

Mr. and Mrs. Fairmind - Gender Differences in Justice Evaluations

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Abstract

Behavioural differences between women and men have gained momentum in economic experiments. Also, results from other disciplines reveal disparities in social preferences and moral orientation. In contrast, relevant findings on justice evaluations are scarce. The present investigation uses two questionnaire studies to contribute to this field. Firstly, the acceptance of an equity axiom that underlies Rawls's difference principle is examined. Secondly, additional responsibility aspects are considered. Results are mixed and seem to depend on subjects' age and the degree of identification with hypothetical groups. If gender differences occur, women more often support the worse off individuals initially, but revise their decision, when other alternatives become more attractive. The place of the investigation plays a role with regard to the effect of responsibility issues on gender disparities. Findings are related to explanations given in the literature. Additionally, verbal comments of participants are used to gain insights into decision motives.

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1 Introduction

Are women more likely than men to support persons in need instead of backing a more efficient alternative? Can we observe gender disparities if this alternative becomes more and more attractive? Does it make a difference when the worst off individual is responsible for her own fate? And do our results also hold for respondents from different countries? The present study will offer some empirical answers to these questions from questionnaires distributed among students. However, beforehand, we more basically ask what a theorist in the field of distributive justice, on which we will focus our attention in the following, could gain from such observed attitudes of laymen. Indeed, recent studies often show that several standard assumptions concerning the behaviour of economic agents are not stable in diverse environments and among different groups of individuals, and should, therefore, be reconsidered. In the domain of social choice, Schokkaert (1999) argues that current ‘post welfarist’ developments may be interpreted as a convergence towards justice conceptions held by ‘Mr. Fairmind’, an imaginary person who is supposed to be representative for the general public opinion. In turn, and in order to facilitate this process, these attitudes should be carefully determined by theoretically inspired questionnaire examinations. Nevertheless, besides the mere description of possible differences in justice evaluations, empirical investigations could also provide further insights into the origin of these disparities. Here, independent variables, which are presumed to bias justice evaluations and, thereby, generate part of the observed variations among individual assessments, can be identified. But certainly, as Schokkaert warns, the theorist is also likely to differ from Mr. Fairmind, e.g. with respect to social background or possibly self-interest, so that such prejudices could even be of relevance to his or her theoretical justice conception.

But why should we observe gender disparities in our contexts? And if there exist any, in what direction are women and men supposed to differ? Starting with findings from psychological literature, probably the best-known work that recognises gender differences in moral reasoning is Gilligan’s (1982) claim that women are more likely to follow a ‘care perspective’ and relate hypothetical scenarios to real life problems, whereas men tend to be more oriented towards a ‘justice perspective’ and apply an abstract, consistent and often hierarchical ordering of ethical principles.¹ However, Miller (1992) criticises the evidential basis of Gilligan’s conclusion, and especially Jaffee and

¹With respect to the possible gender bias of the theorist, Lévy-Garboua, Meidinger and Rapoport (2004, p. 33) review Gilligan’s work by arguing “that, because most of the theory of morality has been formulated by males, the morality of care, supposed to be mainly present among females, has not received enough attention”.

Hyde (2000) could not deduce from their meta-analysis that any of the two perspectives is significantly more often used by one sex. Nevertheless, Gilligan's claim frequently serves as a starting point for many studies on gender disparities. Eagly (1995) reviews various psychological studies and finds gender differences to be strong, stable, non-artificial, and consistent. Women are found to be more socially oriented and men to be more individually oriented (see Eckel and Grossman, 1998); females more often support politics like public protection (Shapiro and Mahajan, 1986) and are better able to take on the perspective of others (Davis, 1983, and Eisenberg and Lennon, 1983). Furthermore, Gilligan (1982) argues that women's and men's moral development may proceed along different lines. Thereby, she identifies different moral stages, passed through by young adults, which do not only depend on age but also seem to be gender-specific.

With regard to views of justice, it is useful to classify investigations along two dimensions, as proposed for example by Miller (1992). Firstly, we may contrast micro- with macro-justice principles, i.e. individual fairness versus justice at societal level (see also Konow, 2003), and secondly, we could distinguish between beliefs about justice and distributive behaviour. Commonly, surveys are viewed to be better able to detect 'unbiased' distributive preferences, particularly, because behaviour of participants in experiments is regularly influenced by self-interest (see e.g. Schokkaert, 1999). Konow (2000, 2005) demonstrates that selfishness of probands plays indeed an important role in experiments on fairness issues. He proposes to use instead a benevolent-dictator setting, in which the decision maker receives a fixed amount of money. This is independent of her choice on the allocation of an additional resource to other parties. To the best of our knowledge, there are only two studies that apply this approach and also comment on gender differences. Firstly, in experiments by Dickinson and Tiefenthaler (2002) probands have to divide a certain amount of tokens between two other players who differ in their ability to transform the resource into real money. Here, men are found to be more frequently concerned about efficiency, whereas women are more likely to prefer equal outcomes. An additional aspect, viz. merit, is introduced in the way that in one version the two beneficiary parties had to complete a simple test in advance. This aspect more often influences males than females. In a second study, Traub et al. (2005) explicitly examine different concepts of justice in an income-distribution setting including real monetary payoffs. The authors do not find any gender differences, but it should be remarked that their sample includes only 61 participants, and nothing is said about the proportions of both sexes.

Lack of impartiality particularly confounds gender differences. For example, Major and Deaux (1982) conclude that gender disparities are often observable when decision

makers are affected by their own choices in the way that females distribute less to themselves compared to male allocators. Nevertheless, besides self-interest economic experiments identify further environmental aspects to have an impact on gender differences. Therefore, they may also be of relevance for justice views. Eckel and Grossman (2000) and Croson and Gneezy (2004) review several experimental studies and find that, in general, women tend to be significantly more risk-averse than men. Moreover, the latter authors confirm the persistence of such disparities between different cultures.

Croson and Gneezy also stress the importance of ‘framing effects’, viz. differences in the setting of an experiment - even variations in the wording, which may have stronger effects on females compared to males. Additionally, gender disparities seem to be influenced by costs of behaviour. Eckel and Grossman (1996) use a ‘third-party punishment game’ and discover women to punish unfair behaviour of the other party towards somebody else more often than men when costs are low, but less frequently when costs are higher. Similarly, in a dictator experiment by Andreoni and Vesterlund (2001) women act more altruistically than men if giving is costly, but men are kinder if giving is cheaper. Finally, by using field studies on altruism, Rooney et al. (2005) analyse charitable giving of American households and find important differences in donating by gender in the way that females tend to donate both more frequently and higher amounts, but Frey and Meier (2005) discover that women were less likely to voluntarily contribute to university funds.

Concerning questionnaire investigations on macro-justice principles, there exist some illuminating surveys in the field of social psychology. Michelbach et al. (2003) use questionnaires on income distribution and evaluate four different allocation principles - equality, efficiency, merit and need - which they derive from theoretical literature. Results on gender differences are particularly clear. Firstly, they confirm findings from several earlier studies in the way that women are significantly more sensitive to needs than men. Secondly, women obviously tend to prefer the equality principle, whereas men are more likely to consider efficiency aspects. Furthermore, in contrast to their earlier work (i.e. Scott et al., 2001), they could not corroborate that the influence of merit on the equality-efficiency trade-off is driven by gender; men and women are similarly influenced by merit considerations. Of course, such findings would be of great importance for equity evaluations at any scale, but Sabbagh (2001) argues that distribution patterns resulting from the application of macro- and micro-justice principles do not necessarily correspond. However, a review of investigations on the latter group of principles shows that individual characteristics are rarely considered. One investigation to be mentioned here is presented by Schokkaert and Capéau (1991). They use a repre-

sentative sample of adult Belgians in order to analyse attitudes towards fair salaries in several hypothetical situations, thus they also consider accountability aspects, and find gender differences in one single case, in which men are more likely to reward education.

To summarise this rather extensive review, gender plays a role in several investigations not only of justice views but also of social preferences and behaviour. Often, the influence of sex is confounded by other factors. Obviously, in most of the studies females allocate more to their opponents than males as long as neither self-interest nor risk is involved. However, results appear to depend on the framing of the investigation. Furthermore, altruism of women seems to depend on related costs. Surveys on macro-justice principles show women to be more concerned about people in need, but it is not clear whether these findings also hold for studies on micro-justice principles. In contrast, the effect of responsibility considerations seems to be vague. Finally, the cultural background of respondents has regularly no strong influence on gender disparities.

Overall, it seems to be possible that we observe at least some gender differences in justice attitudes, but what would be the consequences? Firstly, such results may certainly contribute to the growing literature on various gender disparities. Secondly, researchers on social choice theory display a growing interest in confronting laymen with theoretical concepts. Thirdly, and probably more importantly, it is of major interest whether there exist distinct female and male justice concepts. Is it likely that female decision makers act differently from male colleagues? Can we then still rely on the concept of Mr. Fairmind? Or do we also have to introduce ‘Mrs. Fairmind’?

The paper is organised as follows. Section 2 gives information on the theoretical background of the questionnaire study and formulates research questions. In section 3, several statistical tools are introduced, which are used in section 4 in order to analyse the answers of our respondents. Moreover, some additional verbal comments of participants of the basic questionnaire are presented to gain insights into underlying decision motives. In the concluding section, results are related to several explanations for gender differences in the literature.

2 Theoretical Background of the Questionnaires

It has been stated already that empirical examinations should be thoroughly directed by theoretical concepts. As the aim of the present study is to evaluate gender differences with regard to the acceptance of an equity axiom from social choice theory, the conception of the investigation should be explained in some more detail. The theory of John Rawls (1971) belongs to a class of distributive justice concepts, which are based on

deeper philosophical argumentation. Rawls posits that parties who are deciding in the ‘original position’ behind a ‘veil of ignorance’ would adopt two lexicographically ordered justice principles for the basic structure of society. Economists almost exclusively focus on the first part of the second principle, the so-called ‘difference principle’. It requires to maximise the benefits of the worst off members of society, assessed through an index of ‘primary goods’.

Rawls concept is already fully described axiomatically in the social choice literature. The equity axiom to be presented is essential for many mathematical characterisations of the difference principle (see e.g. Hammond, 1976, Deschamps and Gevers, 1978, and Gaertner, 1992). However, for our purpose it may be sufficient to state the intention of the axiom: Consider a society where only two members, persons 1 and 2, are affected by a policy change from alternative x to y , whereas all other individuals in society are either not affected or equally well off under both options. Suppose that person 1 prefers x to y , while person 2 prefers y over x . Furthermore, person 2 is assumed to be unambiguously always better off than person 1 no matter, which alternative is realised. For the described situation, the axiom states that x should be socially preferred to y .

But how can we evaluate whether individuals - namely women and men - act in accordance with the considered axiom? Gaertner (1992) makes the suggestion to consider a two-person profile of so-called extended orderings $\tilde{R}_i, i \in \{1, 2\}$, that shall be denoted by E^1 :

$$\begin{aligned}\tilde{R}_1 &: (y, 2)(x, 2)(x, 1)(y, 1), \\ \tilde{R}_2 &: (y, 2)(x, 2)(x, 1)(y, 1).\end{aligned}$$

The interpretation is the following. Individuals 1 and 2 agree that in the given situation it is best to be person 2 under alternative y . Moreover, both of them prefer to be person 2 under x than being person 1 under x , which again is deemed better than being person 1 under y . Clearly, this profile reflects the structure described by the equity axiom. Therefore, if our hypothetical situations also follow this construction, we may deduce from the choices of respondents whether there are gender differences with respect to the fulfilment of the axiom.

