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# Children's Inequality Aversion in Ultimatum Games

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# Abstract

Individuals do not only make decisions to maximize their own utility, but are also concerned with how their decisions affect others. Theories of inequality aversion, taking fairness considerations into account, suggest that many people dislike inequalities between themselves and others.

Testing for inequality aversion is easiest done by using experimental economics, in this paper in the form of an ultimatum game. It is a bargaining game where the subjects get to bargain over a sum of money, with their economic behavior being analyzed and quantified afterwards.

Adults who participate act more selfishly if they have to earn their own wealth in the game before starting to play. In this paper, an experiment testing how earned wealth affects children's behavior is constructed. This is done in order to show that as much as one can prove that even young children take fairness considerations into account, they can also act as selfish actors to a high extent, especially when earning their own wealth before being asked to share it with others.

***Key words:*** *altruism; fairness; inequality aversion; ultimatum games; children*

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# 1. Introduction

The question why humans behave and act in certain ways is almost impossible to answer. Although human behavior can be both complex and unpredictable, it sometimes seems to follow certain patterns. When looking at both children and adults and their interaction with other individuals, one might wonder how they choose between different decisions. A theory concerning why people choose to behave in specific ways, could therefore help when predicting human behavior.

This introduction will shortly describe the concept of inequality aversion, that humans dislike unequal divisions of material assets. It will also be explained why this is connected with human traits like fairness and altruism and why it is important to test this model on children. The purpose, problem, and delimitations of the paper will also be described, before moving to the theoretic part of the essay.

## 1.1 Problem discussion

Ernst Fehr, an economist based at the University of Zurich, has during the past decades formed a theory on the subject of human nature. His main paper, *A theory of fairness, competition and cooperation*, written together with Klaus M. Schmidt, questions some of the most common assumptions made by economists.

One of the standard economic assumptions, as defined by Fehr, states that people are exclusively driven by motives of material self-interest (Fehr<sub>1</sub>, 1). This means that the human being is a rather selfish individual, only seeking to maximize his own material gains and only acting accordingly to what he thinks has the highest expected utility. Fehr, on the other hand, argues that there are other equally important motives influencing human behavior. These are motives of fairness, altruism and intentions. Instead of only thinking about themselves, people also think about what they have in relation to others. Is it fair that some live in luxurious houses when others live on the streets? Is it expected for someone with a high salary to give some of it to charity? And do people think less of the ones who violate this norm?

To show that human behavior is driven by much more than self-interest, Fehr has used experimental economics, a field in economics where real individuals are engaged in various economic tests (experiments). Game theory provides the tools for analyzing human behavior, which is why it has become the base for most experimental economics. One common economic experiment is called the ultimatum game.

The ultimatum game is a short bargaining game. The task is for two persons to bargain over a sum of money. Person A, who initially has all of the money, offers some of it to the other one, person B. B then decides if the sum offered is acceptable or not. If B accepts, the money is divided as A proposed. But, if B decides that the offer is not good enough and turns it down, neither A nor B receives any money. How much money will A offer? What are the sums that B will turn down?

If acting according to standard economic theory, A would offer the lowest possible sum. If A also knows that the only thing B seeks is to maximize his own material gains regardless of the amount of money A has, B will always choose to accept any offer. Even if the offer is a small one, little money always being better than no money at all. The problem is that when people play the ultimatum game they do not act like this. Instead, person A often decides to split the sum by 50-50. Person B almost never accepts an offer below 20 percent. In order to explain this behavior, Fehr formed a model of inequality aversion showing that people dislike inequality, regardless if the inequality is to a person's advantage or disadvantage. When growing older, children show similar results as adults when playing the ultimatum game. Many researchers, Fehr included, are convinced that this is because humans have inherent traits of altruism, fairness and equality.

Interestingly, it has been shown that people act more selfishly as soon as they have had to earn the sum that they are playing with in the ultimatum game. For example, person A make much less generous offers if he in beforehand have earned the money by having to do a task of any sort. In real life money is not created out of thin air, and most people have to earn their wealth. The purpose of this essay is to design an economic experiment which, when carried out, would prove that also children, when earning their wealth before paying the ultimatum game, act much more selfishly. This would suggest that the inequality aversion in children is as dependant on earned wealth as for adults, and furthermore, that the evolutionary traits of fairness are not as strong as previously suggested.

## 1.2 Purpose and problem

Fehr has been involved in developing experimental economics in the game-theoretic field. By manipulating different areas of ultimatum games he has found evidence for his theories.

When conducting economic experiments, experimental design is essential for the outcome.

All the details in the experiment are defined in the experimental design, such as participants included, their tasks and what information they receive. Having this in mind the purpose of this paper is divided in two parts:

- i. To describe the theory of inequality aversion developed by Fehr and Schmidt, and its application to ultimatum games.
- ii. To design an economic experiment, set up as an ultimatum game, intended to test if children's inequality aversion decreases when earning their own wealth.

It is essential to understand the theory behind inequality aversion before designing an experiment to test it. The purpose has been narrowed down as far as possible, to order to concentrate to the main problem. The question to be answered is:

- How would we design the economic experiment in order to be able to test if children's inequality aversion decreases when they have to earn their own wealth?

## 1.3 Delimitations

First, the most obvious delimitation of this paper is that this economic experiment is only designed, but not carried out. The time available for writing the paper allowed no possibilities setting up the experiment with real test subjects. However, hypotheses are constructed and shown, and predictions on expected results will be reported. This is possible since there is previous research available in this field, which is used when making predictions for this experiment.

Furthermore, the paper focuses on research by Fehr, specifically on his model of inequality aversion. There are, of course, other models of inequality aversion which have been developed in the same area. One of the most famous is the Bolton-Ockenfels model (BO

model). The BO-model is only shortly mentioned in this paper, whilst the central attention will be given to the FS-model, mainly because it is suitable to use when working with ultimatum games. Why the FS-model is more suitable than the BO-model will be further discussed in the theoretic part of the paper.

## 1.4 Outline

Understanding the purpose and problem in chapter one, chapter two continues with the theoretical framework, which is the basis of the paper. In chapter two, the FS-model of inequality aversion and how it is applied to the ultimatum game will be described in detail. Chapter three consists of previous research made in the field of measuring inequality aversion in children, as well as previous studies concerning ultimatum games with children of various ages.

Chapter four explains the experimental design set up by the author. It starts with a review on what is essential to think about before designing an experiment, before describing it together with its hypotheses. Chapter five gives the analysis together with the predicted results, and the paper ends with chapter six and its conclusion.

## 2. Theory

This chapter will firstly describe how self-interest, altruism and fairness are defined by Fehr. This is the foundation to the theoretical framework, where the model of inequality aversion and the ultimatum game will be explained. The chapter ends with a section on earned wealth, describing what happens when it is included in economic experiments.

