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**A CROSS-CULTURAL STUDY OF
RECIPROCITY, TRUST AND ALTRUISM IN A
GIFT EXCHANGE EXPERIMENT**

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A cross-cultural study of reciprocity, trust and altruism in a gift exchange experiment

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Abstract

This paper presents the results of a bilateral gift exchange experiment in which mutual gift giving is efficient but gifts are individually costly. We compare the results for Norway and the Netherlands and for two information treatments: one with and one without information about previous gifts. We find that average gifts are higher in Norway. Furthermore, gifts are higher when information is provided about the previous gift. A model of individual behaviour suggests that Norwegian and Dutch subjects behave similarly along the egoist-altruist dimension. The observed differences in behaviour can be fully rationalised by a difference in the degree of reciprocity, with Norwegian subjects having more concerns for reciprocity.

Keywords: experiments, gifts, reciprocity, altruism, cross-cultural

JEL-Classification codes: C90, D63, H55

PsychINFO Classification Code: 3020, 3040

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1. Introduction

There is an ongoing debate on the question whether individuals are rational and self-interested pay-off maximizers, or motivated by non-monetary, social considerations. This discussion is strongly inspired by results from economic experiments with e.g. ultimatum games (see, for instance, Güth and Tietz, 1990, for a survey) and public goods (see, for instance, Ledyard, 1995, for a survey), which show that people often do not act in line with standard maximising behaviour. Some authors have claimed that the observed deviations from economic rationality are not so severe and can be attributed to specific justifications such as inexperience or confusion (e.g., Binmore et al. 1985 and 1988 and Andreoni, 1995). Others have argued that many people are not rational and selfish but are at least partially motivated by social norms such as trust, reciprocity and altruism, which in their view exist as primitives of human behaviour (Berg et al., 1995, Fehr et al., 1993, Güth and Tietz, 1990). Yet another explanation is that people behave strategically. For example, substantial offers in the ultimatum game could be explained by the fear that small offers will be rejected (Prasnikar and Roth, 1992 and Straub and Murnighan, 1995). Pillutla and Murnighan (1995) argued that in their experiment only very few people were actually fair; most people just wanted to appear fair.¹ Finally, it has been shown that the presence and impact of social concerns may be context related (Roth et al., 1991, Van der Heijden et al. 1997).

In this paper, we take the view that individual behaviour is sometimes motivated by social concerns, and sometimes by pure self-interest, according to some random mechanism that is not the outcome of conscious deliberation, but that may depend on the specific characteristics of the choice situation in which the individual finds herself. Based on this general idea, we formulate a model of individual behaviour and apply it to data from a cross-cultural experiment with the gift exchange game of Van der Heijden et al. (1997). The purpose is to identify possible differences in behaviour across different populations of players, and relate them to differences in attitudes towards trust, reciprocity and altruism.

This paper contributes to the existing literature by examining the role of social concerns in a gift exchange setting in two countries: Norway and the Netherlands. The comparison between various countries is not only interesting from an experimental point of view, but it could also be important for economic policy. With the upcoming EMU and the resulting harmonisation of several political systems, it seems useful to know if people in various European countries have similar ideas about social norms. In particular as regards social security systems, people

¹ In an ultimatum game environment Pillutla and Murnighan (1995) found that offerers made offers that appeared fair only when responders had full information about the money to be divided or when third parties labelled offers as to their fairness.

favour systems that they consider to be fair. Whether social norms are stable across populations is an interesting question, which thus far has not received much attention in the experimental literature.

The remainder of this paper is organised as follows. The next section introduces the gift exchange game and discusses results from some related experiments. Section 3 presents the experimental procedure of our bilateral gift exchange experiment. Section 4 discusses the general data. In Section 5, we present and estimate a model of individual behaviour. The last section contains a summary of the results and a concluding discussion.

2. Social concerns, the gift exchange game and related experiments

In this section we describe the most important features of the gift exchange game. In addition, we explain our interpretation of several social concerns and discuss some related literature.

2.1 Social concerns and the gift exchange game

The gift exchange game is a two-period game played by two players. In the first period, player 1 has to decide on his gift to player 2. In the second period, player 2 has to choose her gift to player 1. The game is designed such that mutual gift giving is socially efficient but individually costly. The unique Nash equilibrium of this game is that both players give nothing. The reason is that player 1 should realise that it is a dominant strategy for player 2 to give nothing, and therefore he should transfer nothing too. We study two versions of this game. In one treatment, called the information treatment, player 2 knows the size of the gift made by player 1 when she decides on her gift to player 1. In the no-information treatment, player 2 is not informed about the gift by player 1 when she decides on her gift.² Both treatments have been conducted in Norway and the Netherlands. Details are given in the section 3.

The design of the gift exchange game allows us to examine the possible effects of reciprocity, trust and altruism.³ Perhaps even more important is the fact that we will be able to disentangle their impacts, as we will see later. Because the notions of reciprocity, trust, and altruism play

² Actually, from a game-theoretic perspective the two versions of the game, i.e. the two treatments, are different games. For instance, the strategy space is different as well as the argument for getting at the equilibrium outcome of no transfers (see section 3).

³ We do not intend to claim that other social concerns like distributional justice (e.g., Bolton et al. Ockenfels, 1997) could not play a role as well, but we want to focus on what we think are the most relevant motivations for the present situation.

a central role in this study and because their exact meaning is not unambiguous in the literature, we first want to elaborate somewhat on what we mean by these concepts.

Our basic view is that reciprocity has to do with conditional behaviour in the sense of Gouldner (1960, p. 171) 'we owe others certain things because of what they have previously done for us'. According to this definition of reciprocity people react to observed behaviour. Feelings of reciprocity then imply that people are willing to help those who are being kind to them and to punish those who are being unkind (Rabin, 1993, p. 1282). Notice that this definition allows for both positive and negative forms of reciprocity.⁴

Feelings of altruism constitute another form of social concerns. In contrast to reciprocity, we see altruism as a kind of unconditional behaviour. The common interpretation of altruism among economists follows Becker (1981), who defines altruism as 'to attach a positive value to payoffs to others' (see also Andreoni, 1989 and 1990).

The last form of social motivations that is relevant for our purpose is trust. As regards trust we follow Berg et al. who recently defined trust in terms of the following two actions (Berg et al. 1995, p. 126). First, the trustor gives a trustee the right to make a decision, and, second, the trustee makes a decision which affects both trustor and trustee. According to Berg et al. subjects have used trust to facilitate exchange if the following conditions are met: a) placing trust in the trustee puts the trustor at risk; b) the trustee's decision benefits the trustor at a cost to the trustee; and c) both trustor and trustee are better off by the transaction compared to the situation without trust and exchange.⁵ Similar definitions of trust are operationalised in the social psychology literature (see, e.g., Webb and Worchel, 1986).

2.2 Related experiments

Our study of the gift exchange game is related to two strands of literature that we will next review briefly: The first one is a series of experiments that considers the concepts of trust and reciprocity, namely Berg et al., 1995, Ortmann et al., 1996, Forsythe et al., 1995, Gächter and Falk, 1997, and the second one consists of studies that are concerned with cross-cultural

⁴ The interpretation of reciprocity we stick to here is only applicable in specific situations, that is, when actions can be observed. Instead of reacting to *observed* behaviour, people may reciprocate *anticipated* behaviour. Although this latter definition is rather popular in the literature (see, e.g., Sugden, 1984, Rabin, 1993, and Dufwenberg and Kirchsteiger, 1998) in our view the former one is more applicable to the gift exchange game situation. We do not want to go into more detail here, but refer to the discussion in Van der Heijden et al. (1997).