However, having established this basic structure, it is possible to extend the profile E^1 by successively adding extended orderings of further better off persons, which are assumed to have the same preferences as person 2 and are also unambiguously al-

ways better off than person 1. For example, the corresponding three-person profile of extended orderings, which may be denoted by E^2 , reads:

$$\begin{aligned}\tilde{R}_1 &: (y, 3)(x, 3)(y, 2)(x, 2)(x, 1)(y, 1), \\ \tilde{R}_2 &: (y, 3)(x, 3)(y, 2)(x, 2)(x, 1)(y, 1), \\ \tilde{R}_3 &: (y, 3)(x, 3)(y, 2)(x, 2)(x, 1)(y, 1).\end{aligned}$$

It is important to notice that this extension goes beyond the statement of the considered equity axiom. Nevertheless, a choice of alternative x instead of y may still be interpreted as being in the ‘spirit’ of the axiom. Yet, it is also possible that a consecutively increasing number of better off persons causes more and more support of this group, since efficiency arguments may gain successively more momentum.

This setting forms the background for our ‘basic questionnaire’ investigation. However, in a second study we additionally introduce a responsibility aspect with regard to the worst off (group of) individual(s).² In one version of this ‘responsibility questionnaire’, which was presented to half of the respondents in this second sample, persons in need are thought to be responsible for their own fate, whereas the other participants faced a version of these hypothetical situations, in which the worst off individuals are not responsible. Besides the macro-justice studies reviewed in the previous section, there also exist some empirical investigations regarding the influence of responsibility aspects on the consideration of basic needs in micro-level contexts (see e.g. Konow, 2001, Farwell and Weiner, 1996, or Skitka and Tetlock, 1992), but none of them explicitly allows for gender differences.

In the questionnaires, several hypothetical situations were presented all of them reflecting the structure of the equity axiom. In a within-subject design each participant received the initial case with two (groups of) persons, but also three enlargements of the better off group(s) in each context.³ Participants always faced either-or decisions so that a split up of the given resource is not possible. Considering the basic questionnaire, in the first situation a certain amount of money should be used either to help a handicapped person learning some very basic things (alternative x) or to further the education of one, two, three or four intelligent children (alternative y). The

²See for example Fleurbaey and Maniquet (2005), Miller (1999), or Fleurbaey (1995) for theoretical elaborations of this question.

³The complete questionnaires can be found on the Internet. The Internet address for the basic questionnaire is <http://nts4.oec.uni-osnabrueck.de/mikro/basic.pdf>. All in all, there have been six different situations, but two of them were only incorporated in order to evaluate the consistency of the students’ answers. Hence, they are omitted in the present paper. The Internet address for the two responsibility versions is <http://nts4.oec.uni-osnabrueck.de/mikro/responsibility.pdf>.

second situation requires an allocation of money to starving people in Africa (x) or to environmental programs in the home country of the respondents (y). The third situation describes a poor country, which could purchase either dialysis machines for kidney patients (x) or vitamins and fruit to support some groups of the population, namely pregnant women, children, teenagers and workers (y). In the final context, the issue at stake is whether an economically run-down country should fully restore workers' rights and, thereby, accept a slower economic recovery (x) or take up a favourable loan, which serves an increasing number of economic groups but is conditioned on a longer curtailment of workers' rights (y). With respect to the responsibility sample, we concentrate on situations 1 and 2 of the basic questionnaire. In the first context, we either added that the retarded person is severely handicapped from birth, hence she is not responsible, or that the brain damage is due to participating in a dangerous sport. In situation 2, the starvation in Africa is said to be caused either by a drought ('no responsibility' version) or by failures in cultivating self-bred grain ('responsibility' version). In Gaertner and Schwettmann (2007) it is argued that in situation 1 a personalised kind of responsibility is formulated, while in situation 2 responsibility concerns are at large scale. In that paper, we find that responsibility aspects play a role only in the first context.

Some clarifications seem to be advisable. Certainly, this study does not aim at 'testing' Rawls's theory of justice, but instead intends to examine whether laymen satisfy the described equity axiom. Moreover, it cannot be claimed that in all situations a veil of ignorance has been erected. In fact, as the discussion of the results will show, contextual influences are of some importance and reveal certain gender differences. Furthermore, in contrast to Rawls's theory the following situations consider micro-justice principles in the way that allocations among (smaller groups of) individuals are regarded instead of overall distributions of a resource for a given society.

In the following, we first ask for gender differences with respect to the fulfilment of the equity axiom by students in Germany. Second, we want to see whether women and men stick equally often to their initial choice of alternative x even when additional better off persons are introduced. Alternatively, respondents could 'switch' towards alternative y at some point. It might be possible that we observe gender differences with regard to the location of this 'switching point'. Finally, we investigate the influence of responsibility aspects on the answers to these questions and extend the sample by incorporating students from Belgium and Spain.

But what to expect a priori? Clearly, the structure of all situations could be interpreted as creating an increasing trade-off between needs and efficiency considerations

(see Konow, 2003, for such an interpretation). However, as we know from the literature, women often tend to recognise needs more frequently than men. Furthermore, if faced with an equity-efficiency trade-off, men, compared to women, are more likely to decide in accordance with the efficiency principle. Thus, in general we may expect women to choose alternative x more frequently than men. Yet, both the fulfilment of the equity axiom and the described ‘switching’ decision may be affected. This prediction may gain further backing if the refused support of the better-offs is interpreted as ‘opportunity costs’ of a decision in favour of alternative x . But when the number of better off persons goes up, these costs also increase. Hence, our results may be compared to experiments on giving and altruism, where costs also varied and gender differences occurred.

The position of the decision maker could be another reason for different answer patterns. In situation 2, the groups who are affected by environmental programs are inhabitants of the home country of the respondents. Moreover, the first group that is affected by alternative y in situation 3 consists of pregnant women. Certainly, this information may have tackled stronger feelings among our female respondents. Compared to these two contexts, situations 1 and 4 are supposed to be farther away from the everyday life of our students. Hence, all situations may be interpreted as displaying different degrees of identification of the respondents with hypothetical groups. However, this degree could differ among sexes.

Additionally, women seem to relate their decisions more closely to the framing of the given context. Therefore, we may find stronger variations of decision patterns between the four situations among females compared to their male counterparts.

Finally, the influence of the responsibility aspect is not clear, beforehand. While some studies on macro-justice predict only minor effects of ‘merit’ assumptions, the supposed higher risk-aversion of women may also play a certain role in evaluating the behaviour of hypothetical agents.

3 Empirical Methods

In the following, we introduce the statistical methods, which are applied in order to answer the stated questions. We begin with descriptive comparisons. All possible decision patterns are represented by four-digit sequences. Thereby, a choice of alternative x is coded as ‘0’, whereas a decision in favour of y is reflected by ‘1’. The first number of each sequence corresponds to the selection in the initial case of the considered question and, thus, reflects those respondents who fulfil the equity axiom. The following three digits of a sequence represent decisions in each of the successive extensions.

Hence, there are 16 possible answer sequences. We will use them to denominate and distinguish different decision patterns.

Respondents are divided into female and male sub-samples. Here, χ^2 tests for 2×2 tables are employed to evaluate differences between relative frequencies for each sequence in the samples. Moreover, χ^2 tests for 16×2 tables are applied to generate evidence against the hypothesis H_0 that the distribution of responses on all sequences is identical between the two groups.

However, such one-dimensional comparisons ignore possible influences of additionally available individual characteristics so that we use multivariate models. A binary response model seems to be an appropriate approach to investigate gender differences in the fulfilment of the equity axiom. Let

$$z_i^* = x_i' \beta + \varepsilon_i \quad (1)$$

be the latent regression, where z_i^* is an unobserved continuous variable that represents the positive or negative latent utility, which person i receives from choosing alternative x over y in the initial case. The values of k independent variables are represented by the $k \times 1$ vector x_i so that the linear index function $x_i' \beta$ reflects the systematic utility gain. The model also includes a constant term, whereby $x_{i0} = 1$ for all individuals i . Moreover, the terms ε_i denote the individual-specific effects. They are assumed to be independent and logistically distributed, hence $Pr(\varepsilon_i < t) = \frac{\exp(t)}{1 + \exp(t)}$. However, instead of z_i^* we observe the choice z_i , which is supposed to be related to the latent model in the way that

$$z_i = \begin{cases} 1 & \text{if } z_i^* \geq 0 \\ 0 & \text{if } z_i^* < 0. \end{cases} \quad (2)$$

It follows that

$$Pr(z_i = 1 | x_i) = Pr(-x_i' \beta \leq \varepsilon_i | x_i) = 1 - \frac{\exp(-x_i' \beta)}{1 + \exp(-x_i' \beta)} = \frac{\exp(x_i' \beta)}{1 + \exp(x_i' \beta)} = \Lambda(x_i' \beta). \quad (3)$$

Thus, the conditional probability of observing a choice of $z_i = 1$ (support of the worse off individual), given the regressors, equals the cumulative density function of the standard logistic distribution denoted by Λ .⁴

The parameters β can be estimated by the method of maximum likelihood. We apply two possible interpretations of the estimated coefficients. Firstly, the marginal probability effect of the l -th regressor is given by

$$\frac{\partial Pr(z_i = 1 | x_i)}{\partial x_{il}} = \frac{\partial \Lambda(x_i' \beta)}{\partial (x_i' \beta)} \frac{\partial x_i' \beta}{\partial x_{il}} = \lambda(x_i' \beta) \beta_{il}, \quad (4)$$

⁴See e.g. Winkelmann and Boes (2006) for elaborating this concept.

where $\lambda(x'_i\beta) = \Lambda(x'_i\beta)[1 - \Lambda(x'_i\beta)]$ is the probability density function of the logistic distribution. Thus, the sign of the marginal effect is equal to the sign of β_l .⁵

Secondly, the structure of the logit model also allows us to interpret the estimated coefficients with the help of odds, which are given by

$$\frac{Pr(z_i = 1|x_i)}{Pr(z_i = 0|x_i)} = exp(x'_i\beta). \quad (5)$$

If we consider the factor change in these odds caused by a one unit increase in x_{il} , say e.g. a change from '0' to '1' in the gender dummy, the term $exp(\beta_l)$ denotes the odds ratio, which results from the comparison of the two corresponding probabilities. For example, an odds ratio of 1.0 indicates the absence of any differences caused by the increase in the explanatory variable.⁶

Next suppose sequential enlargements of the better off group. We have to use two different statistical methods for our two samples, an ordered or a multivariate logit model. While the first approach clearly fits better to our questionnaire procedure, it implicitly uses an assumption, which is not fulfilled by our data from the 'basic questionnaire'. Nevertheless, we will start by describing this first model and describe the constraint. We know that a respondent who decides in accordance with sequence 1111 rejects the equity axiom right away, whereas answers reflected e.g. by the sequence 0011 represent a 'later' reconsideration of the initial choice of alternative x . This could be interpreted in the way that the second respondent displays a higher closeness to the 'spirit' of the equity axiom. Therefore, we can order at least the five 'intelligible' sequences with respect to this closeness, which is lowest for the sequence 1111 and highest for 0000.⁷ An appropriate way to represent this interpretation statistically is to apply an ordered logit model. This can be done by reconsidering the just described binary choice model.