### 2.1 The selfishness axiom

“It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest.”

- *Adam Smith, Wealth of Nations*

Since his descriptions of human nature in *The Wealth of Nations*, Adam Smith is often thought to be the father of traditional textbook example of *Homo Economicus* (Fehr<sub>2</sub>, 3). There are many definitions of this theoretical individual, but they all include the trait always seeking to optimize personal well-being according to his utility function in any given situation.

When examining the research by Fehr, one must keep in mind that it is not the fact that an individual utility function can contain any given preference that Fehr questions. For example, a utility function might be formed in a way where helping others gives the most utility. Instead, Fehr questions the assumption that that one’s utility depends only on outcome, or expected outcome of some interaction. This practice is called the “the consequentialist practice”. What Fehr and Schmidt did when they formed a new model of inequality aversion, was to assume that our utility is both affected by the consequences of, and the intentions behind, every action.

The selfishness axiom is a definition Fehr uses to explain exactly the assumptions of human behavior, used in common economic theory, he challenges. Again, the motives behind human interaction are sought to be explained. The selfishness axiom, as defined by Fehr, states that “individuals seek to maximize their own material gains (...) and expect others to do

the same” (Fehr<sub>3</sub>, 8). As will be shown later on, Fehr and his colleagues have found that individuals do not follow this simple assumption in most of their economic interactions.

## 2.2 Altruism

Fehr has created a definition of human altruism, used to explain some of the actions that do not follow the selfishness axiom: “An act is altruistic if it is costly for the actor and confers benefits on other individuals. It is completely irrelevant for this definition whether the act is motivated by the desire to confer benefits on others, because altruism is solely defined in terms of the consequences of behavior” (Fehr<sub>4</sub>, 1257).

As pointed out by Peacock (2007, 6), it is important to remember that the term “costly” not only implies that the act will result in an immediate cost, but also that the individual carrying it out does not expect the cost to be replaced in the future. To be able to argue that some individuals have an inherent trait of altruism, one must therefore be able to rule out individuals who only refrain material gains since they believe that their behavior will be equally repaid in the future.

One also has to notice that Fehr’s definition of an altruistic act does not consider the reasons behind this act. Therefore acts can be classified as altruistic even if the actor did not intend to benefit anyone else (Peacock 2007, 6). Instead, actions that are explicitly taken to benefit or damage someone else’s material gains have their own definitions.

## 2.3 Strong reciprocity

Reciprocity can be described as a relation of mutual dependence, mutual action or mutual influence. In contrast to Fehr’s definition of altruism, his definitions of the different states of strong reciprocity all refer to the intentions behind the act. To be defined as a strong reciprocator, an individual has to satisfy the requirements of both positive and negative reciprocity.

*Strong positive reciprocity* is defined as a person who is willing to “sacrifice resources to bestow benefits on those who have bestowed benefits” (Fehr<sub>5</sub>, 3). This means that if someone acts in a way that is costly for him but favorable to you, you will take costly actions to return the favor. In simple words, making sacrifices to give back some of what others have given to you.

*Strong negative reciprocity* is defined as a person who is willing to “sacrifice resources to punish those who are not bestowing benefits in accordance with some social norm” (Fehr<sub>5</sub>, 3). This means that if someone acts in a way that is harmful to you, you are prepared to take costly action to reduce his material gains.

Using specific definitions of both altruism and strong reciprocity enables us to separate them from other kinds of behavior. For example, a person who only takes costly actions towards someone else because he thinks the action will be repaid in the future is defined as a *reciprocally altruistic* individual. Another actor, who takes costly actions towards others believing that the mere rumor of these actions will make others more cooperative and generous in return, is called an *indirect reciprocator* (Fehr<sub>5</sub>, 3).

## 2.4 Fairness

How different individuals interpret “fairness” can never be fully explained. Since your subjective feelings regarding fairness can never be the same as anybody else’s, it is useless to try to define fairness. Interestingly, feelings of what is fair or not can also arise inside a group or a community. This means that fairness considerations are present both in individual and collective minds.

Time can also change the view of what is fair and unfair. For example, punishments for breaking the law in the middle ages might have been seen as fair, whereas the same punishments would come off as being extremely unfair today (Wilkinson 2008, 330).

However, there are many arguments that fairness motives have a significant effect on people’s behavior. Empirical research show that a reason why companies do not cut wages as much as they would need in times of recession, is because they fear that workers would perceive it as unfair, affecting their working morale negatively (Fehr<sub>1</sub>, 1). In the normal everyday life surely everybody can come up with something they regard as unfair, high food-prices or someone cheating in a card game.

Fehr and Schmidt have, instead of trying to define fairness, found a way of investigating it. They model fairness as “self-centered inequity aversion”, described in next section. As said previously, there are several models of inequality aversion. The FS-model has been chosen in favor of the BS-model, mainly for two reasons.

Firstly, the FS-model is better in predicting results for ultimatum games. In terms of inequality, the BO-model suggest that guilt (feeling it is unfair not to give) and envy (a wish to punish those who do not give) are equal in forces. The FS-model suggests that envy is

stronger than guilt, which is in line with the results in many ultimatum games (Wilkinson 2008, 358), related to this paper.

Secondly, the robustness and simplicity of the FS-model makes it suitable for predicting results in many different games, notably ultimatum games. It is simple in terms of both parameters and linearity of the function. This makes the model easy to use and understand (Wilkinson 2008, 358).

## 2.5 The Fehr-Schmidt model of inequality aversion

Inequality-aversion models take into account that individuals not only care about their own material payoffs, but also care about comparing them with the payoffs of other individuals. There distinction between *inequality*-aversion and *inequity*-aversion is important to notice. Fehr and Schmidt have developed a model of inequality-aversion, but they call it a model of inequity-aversion. Whereas inequality is a neutral term, inequity is a normative word which involves a subjective perception of fairness (Wilkinson 2004, 354). The FS-model refers to the fact that research in psychology, when discussing social comparison, show that relative material payoffs affect both an individual's behavior and well-being (Wilkinson 2008, 355). The FS-model therefore seeks to explain this phenomenon by in a simple way provide a set of economic assumptions that take this into consideration.

One of the first assumptions stated in the FS-model, is that an individual is inequality-averse if "it dislikes outcomes that are perceived as inequitable". This individual experience inequality if he or she is better or worse off than others in terms of material payoff in the experiment. A second assumption is that individuals suffer more from inequality that is to their disadvantage than if the inequity is to their material advantage (Fehr<sub>1</sub>, 3). Therefore, an individual's utility function depends both on their own monetary payoff and the payoff in relation to earnings other people have gained.