⁵ All these conditions are met in the gift exchange experiment presented here. It therefore makes sense to discuss the role of trust in this game and compare it with the results obtained by Berg et al. (1995) and by Ortmann et al. (1996) in their replication of the game.

comparisons of experimental results (Roth et al., 1991, Cason et al., 1997, Brandts et al., 1997).

Our gift giving game is somewhat similar to the well-known one-shot two-stage investment game studied by Berg et al. (1995) and replicated by Ortmann et al. (1996). Berg et al. claim that their results, which deviate considerably from outcomes predicted by game theory, show that reciprocity and trust are basic elements of human behaviour. One could cast some doubt on these results, however. First, although most first players seemed to trust their partners by sending a positive amount, no evidence was found for reciprocity as defined above; the correlation between the amount sent and the amount returned is only 0.01. A second remark is that Ortmann et al. (1996) found much less support for the existence of trust and reciprocity as a primitive when they replicated the investment experiment. Apparently, in the investment game first players place considerable trust in the second players, but second players behave only weakly reciprocally.

The role of trust in a message exchange setting has also been examined by Forsythe et al. (1995). They studied an experimental market in which a seller is endowed with an asset, the quality of which is private information to the seller. Sellers can send a cheap talk message to buyers about the quality of the asset. The results reveal that sellers are quite willing to lie about the quality of the asset. In fact, the messages contain almost no information. It is therefore rather surprising that the buyers continue to act as if they believed in the messages of the sellers. As a result, buyers buy at too high prices and sellers gain at the expense of buyers.

Fehr et al. have performed several studies to examine the possible effect of reciprocity in experimental labour market situations (e.g., Fehr et al., 1993, 1997 and 1998, Kirchler et al., 1996, and Gächter and Falk, 1997). Their experiments are based on a two-stage game in which employers first set a wage and then workers choose an effort level. Standard economic theory predicts that the employers will offer the workers' reservation wage and the workers will choose the minimum effort level. Their experimental results lend rather strong support for the existence of reciprocal forces in several situations. For example, Gächter and Falk (1997) argue that a majority of the subjects behave genuinely reciprocally in a series of one-shot bilateral gift exchange games comparable to the present game.

Now, if it is true that people do not always behave as rational pay-off maximizers, but are also motivated by social norms like the reciprocity norm, it is not obvious that these norms are equally important across cultures. Indeed, it seems natural that the occurrence and impact of social norms varies across cultures. The empirical answer to this issue may yet be hard to

give using field data. However, controlled laboratory experiments can be used to provide useful insights into this question.

In spite of the increasing literature on economic experiments, cross-cultural experimental studies are still relatively rare. Although many experiments have been replicated in different countries, most replications are not directly comparable because of differences in the experimental design, e.g., differences in the amount of money at stake, the number of repetitions or in wording or framing. One of the first real cross-cultural experimental studies is a paper by Roth et al. (1991), in which they examined two different experimental situations in four countries: Israel, Japan, the United States and Yugoslavia. They found no relevant differences among countries in a market environment, but substantial differences in an ultimatum-game situation.

Recently, two studies have been conducted that compare the effects of spite and co-operation in public-good experiments with voluntary contribution mechanisms in several countries (Cason et al., 1997, and Brandts et al., 1997). The former paper studies voluntary participation and spiteful behaviour in two treatments in the US and Japan, while the latter one compares behaviour in Japan, the Netherlands, the US and Spain. Interestingly, observed behaviour is rather similar across countries in the latter study, whereas Cason et al. find significant differences between the Japanese and American subjects.⁶

These findings illustrate again that results may be sensitive to the context chosen and that more experimental research is needed in order to draw conclusions. For instance, the question whether or not social norms vary across countries is not yet settled. The current paper aims to contribute to the existing literature by considering the role of social norms in a gift exchange situation in Norway and the Netherlands.

It should be clear from our brief review of the experimental literature that the evidence on reciprocity, trust and altruism is not conclusive. For example, the degree of observed reciprocity varies considerably between experiments, even in similar situations. Furthermore, as experimental results turn out to be context-dependent, where context is meant in a broad sense, e.g., including framing differences, one has to be careful when comparing and interpreting results from various experiments. In cross-cultural experimental studies one should in general be aware of at least three important potential risks: experimenter effects, currency effects and language effects (see Roth et al., 1991). In our experiments on reciprocity, trust and altruism, we have tried to minimise these possible side effects in the

⁶ See also Burlando and Hey (1997) and Kachelmeier and Shehata (1992).

following ways: The gift exchange game underlying the experiments was exactly the same in both countries. Furthermore, one of the experimenters was present during the experimental sessions in both countries. Concerning the currency effect, the pay-off schedule used in the Netherlands was transformed to the Norwegian schedule using the existing exchange rates. Finally, the instructions were translated directly from Dutch to Norwegian by one of the experimenters and controlled by a person who knows both languages. By taking these measures we maximised the possibility that observed differences are due to cross-cultural differences.

3. Experimental procedure

The game

The experiments are based on a simple two-person two-period gift exchange game. The crucial feature of the game is that gift giving is individually costly, but mutual gift giving is efficient. Each of the two players is "rich" in one period and "poor" in the other period. A rich player has an endowment of 9, and a poor one has an endowment of 1. In the first period, player 1 is rich and he decides on his gift T_1 to player 2, who is poor. In the second period the roles are reversed; player 2 is rich, player 1 is poor, and player 2 decides on her (return) gift T_2 to player 1. Endowments and gifts together determine players' final asset levels in the two periods. If player i gives a gift of T_i when he is rich, then his final assets in that period are $9 - T_i$. If player i receives a gift of T_j when he is poor, then player i 's final assets in that period are $1 + T_j$. The pay-offs to player i are defined as the product of the final assets levels in the two periods,

$$U_i = (9 - T_i)(T_j + 1)k \quad (1)$$

where k is a constant used to transform the pay-offs in points to monetary earnings.

Ten sessions of the gift exchange game were run at Tilburg University in March 1995. Another eleven sessions were run at the Norwegian School of Economics and Business Administration in November 1996. In each country two treatments were run, one with information and one without information. The four treatments form a 2x2 factorial design with treatment variables country and information. In the information treatment, player 2 is informed about player 1's gift T_1 in the first period, when she chooses her gift T_2 in the second period. In the no-information treatment player 2 is not informed about T_1 when she chooses her gift T_2 . Table 1 summarises the design. The numbers between brackets indicate the number of sessions in each treatment.

Table 1: Overview of the experimental treatments

country\information	Information	No information
Norway	6	5
Netherlands	5	5

Note that the only difference between the two information treatments is that in the information treatment player 2 is informed about player 1's gift T_1 in the first period, when she decides on her gift T_2 in the second period, whereas in the no-information treatment player 2 is not informed about T_1 when she chooses her gift T_2 . Basically this means that in the no-information treatment players make their decisions simultaneously, whereas in the information treatment decisions are made sequentially. In all treatments, at the end of a round, subjects were informed about their own pay-offs in that round and the transfer they received. So, at the end of a round there is no difference in knowledge about the received transfers between the information and the no-information treatment.

Obviously, there is a unique Nash-equilibrium for the no-information treatment game, and a unique subgame perfect equilibrium for the information version of it. Actually, it is fairly easy to check that there is a unique Nash equilibrium for the information treatment as well, i.e. both variants of the game have a unique game theoretic solution, which is for both players to give nothing.