Let z_i^* denote the latent continuous variable as described in equation (1), with ε_i supposed to be logistically distributed. However, here the value of z_i^* reflects the utility, which person i derives from choosing alternative x . In contrast, supporting alternative

⁵Note that by using marginal effects we only approximate - inter alia - a discrete change in the probabilities associated with a discrete change in a dummy variable from zero to one. See Winkelmann and Boes (2006, p. 105) for a clarification.

⁶We evaluate the deviation of the odds ratio from the value 1.0 by using 95% confidence intervals for the exponents of the logistic coefficients.

⁷Remark that in the binary response model we are able to use all 16 sequences and distinguish them only by their first digit. However, here we focus only on those sequences denoting either an unconditional support for one alternative, i.e. sequence 0000 or 1111, or a sensible switch from x to y , sequences 0001, 0011, 0111.

y yields an expected utility of μ_s , where $s = 1, 2, 3, 4$ indicates the size of the better off group. It is intuitive to assume that μ increases with s so that $\mu_1 < \dots < \mu_4$. As before, we cannot detect z_i^* , but now we observe z_i with five discrete values $z_i = 1, \dots, 5$. Accounting for the ordering information in z_i , we assume that

$$z_i = \begin{cases} 1 & \text{if } z_i^* \leq \mu_1, \\ s & \text{if } \mu_{s-1} < z_i^* \leq \mu_s \text{ with } s = 2, 3, 4, \\ 5 & \text{if } \mu_4 < z_i^*. \end{cases} \quad (6)$$

Consider for example situation 1 in the questionnaire. From observing $z_i = 5$ we can deduce that even in the case of four intelligent children, participant i is not willing to switch from alternative x to y (sequence 0000), so that the (unobserved) utility from choosing x is supposed to be higher than the corresponding benefit from supporting four better off persons. In contrast, for $z_i = 3$ the probability that respondent i switches, if the number of intelligent children is increased from 2 to 3 (sequence 0011), is equal to the probability that the unobserved variable z_i^* is between μ_2 and μ_3 .

Similar to equation (3), we obtain the following probabilities:

$$\begin{aligned} Pr(z_i = 1|x_i) &= Pr(z_i^* \leq \mu_1) = \frac{\exp(\mu_1 - x'_i\beta)}{1 + \exp(\mu_1 - x'_i\beta)} = \Lambda(\mu_1 - x'_i\beta), \\ Pr(z_i = s|x_i) &= \Lambda(\mu_s - x'_i\beta) - \Lambda(\mu_{s-1} - x'_i\beta) \quad \text{for } s = 2, 3, 4, \\ Pr(z_i = 5|x_i) &= 1 - Pr(z_i^* \leq \mu_4) = 1 - \Lambda(\mu_4 - x'_i\beta). \end{aligned} \quad (7)$$

The threshold values μ are estimated along with the β coefficients by means of the method of maximum likelihood.⁸

The marginal probability effects of the l -th element in x_i can be calculated from equations (7) by taking first derivatives:⁹

$$\begin{aligned} \frac{\partial Pr(z_i = 1|x_i)}{\partial x_{il}} &= \lambda(\mu_1 - x'_i\beta)(-\beta_l), \\ \frac{\partial Pr(z_i = s|x_i)}{\partial x_{il}} &= [\lambda(\mu_{s-1} - x'_i\beta) - \lambda(\mu_s - x'_i\beta)]\beta_l \quad \text{for } s = 2, 3, 4, \\ \frac{\partial Pr(z_i = 5|x_i)}{\partial x_{il}} &= \lambda(\mu_4 - x'_i\beta)(\beta_l). \end{aligned} \quad (8)$$

From equations (8) it becomes obvious that for a positive estimated coefficient β_l the probability for $z_i = 1$ decreases and increases for $z_i = 5$ with a growing independent

⁸However, the intercept term is excluded from the model in order to identify the μ parameters. See Borooah (2002, p. 10) for a discussion of the effects of including a constant term.

⁹In order to obtain average marginal probability effects we have to substitute β by its ML estimates $\hat{\beta}$ and calculate the mean. See Winkelmann and Boes (2006, p. 182).

variable x_{il} . The effects on the other three possible outcomes are not known a priori. Hence, we also calculate marginal effects of selected variables for each probability.¹⁰

The ordered response model has the property of using a single index function. Although this is an advantage in terms of number of estimated coefficients (see e.g. Heij et al., 2004), Winkelmann and Boes (2006) illustrate the limitations: If we calculate marginal probability effects, we face the “single crossing property” (p. 187), which means that as we move from $z_i = 1$ to $z_i = 5$ the marginal effects can change their sign only once. Unfortunately, the results of the basic questionnaire will suggest a possible violation of this implicit assumption. Hence, Borooah (2002, p. 15) recommends applying a multinomial logit model, “notwithstanding the fact that the dependent variable is clearly ordinal.”

The multinomial logit model to be considered is a repeated application of the binary logit model. The five observed outcomes, i.e. sequences, z_{ij} are arbitrarily indexed by $j = 1, \dots, 5$. We can interpret the latent variable z_{ij}^* in equation (1) as the unobserved utility which person i receives from choosing sequence j . Again, the linear index $x_i' \beta_j$ contains the vector of individual characteristics x_i , but also outcome-specific vectors β_j . In contrast to the ordered logit model, these latter vectors are allowed to differ between the five outcome probabilities. The probability of observing $z_i = j$ is given by

$$Pr(z_i = j) = \frac{\exp(x_i' \beta_j)}{\sum_{r=1}^5 \exp(x_i' \beta_r)} \quad j = 1, \dots, 5, \quad (9)$$

but because all probabilities sum to 1, equation (9) is indeterminate, so that we set the parameters of the fifth alternative, viz. β_5 , equal to zero and, thereby define this outcome as the base sequence. Due to this normalisation we get

$$\begin{aligned} Pr(z_i = s) &= \frac{\exp(x_i' \beta_s)}{1 + \sum_{r=1}^4 \exp(x_i' \beta_r)}, \quad s = 1, \dots, 4, \\ Pr(z_i = 5) &= \frac{1}{1 + \sum_{r=1}^4 \exp(x_i' \beta_r)}. \end{aligned} \quad (10)$$

As before, we define s as the number of (groups of) better off persons considered in the chosen sequence. Yet, the probability of observing sequence 0000 serves as the baseline.

¹⁰We follow the procedure described by Borooah (2002, p.33). Thus, for example we calculated ceteris paribus the probability of person i being at utility level $z_i = 1, \dots, 5$ from $\sum_{l=1}^k \hat{\beta}_l x_{il}$ with $x_{i, Male} = 0$ and $x_{i, Male} = 1$, respectively. Hence, for any person in the sample the differences between both probabilities in each outcome category are entirely due to the gender effect. In the following, we will interpret the mean of these individual marginal effects.

Again, we use odds to interpret the estimated parameters. From equations (10) the odds of outcome s versus the base sequence are given by

$$\frac{Pr(z_i = s|x_i)}{Pr(z_i = 5|x_i)} = exp(x'_i\beta_s) \quad s = 1, \dots, 4. \quad (11)$$

As in the case of the binary logit model, the term $exp(\beta_{sl})$ denotes the odds ratio of the l -th independent variable. For example, a positive value $\beta_{3, Male}$ implies that the odds ratio is larger than one and, thus, a change in the gender dummy from $Male = 0$ to $Male = 1$ raises the probability of sequence 0011 relative to the probability of the base sequence 0000. Again, ML estimations are applied.

To summarise, on the one hand, in a multinomial logit model we have to estimate $s \times k$ parameters compared to only $k + s - 1$ parameters in the ordered logit model. On the other hand, the first approach allows us to estimate outcome-specific coefficients for the gender dummy.

The described multivariate models are used in order to separate the gender effect from other confounding individual attributes. However, this approach assumes those factors to bias decisions of females and males in the same direction. But if we want to allow for gender specific influences of these characteristics, we have to control for interaction effects. This can be modelled by incorporating a product term of x_{Male} and x_{Mod} , a so-called ‘moderator’ variable, in the model so that for example the right hand side of equation (5) reads

$$(\dots) = exp(\beta_0 + \beta_{Male}x_{i, Male} + \beta_{Mod}x_{i, Mod} + \beta_{Product}x_{i, Male}x_{i, Mod} + \dots + \varepsilon_i), \quad (12)$$

where $\beta_{Product}$ represents the estimated coefficient of the interaction term. As equation (12) shows, the incorporation of product terms establishes the idea of a relationship between two independent variables. Nevertheless, the estimated values of the non-product coefficients of interacted variables are now conditional on the other product component(s) being zero.¹¹ In order to reduce the high covariance between the product term and its components, continuous variables in the model are centred about their mean value.¹² For the binary and ordered logit models we employed stepwise backward elimination of interaction terms (the critical p-value is set at .10). In the case of the multinomial logit model, we include those products, which display a significant influence at the 5% level for at least one sequence. Furthermore, in the analysis of the second study we pool the ‘no responsibility’ and the ‘responsibility’ samples. Then we extend the statistical models either by incorporating an additional product term consisting of

¹¹See Jaccard (2001) for an introduction to interpretations of interaction effects in logistic regressions.

¹²See e.g. Jaccard, Turisi and Wan (1990) or Aiken and West (1991) for a discussion of this procedure.

the gender dummy and an indicator for the questionnaire version respondent i faced or by two interaction terms, which control for local effects on gender differences. Finally, we also allow for local differences of the influence of responsibility concerns on gender disparities. This is done by using 3-way interaction terms, where place dummies are introduced as second order moderator variables. In this case, as for example Kleinbaum (1994) explains, our model has to comprise all lower-order components in order to be hierarchically well-formulated.

4 Sample Structures

As we said above, there exist two different samples. The first group of participants received the basic questionnaire, whereas a second group was asked to answer one out of two responsibility questionnaire versions. The first study was carried out with undergraduate students at the Department of Economics in Osnabrück (Germany) in the years 1989, 1990, 1993 and 2002; in 2003 only situations 1 and 4 have been presented.¹³ The second questionnaire study was completed by undergraduates at Economics departments in Osnabrück, Barcelona (Spain) and Leuven (Belgium) in the years 2002 (only situation 1 in Osnabrück) and 2003.

Besides the previously described hypothetical situations, the sheets also contained questions on individual characteristics. Table 1 summarises the constructed variables and their sample values. Thereby, the distributions of these attributes for the female and male sub-samples reveal some important differences and, therefore, give reason for applying a multivariate statistical model.

Certainly, using a student sample, there is no great variation in the age of participants. However, its incorporation allows us to separate a possible influence from other variables, especially job experience. As can be seen from the sample means of all sub-samples, male students are older than females. Primarily, this disparity can be explained by compulsory military or civilian service that young men have to complete in Germany.

¹³In the first three years, two versions of the basic questionnaire have been used, a technical one, which incorporates the extended-orderings presented above, and a non-technical version, giving a longer verbal explanation, instead. The latter version can be found at the given Internet address. Using a χ^2 test statistic, we could not find any differences at the 5% significance level between these two versions for every single year. Hence, both versions of the basic questionnaire are pooled.

