



## Differential calculus: the impact of group norms, social values and identity on altruism\*

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### Abstract

In this study, we played the dictator game with more than 1,200 nursing students and economics students in three low- and middle-income countries: Kenya, South Africa and Thailand. We found significant differences in altruistic behaviours between subject pools, with nursing students being more altruistic dictators than economics students, and systematic differences across countries. Dictators' generosity increased with the perceived deservingness of the recipient, but the sense of moral obligation varied across subject pools in unexpected ways. Our results caution against generalising experimental results based on standard subject pools, and originating from specific contexts.

**JEL classification:** C91 - Laboratory, Individual Behavior; D64 – Altruism

**Keywords:** Dictator Game; cross-country experiment; social norms

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## **Differential calculus: the impact of group norms, social values and identity on altruism**

### **1. Introduction**

Building upon a large body of experimental evidence contradicting the traditional paradigm of a self-interested *homo economicus*, economists have recently constructed parsimonious models of economic behaviours taking into account such 'non-standard' motives. These include models of inequality aversion (Fehr and Schmidt, 1999, Bolton and Ockenfels, 2000), pure altruism (Andreoni and Miller, 2002), social welfare preferences (Charness and Rabin, 2002) and reputational effects (Bénabou and Tirole, 2006). This theoretical literature on pro-social behaviour complements and formalises the views expressed by several prominent economists who have emphasised over many years that a concern for others is quite common (Smith, 1759, Becker, 1974, Samuelson, 1993). Recognising that altruistic considerations can influence economic decision-making has not been uncommon in the health economics literature, in particular in models of physician agency (McGuire, 2000) where physicians' objective functions have typically included the quality or quantity of health care received by the patient, or patient utility directly, in addition to their own monetary gains.

Akerlof and Kranton have provided a broader framework explaining how individuals within a particular social context or work environment increase their utility when they perform actions that comply with the norms that form their identity (Akerlof and Kranton, 2000, Akerlof and Kranton, 2005). A professional identity can set norms dictating the appropriate proportion of time and effort to allocate to one's work, but also influence other attitudes, decisions and behaviours. In the case of health care professionals, identity can prescribe that nurses or doctors should always act in the interest of the patient first, even if that means compromising one's own interests.

A large body of laboratory-based experimental evidence has identified the existence of altruism in individual decisions (Camerer, 2003). Most of this evidence comes from the dictator game (DG), a simple game where participants are given an endowment to split between themselves and someone else (Forsythe et al., 1994). The DG is typically played anonymously, meaning that

subjects never learn the identity of the sender (or receiver) with whom they are matched. This game has been presented as a good tool to measure altruism, since if a dictator was a self-interested money-maximizer, she would clearly allocate nothing to the other player as her decision in the DG is not influenced by strategic or reputational concerns. In fact, a large proportion of participants in the DG freely choose to allocate some of their money to anonymous recipients, even though no mechanisms induce them to act as such (Camerer, 2003).

Empirical evidence of altruism is important, because it could explain important aspects of individual decisions and human cooperation. However questions have emerged as to whether the experimental evidence can be generalised outside the study group and how non-selfish behaviours in the DG should be interpreted.

Some criticisms are linked to the fact that the vast majority of experimental evidence has come from studies conducted in the experimental laboratories of universities in high-income countries, mainly with economics or business students being used as participants. This suggests at least several potential problems. For one thing, the standard pool of participants in these experiments may suffer from selection bias (Levitt and List, 2007) and do not represent the altruism of other groups. Economics students are often aware of the discipline (and therefore of the presence of monetary stakes), but they also constitute a population of well-educated volunteers, whose characteristics and behaviours may systematically differ from those of the general population (Fehr and List, 2004, List, 2005). It is also possible that economics students' behaviours in games are driven by specific shared values or norms. A few studies have shown that results from the DG obtained from groups of participants taken from the general population were quite different (Carpenter et al., 2008). Finally, it is unclear if playing the DG with other groups, such as the clergy or health professionals, who are thought to share certain values or norms, would produce systematically different results from those obtained with economics students.

Second, most of the empirical evidence from the DG may be the product of particular cultural or social norms emanating from high-income countries. A few studies have used dictator games in

developing countries<sup>1</sup>, but only one seminal study implemented in 15 small remote societies sought to compare results across countries, and explore the role of local internalised norms in shaping pro-social behaviours (Henrich et al., 2004).