Our motivation for including the no-information treatment in our experiment is to use it as a control treatment. The design of the our experiment is such that reciprocity (in our definition of conditional behaviour, that is as a reaction to observed behaviour) is possible in the information treatment, i.e. when players have the possibility of monitoring previous transfers, but not in the no-information treatment. On the other hand, altruism, which is unconditional behaviour, is possible in both treatments. The design thus allows us to disentangle these motives. We believe that this is a strong point of our design compared with some other experiments, like for instance the investment game of Berg et al. (1995), in which it cannot be excluded that subjects' behaviour is mainly driven by altruism instead of reciprocity.

Experimental procedure

The procedure of the experiment was identical in Norway and the Netherlands. All sessions were run with eight participants except for one session of the Norwegian information treatment, which was run with six participants.⁷ A session typically lasted about an hour.

Upon arrival, subjects were randomly seated behind computer terminals, which were separated by partitions. Instructions in the subjects' own language were distributed and read aloud by the experimenter.⁸ After that, subjects got several minutes to study the instructions more carefully and to ask questions. Then one practice round was played.

After the practice round, the subjects played 15 repetitions of the gift exchange game. In each round, the subjects were randomly and anonymously paired into four couples, and also randomly assigned to be rich, i.e. the Decider, in either the first or the second period. For each couple, the first Decider made a transfer (T_1) to the first Receiver. Then the two switched roles, and the second Decider made a transfer (T_2) to the second Receiver. Earnings in each round (U_i) were denoted in points and calculated according to equation (1). Subjects could also use a table included in the instructions, which gave U_i as a function of T_i and T_j . This pay-off table can be found in Appendix B. Subjects knew that points would be transferred to money earnings at the end of the experiment at a fixed known rate. At the end of round 15, the points earned were accumulated and transferred into money earnings. Then an anonymous questionnaire asked for some background information (gender, age, major, and motivation). After that, subjects were privately paid their earnings in cash and left.

It is important to note that in every round a new random and anonymous assignment of the players to the couples took place, i.e. that subjects were not matched with the same subjects for all rounds. Furthermore, in each round it was randomly determined who was the first Decider in each couple.

Pay-offs

Each point in the experiment in Norway and the Netherlands earned 20 øre and 5 cents, respectively. In addition, Norwegian participants received 20 Norwegian Crowns for showing up in time and the Dutch ones 5 Dutch Guilders.⁹

⁷ The fact that one session had only 6 participants was not planned but occurred because of no shows. The results of this session are not substantially different from those of other sessions with the same treatment.

⁸ An English translation of the instructions can be found in Appendix B. Neutral terms were used in the instructions. For example, in the period a player was rich he was referred to as the Decider, and in the period a player was poor he was called the Receiver.

⁹ At the time of the experiment, one Norwegian Crown exchanged for about 0.27 Dutch Guilders, and one Dutch Guilder was about \$0.50. The potential earnings in both countries are similar in relative terms. Expected

Subjects

None of the participants had previous experience from any related experiment and none of them participated more than once. The Norwegian participants were undergraduate and graduate students from the Norwegian School of Economics and Business Administration in Bergen. All these students studied (business) economics. They were mainly recruited by posters and by entering classrooms, asking for participants for a decision-making experiment, and promising monetary rewards contingent on performance. The Dutch participants were undergraduate and graduate students from Tilburg University. These students came from various disciplines like economics, law and psychology. Dutch participants were mainly recruited by an announcement in the University Bulletin and by posters.

Cross-cultural comparison

A comparison of Norway and the Netherlands in terms of aggregate measures will reveal substantial similarities: Both are located on the North Sea coast, which historically has been a tightly knit area of sea-borne trade and cultural exchange. Since the Second World War, both countries have developed a Scandinavian type of welfare state, strongly rooted on the same set of social democratic values. An obvious point of difference is their population densities, where the two countries represent opposite extremes of the European spectrum. Despite that fact, the proportion of Norwegian inhabitants living in urbanised areas in 1994 was as high as 73 per cent, as compared to 81 per cent for the Netherlands.¹⁰

A more interesting difference concerns the degree of cultural heterogeneity in the two countries. In recent years, the Netherlands has received a substantial number of immigrants from Central and South America, Africa, Asia and the Middle East, and is now a multi-ethnic and multi-cultural society with a strong international orientation. Norway, on the other hand, has pursued a more isolationist policy, e.g. by choosing to stay outside the European Union, and by pursuing a restrictive immigration policy. As a result, the Norwegian population is much more homogeneous than the Dutch one.

This suggests that although our Dutch and Norwegian groups of subjects may share some basic values of relevance to our experiment, they are different with respect to cultural homogeneity, with Norwegian subjects as the more homogeneous group. This difference is enhanced by the fact that the Norwegian subjects were all students of business economics at a relatively small business school, while the Dutch subjects were recruited from various

earnings, based on previous experience of the experimenters, are somewhat higher than what students could earn with one hour of work in, for instance, a bar.

¹⁰ Statistical Yearbook 1996 for Norway and The Netherlands, respectively.

disciplines at a larger university. Social psychology, and in particular social identity theory (Tajfel and Turner, 1986), predicts that when subjects consider themselves to be member of a group (or are more group-oriented) it is more likely that they take the group-interest into account than when they consider themselves as single individuals. As the Norwegian subjects seem to be a more homogeneous group, this suggests that one could expect more co-operative behaviour, i.e. higher gifts, in Norway than in the Netherlands. The validity of this argument is tested in the next sections.

4 The data

To get a first idea of the data obtained in both countries, Tables 2 and 3 present the average transfers by player (averaged over the 15 rounds of all relevant sessions) and the standard deviations for the treatments with and without information, respectively.¹¹ The bottom row shows whether the transfer by the first player (T_1) and the transfer by the second player (T_2) are different in a particular treatment. The test used is a non-parametric Wilcoxon test with session averages as units of observations.¹² The last column shows the results of a Mann-Whitney test used to examine whether the average values of the first and second transfers differ across Norway and the Netherlands. For both tests small p-values indicate significant differences.

A first observation from the tables is that average transfers are positive, which contrasts the game-theoretic prediction of zero transfers. Second, average transfers are higher in the Norwegian treatments than in the corresponding Dutch treatments, in agreement with the differences in cultural homogeneity and the predictions by social identity theory. Third, the average transfer by the first player is much higher than the average transfer by the second player for the information treatment; in both countries this difference is significant at a 5%-level (using Mann-Whitney tests). For the no-information treatment, however, no significant difference between the behaviour of first and second players can be observed. This is not surprising given the fact that the No-information treatment is in fact a simultaneous move game.¹³ More interestingly, the differences in behaviour by the same player across countries are much smaller in the no-information treatment than in the treatment with information. This suggests that the observed difference in behaviour across countries in the information

¹¹ Session averages are listed in tables A.1 and A.2 in the appendix.

¹² Because participants interact repeatedly within one session, data by round are not independent; only session averages are truly independent.

¹³ Note, however, that some studies have found that players moving second act differently than players moving first, even though players are not informed about each other's move and are basically in an identical strategic position (e.g., Morris et al. 1995).

treatment be due to differences in trust and reciprocity rather than differences in altruism among the two groups of subjects.