Explained mathematically, if there are  $n$  players the social allocation is given by the vector of payoffs.

$$x = (x_1, x_2, \dots, x_n) \tag{1}$$

As a function of this vector, the utility function of player  $i$  is given by:

$$U_i(x) = x_i - \alpha_i / (n - 1) \sum \max(x_j - x_i, 0) - \beta_i / (n - 1) \sum \max(x_i - x_j, 0) \quad (2)$$

where  $\alpha_i$  is a measure of player  $i$ 's aversion to disadvantageous inequality and  $\beta_i$  the measure of  $i$ 's aversion to advantageous inequality. In a case where there are only two players, this can be simplified to:

$$U_i(x) = x_i - \alpha_i \max(x_j - x_i, 0) - \beta_i \max(x_i - x_j, 0), \quad i \neq j \quad (3)$$

The model of preferences with inequity aversion can be illustrated by figure 1 (Fehr<sub>1</sub>, 4):

Figure 1.

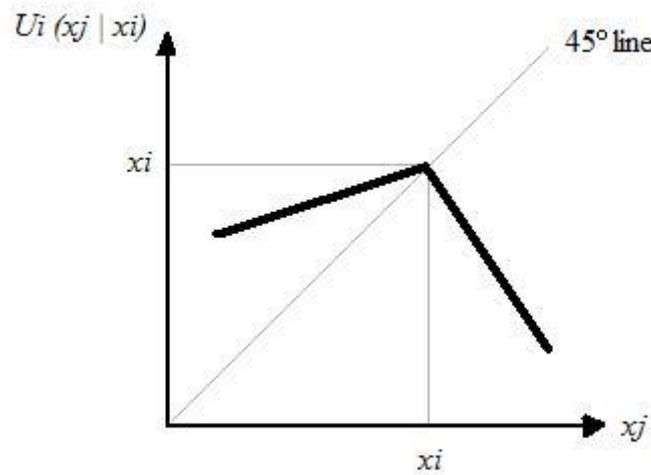


Figure 1 illustrates the utility of player  $i$  as a function of  $x_j$  for a given income of  $x_i$ . Player  $i$ 's utility reaches a maximum when  $x_j = x_i$ . As the figure shows player  $i$ 's loss of utility from disadvantageous inequality, where  $x_j > x_i$  is larger than  $i$ 's loss of utility from advantageous inequality, where  $x_j < x_i$ .

The relationship discussed above, when an individual is worse off from inequalities to its disadvantage, can also be described as  $\alpha_i \geq \beta_i$ . As Fehr points out, this "... essentially means that a subject is loss averse in social comparisons: Negative deviations from the reference outcome count more than positive deviations" (Fehr<sub>1</sub>, 5).

A second assumption from the FS-model important to point out is that  $0 \leq \beta_i < 1$ . That is  $\beta_i \geq 0$  is assumed means that individuals who do not mind feeling better than others are ruled out. This assumption has received critique, since status-seeking individuals who experience benefit when being better than others, and therefore having negative  $\beta$ -values, possibly could

exist (Wilkinson 2002, 356). Fehr and Schmidt recognize this, but state that they in the context of their experiments do not consider individuals with such  $\beta$ -values having any relevant impact on equilibrium behavior (Fehr<sub>1</sub>, 5).

The restriction of  $\beta_i < 1$  is not designed as  $\beta_i \leq 1$  for a simple reason. Remember that if, e.g.,  $\beta_i = 1$ , it means that player  $i$  is indifferent between keeping a dollar and giving it to player  $j$ . If there was a possibility for  $\beta_i = 1$ , it would mean that  $i$  would be ready to throw away a dollar to reduce his advantage relative to  $j$ , which is unlikely (Fehr<sub>1</sub>, 6).

There is no upper boundary for  $\alpha_i$  since behavior in experiments where some individuals have very high  $\alpha$ 's have been observed. Some individuals are actually willing to give up money if it reduces the payoff of another individual. Finally, remember if there are  $n > 2$  players, player  $i$  will compare his payoff to all  $n-1$  players. Fehr and Schmidt also make the assumption that the loss in utility subjects experience from both advantageous and disadvantageous inequality is "self-centered", meaning that subjects only compare themselves individually with each other, and do not care about inequalities within the group as a whole (Fehr<sub>1</sub>, 6).

## 2.7 The ultimatum game

A common way investigating fairness in humans is through ultimatum games. The basic ultimatum game is conducted with two individuals, one being the proposer, and the other one being the responder. Their assignment is to bargain over a fixed amount of surplus, mostly in the form of money.

A proposer is given money, let us say 10 euros, and is asked to divide this money between himself and the responder. When offered a sum by the proposer, the responder can choose either to accept or reject the offer. If he accepts the offer, both are walking away with the suggested division of money. If he rejects the offer, none of them will get anything.

The standard ultimatum game is only played once, but as discussed earlier, almost all the components of the experiment can be varied.

When the FS-model of inequality aversion is applied to an ultimatum game, the model can explain why the outcome of the bargaining in the game often reaches quite equal divisions, when the standard economic model would predict a completely different behavior. The sub-perfect Nash equilibrium of the game would be for the proposer to offer the lowest possible

amount to the responder, who always would say yes to the amount, little money is always considered being better than none (Fehr<sub>5</sub>, 5). However, this is not the case.

## 2.8 Inequality aversion in the ultimatum game

When the FS-model is applied to the ultimatum game, as described in Fehr<sub>1</sub> (1999), the sum that is being divided is generalized to a surplus of 1. The responders share,  $s$ , is then  $1-s$ . The proposer can offer a share of  $s \in [0, 1]$  to the responder, who can choose to accept or reject  $s$ . If the responder accepts, the proposer receives a monetary payoff of  $x_1 = 1-s$  and the responder  $x_2 = s$ .

The standard economic model would suggest that the responder accepts any  $s \in (0, 1]$ , and is indifferent between saying yes or no to  $s = 0$ . This means that in the subgame perfect Nash-equilibrium the proposer offers  $s = 0$ , which the responder accepts.

What are the empirical results? Experiments in ultimatum games show that 40 percent of all offers are split equally,  $s \in [0.5]$ . 30 percent of all offers can be found within  $s \in [0.4, 0.5)$ , and another 30 percent offer less 0.4. There are almost no offers below 0.25 or above 0.5, and most offers below 0.2 are rejected (Fehr<sub>1</sub>, 22).

The model is able to predict this behavior when applied to an ultimatum game. If the proposer's preferences are  $(\alpha_1, \beta_1)$  and the responder's  $(\alpha_2, \beta_2)$  the equilibrium outcome will be a function of these parameters.