Table 1: Demographics (Standard deviations are given in parentheses)

Variable Code	Description	Basic Questionnaire				Responsibility Questionnaires			
		Situations 1 and 4		Situations 2 and 3		Situation 1		Situation 2	
		Women n=231	Men n=410	Women n=184	Men n=358	Women n=305	Men n=366	Women n=242	Men n=263
<i>Age</i>	Age of proband (in years)	22.34 (1.69)	23.09 (1.76)	22.48 (1.72)	23.11 (1.72)	20.38 (2.17)	21.21 (2.63)	19.92 (1.98)	20.51 (2.49)
<i>BA</i>	B.A. Student: 0=No, 1=Yes	0.89 (0.32)	0.83 (0.37)	0.90 (0.31)	0.83 (0.38)				
<i>Job</i>	Proband has job experience: 0=No, 1=Yes	0.41 (0.49)	0.38 (0.49)	0.45 (0.50)	0.40 (0.49)				
<i>Male</i>	Proband is male: 0=No, 1=Yes	0.00 (—)	1.00 (—)	0.00 (—)	1.00 (—)	0.00 (—)	1.00 (—)	0.00 (—)	1.00 (—)
<i>Res</i>	Questionnaire Version: 0=No Responsibility, 1=Responsibility					0.50 (0.50)	0.51 (0.50)	0.49 (0.50)	0.50 (0.50)
<i>Time</i>	Number of semesters, starting from the first study in 1989	12.87 (12.05)	10.01 (10.29)	8.75 (9.93)	7.26 (7.82)				
Future	Dummy variables: Proportion of the citizens expected by the proband to earn less than the proband in 10 years' time:								
<i>Fut₁</i>	less than 50%	0.15 (0.36)	0.11 (0.31)	0.13 (0.33)	0.09 (0.28)	0.20 (0.40)	0.13 (0.34)	0.22 (0.41)	0.15 (0.36)
<i>Fut₂</i>	50%	0.49 (0.50)	0.41 (0.49)	0.56 (0.50)	0.45 (0.50)	0.45 (0.50)	0.30 (0.46)	0.44 (0.50)	0.29 (0.45)
<i>Fut₃</i>	more than 50%	0.36 (0.48)	0.48 (0.50)	0.32 (0.47)	0.46 (0.50)	0.35 (0.48)	0.57 (0.50)	0.34 (0.48)	0.56 (0.50)
Background	Dummy variables: Profession of the main earner of the family in which the proband grew up:								
<i>Par₁</i>	Worker, Craftsman	0.15 (0.36)	0.17 (0.38)	0.15 (0.36)	0.18 (0.38)	0.19 (0.40)	0.16 (0.37)	0.19 (0.40)	0.17 (0.37)
<i>Par₂</i>	Employee or civil servant in the public sector	0.29 (0.45)	0.28 (0.45)	0.30 (0.46)	0.28 (0.45)	0.30 (0.46)	0.25 (0.43)	0.31 (0.46)	0.24 (0.43)
<i>Par₃</i>	Employee in the private sector	0.27 (0.45)	0.28 (0.45)	0.27 (0.45)	0.28 (0.45)	0.23 (0.42)	0.28 (0.45)	0.24 (0.43)	0.28 (0.45)
<i>Par₄</i>	Self-employed	0.29 (0.46)	0.27 (0.45)	0.28 (0.45)	0.26 (0.44)	0.26 (0.44)	0.30 (0.46)	0.24 (0.43)	0.31 (0.46)
University:	University at which the investigation was carried out:								
<i>Place_O</i>	University of Osnabrück (in 2002 and 2003)					0.51 (0.50)	0.57 (0.50)	0.38 (0.49)	0.40 (0.49)
<i>Place_B</i>	Universitat Autònoma de Barcelona (in 2005)					0.14 (0.35)	0.08 (0.27)	0.18 (0.39)	0.11 (0.31)
<i>Place_L</i>	Katholieke Universiteit Leuven (in 2005)					0.34 (0.48)	0.35 (0.48)	0.43 (0.50)	0.49 (0.50)

We are able to distinguish our German respondents with respect to the subject they study, being it Business Administration (BA) or Economics (as their first or subsidiary subject), but similar information is not available for the samples from the other places.

An influence on equity judgements may result from job experiences. In situation 1, experiences of young men during civilian service may enhance support for the handicapped person, while in situation 4, students with job experiences may either support the rights of workers or back economic growth in order to create more jobs. Unfortunately, for the German participants we are only able to model a single dummy variable, because further information on the character of these experiences, being it part- or full-time jobs, vocational training or compulsory military or civilian service, is not available. The Belgian students did not possess any job experiences at all so that this variable is left out for the second sample.

Students were also asked about their expected position in societal income distribution in 10 years time, which is then modelled by three dummy variables. Male participants in all samples are remarkably more optimistic about their future income than their female counterparts. This is very much in line with assumptions in the literature about the self-perceived socioeconomic status of women. The parental background may also have an impact on justice evaluations. As we know from psychological studies, the social environment, in which the participant grew up, can imprint attitudes. Additional place dummies denote the corresponding place of investigation in the case of the responsibility questionnaires.

Finally, Gaertner and Schwettmann (2007) pronounce the importance of allowing for developments over time. This concerns only the first sample. Possibly, the temporal distance between two investigations is of additional importance. Thus, instead of creating dummy variables for the different years of the investigation, we model a continuous variable, which is measured in number of academic semesters since the first study. It should be remarked that the proportion of women increases in more recent years. Thus, if time matters, we should regard this effect in order to separate gender differences. Nevertheless, there are more male than female answers.

To summarise, it cannot be ruled out that women and men display different life courses, which are partly covered by individual attributes. Of course, these variables can only be a very rough measure for assumed disparities. But if these factors have any significant influence on moral decisions in general, they should be controlled for in order to get more valid results on gender differences.

5 Results

We will begin the description of results by answering the stated questions with respect to the basic questionnaire. Then, findings from the responsibility sample are presented. Finally, we will review additional verbal comments of respondents in the first sample.

5.1 Basic Questionnaire

Descriptive results for the four considered situations of the basic questionnaire - distinguished by gender - are summarised in table 2a. As explained above, all possible decision patterns are represented by four-digit sequences in the first column.

In general, some similar results for both groups with respect to comparisons between the four situations are visible. The highest fulfilment of the equity axiom and, correspondingly, the lowest relative frequency of the sequence 1111 can be observed in situation 1. In contrast, in situation 2, where alternative y concerns the home country of respondents, we discover least support for the worst off individuals. This finding concerns the sequences 0000 and 1111, but also the fulfilment of the axiom. The results for situations 3 and 4 are ‘somewhere in the middle’.

Now, consider women and men separately. On the one hand, although the fulfilment of the equity axiom is rather high for both sexes, in neither situation the relative frequency for males exceeds the corresponding value for females. Moreover, differences are significant for situations 1 and 4; the p-value of the χ^2 test for 2×2 tables equals 0.006 for the first and 0.091 for the last case. On the other hand, if the better off group is successively enlarged, the unconditional support of the least advantaged - expressed by the sequence 0000 - is almost the same for both samples in each situation. However, apart from situation 2, gender plays a role among those students of the two groups who decided in favour of alternative y either immediately or when additional better off persons are introduced. Among these students, men are more frequently willing to support the better off individuals right from the beginning (corresponding p-values of χ^2 tests are 0.002 for situation 1, 0.037 for situation 3 and 0.107 for situation 4), while women are more likely to reconsider their initial decision in favour of alternative x and switch more often towards y .

Nevertheless, only in situation 1 we can generate evidence against the hypothesis H_0 that the distribution of responses on the 16 possible sequences is similar between both samples ($\chi^2(10) = 21.58$, p-value = 0.017).

Next, we employ multivariate regressions in order to get further insights into the statistical relevance of observed similarities and disparities. At first, we focus solely

Table 2: Relative Frequencies for All Possible Decision Patterns
(x coded as 0, y coded as 1)

a) Basic Questionnaire

Sequence	Situation 1		Situation 2		Situation 3		Situation 4	
	Women (n=231)	Men (n=410)	Women (n=184)	Men (n=358)	Women (n=184)	Men (n=358)	Women (n=231)	Men (n=410)
0 0 0 0	0.528	0.515	0.380	0.385	0.446	0.433	0.532	0.534
0 0 0 1	0.095	0.046	0.033	0.036	0.033	0.042	0.091	0.085
0 0 1 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0 0 1 1	0.182	0.156	0.065	0.089	0.082	0.081	0.091	0.061
0 1 0 0	0.0	0.0	0.0	0.003	0.011	0.006	0.0	0.0
0 1 0 1	0.004	0.002	0.005	0.0	0.0	0.0	0.0	0.002
0 1 1 0	0.004	0.0	0.005	0.008	0.011	0.006	0.0	0.002
0 1 1 1	0.121	0.144	0.120	0.087	0.185	0.168	0.095	0.066
1 0 0 0	0.0	0.002	0.016	0.014	0.011	0.003	0.004	0.002
1 0 0 1	0.0	0.005	0.0	0.003	0.0	0.0	0.0	0.0
1 0 1 0	0.0	0.0	0.005	0.008	0.0	0.0	0.0	0.002
1 0 1 1	0.004	0.005	0.016	0.008	0.005	0.0	0.0	0.0
1 1 0 0	0.013	0.002	0.016	0.011	0.022	0.011	0.004	0.010
1 1 0 1	0.0	0.0	0.0	0.0	0.0	0.003	0.0	0.0
1 1 1 0	0.0	0.0	0.076	0.070	0.011	0.003	0.004	0.002
1 1 1 1	0.048	0.122	0.261	0.277	0.185	0.246	0.177	0.232

% Switch	39.8	34.6	21.7	21.2	29.9	29.1	27.7	21.2
% fulfilment of equity axiom	93.5	86.3	60.8	60.8	76.6	73.5	81.0	75.1

b) Responsibility Questionnaires

Sequence	Situation 1				Situation 2			
	No Responsibility		Responsibility		No Responsibility		Responsibility	
	Women (n=154)	Men (n=180)	Women (n=151)	Men (n=186)	Women (n=124)	Men (n=131)	Women (n=118)	Men (n=132)
0 0 0 0	0.442	0.300	0.358	0.355	0.532	0.397	0.525	0.402
0 0 0 1	0.039	0.028	0.033	0.027	0.048	0.031	0.034	0.008
0 0 1 0	0.0	0.0	0.0	0.0	0.032	0.023	0.008	0.023
0 0 1 1	0.182	0.161	0.166	0.118	0.129	0.122	0.186	0.121
0 1 0 0	0.0	0.006	0.0	0.005	0.008	0.015	0.0	0.008
0 1 0 1	0.006	0.006	0.0	0.011	0.0	0.008	0.0	0.0
0 1 1 0	0.006	0.011	0.0	0.005	0.0	0.008	0.025	0.015
0 1 1 1	0.195	0.222	0.245	0.161	0.048	0.084	0.102	0.091
1 0 0 0	0.0	0.0	0.0	0.011	0.016	0.0	0.008	0.008
1 0 0 1	0.006	0.0	0.0	0.005	0.0	0.008	0.0	0.0
1 0 1 0	0.0	0.0	0.0	0.005	0.024	0.008	0.008	0.0
1 0 1 1	0.0	0.006	0.007	0.005	0.008	0.008	0.0	0.015
1 1 0 0	0.006	0.006	0.0	0.005	0.0	0.015	0.0	0.023
1 1 0 1	0.006	0.0	0.0	0.005	0.0	0.0	0.0	0.0
1 1 1 0	0.0	0.0	0.0	0.005	0.032	0.023	0.017	0.053
1 1 1 1	0.110	0.256	0.192	0.274	0.121	0.252	0.085	0.235

% Switch	41.6	41.1	44.4	30.6	22.5	23.7	32.2	22.0
% fulfilment of equity axiom	87.0	73.4	80.2	68.2	79.7	68.8	88.0	66.8

on the fulfilment of the equity axiom, which we model as a dichotomous variable. ML estimates of binary logit models are summarised in table 3.