Table 2. Average gifts by player and country for the information treatment

	Norway	Netherlands	significance
player 1 (T ₁)	2.73 (1.63)	2.10 (1.74)	p=0.07
player 2 (T ₂)	1.06 (1.70)	0.72 (1.54)	p=0.10
Significance	p=0.03	p=0.05	

Table 3. Average gifts by player and country for the no-information treatment

	Norway	Netherlands	significance
player 1 (T ₁)	1.43 (1.92)	0.99 (1.50)	p=0.35
player 2 (T ₂)	1.21 (1.80)	1.03 (1.47)	p=0.83
Significance	p=0.35	p=0.69	

The development of the transfers over time confirms these findings, see Figures 1a-1d. First, all transfers decline over rounds, but last round transfers are still positive. Furthermore, in both countries T₁ and T₂ are (of course) indistinguishable in the no-information treatment, which might be seen as evidence that the subjects understand the game. Most importantly, Figures 1a and 1b show that the observation that the overall level of transfers is higher in the information treatment is due to the persistently high level of T₁: In all rounds of the Norwegian and Dutch information treatment the average value of T₁ is about 2.5 - 3 times as high as the average value of T₂.

[Insert Figures 1a-1d about here]

In order to gain some more insight, it is useful to consider the frequency distributions of the transfers by first and second players. As regards the frequency distribution of the no-information treatments, it turns out that the distributions of T₁ and T₂ are very similar in each country. Furthermore, the distributions do not differ across countries. In particular, the percentage of zero transfers is 55.8% in the Dutch no-information treatment and 56% in the Norwegian one (cf. tables A4 and A6).

The frequency distributions of T_1 and T_2 for the information treatments are depicted in Figures 2a and 2b. Note first that the percentage of zero transfers by the second player is in the neighbourhood of 70 per cent for both countries, and somewhat higher for the Netherlands than for Norway. Thus, on average across both countries, some 70 per cent of second players act in agreement with individual rationality, while the remaining 30 per cent display non-egoistic behaviour by transferring positive amounts. Turning next to the distribution of transfers by first players, we see that the percentage of zero transfers is much lower in Norway than in the Netherlands (18 and 30 per cent, respectively). This indicates that Norwegian first players are either more altruistic than their Dutch counterparts, or if they are driven by self-interest, that they place more trust in their partners. We have already seen from the no-information treatments, however, that the two groups of subjects do not differ significantly along the altruist dimension, and we are therefore led to conclude that it must be a higher degree of trust among Norwegian subjects which is responsible for the higher transfers by Norwegian first players in the information treatment.

[Insert Figures 2a and 2b about here]

We may get a second assessment of the likelihood of this explanation by considering the frequency distribution of positive transfers made by first and second players in the information treatment: In Norway, higher positive transfers occur more frequently than lower ones for both players, at least for transfers in the interval [1,4], whereas in the Netherlands, this only holds for first, but not for second players. Thus, it looks as if first players tend to give high positive transfers in order to induce second players to give high transfers in return, but that the Norwegian first players succeed better with that than the Dutch ones do.

Because reciprocity is defined as a systematic positive relationship between the transfer given and the transfer returned, the correlation coefficient between T_1 and T_2 gives an indication for the presence of reciprocity. Across all sessions and player pairs in the Norwegian information treatment the correlation coefficient between T_1 and T_2 is 0.19, while the corresponding value for the Dutch information treatment is only 0.01. Furthermore, in the first ten rounds of the Norwegian information treatment, the correlation coefficient is significantly positive and in some rounds quite high, around 0.5. In the Dutch information treatment, on the other hand, the correlation coefficient between T_1 and T_2 is close to zero in all rounds.

[Insert Figure 3 about here]

The distinction in the degree of reciprocal behaviour between the two countries is also illustrated by Figure 3, which shows the average value of the return transfer T_2 given the first transfer T_1 for the information treatment. The numbers above the bars indicates the percentages of first transfers with that particular value. First transfers of 5 until 7 are pooled because they are not so often observed. It is obvious from the figure that on average reciprocity is more observed in Norway, i.e. the average value of T_2 increases with T_1 for the Norwegian treatment whereas for the Dutch no clear pattern can be observed. Hence the data indicate that the degree of reciprocity among Norwegian subjects is higher than that among their Dutch counterparts.

To summarise, average gifts are positive in all treatments, but considerably higher in the information treatments, which results in more efficient outcomes and thus higher pay-offs. Furthermore, in the information treatments, players seem to have trust in the decisions of their partner, and therefore choose to make substantial transfers. In Norway, second players reciprocate this gift to some degree, but in the Netherlands, higher first transfers do not induce higher transfers in return. In the next section we will propose a model that captures these and other aspects of the data.

5. A model of individual behaviour

The game-theoretic prediction for the gift exchange game is that both players will make a zero transfer. For the no-information treatment, this follows if all players behave as pure egoists, and for the information treatment, it follows by backward induction if it is common knowledge that all players behave as pure egoists. However, pure egoism is not supported by our experimental results: In the no-information treatment, 44 per cent of all transfers in both countries were positive, despite the fact that positive transfers are costly for individual players. It seems therefore that one must account for both altruistic and egoistic behaviour in order to interpret the experimental results. For that purpose, we suggest the following model of individual behaviour:

Suppose that in each decision situation, a player can be in one of two possible moral modes, an egoistic mode, or an altruistic one. If a player is in the egoistic mode, he acts to maximise his own pay-off, while in the altruistic mode, his acts are based on social considerations like altruism and reciprocity. We shall assume that the moral mode of a player is not subject to conscious deliberation, but is triggered by some moral responsiveness mechanism, which might depend on the experimental treatment, the gifts received from other players, and possibly by the number of rounds to go.

Based on this general idea, we model the decision making process of a randomly selected player as a two-stage procedure: In stage A, her moral mode is determined by a random draw from a probability distribution which represents the moral responsiveness mechanism, and in stage B, she makes a Bayesian rational decision if she is in the egoistic mode, or transfers a positive amount if she is in the non-egoistic (or social) mode. In stage A, the probability of selecting the non-egoistic mode is determined by a function P_A , which may depend on the treatment (country and information), the player position (1 and 2) and the round (1,2,...,15). For player 2 in the information treatment, it may also depend on the transfer received from player 1. In stage B, a transfer by a non-egoistic player is represented as a random draw from another probability distribution P_B on the set $\{0,1,2,\dots,7\}$ of possible transfers. This probability distribution is also allowed to vary with the treatment and the player position, but is restricted to be constant over rounds, since there is no a priori reason to believe that the players' attitudes to reciprocity will change during the experiment. However, for player 2 in the information treatments, we must allow P_B to depend on the transfer received from player 1 in order to represent reciprocal behaviour by player 2. Note that the Bayesian rational decision in stage B is always to give a zero amount, except for player 1 in the information treatment, who must consider the reciprocity and moral responsiveness of player 2.

Given this model, one would expect to see no difference between the behaviour of players 1 and 2 in the no-information treatment, because the strategic situation is identical for both players in that treatment. Turning next to the information treatment, one would expect to see a positive correlation between the transfer levels of the two players, because higher transfers by player 1 increase the probability of triggering the non-egoistic mode of player 2. This in turn suggests that the transfers by player 1 will be higher than those by player 2, because it might be rational for a player 1 who is in the egoistic mode to try to trigger the social mode of player 2. Moreover, the incentive for player 1 to transfer positive amounts will be greater the greater the degree of reciprocity in the relevant group of players. Hence one would expect to see a positive relationship between the level of transfers by player 1, and the degree of reciprocity among her fellow players. To sum up, our informal model yields the following testable hypotheses:

- H1 No difference between the behaviour of player 1 and 2 in the no-information treatments.
- H2 Higher transfers by player 1 increase the probability of receiving a positive transfer by player 2 in the information treatments.
- H3 Higher transfers by player 1 than by player 2 in the information treatments.
- H4 Higher group reciprocity increases the transfers made by player 1 in the information treatments.

We have already seen that the data are consistent with hypotheses H1 and H3, which are concerned with intergroup relationships between different player positions.