The dominant strategy for the responder is to:

- Accept  $s$  if  $s \geq 0.5$
  - To reject  $s$  if  $s > s'(\alpha_2) \equiv \alpha_2 / (1 + 2\alpha_2) < 0.5$
- (4)
- Accept  $s$  if  $s > s'(\alpha_2)$

The proposer is going to act in different ways, depending on if he knows the responder's preferences or not. If the proposer knows the responder's preferences, he will in equilibrium offer:

- $s^* = 0.5$  if  $\beta_1 > 0.5$

- $s^* \in [s'(\alpha_2), 0.5]$  if  $\beta_1 = 0.5$
- $s^* = s'(\alpha_2)$  if  $\beta_1 < 0.5$

(5)

If the proposer does not know the responder's preferences, Fehr and Schmidt assume that the proposer thinks that  $\alpha_2$  is distributed according to the cumulative distribution function  $F(\alpha_2)$ . Here  $F(\alpha_2)$  has the support of  $[\underline{\alpha}, \bar{\alpha}]$  with  $0 \leq \underline{\alpha} \leq \bar{\alpha} < \infty$  (Fehr<sub>1</sub>, 8). The probability ( $p$ ) that an offer of  $s < 0.5$  will be accepted is then:

- $p = 1$  if  $s \geq s'(\bar{\alpha})$
- $p = F(s/(1-2s)) \in (0,1)$  if  $s'(\underline{\alpha}) < s < s'(\bar{\alpha})$
- $p = 0$  if  $s \leq s'(\underline{\alpha})$

(6)

This gives us the proposer's optimal offer, which is:

- $s^* = 0.5$  if  $\beta_1 > 0.5$
- $s^* \in [s'(\bar{\alpha}), 0.5]$  if  $\beta_1 = 0.5$
- $s^* \in (s'(\underline{\alpha}), s'(\bar{\alpha})]$  if  $\beta_1 < 0.5$

(7)

The values of  $\alpha$  and  $\beta$  are derived from the utility function (2). For example, the proof that the responder always will accept  $s \geq 0.5$ , as suggested in (4) comes from the responder's utility function  $U_2(s) = s - \beta_2(2s-1)$  which always is positive for any  $\beta_2 < 1$ , ( $\beta_2$  = the responder's aversion to advantageous inequality) and therefore always better than rejecting the offer which would result in the payoff 0. For further mathematical proof please see Fehr<sub>1</sub> (1999: 8-9).

## 2.9 Earned wealth

We will now move on to explaining how including earned wealth affects behavior in ultimatum games. The first attempts to test if earned wealth affects the results in game-theoretic

experiments was made on so called “dictator games”. A dictator game is set up exactly as the basic ultimatum game, except for the fact that the responder cannot respond at all. The proposer is a “dictator”, and whatever division the dictator chooses, is what will be divided. Since the proposer experiences no threat of a “no” from the responder, all offers given to the responder are said to be truly altruistic.

When compared with the ultimatum game, studies show that dictators offer approximately 20 % less than proposers in ultimatum games, but still a large share of the dictators choose to offer a positive amount to its counterpart. The dictator games were later critiqued, mainly on the point that the sum the dictator is to divide or keep is not earned wealth, but has been given to him for free (Wilkinson 2008, 334).

To be given money without having to earn it is not something that occurs in everyday life. By conducting dictator games, where students first had to earn their wealth through answering a set of GMAT questions, Cherry *et al.* (2002) proved that offers decrease drastically when afterwards playing the game. In the group where the income had been earned, only 20 % of the students made any offer at all to their counterpart. This was compared to the group where the money was simply given to the students, with the result that 83 % of the students making offers.

Hoffman *et al.* (1994) made a study on ultimatum games, where they also tried to incorporate a feeling of the proposer in some way earning his position. By letting all experimental subjects answer a questionnaire, and then letting the ones with best result take place as proposers, proposer’s offers fell with 10 percent. One interesting feature was that the responder’s rejection rates were not affected, which might suggest that the feeling of being “entitled” to a certain amount only affects the one who has earned his wealth.

All these results are important to keep in mind when investigating the inequality aversion in children, since one can expect that if the child understands the rules of an ultimatum game the results should be fairly similar to the ones with adults. In the following section, the previous research on inequality aversion in children will be presented to further illuminate the subject.

## 3. Previous research

This section will focus on available research on children's inequality aversion. Studies conducted in this area, e.g. by Damon (1980, 1010), have shown that children seem to go through three main stages in their development to adulthood. According to Damon, children are very self-interested before the age of five, and become concerned with equality between the age of five and seven, understanding that equality can be used to prevent conflicts. After the age of seven, they then begin to focus on equity (fairness). This chapter first explains some of the theories why children are inequality averse even at young ages, and then show how previous researchers worked when testing inequality aversion in children.

### 3.1 Theories

Evolutionary psychology has often been used in Fehr's experiments to explain why individuals do not act in accordance with the standard economic model. Results show that responders repeatedly reject offers of 20 percent or less of the total sum in the ultimatum game. This is, according to Fehr, an example of strong negative reciprocity (Fehr<sub>5</sub>, 5). The offer is not perceived as "fair", and the respondent takes the chance to punish the proposer. The other way around, proposers have shown to hardly ever propose a sum beneath 25 percent, and roughly 40 percent suggest an equal split (Fehr<sub>5</sub>, 22).

Fehr argues that strong reciprocity, amongst others, is an evolutionary trait. Throughout the years of evolution, traits promoting altruism, cooperation and strong reciprocity have been developed. Since the behavior in ultimatum games, even when being conducted in many different countries and cultures across the world, is inconsistent with the selfishness-axiom, it is interpreted as a proof that humans are not as self-regarding as standard economic theory would suggest (Fehr<sub>7</sub>, 84). Experimental subjects in ultimatum games do not seem to only be driven by the will to maximize their own gains, but also to improve the gains of others. Also, acting in a selfish way, wanting to keep most of the sum being divided in the game, is a behavior usually punished by others.

Fehr has suggested that altruism has a biological function. Altruistic individuals have been better in communicating with other groups of individuals, and have therefore been able to

establish better relations for trade and communication, essential for the development of successful human societies. To be able to reject “unfair” offers is also supposed to be an evolutionary trait. If an individual gains a reputation among others as being easily fooled, or weak in bargaining situations, others would exploit this individual. To possess such a trait would then be a disadvantage in an evolutionary context, and neither gain the individual, nor his group (Fehr<sub>7</sub>, 87).

## 3.2 Testing for inequality aversion

In 2008, Fehr, together with Helen Bernhard and Bettina Rockenbach, tested the inequality aversion in children. They did not use the ultimatum game per se, but rather a simplified version of it. In short, they conducted the experiment on children between the ages of three and eight years old. The children were asked to allocate sweets between themselves and, at first, a group of anonymous counterparts (Fehr<sub>6</sub>, 1079).