Another area of criticism in the dictator game literature relates to uncertainty about how the results from DGs should be interpreted. Various interpretations have been given to explain why respondents in DGs deviate from utility-maximising behaviour in the absence of clear inducements to do so. One explanation of the non-selfish behaviour is that dictator game results are an “*artefact of behavioural experimentation*” (Bardsley, 2008, Levitt and List, 2007), with participants only responding to the experimental cues and setting provided by the experimenter. Other studies suggest that the decision to allocate money in the DG relates to “*an expectations phenomenon*”, reflecting adherence to social norms (Boyd and Richerson, 1992), rather than “*an autonomous private preference for equity*” (Hoffman et al., 1996). Finally, some have recently argued that what motivates dictators is a sense of moral obligation (Bolton et al., 1998), a desire to demonstrate kindness, motivated by the moral distance that separates them from the recipients. For instance, Carpenter et al. (2008) underline that more generous behaviours are often associated with a greater degree of “deservingness” of recipients; behaviours observed in the DG reveal their relative adherence to a social norm, which in turn conveys a sense of moral obligation towards the recipients. While appealing, these explanations all try to achieve a generalisable truth that somehow ignores the potential complexity of these notions. In particular, experimental economic studies still need to investigate the extent to which altruistic behaviour is mitigated by individual characteristics and group norms.

This paper therefore attempts to examine inter-cultural variation of pro-social behaviour in a rigorous manner by analysing the giving decisions made by individuals belonging to distinct groups, in different local contexts, towards various types of recipients. More precisely, in this

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<sup>1</sup> See for example Carter and Castillo (2003), Van der Merwe and Burns (2008) and Gowdy et al. (2003).

study, we played a non-standard version of the DG with an unusually large sample of over 1,200 participants, some nursing and some economics students, recruited in three developing countries: Kenya, South Africa and Thailand. Furthermore the protocol of the study allowed us to observe the allocation decisions made by participations in three different DGs where they were paired with recipients who differed in their perceived 'deservingness'. Such framings have been used in a few studies to allow moral motivations to play a prominent role in the decisions (Eckel and Grossman, 1996, Branas-Garza, 2006, Carpenter et al., 2008).

Our results build on previous empirical work in a number of ways. First, controlling for important potential confounding factors (such as age and gender) we show that there are significant differences in altruistic behaviours between subject pools, with nursing students being more altruistic dictators than economics students. Second, we find systematic differences across countries, suggesting that local culture and norms affect individual behaviours. Finally, while we found that the generosity of dictators increased with the perceived 'deservingness' of the recipient, the sense of moral obligation varied unexpectedly across subject pools, with nursing students being less altruistic than economics students towards patients. Our results caution against generalising experimental results based on standard subject pools, originating from specific contexts. They also underline the importance of cultural and professional norms in shaping simple economic decisions.

The rest of the paper is organized as follows. Section 2 details the hypotheses that we set out to test. Section 3 reports the design and experimental procedures. Section 4 reports the results of the study, while the final section discusses the results and concludes.

## **2. Hypotheses**

In a unique cross-country study with economic and nursing students in three developing countries (Thailand, Kenya and South Africa), we asked individuals to participate in three DGs, where the identity of the recipient was different each time. In the first DG, dictators were asked to split their

money with fellow students; in the second they were matched with patients, and in the third they were matched with poor people. This study design allowed us to investigate four hypotheses relating to the existence and understanding of altruistic motives.

### 2.1. *Altruism and Subject Pool*

A growing number of “*artefactual field experiments*”, where non-standard subjects have taken part in typical laboratory experiments, been carried out to inform the external validity of behavioural experiments (Cardenas and Carpenter, 2008). In many of these studies, the subjects have shown stronger social preferences, leading researchers to conclude that, if anything, experiments with standard subject pools under-estimate the importance of social preferences. For example, in a study contrasting the giving behaviours of students and members of the community, Carpenter et al. (2008) found that students donated 17% less to the charity. More recently, the results of a trust game played with the general population and a standard group of economics students showed a greater level of reciprocity from the first group (Falk et al., 2011).

*H1: nursing students are more altruistic than economics students.*

In this present study, the design allowed us to compare the decisions made in a DG by economics students to those made by nursing students in three different countries. We anticipated that nursing students would likely be more altruistic overall than economics students. Indeed, we hypothesize that there is a nursing “identity” (Akerlof and Kranton, 2000) that generates an altruistic attitude towards others that is externalised by nurses in their decisions. The existence of such identity constructs is supported by the nursing literature which has described the existence and role of a set of positive professional and moral values shared by nurses (Shaw and Degazon, 2008). We assumed here that this identity is already shaped before the nurses enter into the professional world, through the self-selection of nursing students who choose this vocation because they want to “help others” (Prater and McEwen, 2006, Miers et al., 2007, Mkhize and Nzimande, 2007), and because it is transmitted to nursing students through their curriculum and through early professional exposures during training.

## 2.2. *Altruism and Cultural Norms*

The initial focus of economic experiments in wealthy countries has raised questions about generalising results from one specific national context to another, where beliefs and societal norms might be different. In the seminal study looking at social preferences across very different remote small societies (Henrich et al., 2004, Henrich et al., 2001), economists and anthropologists have shown how locally internalised norms influence other-regarding preferences. However, it is unclear whether the dramatic differences they observed derived from the particularities of the rather extreme micro-societies chosen by the researchers in this study, or whether such variations could be identified at a more macro level, generated by national norms.