As for H2, the data indicate a positive relationship between T₁ and T₂ in Norway, but not in the Netherlands. This can explain why transfers are lower in the Netherlands than in Norway, but it does not tell us whether this is due to differences in reciprocity among non-egoistic players, or to differences in the moral responsiveness of the two groups of subjects. Our results from the no-information treatment indicate that the Dutch and Norwegian subjects are quite similar on the egoist-altruist dimension, as the fraction of positive transfers is virtually identical for the two groups of subjects. In order to test hypothesis H2 and uncover possible differences in the moral responsiveness of the two groups of subjects, we introduce the binary variable S (for social mode), which is 1 if T₂ is positive, and zero otherwise. We then estimate a logit model of the form

$$S = P_A(T_1, R),$$

on the data set consisting of all Dutch and Norwegian player pairs under the information treatment, using a forward selection procedure with all linear and quadratic terms in T₁ (transfer by player 1) and R (round number) as potential explanatory variables and a 5 per cent minimum significance level. This yields a model consisting of the 3 explanatory variables T₁, T₁R = T₁*R and T₁SQ = T₁*T₁, and with coefficients as depicted in Table 4.¹⁴

¹⁴ As noted in footnote 12, individual data are not independent because players interact repeatedly with each other. Therefore, one has to be careful when interpreting the regression results. However, the results of this section illustrate nicely the general conclusions that followed from the previous analyses with the (independent) data at the level of the session.

Table 4. Estimated moral responsiveness**model. Pooled data**

Variable name	Estimated coefficient	Asymptotic t-ratio
T ₁	1.0717	6.2118
T ₁ SQ	-0.1079	-3.5294
T ₁ R	-0.0388	-5.21245
constant	-1.8772	-8.6072
Log of likelihood function: -361.04		
Percent correct predictions: 70.5		

Table 4 shows that the probability of triggering the social mode of player 2 is an increasing function of T_1 , but the marginal effect of T_1 is decreasing in T_1 and R . Thus, in particular, it becomes more difficult for player 1 to trigger a non-egoistic response by player 2 as the game approaches the final round.

In order to check if there are any systematic differences between the moral responsiveness of the two groups of subjects, we introduce a dummy $DNOR$ for Norway, and the variables $NT_1 = T_1 * DNOR$, $NT_1SQ = T_1SQ * DNOR$ and $NT_1R = T_1R * DNOR$. We then re-estimate the model and obtain the results depicted in Table 5:

**Table 5. Test of country-specific differences
in moral responsiveness model**

Variable name	Estimated coefficient	Asymptotic t-ratio
T ₁	1.0480	4.0469
T ₁ SQ	-0.1279	-2.6041
T ₁ R	-0.0317	-2.6370
NT ₁	0.0134	0.3777
NT ₁ SQ	0.0338	0.5204
NT ₁ R	-0.0108	-0.7051
DNOR	0.0709	0.1609
constant	-1.8979	-6.5596
Log of likelihood function:		-359.54
Wald chi-square statistic:		2.8968 with 4 df.
P-value:		0.57523

As can be seen from Table 5, none of the country-specific variables are individually significant. Moreover, a joint Wald-test of these variables reveals no significant difference between the two data sets as regards moral responsiveness. Thus not only do the Dutch and Norwegian subjects display the same degree of altruism in the constant environment represented by the no-information treatment, but their moral responsiveness to stimuli in terms of varying transfers is also the same. This strongly suggests that the observed differences in behaviour between the two groups of subjects in the information treatment must be related to differences in trust and reciprocity among socially inclined subjects, and not to differences along the altruist-egoist dimension.

To see if this is indeed the case, we consider for each country the set of pairs of players in the information treatment that display trust and reciprocity, in the sense of transferring positive amounts to each other. We then regress T₂ on T₁ for this set of pairs for each country separately, and take the coefficient on T₁ as a measure of the degree of reciprocity among altruistic subjects in the given country. The regression results are depicted in Table 6.

Table 6. Estimated reciprocity models for the Netherlands and Norway

	The Netherlands	$R^2=0$	Norway	$R^2=0.23$
Variable name	Estimated coefficient	t-ratio	Estimated coefficient	t-ratio
T ₁	0.0795	0.4585	0.5355	5.6400
constant	2.0690	3.7160	1.1086	3.2660

The table shows that the reciprocity coefficient in the Netherlands is not significantly different from zero, while in Norway it is significant and close to 0.5. It implies that there are two incentives for Norwegian first players to make positive transfers to player 2: First it increases the probability of triggering the social behaviour mode of player 2, and second, it increases the transfer by player 2, given that player 2 is in the non-egoistic mode. In the Netherlands, however, only the first effect is present, and this explains the relatively low transfers by player 1 in the Netherlands as a rational response to absence of reciprocity, and the low transfers by player 2 as the result of low transfers by player 1 triggering few non-egoistic player 2's. Our results are thus consistent with hypothesis H4, which states that higher group reciprocity increases the transfers made by player 1 in the treatments with information.

6. Concluding discussion

In this paper we have presented the results of a cross-cultural study of a bilateral gift exchange experiment. The experiment is designed such that gift giving is mutually beneficial but individually costly. The results of two treatments of this experiment are compared for Norway and the Netherlands. In the information treatment the second player was informed about the gift of the first player when she had to decide on her return gift to the first player (sequential decision-making). In the no-information treatment, the second player was not informed about the gift of the first player (simultaneous decision-making). So, although in both treatments players can have trust in the other player(s) and can behave altruistically, reciprocating gifts based on observed behaviour is only possible in the treatment with information.

The main results are as follows. In all treatments average gifts are positive, which contrasts the unique Nash prediction. Furthermore, both in Norway and in the Netherlands, average gifts are higher in the information treatments, which is completely due to the relatively high gift by the first player in this treatment. The results from the no-information treatment suggest that the Dutch and Norwegian subjects behave equally altruistically. In the information treatment, the main difference between the results for the Netherlands and Norway is the observed degree of reciprocity. In both countries first players in this treatment seemed rather confident that the second player would reciprocate, i.e. would reward relatively high gifts by the first player by high return gifts. However, only in Norway this turned out to be the case, and only to some extent. Here a systematic and significantly positive correlation between the gift received and the gift returned can be found, whereas in the Netherlands the return gift T_2 is almost completely independent of T_1 . That is, Dutch second players largely exploit the trust placed in them. The Norwegian data, on the other hand, support the presence of a strong form of reciprocity.

These and other features of the data can be captured by the proposed model of individual behaviour. Our informal model states that in each decision situation, a player can be in one of two possible moral modes, an egoistic mode, or a non-egoistic (or social) one. If a player is in the egoistic mode, he acts to maximise his own pay-off, while in the social mode, his acts are based on social considerations like altruism and reciprocity. The moral mode of a player is triggered by some moral responsiveness mechanism, which might depend on the experimental treatment, the gifts received from other players, and possibly by the number of rounds to go. We have estimated this model in two stages. In stage A we specify a logit model to estimate the probability of triggering the non-egoistic mode as a function of the first transfer and the round. In stage B the degree of reciprocity among socially inclined subjects was estimated by regressing the transfer by the second player on the transfer by the first player. The results indicate that no differences exist between Norway and the Netherlands with respect to stage A: Conditional on the stimulus received, the probability of being in the social mode is equal for Dutch and Norwegian subjects. The results for stage B are different, however. The coefficient of T_1 , which is an indicator for the degree of reciprocity, is significantly positive in Norway, whereas in the Netherlands, it is not significantly different from zero.