The experiment was conducted in three sequences, all to test for different traits. In the first sequence, the child was asked to choose between two different allocations, the first (1,1) would result in one sweet for the child, and one sweet for the counterpart. The other allocation shown was (1,0), one for the child, and none to the others. Children driven by an equality motive would in this case choose the division of (1,1).

In the second sequence, the child chose between divisions of (1,1) and (1,2). This to test for any “envy” motives, since the decision of (1,2) would lead to a disadvantageous inequality for the child. In the final sequence, called the “sharing” treatment, the choice was made between divisions of (1,1) or (2,0). This was made to measure a strong form of inequality aversion, since choosing (2,0) would result in great inequality relative to the counterpart. The choice of (1,1) in this sequence would be a proof of altruism, since the choice is costly and confer a benefit upon someone else.

The results of the experiments showed that children at the age of three and four years behaved very selfishly. Older children, particularly when reaching the age of seven to eight years old, instead chose allocations that would remove both advantageous and disadvantageous inequality. This development would further recognize evolutionary theories suggesting that humans have an inherent instinct of inequality aversion, which has been genetically transmitted (Fehr<sub>6</sub>, 1082).

There are two main studies testing for children's inequality aversion in ultimatum games. In the first, conducted by Murnighan *et al.* (1998), three different age groups were tested. The first with five and six year-olds, the second with nine year-olds and the third at the age of twelve.

The experiments were conducted in school hallways, playing with both sweets and small amounts of money. The game was very closely described, and then half of the children were to act as proposers, and the other half as respondents. Later the roles were switched. All choices were made individually, under the conduct by the staff.

The result of the ultimatum game bargaining showed differences in the behavior of younger and older children. The only ones who occasionally offered the entire sum of money or sweets to the respondent were young children. As pointed out, this could both reflect early altruism, but also a strategy to avoid conflict, since two of the children explained their act with the words "so he wouldn't bother me", meaning the supposed respondent (Murnighan 1998, 438).

The overall trend was that young children made larger offers and accepted smaller amounts than the older ones. Finally, under no-information conditions, not knowing how much sweets/money that was to be divided, respondents accepted smaller offers than under complete information circumstances.

The second study, by Sutter (2006), investigated the results from mini-ultimatum games with children, teens and university students. Mini-ultimatum games are constructed exactly as the experiment by Fehr, Bernhard and Rockenbach, but with the responder still taking an active part in the experiment. In one of the games the proposer chose between offering the division of (8,2) or (2,8). Most proposers chose the generous division of (2,8). The results showed that children and teens rejected this advantageous inequality to a much higher extent than university students did. According to Sutter, this suggests that children and teens are more considered with equal outcomes than of fair intentions. The conclusion is that the consequentialist practice to define utility in terms of consequences of an outcome, might be more appropriate for children and teens than for university students and adults (Sutter 2006, 76).

## 4. Experimental design

In this chapter, the design of the new experiment to test inequality aversion in children will be described. The chapter starts with discussing the methodological issues related to the experimental design, with explanations why a certain method has been chosen. The second part is a practical description of the experiment. The chapter ends with a number of hypotheses predicting expected results.

### 4.1 Method

One of the purposes of this paper has been to present an experimental design to test for inequality aversion in children. The main methodological issues to be considered before constructing an experiment, are as follows:

#### *Repetition and learning*

When an experimental subject plays, for example, an ultimatum game repeated times, studies have shown that there are some learning effects. When playing a certain role in a game repeatedly, subjects develop tactics to be able to earn the largest amount of money. In ultimatum games, a small learning effect has been observed, where subjects offer lower and lower amount of money over time (Wilkinson 2008, 341).

It is usual to play ultimatum games a number of repeated times with every subject, since this allows them to fully understand the rules of the game. However, as Babcock (2004, 338) points out: “It is not at all obvious (...) that the real world allows for anything like the opportunities for learning that are present in economics laboratory experiments”. It is also common to let the subjects alter roles in the games, both making choices as proposers and responders. This allows for more data to be collected from each experimental group. The most common way of conducting ultimatum games is with adults, who play the game on computers or receive forms where they are to fill out their choices. In working with small children, some of them cannot read or write this is not possible. Therefore, the game will be played live under supervision of the staff, instructing and explaining the game several times for each child, as well as showing how the game works together with a partner (See appendix A). The subjects

will only play the game once, as a proposer or as a responder, in order to avoid confusion and unnatural development of tactics. To be able to compare the results between different groups without any complications, all children, independent of age, will play the game exactly the same.

### *Stakes*

It has been proven that the amount of money involved in ultimatum games have surprisingly little effect on the experimental subjects. For example, when playing the ultimatum game in Indonesia, the amount being divided between two players was as much as three times higher than their average monthly income. The results still stood in line with the common behavior in ultimatum game bargaining (Fehr, 1984). It is important that the sum represents some economic value for the subject. If the sum is too small to be of any use, the sum is considered meaningless and the subjects might not care about the outcomes of the experiment (Murnighan 1996, 442).

Children are not always allowed (by the school or by parents) to keep any monetary or material gain from participating in experiments. If this is the case, the children should be informed about this before the experiment. Knowing that nothing will be earned might change the subject's behavior, but Murnighan et al (1998, 423) report that the children in their ultimatum game bargaining seemed to take their task very seriously, even if nothing could be earned in the end.

In this experiment, the maximum sum that could be bargained with is five Euros. This exact sum was chosen because it is a sum of significance for all children, regardless of age. The same sum could be used throughout different age groups, and could also easily be split into 50-cent coins, to ease the bargain process.

### *Anonymity*

The behavior of subjects is always affected by the degree of anonymity in the experiment. A lack of anonymity, or a feeling of it, might cause subject to act in ways they think pleases either their counterpart or the staff conducting the experiment (Wilkinson 2008, 341).

In this experiment, the children will be told that they do not know counterpart in the ultimatum game. They will be making their choices in a separate room, only with members of the staff present. Because of the children's young ages, conducting the experiments without any staff ready to help and explain the game would be very difficult.

### *Communication*

If the subjects are allowed to talk to each other, they tend to be more generous towards each other in experiments. Again, to ensure as much anonymity as possible it is important to rule out such factors (Wilkinson 2008, 341).

To rule out the possibility of children telling each other what the experiment is about, influencing the ones who have not yet played the game, the children who are finished with the game are not allowed to go back to the classroom. Instead, they will be gathered in another group room or playroom to ensure that they are not communicating with the others.

### *Entitlement*

As discussed in “previous research”, subjects who have had the possibility to earn their own wealth, tend to feel more entitled to the sum and behave more selfishly (Wilkinson 2008, 341). In this game, the test group will earn their own wealth by answering a set of questions. Based on how well the subjects succeed in the test, a salary will be paid, with the maximum amount of five Euros.