Table 3: Basic Questionnaire - ML Estimates of Binary Logit Models

Variable	Situation 1 (n=641)		Situation 2 (n=542)		Situation 3 (n=542)		Situation 4 (n=641)	
	Single effects	Inter-active	Single effects	Inter-active	Single effects	Inter-active	Single effects	Inter-active
<i>Const</i>	3.192*** (.572)	3.142*** (.574)	.808** (.365)	.781** (.366)	1.014** (.394)	.685 (.417)	2.154*** (.414)	2.065*** (.414)
<i>Age_c</i>	.010 (.093)	-.410*** (.158)	.020 (.064)	-.118 (.099)	-.003 (.071)	-.231 (.128)	.091 (.071)	-.156 (.110)
<i>Job</i>	.189 (.334)	.216 (.338)	-.113 (.223)	-.101 (.223)	.127 (.251)	.883* (.462)	-.423* (.248)	-.398 (.249)
<i>Male</i>	-.891*** (.321)	-.826** (.322)	.021 (.197)	.054 (.198)	-.173 (.223)	.329 (.322)	-.523** (.218)	-.462** (.216)
<i>Time</i>	-.020* (.011)	-.024** (.012)	.025** (.011)	.022** (.011)	-.009 (.011)	-.012 (.012)	-.022** (.009)	-.025*** (.009)
<i>Male*Age_c</i>		.546*** (.174)		.208* (.112)		.328** (.156)		.350*** (.122)
<i>Male*Job</i>						-1.082* (.553)		
Log likelihood	-215.0	-210.2	-357.5	-355.7	-304.8	-302.2	-336.6	-332.5
LR statistic	16.22*	25.93***	10.56	14.06	5.40	10.64	14.60	22.80**
McFadden R ²	0.036	0.058	0.015	0.019	0.009	0.017	0.021	0.033

Note: Dependent variable: Fulfilment of the equity axiom. Values are logistic coefficients (betas) Asymptotic standard errors are reported in parentheses. Level of significance: * 10%. ** 5%. *** 1%. All models also include the dummy variables *BA*, *Fut₁*, *Fut₃*, *Par₂*, *Par₃* and *Par₄*, which are not significant at the 5% level in any model.

Here we distinguish ‘single effect models’ from ‘interactive models’, where the included factors are allowed to display different effects on the dependent variable for females and males.¹⁴ If we first look at single effects of additional explanatory variables, we only find the year of the investigation to have a significant influence on the initial choice in three situations. Remark that non-significant variables are omitted in this presentation, although they are included in the model. Over the covered period of time our students considerably less often fulfil the equity axiom in the first and in the last context, but more often in situation 2. Hence, even with a considerably larger sample we can confirm earlier findings in Gaertner and Schwettmann (2007).

¹⁴As can be seen from the R^2 values and the LR statistics in all estimated equations in this paper, the explanatory power of each model is rather weak. However, our aim is not to identify an ‘optimal model’, but to investigate possible gender differences.

The results on the gender variable support many of our preliminary observations. Clearly, men are significantly less likely to fulfil the equity axiom in situation 1, but also – in contrast to the ‘one-dimensional’ analysis – in the fourth context. Thus, leaving aside the unintelligible sequences, there are also considerable differences with respect to the sequence 1111 with men being more likely to display this answer pattern. As explained in section 3, we can obtain predicted odds ratios from the estimated logistic coefficients for β_{Male} . Therefore, we get $exp(-0.891) = 0.410$ for situation 1 and $exp(-0.523) = 0.593$ in situation 4. These results state, for example, that the predicted odds of fulfilling the equity axiom for males are 0.410 times the corresponding value of the predicted odds for females in the first context.¹⁵ Hence, although the probability of observing an initial choice of alternative x is rather high for both groups, there are significant differences. In contrast, neither in the case of environmental programs in the home country nor in situation 3, where children and pregnant women are the beneficiaries of alternative y , we detect remarkable gender disparities.

Next, we consider successive extensions of the better off groups. From the differences between relative frequencies of women and men in table 2a, we observe that the ‘single crossing property’, described in section 3, might be violated. Take situation 4 as an example. The relative frequencies for females are lower for sequences 0000 and 1111 but higher for the remaining three relevant decision patterns. Nevertheless, we also run ordered logit models but found rather odd marginal effects. Thus, we turn to multinomial logit models. Results are presented in table 4.

The proportions of those students who support the worst off individuals in every extension are almost equal for both samples in each situation. Hence, it seems to be obvious to choose sequence 0000 as the baseline for the comparison of the odds of other decision patterns.¹⁶ The estimated coefficients confirm the supposed developments over time in each context, while other independent variables have no considerable influence in more than one situation. More importantly, again there are no significant gender effects in situations 2 and 3, whereas the predicted odds ratios hint at differences in the other two contexts. In situation 1, men, compared to women, are more likely to choose in accordance with sequence 1111 in relation to sequence 0000. The corresponding multiplicative factor is $exp(1.243) = 3.466$. Furthermore, in this context males seem to ‘switch’ remarkably earlier from alternative x to y than their female counterparts,

¹⁵The 95% confidence intervals for the two values are [0.219;0.770] and [0.386;0.909], respectively, and, consequently, do not contain the value of 1.0.

¹⁶Notice again that we focus only on the five intelligible sequences as described in section 3. Hence, sample sizes are smaller than for the binary response models.

Table 4: Basic Questionnaire - Multinomial Logit Estimates

Situation (model)	Variable	Seq. 1111		Seq. 0111		Seq. 0011		Seq. 0001	
		Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Sit. 1: (single effects)	<i>Age_c</i>	-.102	(.105)	-.249**	(.100)	-.036	(.082)	-.029	(.121)
	<i>Male</i>	1.243***	(.380)	.738**	(.295)	.054	(.253)	-.709**	(.356)
	<i>Time</i>	.051***	(.013)	.071***	(.012)	.042***	(.011)	.000	(.017)
Log likelihood: -751.63, LR test: 96.35***, McFadden R^2 : .058									
Sit. 1: (inter-acted)	<i>Age_c</i>	-.220*	(.116)	-.274**	(.109)	-.085	(.093)	.041	(.147)
	<i>Male</i>	1.174***	(.380)	.748**	(.316)	.032	(.253)	-.689*	(.370)
	<i>Age_c*Male</i>	-.586***	(.200)	-.069	(.175)	-.152	(.138)	.134	(.199)
Log likelihood: -698.61, LR test: 106.04***, McFadden R^2 : .064									
Sit. 2: (single effects)	<i>Male</i>	.025	(.244)	-.473	(.340)	.281	(.394)	.297	(.560)
	<i>Time</i>	-.031**	(.014)	.013	(.017)	.004	(.019)	.013	(.026)
Log likelihood: -539.08, LR test: 46.64, McFadden R^2 : .037									
Sit. 3: (single effects)	<i>Male</i>	.368	(.260)	.089	(.273)	.063	(.373)	.350	(.541)
	<i>Time</i>	.029**	(.013)	.026*	(.014)	.042**	(.018)	.044*	(.026)
	<i>Fut₁</i>	-.220	(.386)	-1.494**	(.633)	-.297	(.592)	-1.321	(1.063)
	<i>Fut₃</i>	-.076	(.244)	-.166	(.260)	-.062	(.357)	-1.139**	(.546)
Log likelihood: -604.22, LR test 44.08, McFadden R^2 : .032									
Sit. 3: (inter-acted)	<i>Age_c</i>	-.123	(.093)	-.226**	(.110)	-.240	(.148)	.080	(.178)
	<i>Male</i>	.309	(.263)	.028	(.277)	.019	(.378)	.353	(.564)
	<i>Age_c*Male</i>	-.315**	(.150)	-.295*	(.161)	-.747***	(.210)	-.095	(.311)
Log likelihood: -596.48, LR test: 59.57*, McFadden R^2 : .043									
Sit. 4: (single effects)	<i>Job</i>	.519*	(.266)	.872**	(.412)	.293	(.426)	.149	(.376)
	<i>Male</i>	.504**	(.236)	-.063	(.345)	-.094	(.344)	.091	(.320)
	<i>Time</i>	.030***	(.010)	.063***	(.015)	.016	(.015)	.014	(.014)
	<i>Fut₁</i>	.302	(.333)	-.179	(.552)	.316	(.456)	.526	(.425)
	<i>Fut₃</i>	-.138	(.227)	-.153	(.346)	-.817**	(.372)	-.222	(.329)
	<i>Par₂</i>	.131	(.325)	1.291**	(.587)	.850	(.602)	-.381	(.418)
	<i>Par₃</i>	.228	(.321)	.817	(.610)	.945	(.598)	-.463	(.425)
	<i>Par₄</i>	.060	(.324)	.591	(.615)	.949	(.594)	-.368	(.413)
Log likelihood: -695.05, LR test 61.61**, McFadden R^2 : .039									

Note: The base sequence is 0000. Values are logistic coefficients (betas). Asymptotic standard errors are given in parentheses. Level of significance: * 10%. ** 5%. *** 1%. The single effect models include all variables. However, only those parameters are reported, which proved to be significant at the 5% level for at least one category. The same criterion is used to identify additional interaction effects. Here, only interacted variables are given.

which can be seen from the significant estimated coefficients of the gender dummy for the sequences 0111 and 0001. In situation 4, we observe significant differences with respect to the unconditional support of the better off individuals.

For the interactive effects in both the binary models in table 3 and the multinomial logit models table 4, the age of respondents proves to be the most prominent variable displaying a major influence on the effect of gender. Closer examinations of the predicted odds for both sexes at different ages in the first model, which are not presented here, reveal that younger women are much more likely to support the worst off individual(s) initially compared to men of the same age. Yet, the positive signs of all predicted coefficients show that this disparity declines if respondents grow older. Also, younger women are less likely to choose in accordance with the sequence 1111 in situations 1 and 3. It is important to notice that this effect is separated from other influences, especially job experiences.

Furthermore, remarkably the interaction term of gender and time is not significant. Thus, the results on gender differences are stable over the covered period of time.

To summarise, in two situations we discover strong gender differences for both the initial fulfilment of the equity axiom and the switching decision, when the better off group is enlarged. In contrast, we do not observe any disparities in the other two contexts. Surprisingly, an equal share of both groups in each situation follows the intention of the axiom unconditionally.

5.2 Responsibility Questionnaires

In table 2b, relative frequencies of possible decision patterns for the two situations in the responsibility questionnaires are presented. Here, both questionnaire versions are separated. We assumed that our students would interpret the basic questionnaire in the way that the person in need is not explicitly responsible for her own fate. Nevertheless, comparisons between the relative frequencies from both the basic and the responsibility questionnaires are inappropriate, because the first sample comprises different years, for which we detected already significant changes over time. However, we could compare the studies with respect to gender differences, which proved to be stable over the covered time period. Compared to the basic questionnaire, disparities between females and males are even more obvious in the ‘no responsibility’ version of both situations in the second study. As before, men fulfil the equity axiom clearly less frequently than women (p-values of χ^2 tests for 2×2 tables equal 0.002 in situation 1 and 0.042 in situation 2). Hence, men are more likely to support the better off individuals right from the beginning. But now, women tend to decide remarkably more often in accordance with sequence 0000. Are these gender differences due to the students from Belgium and Spain?