The results suggest that Dutch and Norwegian subjects are similar along the altruist-egoist dimension, but different with respect to the degree of reciprocity. As suggested by social identity theory, the fact that the Norwegian subject pool is more homogeneous than the Dutch one may be responsible for this result. The Norwegian and Dutch participants differed in two

dimensions, a much more homogeneous population in Norway and a more homogeneous Norwegian subject pool, namely economics students. In this respect it is worthwhile to mention that we have not found any difference in behaviour between economics students and other students in the Dutch treatments. It is therefore quite possible that cross-cultural differences are responsible for the results presented in this paper.

To what extent do our results fit into results of related experiments? On the one hand, such a low degree of reciprocity as obtained in our Dutch information treatment is rare in the experimental literature; Ortmann et al. (1996) in their replication of Berg et al.'s investment game experiment belong to the few exceptions who attribute only a minor role to trust and reciprocity. On the other hand, the observed degree of reciprocity in the Norwegian information treatment is comparable to the results from similar experiments, such as Berg et al. (1995) and Fehr et al. (1993, 1997 and 1998). The results from our study do not unambiguously support one of the opposing views on the roles of social norms. They underline, however, that people may behave differently, even in identical situations.

This brings us to the question of the possible effect of cross-cultural differences. Thus far, only a few experimental studies have been conducted that focus directly on a cross-cultural comparison. Unfortunately, the results of, for example, the investment game conducted by Berg et al. (1995) and Ortmann et al. (1996) are hard to compare because of differences in the experimental set-up, the instructions, etcetera. Their results illustrate, however, that findings may be quite sensitive to the context chosen. Similarly, it is hard to relate the results of the gift exchange game of Fehr et al. (1998), which strongly suggest that reciprocity motives are important, to the present findings. Yet, our experimental designs were identical in Norway and the Netherlands, which allows for a fair comparison, like in Roth et al. (1991)'s study. Roth et al. suggest that differences in bargaining behaviour could be attributed to cultural differences. We claim that the findings of our gift exchange experiment, which is also a kind of bargaining situation, may be explained by cross-cultural differences as well.

The tentative conclusion might then be that even in countries that look quite similar, like Norway and the Netherlands, people might have different norms and values. Or, to put it differently, people may react differently when exposed to similar (decision-) situations. The policy implication for a unified Europe could be that one has to be careful when rules of social security systems, for example, are modified or harmonised among countries. What people in one country consider being fair, is not necessarily judged similarly by people from other countries.

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Appendix A

Table A.1 Transfers and pay-offs at the level of the session for Norway

treatment	session	T ₁	T ₂	$\frac{1}{2}(T_1+T_2)$	P ₁	P ₂	$\frac{1}{2}(P_1+P_2)$
No information	2	2.67	1.93	2.30	17.77	25.10	21.43
	4	1.18	1.32	1.25	18.17	16.83	17.50
	6	1.57	1.07	1.32	15.85	20.85	18.35
	8	0.63	0.70	0.67	14.60	13.93	14.27
	10	1.12	1.02	1.07	16.33	17.33	16.83
	average	1.42	1.21	1.32	16.54	18.81	17.68
Information	1	3.38	1.60	2.49	14.22	32.00	23.11
	3	2.78	1.17	1.98	12.85	29.02	20.93
	5	3.33	1.33	2.33	12.57	32.57	22.57
	7	1.83	0.58	1.21	11.22	23.72	17.47
	9	2.82	1.22	2.02	13.87	29.87	21.87
	11	2.42	0.60	1.51	10.10	28.27	19.18
	average	2.73	1.06	1.90	12.39	29.12	20.76

Table A.2 Transfers and pay-offs at the level of the session for the Netherlands

treatment	session	T ₁	T ₂	$\frac{1}{2}(T_1+T_2)$	P ₁	P ₂	$\frac{1}{2}(P_1+P_2)$
No information	1	0.40	0.43	0.42	12.35	12.02	12.18
	2	1.53	1.32	1.42	17.70	19.87	18.78
	3	1.28	1.20	1.24	16.77	17.60	17.18
	4	0.78	1.17	0.97	18.22	14.38	16.30
	5	0.93	1.03	0.98	16.13	15.13	15.63
	average	0.99	1.03	1.01	16.23	15.80	16.02
Information	6	1.87	0.47	1.17	10.78	24.78	17.78
	7	2.28	0.42	1.35	9.12	27.78	18.45
	8	1.63	1.10	1.36	15.82	21.15	18.48
	9	2.22	0.65	1.43	10.68	26.35	18.52
	10	2.50	0.97	1.73	12.87	28.20	20.53
	average	2.10	0.72	1.41	11.85	25.65	18.75

Table A3: Frequency table of first and second transfers in the Norwegian information treatment

T2 T1	0	1	2	3	4	5	6	7	total
0	54	1	0	0	1	0	0	5	61
1	15	5	0	1	0	0	1	0	22
2	26	0	8	2	0	0	0	0	36
3	48	7	10	15	3	0	1	0	84
4	74	3	6	13	28	0	0	0	124
5	6	0	0	0	5	1	0	0	12
6	1	0	0	0	0	0	0	0	1
7	3	0	1	0	0	0	0	1	5
total	227	16	25	31	37	1	2	6	345

Table A4: Frequency table of first and second transfers in the Norwegian no-information treatment

T2 T1	0	1	2	3	4	5	6	7	total
0	99	19	16	11	7	3	1	5	161
1	12	3	3	3	1	0	1	1	24
2	21	3	4	1	2	1	0	2	34
3	14	2	5	3	5	1	0	1	31
4	14	0	5	7	4	1	0	0	31
5	4	0	0	1	0	1	0	0	6
6	2	0	0	0	0	0	0	0	2
7	9	1	0	0	1	0	0	0	11
total	175	28	33	26	20	7	2	9	300

Table A5: Frequency table of first and second transfers in the Dutch information treatment

T2 T1	0	1	2	3	4	5	6	7	total
0	78	0	2	1	3	0	0	7	91
1	19	3	1	0	0	0	0	1	24
2	35	7	3	0	1	0	0	0	46
3	42	3	7	14	0	0	0	1	67
4	40	7	4	4	6	0	0	0	61
5	2	2	0	0	0	0	0	0	4
6	0	0	0	0	0	0	0	0	0
7	7	0	0	0	0	0	0	0	7
total	223	22	17	19	10	0	0	9	300

Table A6: Frequency table of first and second transfers in the Dutch no-information treatment

T2 T1	0	1	2	3	4	5	6	7	total
0	100	32	22	11	4	0	0	6	175
1	20	7	7	5	2	0	0	0	41
2	16	4	9	6	3	0	0	0	38
3	12	3	9	3	0	0	0	0	27
4	5	0	1	0	0	0	0	1	7
5	5	1	0	1	0	0	0	0	7
6	0	0	0	0	0	0	0	0	0
7	2	3	0	0	0	0	0	0	5
total	160	50	48	26	9	0	0	7	300

Appendix B: Instructions

Introduction (read aloud only)

You are about to participate in an experimental study of decision-making. The experiment will last for about one hour. The instructions of the experiment are simple and if you follow them carefully and make good decisions you may earn a considerable amount of money. All the money you earn will be yours to keep and will be paid to you, privately and confidentially, in cash right after the end of the experiment

{For the experiment it is of crucial importance to have 8 participants. However, experience shows that often 1 or 2 persons do not show up or do not show up in time. Therefore, we need to have 10 instead of 8 subscriptions. This sometimes has, as now, the consequence that too many participants are present and that 1 or 2 persons cannot participate in this experiment. These persons can still put their name down for one of the following experiments and receive f 10 for any inconvenience. These persons are determined by lot because one or two blank envelopes are added to the box with seating numbers, unless one of you checks in voluntarily not to participate in the experiment and receive f 10 instead.}

Before we go on with the instructions, I would like to ask all of you to draw an envelope from this box and open it. The number denotes the terminal you have to be seated. {If you draw a blank envelope you cannot participate in the experiment and you receive f 10.}

We will distribute the instructions of the experiment now and read through them together. After that, you will have the opportunity to ask questions. From now on, you are requested not to talk to, or communicate with, any other participant.