In order to be able to compare the results with each other, 50 percent of all proposers will have the opportunity to earn their wealth, the other 50 percent only being handled the money without having to do anything. The questions on the tests (see appendix) are designed to make it easy to earn the maximum amount, and making comparisons even simpler.

### *Available information*

In ultimatum games, responding subjects can have complete information and know the sum to be divided, partial information and know the possible payoff sizes, or no information at all. It has been shown that subjects tend to accept smaller amounts of money if they do not know how much money is to be divided (Wilkinson 2008, 341).

The two information conditions in this experiment are a) Full information and b) partial information. Under the full information condition, all participants of the test who have earned their money will be gathered. When acting as proposers and responders, both are told that the information on how much money the proposer has earned is available for them both. In the partial information condition, consisting of the latter 50 percent of the group, no information on how the proposers have received the initial five Euros is given.

## 4.2 Procedures and design

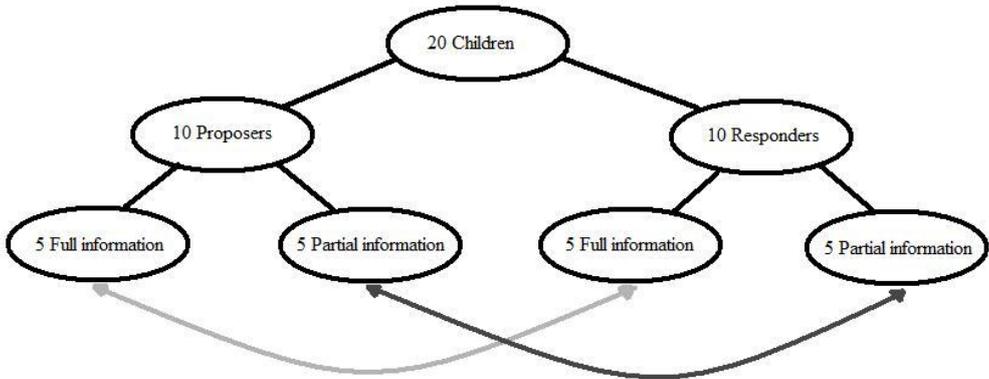
The participants of the experiment will be chosen to fit three main groups of ages. For simplicity, classes from elementary and high schools can be chosen. The participant's in the study by Murnighan *et al.* (1998) represented a mix of children from different national and socioeconomic backgrounds, whereas the children in the experiment by Fehr *et al.* (2008) all were Swiss and genetically unrelated. The best option is to choose schools with children from various socioeconomic environments, and rule out siblings or twins within the classes.

The three age groups will consist of children of six, nine and twelve years old. This is done in order to make as accurate comparisons as possible with the experiment by Murnighan *et al.* (1998), since he used children of above ages.

The experiment would include four different test groups in each age group, so approximately six classes of 20 children will be needed for each age group in the experiment (total of participants, 360). The number of participants has been chosen to provide each test group in each age group with the minimum population of 30 children, enough to fill the demands for a normally distributed stock sample.

The experiment will be conducted as one-shot ultimatum games, and every child is going to play the game only once in order to avoid learning effects. Furthermore, half of the proposing children will be part in an act earning their wealth before the experiment. By being asked a set of questions by the staff, the child is expected to gain a feeling of being entitled to the money that is received. Before an explanation of the experiment is provided, figure 2, a visual outline of the division of the children in each class into four sub-groups, is shown in order to help understanding the experimental design.

Figure 2 - Game design



The experiment starts with the staff entering the classroom and explaining that the children individually are to come out of the classroom and play a game together with the staff. A hat is then passed around in the class and each child will take a card with a number (1-20) from the hat. The order of the children entering the experiment is now randomized.

Numbers 1-10 starts, being called out one by one to act as proposers in the ultimatum game. Numbers 1-5 are first asked to answer five questions. For every right answer, they win 2 coins, worth 50 eurocents each. The maximum amount that can be earned is ten coins, worth 5 euros. As discussed earlier this sum has been chosen since far too small amounts can make the subjects careless in their decision making. All three groups have also been given different questions, to fit the age and knowledge in the groups.

Numbers 6-10 does not do any questions, but continue directly into the ultimatum game. The ultimatum game is explained in detail, and for the six year-olds, the staff also shows a short play of how it works (for detailed information on how the explanations are conducted, see the Appendix). It is also explained that there is an anonymous responder, sitting in another room. The responder is said to be from another school and will leave immediately after the game. In that way, the ultimatum game will be realistically conducted still preserving the anonymity of the proposer.

The information available is as follows; subjects 1-5 are informed that the responder will know about the fact that they have earned their money, including the total sum that can be earned and how much they have earned by answering the questions. Subjects 6-10 will be informed that the responder will know about the total amount being divided (always five Euros).

Thereafter, the proposers in both groups will make their decisions. Since there yet are no “real” responders, the staff will act as if the responder would have answered “yes” to the offer, and the proposer is able to leave with the amount he or she has left.

The children who have finished their games will not return to the classroom, but to another play- or group room at the school. This is to prevent them from talking about the experiment, or showing what they have earned to other classmates.

After all of the proposers have finished their experiments, it is time for numbers 11-20 in the classroom to act as responders. The responders with numbers 11-15 will be given the complete information of how much money proposers 1-5 succeeded to earn. Responders 16-20 will only be informed of the total sum being divided. The ultimatum game will then be explained as it was for the proposers, giving extra attention to the responder’s task. The responders are also informed that the proposer is an anonymous child from another school,

sitting in another room.

Responders 11-15 will face the offers from proposers 1-5, and responders 16-20 the answers from proposers 6-10. When the decisions to accept or reject the offers has been made, responders go into the play- or group rooms until all the children have finished the experiment.

## 4.3 Hypotheses

Before moving on, explaining, motivating and analyzing the experimental design chosen, a set of hypotheses will be set up for this experiment. The hypotheses are as follows:

*Hypothesis 1:* That the children in the earned wealth group will propose a smaller percentage of the money available than the children who are given the money directly.

*Hypothesis 2:* That the respondents who are informed of the outcome from a proposer in the earned wealth group will not accept significantly lower offers than in the other responder group.

*Hypothesis 3:* Younger children will accept smaller offers than older children.

*Hypothesis 4:* Older children will make larger proposer offers than younger children.

## 5. Analysis

This chapter will go through all of the hypotheses and make predictions of whether the hypotheses will hold or not.

Since there is no possibility to carry out the experiment due to limited time available for the task, my predictions and analysis are based on earlier research. The first hypothesis follows the implications from the ultimatum and dictator games that have included earned wealth. That the children in the earned wealth group would propose smaller amounts seem rational. There is little intuition behind the assumption that children would not understand the difference between earning and being given something. Therefore I predict that the first hypothesis will hold, and that the results will be similar to the ones in the experiments with adults.