If we also regard the ‘responsibility’ versions, we find that the initial acceptance of the equity axiom goes down for both groups in the first context, while it even increases for women in the second situation. In both contexts, women tend to switch ‘earlier’, compared to the ‘no responsibility’ case. Also, in the context of the handicapped person, the increase of the relative frequency of sequence 1111 is stronger for women than for men. The probability of observing sequence 0000 goes down for females, whereas we detect an astonishing increase for their male counterparts. In contrast, in the second situation we do not find any further differences due to responsibility aspects.

Next, we investigate these observations by using multivariate models on the pooled data of both questionnaire versions. At first, consider the binary logit models in table 5. Here, we estimate 2-way and 3-way interaction models. In the left column for each situation we present estimated equations incorporating the interaction term $Male*Res$ in order to test whether the effect of gender on fulfilling the axiom is influenced by responsibility considerations in the overall sample. Therefore, as explained in section 3, the single dummy variable for gender and the indicator of the questionnaire version are conditional on the other product term being zero. Results show that in the ‘no responsibility’ case ($Res = 0$) of both situations males are less likely to fulfil the equity axiom. Furthermore, the coefficient of the responsibility dummy confirms that women ($Male = 0$) less often fulfil the equity axiom in situation 1, but more frequently in situation 2, if responsibility aspects are introduced. However, from the estimated coefficients for the 2-way interaction terms, we observe that males do not react significantly different from females with respect to responsibility aspect.¹⁷

The next columns contain 2-way interaction models, where we allow for local differences with respect to gender disparities, which are now analysed without considering different effects from the responsibility aspect. The estimated coefficients for the product terms of the gender and place dummies do not reveal any remarkable variation between answers at the three places regarding the fulfilment of the equity axiom.

Furthermore, as explained in section 3, we also use 3-way interaction terms. The idea is that the effect of responsibility considerations on gender differences is influenced in turn by the place of the investigation. Only for situation 1, our results reveal such differences at the 10% significance level. Here, from the coefficient of the product term $Male*Res$, which is now conditional on $Place_B = Place_L = 0$, it becomes apparent

¹⁷Besides gender differences, in situation 1 students from Leuven decide less frequently in accordance with the equity axiom than our respondents in Osnabrück. Moreover, respondents in Spain more often choose in the ‘spirit’ of the equity axiom, as can be observed from the results of the ordered logit model, but especially from the estimated marginal effects in table 6.

Table 5: Responsibility Questionnaires - ML Estimates of Binary and Ordered Logit Models

Variable	Binary Logit Models			Ordered Logit Models		
	Situation 1 (n=671)		Situation 2 (n=505)	Situation 1 (n=647)		Situation 2 (n=448)
	2-way interact.	3-way interact.	2-way interact.	2-way interact.	3-way interact.	3-way interact.
<i>Const.</i>	5.533*** (1.428)	6.071*** (1.471)	2.729 (1.687)	.001 (.049)	.006 (.050)	-.024 (.068)
<i>Age</i>	-.117* (.060)	-.123** (.061)	-.065 (.075)	-.710*** (.201)	-.170 (.278)	-.312 (.417)
<i>Male</i>	-.781** (.306)	-1.230** (.530)	-.553* (.333)	.625** (.369)	.741 (.528)	1.073** (.720)
<i>Fut1</i>	-.472 (.309)	-.396 (.310)	.068 (.336)	-.593** (.283)	-.392 (.364)	-.032 (.476)
<i>Fut3</i>	-.462** (.225)	-.413* (.227)	.071 (.259)	-.153 (.144)	-.522* (.289)	-.101 (.419)
<i>Par2</i>	-.442 (.316)	-.397 (.318)	-.308 (.336)	.612** (.289)	.894** (.388)	.097 (.578)
<i>Par3</i>	-.351 (.321)	-.335 (.324)	-.210 (.337)	-.112 (.521)	-.085 (.732)	-.604 (.933)
<i>Par4</i>	-.616** (.312)	-.582* (.316)	-.150 (.339)	-.648** (.317)	-.221 (.444)	-.475 (.556)
<i>PlaceB</i>	-.222 (.454)	-1.595** (.754)	1.183* (.692)	-.120 (.675)	-.120 (.675)	-.893 (.887)
<i>PlaceL</i>	-1.381*** (.320)	-1.874*** (.618)	.388 (.461)	-.186 (.460)	.186 (.460)	.259 (.568)
<i>Res</i>	-.544* (.322)	-1.391** (.542)	.168 (.213)	-.074 (1.050)	-.074 (1.050)	.790 (1.282)
<i>Male*Res</i>	.338 (.401)	1.325** (.637)	-.735 (.452)	-.862 (.628)	-.862 (.628)	-.105 (.777)
<i>Male*PlaceB</i>	642 (.812)	2.309* (1.293)	-1.110 (.804)	-.1772 (1.105)	-1.872* (1.120)	-2.096 (1.542)
<i>Male*PlaceL</i>	-.554 (.422)	.421 (.682)	-.461 (.476)	-.648 (1.107)	-.825 (1.116)	-1.575 (1.541)
<i>PlaceB*Res</i>	2.054* (1.076)	2.054* (1.076)	.279 (1.362)	.033 (1.101)	-.138 (1.116)	-.862 (1.540)
<i>PlaceL*Res</i>	1.321* (.728)	1.321* (.728)	.734 (.802)	-.052 (1.101)	-.138 (1.116)	-.743 (1.513)
<i>Male*Res</i>	-2.983* (1.718)	-2.983* (1.718)	-.047 (1.651)	.177 (1.108)	.007 (1.117)	-.601 (1.540)
<i>Male*Res</i>	-1.579* (.879)	-1.579* (.879)	-.195 (.980)	-.108 (1.108)	-.117 (1.117)	-.720 (1.540)
Log likelihood	-337.1	-332.5	-267.5	-905.8	-902.4	-559.8
LR statistic	55.96***	65.09***	27.90***	45.66***	52.52***	30.63**
McFadden R ²	.077	.089	.050	.024	.028	.027

Note: Values are logistic coefficients (betas). Standard errors are reported in parentheses. Level of significance: * 10%, ** 5%, *** 1%. Ordered logit models also include "Future" and "Background" dummies, which are not significant at the 5% level.

that male respondents in Osnabrück act more in accordance with the equity axiom compared to their female counterparts if responsibility considerations are concerned. This effect considerably differs in Barcelona and Leuven, which can be seen from the 3-way interaction terms.¹⁸ Hence, particularly in situation 1 we receive the more complex result that the influence of responsibility on gender disparities is also driven by the place of the investigation.

Again, we consider extensions of the better off groups in both situations. In contrast to the basic questionnaire, we are now able to use an ordered logit model, since the single crossing assumption seems to be fulfilled, as can be seen from the descriptive data in table 2b. As already explained above, the five meaningful sequences can be ordered with respect to their closeness to the ‘spirit’ of the equity axiom. Thereby, sequence 0000 receives the highest value of ‘5’, while sequence 1111 gets the lowest value, viz. ‘1’. For these two categories we are able to observe probability effects due to changes in the gender dummy from the estimated coefficients in the right half of table 5. But in order to make further statements on the other three sequences we also calculated marginal probabilities, which are summarised in table 6.

The results basically confirm our earlier observations. In the case of the first 2-way interaction models, the negative and significant coefficients for the gender dummy variable in both situations indicate that for the overall sample - comprising all three places - men, compared to women, are more likely to choose in accordance with sequence 1111 in the ‘no responsibility’ version. However, they are less probable to decide in accordance with sequence 0000. Additionally, as before we observe significant gender differences with regard to responsibility considerations in situation 1.

The estimated marginal effects show gender effects to be especially strong for the unconditional support of either alternative x or y in both situations. Furthermore, the probability of observing sequence 0111 also increases by about 4.8% in the first and 3.2% in the second situation if we compare males and females. Moreover, from the estimated marginal effects for the responsibility dummy variable we notice that such considerations have a stronger effect on women in situation 1, compared to situation 2.

In the second 2-way interaction model, we especially control for local differences. From the predicted coefficients of the product terms we see that in situation 1 gender disparities are considerably stronger in Leuven compared to Osnabrück, although we al-

¹⁸For example, in Osnabrück the fulfilment of the equity axiom goes down from 93.5% to 78.5% for women, whereas the corresponding values for men are 78.2% and 76.9%. In contrast, in Leuven these frequencies remain almost the same for females (79.6% versus 79.2%), while the proportion decreases from 60.0% to 50.0% for males.

**Table 6: Responsibility Questionnaires - Ordered Logit Models
Marginal Probabilities of Selected Variables**

Situation	Model	Variable	$\frac{\partial P(z_i=1)}{\partial x_{i, Male}}$	$\frac{\partial Pr(z_i=2)}{\partial x_{i, Male}}$	$\frac{\partial Pr(z_i=3)}{\partial x_{i, Male}}$	$\frac{\partial Pr(z_i=4)}{\partial x_{i, Male}}$	$\frac{\partial Pr(z_i=5)}{\partial x_{i, Male}}$	
Sit. 1:	2-way:	<i>Male</i>	.116	.048	-.002	-.004	-.158	
		<i>Res</i>	.078	.030	-.002	-.003	-.104	
		<i>Male*Res</i>	-.094	-.041	-.003	.003	.135	
	2-way:	<i>Male</i>	.028	.012	-.001	-.001	-.038	
		<i>Place_B</i>	-.092	-.050	-.009	.002	.149	
		<i>Place_L</i>	.053	.021	-.002	-.002	-.069	
		<i>Male*Place_B</i>	.019	.007	-.001	-.001	-.025	
		<i>Male*Place_L</i>	.120	.037	-.013	-.006	-.138	
	3-way:	<i>Male</i>	.100	.041	-.002	-.004	-.136	
		<i>Place_B</i>	-.104	-.059	-.012	.002	.172	
		<i>Place_L</i>	.067	.025	-.003	-.003	-.086	
		<i>Res</i>	.086	.033	-.001	-.003	-.114	
		<i>Male*Res</i>	-.129	-.060	-.010	.002	.196	
	Sit. 2:	2-way:	<i>Male</i>	.107	.032	.027	.002	-.167
			<i>Res</i>	.013	.004	.003	.000	-.020
<i>Male*Res</i>			-.024	-.007	-.006	-.000	.037	
2-way:		<i>Male</i>	.048	.014	.012	.001	-.075	
		<i>Place_B</i>	-.130	-.048	-.057	-.008	.243	
		<i>Place_L</i>	-.017	-.005	-.004	-.000	.026	
		<i>Male*Place_B</i>	.107	.022	.011	-.001	-.139	
		<i>Male*Place_L</i>	.079	.021	.015	.000	-.114	
3-way:		<i>Male</i>	.055	.016	.014	.001	-.086	
		<i>Place_B</i>	-.171	-.063	-.082	-.013	.329	
		<i>Place_L</i>	.005	.001	.001	.000	-.008	
		<i>Res</i>	.016	.004	.004	.000	-.024	
		<i>Male*Res</i>	-.015	-.004	-.004	-.000	.023	

Note: Sums of marginal probabilities in each row do not always equal zero due to rounding.

ready revealed some differences for the German students. From the estimated marginal effects it becomes obvious that there also exist remarkable local differences concerning gender disparities.

Finally, if we include 3-way interaction terms in the regression, we detect gender differences with respect to the consideration of responsibility. But now, there are no significant disparities with respect to this additional aspect observable for the three places.