Instructions (distributed and read aloud)¹

Decisions and earnings

The experiment exists of fifteen separate *rounds*. In every round, each of you will earn a certain amount of *points*. At the end of the experiment the points earned in the 15 rounds are added up for each participant separately. Every point earned is worth 5 cent ($\approx \$$ 0.028) at the end of the experiment. In addition to this, all participants receive a fixed extra amount of f 5. Your total earnings will thus be equal to f 5 plus the number of points earned times 5 cent. Now, we describe how the points earned in each round will be determined.

In each round you will be matched with another participant. Each round will consist of two *periods*. In every round you have in one period the role of *Decider* and in the other period the role of *Receiver*. The earnings of a participant in a round are determined by the final assets of a participant in the period in which he or she is a Decider, and by the final assets of the participant in the period in which he or she is a Receiver. We denote the final assets as Receiver by E_0 and the final assets as Decider by E_B . The earnings in points of a participant in a round are determined by the product of the final assets as Receiver and the final assets as Decider. The earnings of a participant in a round are thus equal to $E_B \times E_0$ points. Next, we describe how the final assets as Decider E_B and the final assets as Receiver E_0 are determined.

In each round the participants are first randomly matched two by two. After that the computer determines for each couple who will be the Decider in the first period and who will be the Decider in the second period. In the second period the roles are reversed: the Decider in the first period is thus the Receiver in the second period and the Receiver in the first period is the Decider in of the second period. The Receiver starts with an endowment of 1, whereas the Decider starts with an endowment of 9. The Decider has to decide which part of his or her endowment that he or she wants to transfer to the Receiver. This transfer, which we will denote by T , is 0 at the minimum, and 7 at the maximum. After the Decider has decided about the transfer T to the Receiver, the final assets of the Receiver are $E_0 = 1 + T$, and those of the Decider are $E_B = 9 - T$. After the Decider has decided about her or his transfer to the Receiver, the second period of the round will be started, in which the roles are reversed.

In the second period, the other participant of the couple, who is the Decider now, will have to make a decision. The determination of the final assets of the new Receiver and Decider in this period is

¹ The text between square brackets ([]) is added in information condition two ("full information"). The text between brackets ({}) is added when more than 8 participants show up.

similar to the previous period. The Receiver starts with an endowment of 1 and the Decider starts with an endowment of 9. The Decider decides again on the part of her or his endowment that will be transferred to the Receiver. This transfer T determines the final assets of both participants in the second period: $E_o = 1 + T$ for the Receiver and $E_b = 9 - T$ for the Decider.

As said, your earnings in a round are determined by the product of your final assets E_b in your role of Decider and the final assets E_o in your role of Receiver. Your assets E_b are dependent on your transfer to the Receiver in the period you are Decider and your assets E_o are dependent on the transfer from the Decider to you in the period you are Receiver. To facilitate the determination of your earnings, you may use the table below.

The table states your earnings in points in a round dependent on the transfer *from you* to the Receiver when you are Decider and the transfer *to you* by the Decider when you are Receiver. In this table the rows present the transfer from you as Decider to the Receiver and the columns present the transfer to you as Receiver from the Decider. When you first look for the transfer *from you* in the row and then go to the right to the column stating the transfer *to you*, you can read your earnings in points, $E_b \times E_o$, for the round. The earnings in money are determined by multiplying the stated amount in points by 5 cents.

		Transfer to you from the Decider when you are Receiver							
		0	1	2	3	4	5	6	7
Transfer from you to the Receiver when you are Decider	0	9	18	27	36	45	54	63	72
	1	8	16	24	32	40	48	56	64
	2	7	14	21	28	35	42	49	56
	3	6	12	18	24	30	36	42	48
	4	5	10	15	20	25	30	35	40
	5	4	8	12	16	20	24	28	32
	6	3	6	9	12	15	18	21	24
	7	2	4	6	8	10	12	14	16

When the two period in a round are over, so when both participants have decided on a transfer, a new round will be started.

Procedure and usage of the computer

After we have gone through the instructions, first a practice round will be run. After the practice round, the fifteen rounds that determine your earnings for this experiment will be run.

In every round the computer, in a completely random manner, first determines who will be matched to whom. Then the computer determines, again in a random manner, for each couple who will get the role of Receiver and Decider in the first period. On the upper left part of the screen the Decider will see the number of the current round and the message "You are now Decider in the first period". Underneath the Decider will see the question "How much of your endowment do you transfer (0-7)?" The Decider has to type an integer from 0 up to and including 7. The number typed is the transfer T to the Receiver with whom he has been matched in this round.

Next, the current Decider will be asked the question "How much do you expect to receive?". Here, the Decider types an integer from 0 up to and including 7, dependent on her or his expectation about the transfer she or he expects to receive as Receiver in the next period. This expectation is used by us when analyzing the experiment, but your earnings will be unaffected by it. Besides, the other participants are not informed about your expectations stated.

After all Deciders have made a decision, the first period is over. In the second period the Receivers of the first period are now the Deciders. Every new Decider will see on the screen that in this round he or

she is Decider in the second period [and how much he or she has received in the previous period]. Underneath there is the question "How much of your endowment do you transfer (0-7)?". The Decider has to type an integer from 0 up to and including 7. The number typed is the transfer T to the Receiver with whom he has been matched in this round. When all Deciders of the second period have made a decision all participants will see how much they have received and what their earnings for the rounds are. These earnings are in points and are equal to the product of the final assets as Decider and the final assets as Receiver: $E_B \times E_O$. After one has been informed about this, the round is over and a new round will be started.

In the new round, the computer again determines first who will be matched with whom and next for each couple who will be the first Decider. So, you do not know with whom you are matched in a particular round and whether you will be the first or the second Decider.

Summary

The experiment consists of 15 rounds, and every round consists of 2 periods. In each round the participants are randomly matched two by two by the computer. In each round every participant has in one period the role of Decider and in the other period the role of Receiver. When you are Decider your endowment is 9 and your final assets depend on your transfer T to the Receiver: $E_B = 9 - T$. When you are Receiver your endowment is 1 and your final assets depend on the transfer T by the Decider to you: $E_O = 1 + T$. Your earnings in points in a round are determined by the product of your final assets as Decider and your final assets as Receiver: $E_B \times E_O$. After the first period of a round is over the new Deciders are informed about the transfer T which they have received in the first period. After both periods in a round have been finished, everybody is informed about the transfer T to him or her and his or her earnings in that round.

The matching of the participants and the order in which participants are Decider in the two periods of a round are determined by the computer in a completely random way time after time. You will never be able to know whether you will be the first or the second Decider in a particular round, or with whom you are matched in a particular round.

Final remarks

After the last round, you will first be requested to answer some questions to evaluate the experiment. This questionnaire is anonymous. We can link your answers to your seat number but not to your name. After that, you will be called by your seat number to receive your earnings privately and confidentially. Your earnings are your own business; you do not need to discuss with anyone. It is not allowed to talk to or communicate with other participants during the experiment in either way.