The second one, that the responders would not take the earnings of their counterpart into account, also has evidence from empirical result. As shown by Hoffman et al. (1994), responder rejection rates were not affected by the knowledge that the proposer's had earned their wealth. It suggests that the feeling of being entitled to a sum of money, only affects those who have earned it themselves. Intuitively, one would assume that responders would behave more generous by accepting lower offers to the ones who has earned their money, but the research available does not seem to support the assumption.

The third and fourth hypotheses were initially tested for by Murnighan (1998, 240). According to both hypotheses the inequality aversion is stronger the older the child. This also implies that older children would decline larger offers than the younger, since the older gain more concern with matters of equity and fairness. The existing results of inequity aversion in children point in many directions, although many of them show that the inequity aversion grows stronger the older the child becomes. This could both suggest that the sense of fairness and altruism is not an inherent trait, but something that is developed over time depending on what social context the child is put in. On the other hand, it could be seen as a proof of our evolutionary biology, since different parts in the brain develop during the years a child is growing up.

If all hypotheses would hold, especially the two first ones, this experiment would be able to cast further doubt to the assumptions that inequality aversion is as prominent in human behavior as Fehr has suggested. It would not object to the possibility that humans are born

with inherent traits of fairness, altruism and inequality aversion, but argue that these properties might be weaker than Fehr argues in the FS-model.

Finally, the importance of conducting experiments with earned wealth must be highlighted. In the world outside of closed experiments, money or material payoff is hardly ever given to the average person for free. Excluding the element of earned wealth from the research concerning fairness motives, is excluding something that is usually vital for humans in their everyday life. Therefore, also the previous results concerning children's inequality aversion has to be questioned and re-tested, allowing for children earn their own wealth.

Although the FS-model provides us with fascinating predictions of how proposer's and responder's behave in ultimatum games, I believe that the model has to be further tested and questioned. This also include the evolutionary explanations mentioned, arguing that fairness and altruism are evolutionary traits. Most humans are far from being purely selfish, but this does not rule out the fact that having to work, in order to receive any material gains has also been a central part of human development.

## 6. Conclusion

The purpose of this essay has been to describe the theory of inequality aversion developed by Fehr and Schmidt, and how it is applicable to ultimatum games. The purpose has also been to design an economic experiment in a form of an ultimatum game in order to test if children show less inequality aversion when they earn their own wealth.

On the theory on inequality aversion, basic definitions of altruism, reciprocity and fairness have been sought to increase the understanding of the FS-model. The FS-model has then been described, followed by a description on how it is applicable on ultimatum games, and what results in the bargaining it predicts. The FS-model does not only take intentions and fairness considerations in humans into account. It can also be used to show the expected equilibrium behavior in ultimatum games.

Furthermore, on the road to constructing an experiment to test inequality aversion, previous research in the area has been consulted. Most previous studies state that when experimental subjects are able to earn their own wealth, they become less willing to share a part of it to an anonymous counterpart. The studies that have been made on children show various results, but a general pattern seems to be that children act more selfishly the younger they are.

The main methodological issues when constructing an experiment have also been brought up, discussing everything from learning effects to anonymity. Finally, the economic experiment, designed to test if children who earn their own money show less inequality aversion than the test group, have been described. Hypotheses have been set up and the prediction, that all the hypotheses will hold has been based upon previous research accounted for in the paper. Therefore, question: "How could one design an economic experiment to show that children's inequality aversion decreases when they have to earn their own wealth?" can be considered as answered.

In short the experiment is done by setting up an ultimatum game to be tested on children of six, nine and twelve years old and allowing for half of the proposer's to earn their wealth through completing a test. When paying the ultimatum game the information should be varied by letting half of the participants know what the proposer has earned, in order observe if they behave differently in comparison with participants who are not given this information.

The result will contain data from approximately 360 children, 120 from each age group and 30 from each proposer/responder and full information/partial information group. The result can then be compared, and statistically secured. If the differences are significant, it can be proven that children's inequality aversion decreases when they have to earn their own money.

To round up, it is hard to predict the results of an experiment that is yet to be conducted. It is obvious that individuals with the most shifting inequality aversion appear in all game-theoretic experiments. When studying human behavior one can often distinguish patterns, but never an explanation that fits all. No matter how careful and accurate an experiment is being modeled, there will always be individuals who act in direct violation of whichever theory that is set up.

Here, the conclusion made by Fehr and Henrich (2003), might be to some satisfaction. They suggest that the heterogeneous results shown in experiments, where both strong reciprocators and highly selfish individuals are observed, might actually be a proof of that these two evolutionary forces are intended to coexist. Until we can be certain that someone has found a satisfactory explanation to why humans behave so differently, the last words in their paper are encouraging: "Empirical work should not just aim at providing evidence that is consistent with one of the prevailing approaches but should also aim at discriminating between competing approaches. There is thus ample room for further theoretical and empirical investigations." (Fehr<sub>6</sub>, 29).

## 6.1 Suggested research

Within the field of researching on children's inequity aversion there is still much to be explored. To be able to assess if children have inherent traits of altruism and strong reciprocity, further studies have to be conducted. This paper, suggesting an experimental design which tries if earned wealth affect the decision making in ultimatum games, would be one of the steps for further testing of the FS-model on inequality aversion, to be able to assess if humans have evolutionary traits that promote altruistic and fair behavior. It is the hope of the author that this experiment will be carried out in the future.

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# Appendix

## Supplementary information guide

This information contains a script of what instructions to give to the entire group, and what instructions to give to the “proposer” and the “responder” in the experimental situation.

The children in each class are to be randomly fitted into two groups, proposers and responders. Half of the proposers are to answer the questions in section two to earn money. The other half will not answer any questions, and simply be given the full amount.

Remember to play the game with the proposers first, since their answers will be used on the responders. The total amount of money being available to each proposer should be five Euros, split into 50-cent coins, or equivalent.

## Experimental instructions

### Greetings and information to the entire group of children

- Hello! My name is \_\_\_\_\_ and this is my friend, \_\_\_\_\_. Thank you for letting us visit to your school! We come from Lund University, and we are here today to play a game with each and every one of you. One by one, you will leave the classroom to play the game with us. The game is not part of any schoolwork, it’s just for fun! In the game, you will be able to earn some money, which you are allowed to keep and bring home after the game.

- Once you have played the game with us, it is important that you don’t tell what the game is about to your friends. Therefore, when you are finished with the game, you will not go back to the classroom, but to the play room/group room, and wait until everyone have had a chance to play the game.