The results of the responsibility questionnaire have revealed several findings. Firstly, women seem to be much closer to the equity axiom - but also to the ‘spirit’ of the underlying principle, when we enlarge the better off groups. Secondly, in situation 1 these observations are even stronger in Leuven. Thirdly, at least in the first context responsibility considerations display an effect on both sexes in Germany, but only on men in Leuven. Surprisingly, in contrast to their counterparts in the other two countries, male respondents from Osnabrück seem to honour the risk-taking of the para-glider in the first situation. Finally, overall the results also suggest certain context effects.

5.3 Verbal Answers in the Basic Questionnaire

In the final part of this section, we will try to shed some more light on possible decision motives of respondents. In our questionnaires, students should give additional verbal explanations on their choices. Moreover, those students who decided in accordance with the sequence 0000 were also asked whether they would switch towards alternative y if the better off group is further extended.

Thus, we try to examine which arguments are used by theoretically uninformed women and men in order to justify their decisions. Following the reasoning in the introduction, this procedure seems to be appropriate if we want to evoke a reconsideration of theoretical concepts and also to uncover possible sources of gender disparities. Moreover, offering participants the possibility to give additional verbal explanations had two further advantages. Firstly, it seems as if we made students think more deeply about the underlying decision problems in each situation. This can be observed from both the relatively high response rates and the effort many of the participants spent on their verbal answers. Secondly, from several comments after the study we became aware that students were glad about the opportunity to give reasons for their decisions.

Certainly, the analysis and interpretation of verbal answers is afflicted with many problems. Presumably, although it might be unintended, respondents usually neither state all underlying motives nor do all participants reveal their ‘true’ intentions. However, it is also possible that some of them try to disguise their motivations and, instead, attempt to fulfil certain suspected external expectations. But more frequently, it seems as if students do not get their underlying motives straight. This impression basically results from several incoherent comments. Additionally, many arguments of our students are difficult to distinguish; often statements consider only the first or later decisions of a situation or even contain arguments in favour of both alternatives at the same time. Furthermore, it is not straightforward to build more general answer categories from regularly vague verbal comments. Therefore, as table 7 in the appendix shows, more

diverse arguments have been formulated in order to cover the comments more closely. Thereafter, they are further summarised.

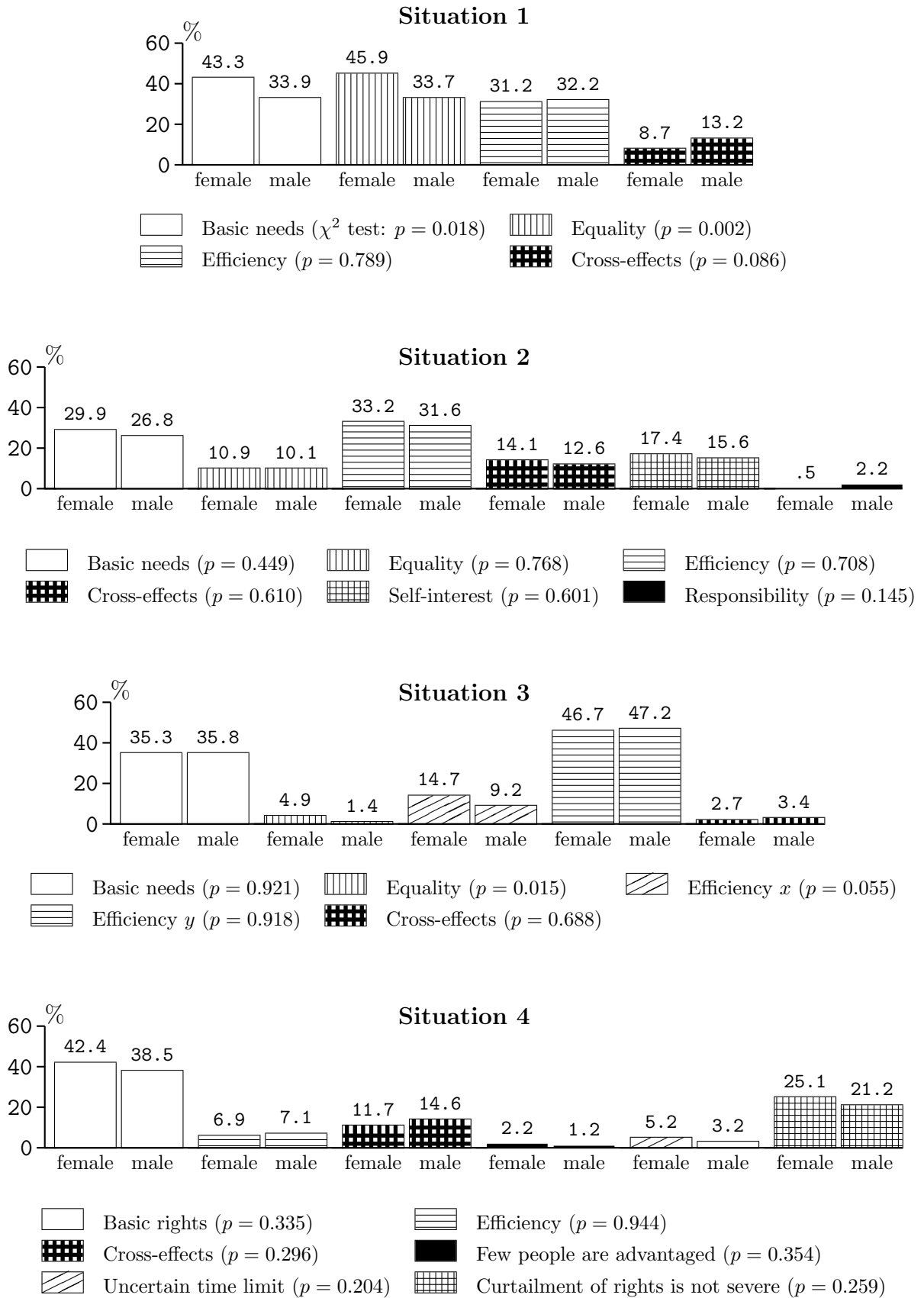
There is no doubt that the categorisation of verbal answers is necessarily subjective and depends on interpretations done by the researcher. Nevertheless, the examination of underlying decision motives clearly goes beyond existing studies and should be seen at least as a supplementing device to better understand observed choices. More precisely, we want to see, which reasons play a role and how often they have been considered. In addition, we are able to investigate whether the rank ordering of possible motivations is similar between women and men; differences in relative frequencies could help to identify typical ‘female’ or ‘male’ answers. On the one hand, we are able to detect reasons for gender differences with respect to distinct decision patterns. On the other hand, it might also be possible that females and males are indeed equally likely to display a certain answer pattern - but for different reasons.

Probably, some general observations are of interest. In all situations men more often refused to give any verbal answer. Moreover, on average women stated 1.41, 1.09, 1.15 and 0.97 different arguments in situations 1 to 4, whereas the respective numbers for men are 1.19, 0.99, 1.05 and 0.89. Hence, it seems as if women tend to give more sophisticated answers while men focus more often on a single reason. Additionally, the context described in situation 3 might have affected female students stronger than males, so that they deal more thoroughly with this choice situation. Overall, it is possible that women are more likely to use any argument, but - as we will see in the following - there also exist ‘male’ motives.

Concerning situation 1, four general categories have been generated (see table 7). In figure 1, the corresponding relative frequencies for women and men are depicted. Additionally, χ^2 tests for 2×2 tables have been employed to evaluate the differences between proportions of these answer categories in both samples. The relevance of basic needs has been mentioned by 43.3% of female respondents but only by 33.9% of male students. This difference is statistically significant. It might also be interesting to consider certain answer classes, which have been distinguished in previous sections. Among those students who fulfilled the equity axiom, 45.8% of the women and 39.3% of the men referred to the importance of basic needs ($p = 0.123$). The corresponding values for participants acting in accordance to sequence 0000 are 63.1% and 58.8% ($p = 0.435$). Obviously, for these groups gender differences are not remarkable.

In general, women are also considerably more likely to state equality reasons. These remarkable gender differences can also be found among those who answered in accordance with sequence 0000 (72.1% of the females but only 57.3% of the males mention

Figure 1: Verbal answers in the basic questionnaire



equality arguments) and to the fulfilment of the equity axiom (49.1% of women and 39.0% of men). Furthermore, with respect to the three single arguments summarised in this category, we find that especially the better situation of the intelligent children is significantly more often mentioned by females. Thus, equality considerations seem to be a typical ‘female’ motive in the given context.

Next, different efficiency arguments are summarised. Although men somewhat more often use these reasons, no gender differences can be observed even if we take into account single answer classes like the sequence 1111. The hope for ‘cross-effects’ is more frequently expressed by male respondents ($p=0.086$). Such arguments clearly reflect the wish to help both groups.

Obviously, gender differences concerning the stated motivations are apparent, with females considering basic needs and especially equality arguments more frequently than their male counterparts. The four general answer categories in situation 1 are also of relevance in the other three contexts. In situation 2, basic needs and efficiency arguments are again important for women and men, whereas the first motive is less often mentioned compared to situation 1. A similar decline is even more apparent for equality arguments, while the proportion of ‘cross-effect’ motivations are almost the same. In general, no gender differences can be detected in the second situation. This observation also holds for two additional context specific motives. Neither arguments driven by self-interest, which pronounce the possible support for the home country of the respondents, nor responsibility considerations show any gender disparities. With respect to the similarities previously found for this situation, these results are not surprising.

In situation 3, there are two prominent motives, which, however, do not display gender disparities: Basic needs have been mentioned by about one third of both groups. Furthermore, the higher efficiency level of alternative y is admitted by almost 50% of the respondents. Nevertheless, a new efficiency argument in favour of alternative x has been used by some students in this situation. They reason that the utility gain for kidney patients is higher, and also question the necessity and usefulness of vitamins. Interestingly, 14% of the women but only 9.2% of the men adopted this reason ($p = 0.055$). Moreover, considering only those students, who decided in accordance with the sequence 0000, we find that 31.7% of the females but 20.0% of the males ($p=0.045$) ascribed a higher marginal utility to alternative x . Similar results can be found for the group of students who fulfilled the equity axiom. Hence, although at a low level, female students more frequently doubted the usefulness of vitamins for pregnant women. Surprisingly, relatively more females than males argued in terms of

equality motives and noted that pregnant women are already better off. Nevertheless, the corresponding frequencies are rather small.

As we said before, situation 4 somewhat differs from the other three situations. Here, basic rights are considered and, moreover, procedural aspects are incorporated. This contextual change is also reflected by a variety of new arguments. Nevertheless, the importance of basic human rights clearly constitutes the most prominent reason for students, who supported alternative x , while the severeness of the described curtailment of these rights has been played down by those students, who instead decided in favour of alternative y . All other motives are of no greater importance, although again certain shares of the two groups wanted to reach both targets at the same time. Surprisingly, there are no gender differences observable, although we found men to fulfil the equity axiom considerably less frequently in previous subsections. One reason for this apparent contradiction might be that men more often abstained from giving verbal comments in this situation. Maybe they thought that their distributive principles were already clear from their earlier answers.

Finally, students were also asked whether they would switch from alternative x towards alternative y later on if they had so far decided in favour of the worst off individual(s). We found an almost equally high proportion of respondents in both groups, who also denied a later reconsideration of their initial choice. Usually, the relative frequency was well above 85%. These results confirm earlier observations saying that an unconditional support for alternative x is equally popular among both sexes.