On your table you will find an empty sheet, which you can use to take notes. Additionally, you will find a sheet labelled "REMARKS". On this sheet you can make remarks about the instructions or your decisions.

You get a couple of minutes to go through the instructions and to ask questions. When you want to ask something, please raise your hand. One of us will come to your table to speak to you.

After that we will start the practice round.

Are there any questions?

Figures

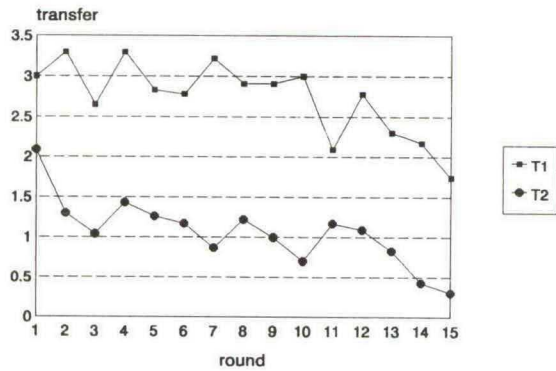


Figure 1a: Average transfers T1 and T2 by round in the Norwegian information treatment

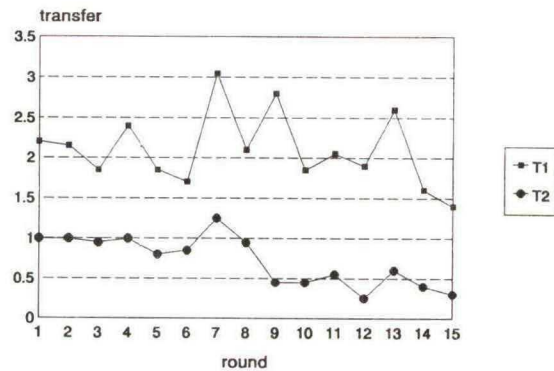


Figure 1b: Average transfers T1 and T2 by round in the Dutch information treatment

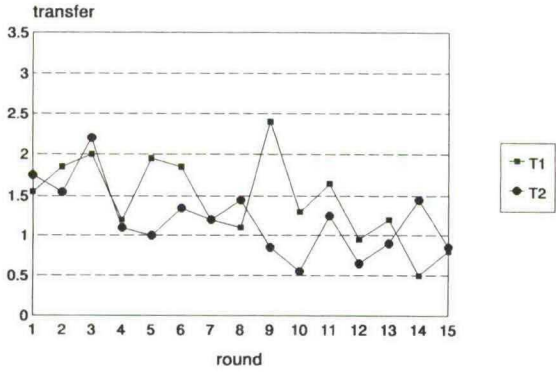


Figure 1c: Average transfers T1 and T2 by round in the Norwegian no-information treatment

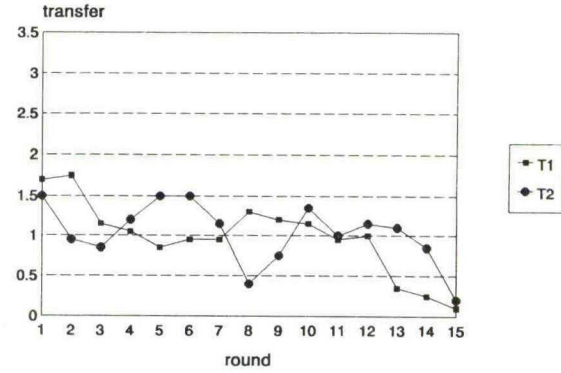


Figure 1d: Average transfers T1 and T2 by round in the Dutch no-information treatment

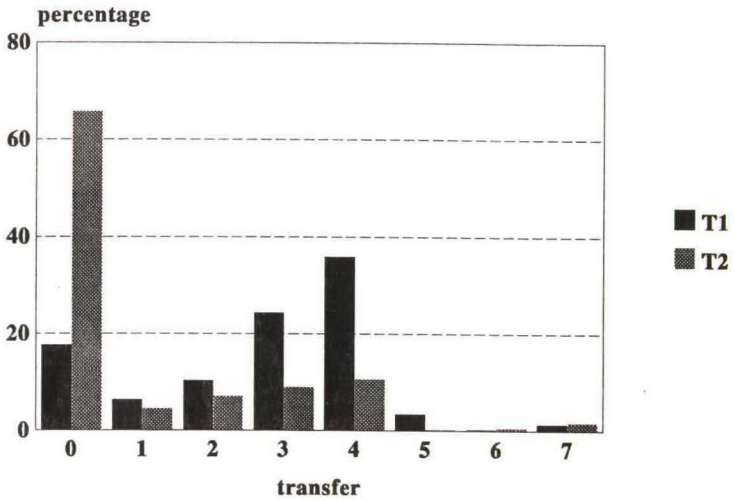


Figure 2a: Distribution of transfers T1 and T2 in the Norwegian information treatment

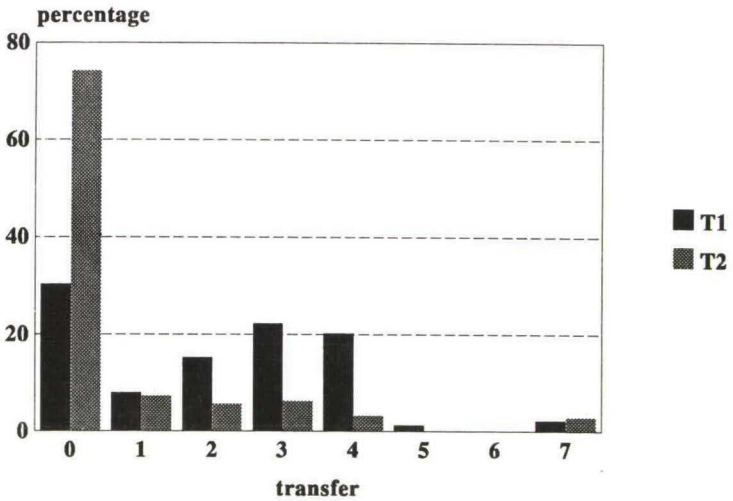


Figure 2b: Distribution of transfers T1 and T2 in the Dutch information treatment

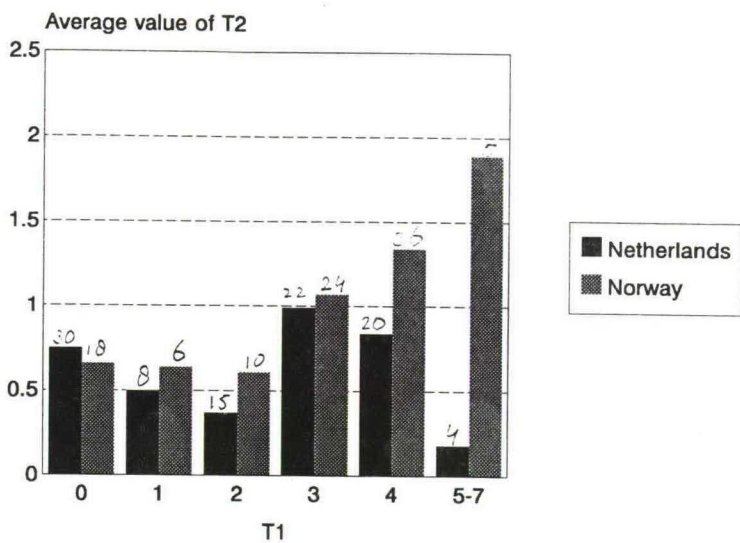


Figure 3: The average value of T_2 given T_1 in the Norwegian and Dutch information treatment

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