- Afterwards, your day will continue as usual.

- Firstly, we will walk around with this hat. Take one of the cards from the hat. Each card has a number on it, and when we call your number, you will follow us to play the game. If you don’t understand your number, ask us and we will help you to find out when it’s your turn.

*The hat is passed around and everyone receives a card with a number. Before the experiment, make sure that you have decided which numbers that belong to proposers and which that belong to responders. The first number is then called out, and the experiment begins.*

## Individual game script (For proposers)

### 1. Introduction

- Hello, my name is \_\_\_\_\_. What is your name? (*Child answers*)
- Now, are you ready to play our game? (*Child answers with "yes"*)

### 2. Questions for half of the proposer group

- Ok. The game is played in two parts. First, we will ask you five questions. For every question you get right, you will earn money. The more questions you get right, the more money will you earn.
- Do you understand? (*Continue of the answer is "yes", otherwise explain everything again*)

*For children aged 6:*

- What is the color of this ball? (*Show red ball*)
- What is the name of this school?
- How many cars am I holding in my hand? (*Show three small cars*)
- What is the name of your teacher?
- What is the name of this county that we live in?

*For children aged 9:*

- How many moths are there in a year?
- What is  $10 + 10$ ?
- What is the name of the person in this picture? (*Show picture of Donald duck*)
- What is the name of the capital in this country?
- Can you tell me a word in a foreign language?

*For children aged 12:*

- What is the name of the prime minister/president?
- What is  $5 * 2$ ?
- Can you give me the names of three major religions in the world?
- Can you give me the names of ten different countries?
- Can you name three different political parties?

### 3. Handing out money

- Congratulations! You did very well on the questions!
- Since you answered right on \_\_\_ out of five questions, you have now earned \_\_\_\_ euros. (*Hand out two 50-cent coins for every right answer*)
- Now we will continue with the second part of the game!

### 4. The ultimatum game (Start here if no questions is to be answered)

- Do you see that door over there? (*Point towards door*)
- Behind that door is another child who doesn't go to this school. The child went in there with one of my friends before you and I started this game. You will never meet this child, and he or she will never know that it is you who are sitting here. After this game is done and you have left, the child will leave this school.

- As you see you now have \_\_\_\_ euros/\_\_\_\_ coins. The game is that you have to decide if you want to give any of these to the child behind the door.

*Used for children who have not answered questions:*

- The child knows that you have 5 euros/10 coins.

*Used for children who have answered questions:*

- We will tell the child how much money you have earned when you answered to your questions.

- Once you have made your decision, my friend \_\_\_\_\_ will go into the other room with the money that you have decided to give away.

- The child behind the door will then decide if he or she wants to keep the money. If the child says yes, the game is over, and you will go back to the playroom/group room. You can keep the money you have left.

- But, if the child in the other room says no, if he or she doesn't like the number of coins that you have offered, none of you will get anything. I will have to take away all of the coins that you have. We will also take away the money that you offered to the child.

- Do you understand? (*For children aged 9 or 12, explain the game again, for children aged 6, always show the play described below.*)

*For children aged 6, now show together with you partner how the game is played. Pretend that you are conducting a play with you colleague, who plays the "child in the other room". Show with your hands how you hand over "invincible" coins to you colleague, who then looks at them and decides for "yes" or "no". Show clearly your empty hands if the answer is "no", so that it is understood that no one gets anything. Explain that the offer the child has to make can be everything from zero, one, two, ... , up to ten coins. DO NOT answer any questions on tactics, whether the other "child" supposedly would say "yes" or "no", and DO NOT give any physical or numerical examples of how many coins you would divide when showing the play.*

## **5. Ending**

*Once you have recorded the child's proposal. Take the proposed money through the door.*

*Come back and give the reply that the offer was accepted.*

- The other child has decided to say "yes" to the money that you offered him or her.

- Thank you very much for participating in our game! You did great! Was it fun?

- Now, go back to the play room/group room, where a teacher will meet you. Make sure not to speak to any of you friends who haven't played the game yet. Thank you!

*End of experiment.*

## Individual game script (For responders)

### 1. Introduction

- Hello, my name is \_\_\_\_\_. What is your name? (*Child answers*)
- Are you ready to play our game? (*Child answers with "yes"*)

### 2. The ultimatum game

- Do you see that door over there? (*Point towards door.*)
- Behind that door is another child, who doesn't go to this school. The child went in there with one of my friends before you and I started this game. You will never meet this child, and he or she will never know that it is you who are sitting here. After this game is done and you have left, the child will leave this school.

*Used for half of the responders in the group:*

- The child on the other side of the door has been given ten coins worth 5 euros.

*Used for the other half of the responders in the group:*

- The child on the other side of the door has been asked to answer some questions. In reward for answering them the child has earned money. If the child on the other side got all of the questions right, the child would now have all of the coins.
- Actually, we know that the child on the other side of the door has earned \_\_\_\_ coins/ \_\_\_\_ euros for answering the questions right.

- The game is that the other child behind the door has to decide if he or she wants to give any of the money to you.
- Once he or she has decided, my friend \_\_\_\_\_ will go to the other room and pick up the money that the other child has decided to give away to you.
- You will then decide if you want to keep the money or not. If you say yes, the game is over, and you will go back to the playroom/group room. You can then keep the money you have gotten from the other child.
- You can also say no to the money, if you do not like the amount of coins you have got. If you say no, none of you will get anything. I will have to take away all of the coins that you have. We will also take away the coins that the other child has got.
- Do you understand? (*For children aged 9 or 12, explain the game again, for children aged 6, always show the play described below.*)

*For children aged 6, now show together with you partner how the game is played. Pretend that you are conducting a play with you colleague, who plays the "child in the other room". Show with your hands how you hand over "invincible" coins to you colleague, who then looks at them and decides for "yes" or "no". Make sure that it is understood that no one gets anything if the answer is no. Explain that the offer the other child can give can be everything from zero, one, two, ... , up to ten coins. DO NOT answer any questions on tactics, or if it would be best to answer "yes" or "no", and DO NOT give any physical or numerical examples of how many coins you would have accepted when showing the play.*

### 3. Ending

*Your colleague walks into the other room, and fetches the number of euros that is associated with the answer from one of the proposers from previous games.*

- The other child has decided to offer \_\_\_\_ Euros to you.
- Would you like to say “yes” or “no” to this offer?

*Explain again the game if necessary. Make sure it is understood that the child cannot regret his/her choice afterwards. If the child says yes, give him/her the offered amount. If the answer is no, keep it.*

- Thank you very much for participating in our game! You did great! Was it fun?
- Now, go back to the play room/group room, where a teacher will meet you. Make sure not to speak to any of you friends who haven't played the game yet. Thank you!

*End of experiment.*