Certainly, as explained at the beginning, the examination of verbal answers is afflicted with many problems. Thus, the present study only allows for limited insights into distinct decision motives. However, if we want to understand the motivation of women and men and, thereby, expose possible reasons for observed gender differences, we have to dispose any available information. In the following section, I will discuss some of our findings and relate them to existing literature.

6 Conclusion

Our starting point were findings from surveys on macro-justice and benevolent dictator experiments, which revealed gender differences with regard to the trade-off between the principles of efficiency and equality, but also with respect to the consideration of basic needs. In many of our hypothetical situations in both considered investigations, female respondents fulfil the equity axiom significantly more often than males. This observation could also be related to the mentioned experimental findings that women act

more socially oriented when no risk for the decision maker is involved. But what makes them choosing more in accordance with the equity axiom? One possible explanation stems from the psychological literature. Females are said to be better able to take on the perspective of others and, thereby, exhibit effective empathy. According to Eisenberg and Lennon (1983), this plays an essential role in social and moral life. Also, Gilligan's (1982) claim that women more often follow a care perspective, while men tend to adopt a justice perspective more frequently, may be of importance for our observations. However, the underlying reason for such behaviour is not obvious. Eagly (1995) reports that in the psychological 'social role theory' it is assumed that women are expected - and expect themselves - to behave warm and friendly. Certainly, such stereotypes may also be of relevance in the current survey. Interestingly, especially in our first context women were more likely to mention both basic needs and equality arguments. Hence, underlying reasons seem to be interdependent and, therefore, rather complex.

Next, we successively enlarged the better off groups. Certainly, higher relative frequencies of the sequence 1111 for males in all situations can be ascribed to differences with respect to the fulfilment of the equity axiom. However, in each situation of the basic questionnaire the proportion of those students, who unconditionally support alternative x , is astonishingly similar between women and men. In contrast, in the 'no responsibility' version of the second sample, where we also include respondents from other countries, men, compared to women, are remarkably less likely to act in accordance with sequence 0000. Furthermore, at least in situations 1 and 4 of the basic questionnaire, but also in the two responsibility cases, women seem to be more likely to revise their initial decision in favour of the least advantaged individuals. Hence, overall men more frequently support the better off person right from beginning, whereas women turn to alternative y if the better off groups are enlarged. But what changes when the number of better off individuals is raised? One possible interpretation is that opportunity costs increase. Thereby, it becomes more and more expensive to support the least advantaged individuals in the way that our students simultaneously have to reject the help for an increasing number of persons. Women seem to be more effected by this expansion. This observation especially contradicts findings by Andreoni and Vesterlund (2001). They conclude from their dictator experiment that women are more altruistic than men if giving is more expensive.

Another observation is also remarkable. In two out of four contexts in the basic questionnaire, we could identify only minor gender disparities. As argued already above, the hypothetical situations may have provoked different degrees of identification or, more indirectly, self-projection between both sexes. While situations 1 and 4 can be

interpreted as being rather far away from the lives of our students, situation 2 creates a context, in which the respondents are assumed to belong to the group of beneficiaries of alternative y . Moreover, situation 3 could be interpreted as being less gender-neutral, since female probands probably identify more with the hypothetical group of pregnant women. Yet, we know from several studies in experimental economics that such identification even with a hypothetical group confound decisions, while e.g. Dickinson and Tiefenthaler (2002) detect remarkable gender differences in an explicitly abstract setting. Surprisingly, more women than men argued that pregnant women are better off, but clearly, females are more likely to opt for alternative y than in situations 1 and 4. Obviously, in our basic questionnaire disparities between women and men disappear in these more neutral contexts.

However, we find stronger gender differences in situations 1 and 2 of the responsibility questionnaires - at least if we regard the overall sample. Are students in Leuven and Barcelona not as strongly concerned by the described environmental programs in their home countries as their German counterparts? We do not know, but it seems to be more likely that in our investigation some gender differences also depend on the place of the investigation.

In connection with context effects, observations by Croson and Gneezy (2004) are of interest. They confirm Gilligan's (1982) suggestion of men deciding less context-specific than women, but more in compliance with abstract rules. They argue that females - in contrast to males - derive distinct 'social clues' even from small differences in the experimental setting and react more strongly to them. Initially, the presented questionnaires were not intended to test for gender differences and, therefore, did not conduct any systematic variations in the hypothetical context. Nevertheless, if Gilligan's claim is right, we would expect women to regard each situation separately, whereas men try to uncover a common structure of the different considered contexts and probably decide more similarly between the situations. Thus, we compared individual answer patterns between different situations and found that in situations 1, 2 and 3 men significantly more often choose similar decision patterns.¹⁹ This observation is probably also substantiated by the lower number of different arguments used by male respondents. They may have assumed that their earlier verbal statements apply to all situations.








¹⁹Simple t-tests have been performed to find evidence against the hypothesis H_0 that women and men are equally likely to display completely identical answer patterns in respective situations. No gender differences are observable in comparisons with situation 4. One reason might be that two additional situations between the third and fourth context have been used - but not presented - in order to test for consistency of answers. This could have disturbed overall decision patterns.

Our findings on responsibility considerations are more complex. On the one hand, according to Croson and Gneezy (2004) women are said to be more risk-averse than men. On the other hand, we created situations, in which the aspects of needs and responsibility are opposed. Obviously, some of our male students from Osnabrück ‘honoured’ the risk-taking in situation 1, while more female respondents had their reservations about this and ‘punished’ this behaviour. The latter observation could be related to findings by Eckel and Grossman (1996). According to them, women are more likely to punish unfair behaviour at least if corresponding costs are low. Hence, in our study gender differences decrease. However, especially in Leuven initial gender disparities with respect to the equality-efficiency trade-off are not affected and, thus, confirm findings by Michelbach et al. (2003). As already discussed above, the evaluations of responsibility aspects in situation 2 do not significantly differ between women and men. This is in line with results of Gaertner and Schwettmann (2007) who argue that responsibility concerns at large scale are rarely considered.









Finally, in the case of the basic questionnaire the incorporation of additional individual attributes shows that the age of a proband displays a remarkable influence on gender differences. Younger women are more likely to fulfil the equity axiom in all situations compared to men of the same age - but also in relation to older women. Yet, these disparities decline if respondents grow older. One possible explanation comes from Gilligan’s (1982) suggestion of different stages of moral development, which has been described in the introduction.

The present study regards a well established equity axiom and, therefore, is theoretically grounded. Thereby, similarities - but more often disparities - between women and men have been discovered. They seem to depend on the degree of identification with hypothetical groups, the age of the respondent, and the consideration of responsibility aspects, whose concrete influence depends in turn on the place of the investigation. Certainly, it is rather speculative to give deeper reasons for the occurrence of such differences even if verbal comments are available. Obviously, findings from the domains of psychology and sociology could help economic researchers interpreting empirical results. An interdisciplinary perspective may be a promising way to better understand gender differences with respect to social and economic behaviours. Clearly, we only considered a very limited extract of distributive justice, which needs to be extended by future work; and of course, we are far away from separating female and male justice theories. Nevertheless, apparently there are some indications for gender-specific justice concepts. Hence, to pick up Schokkaert’s notion, Mrs. Fairmind may exist, but she does not always disagree with her husband.







APPENDIX: Table 7 - Coding of Verbal Answers

General category	Single arguments	Some typical comments
Situation 1		
Basic needs 	(1) Basic needs	“The disabled person depends on help”, “it is a question of human dignity”.
Equality 	(2) Intelligent children are advantaged anyway (3) Improving opportunities of the handicapped person	“Intelligent people are able to help themselves”, “there exists already enough help for the intelligent in our society”. “Equalising opportunities”, “help for the weaker person”, “integration of disabled”, “reduction of disadvantages”.
Efficiency 	(4) Higher number of benefiting people (5) Higher utility gain for society from education (6) Higher marginal utility for intelligent children	“2 persons are more than one person”, “one single person should not blockade many others”. “common welfare will be increased”, “investing into the future of the country”. “The high potential of children should be considered”, “children will gain more“, “help for handicapped person is useless and a waste of money”.
Cross-effects 	(7) Talented children may help the handicapped person	“Higher taxes of intelligent people may finance the care for disabled”, “the intelligent can do research and thereby help the handicapped”.
Situation 2		
Basic needs 	(1) Basic needs	“Hunger threatens lives”, “hunger is the more urgent problem”.
Equality 	(2) Environmental problems are less important (3) Improving opportunities for Africans	“Environment protection is luxury”, “Africans can do more with the money”, “there is already enough environment protection in Germany”. “Equalising life conditions”, “Africans are least advantaged in the world”, “global injustice”.
Efficiency 	(4) Higher marginal utility for Germany (5) Success in Africa is unclear	“Aid for Africa only helps for a short time and is a drop in the ocean”, “environmental programs concern our future”, “more sustainable help would be necessary”. “Success of project against hunger is uncertain, but the utility gain for Germany is certain”.

Continuation: Coding of Verbal Answers

General category	Single arguments	Some typical comments
Cross-effects 	(6) Aid for Africa also helps Germany	“Help for Africa also helps us because our companies receive more orders”.
	(7) Programs in Germany also help Africa	“Environmental problems are global problems”.
Self-interest 	(8) Self-interest	“Own problems should be solved, first”, “Germany is also in a bad condition”, “hunger is a global problem, which can’t be solved by one country”.
Responsibility 	(9) Germans are responsible for pollution	“Pollution is caused by Germans”, “polluters should carry the costs”.
Situation 3		
Basic needs 	(1) Basic needs	“Kidney patients are in a life-threatening state, they die without help”.
Equality 	(2) Pregnant women are better off	“Pregnant women are already better off”.
	(3) Equalising quality of life	“Kidney patients should also enjoy a reasonable quality of life”.
Efficiency x 	(4) Higher utility gain for kidney patients	“Vitamins do not have any effect”, “dialysis machines have a long-term benefit”.
	(5) Substitutes	“Other sources of vitamins are available”.
Efficiency y 	(6) Higher number of benefiting people	“We should help the bigger group”, “there are more and more important groups”.
	(7) Higher utility gain for society from y	“the benefiting groups are more important for the country”.
	(8) Higher marginal utility for women and children	“Help for children is long-lasting, kidney patients will go on suffering”, “children are important, the future is theirs”.
Cross-effects 	(9) Buying vitamins can help kidney patients	“Good health leads to economic growth, which also helps kidney patients”.

Continuation: Coding of Verbal Answers

General category	Single arguments	Some typical comments
Situation 4		
Basic rights 	(1) Absolute priority to human rights (2) No new dictatorship	“Human rights are always most important”, “human rights are necessary for a democracy”, “economic recovery is valueless without freedom”. “People fought for these rights”, “these rights have been promised to the people”, “the curtailment of these rights is a new dictatorship”.
Efficiency 	(3) Higher number of benefiting people	“The welfare of more people is more important”, “at some point, almost all people gain from the economic program”.
Cross-effects 	(4) Human rights bring about economic recovery (5) Economic recovery brings about human rights	“First human rights and then economic recovery”, “people are willing to work harder if they enjoy freedom”. “From a secure existence human rights will follow automatically”.
Few people advantaged 	(6) Few people are better off at the expense of others	“We should not support the enrichment of few groups at the expense of other people”, “the benefiting groups are already better off”.
Uncertain time limit 	(7) Time limit is uncertain	“The temporal limitation of the curtailment is not clear enough”.
Curtailment of rights is not severe 	(8) Curtailment of human rights is limited and not severe	“The limitations are not that severe”, “they are temporally limited”, “the concerned rights are not important”.

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