} = \beta_{female} + \beta_{female*agegroup14/15} = 0$,

We also run a model only including a dummy for gender and country. Gender is significant at 1%-level in the difference aversion and social-welfare preferences model.

[B] H_0: $\beta_{female} = 0$,

[C] H_0: $\beta_{female} + \beta_{female*agegroup12/13} = 0$,

[D] H_0: $\beta_{female} + \beta_{female*agegroup14/15} = 0$,

[E] H_0: $\beta_{agegroup12/13} = \beta_{agegroup14/15} = \beta_{agegroup12/13} + \beta_{female*agegroup12/13} = \beta_{agegroup14/15} + \beta_{female*agegroup14/15} = 0$,

[F] H_0: $\beta_{agegroup12/13} = \beta_{agegroup14/15} = 0$,

[G] H_0: $\beta_{agegroup12/13} + \beta_{female*agegroup12/13} = \beta_{agegroup14/15} + \beta_{female*agegroup14/15} = 0$.

Figure 1. Difference aversion

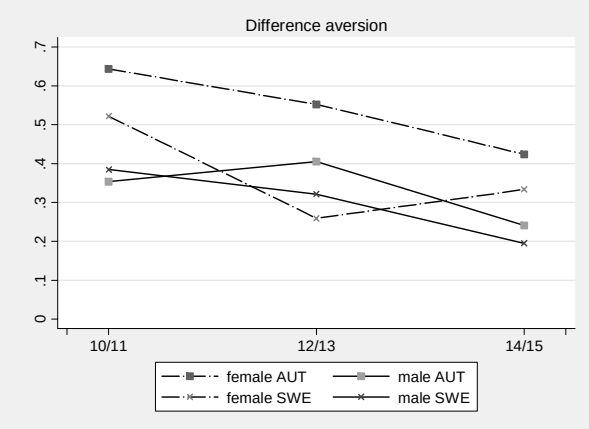


Figure 2: Social-welfare preferences

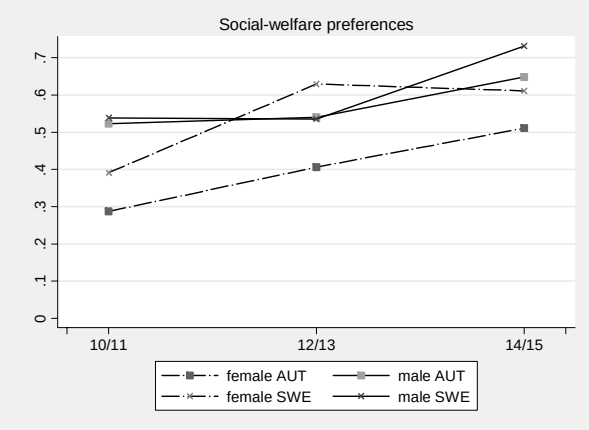


Figure 3: Competitive preferences

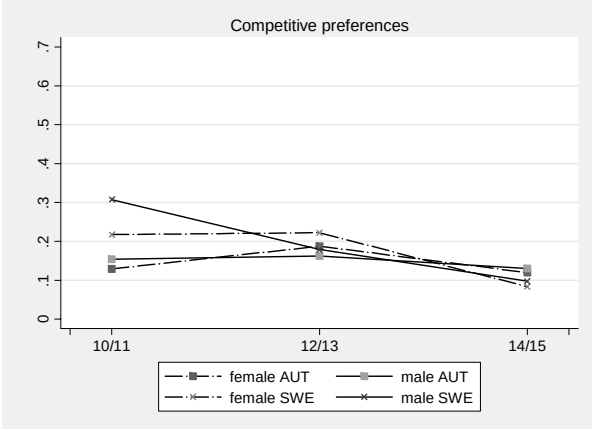
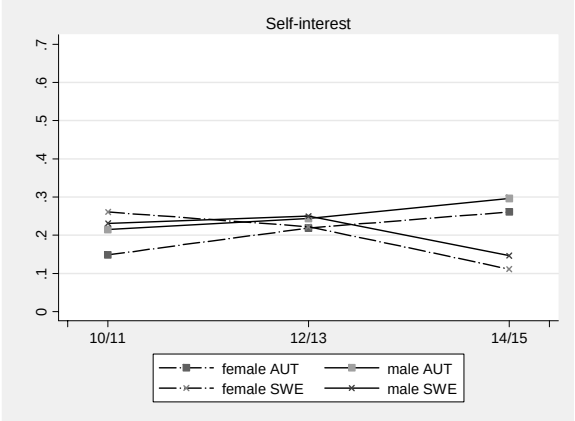


Figure 4: Self-interest



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Peter Martinsson, Katarina Nordblom, Daniela Rützler and Matthias Sutter

Social preferences during childhood and the role of gender and age – An experiment in Austria and Sweden

Abstract

We examine social preferences of Swedish and Austrian children and adolescents using the experimental design of Charness and Rabin (2002). We find that difference aversion decreases while social-welfare preferences increase with age.

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