Only a few studies have tried to carry out the same experiments in different countries with similar population groups. One of the few examples is a study done by Roth et al. (1991), which proposed that the significant differences found between subjects' responses in an ultimatum game played in Tokyo, Pittsburgh, and Jerusalem could best be explained as "cultural differences". Their design carefully controlled for possible design-related confounding factors (such as stake size, procedural variations or translation differences).

In this study, we test the extent to which national norms have an impact on altruism as measured by the decisions of economics and nursing students in a DG played in three developing countries: Kenya, Thailand and South Africa. While university students from these three countries probably have more in common with each other than remote indigenous societies in the Andes and in the Pacific islands (Henrich et al., 2006), they undoubtedly live in societies shaped by different social, economic and political dynamics and values. Thailand and South Africa are comparable middle-income economies, whereas the population in Kenya enjoys relatively less wealth<sup>2</sup>. Whilst the Thai society is often depicted as placing a lot of importance on harmony among members of the group to which they belong (Komin, 1990), social and political tensions are strong in Kenya, as shown in the post-election violence of 2007-2008, and in South Africa, where the heritage of

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<sup>2</sup> According to the International Monetary Fund, in 2010 the GDP/capita adjusted for purchasing power parity was USD 9,187 in Thailand, USD 10,498 in South Africa and USD 1,662 in Kenya.

Apartheid is still, to a certain extent, shaping individual behaviours (Van der Merwe and Burns, 2008).

*H2: Thai subjects are more altruistic than Kenyan or South African subjects.*

Our hypothesis is that if altruistic decisions are indeed shaped by societal norms there should be a significant difference in responses across the three countries. In particular, we expect South African and Kenyan students to be less generous than their Thai counterparts.

### 2.3. *Altruism, Moral Obligation and Group Norms*

A number of studies that have purposefully not used the usual neutral and anonymous instructions have found more positive results in terms of altruism. This literature includes the seminal paper by Eckel and Grossman (1996), who found that dictators were more generous when the recipient was the American Red Cross than an anonymous one. Another example is the experiment carried out by Branas-Garza (2006) where participants were told that their donations would buy medicines for developing countries; 74.6% of them gave away everything, while only 3% kept all for themselves (Branas-Garza, 2006). The idea behind this is that the information provided to the dictators creates a moral context that motivates other-regarding behaviour.

In this study, we test the extent to which decisions in the DG are driven by the '*moral distance*' between dictators and recipients (Aguar et al., 2008). All participants played the role of dictators and were matched with three different recipients: another student, a patient, and a poor person. The first DG was played to conform to the traditional neutral and anonymous beneficiary used in most similar experiments. It also provides a baseline that controls for variability in altruistic motives as a consequence of the manipulation of key factors (Camerer, 2003). By contrast, in the last two DG, the recipients were purposefully chosen to appear more deserving and elicit more generosity from dictators, although in different ways. Patients can be perceived as being in a vulnerable and difficult situation, while describing the recipients as "poor" underlines their financial needs, which is susceptible to generating greater gifts.

*H3: Donations are greater towards the poor and the patient recipients.*



Whilst we expect that the sense of moral obligation towards the poor and patient recipients will be greater than that towards the fellow student (translating into more generous donations), the relative 'deservingness' of the poor and the patient is less clear. In fact, there are reasons to believe that the sense of moral obligation will be affected by group norms. The values nurtured by the professional identity of health care professionals are likely to prescribe that they should act in the interest of patients first. Therefore, one could expect them to have a more generous attitude towards patients than other groups of the population, and in this instance more than economics students. We test the existence of such norms and attitudes towards patients (as opposed to others) by comparing results obtained for different identities of the recipients in the DG played.

Thus, we postulate that pro-social behaviours are not only dependent on the identity of the individuals involved in an interactions (i.e. who is the recipient), but that they are also influenced by internalised social norms, that can emanate from professional values or national norms.

*H4: The greater donations towards the poor and the patient recipients will vary across subject groups.*

### 3. Experimental design and procedures

#### 3.1. *Experimental Design*

The experiment was played in South Africa, Thailand and Kenya, with two different population groups: final year nursing students and third-year undergraduate economic students.

A total of 1,064 nursing students participated in the experiment: 377 from eight nurse training institutions in South Africa; 342 from three training institutions in Kenya; 345 nursing students from four nursing colleges in Thailand. The data collection period spanned from April 2007 to July 2008.

In 2009, we organised additional data collection in the three countries and recruited 237 economic students: 55 students from two universities in Johannesburg, South Africa; 55 from the University of Nairobi, Kenya; and 127 economics students from Kohn Kaen University, Thailand. None of these students (who were all in their third year) had previous exposure to game theory, behavioural or experimental economics.

#### 3.2. *Three Sequential Dictator Games*

In our experiment, subjects were free to choose one of eleven possible ways to split the initial amount of money. The maximum payoff was chosen with reference to the daily starting wage of a nurse in each country: R100 in South Africa (approximately £6.6 at that time), B200 in Thailand (£3.1), and KSh200 in Kenya (£1.6). The stakes were kept the same for economic students.

Adopting a similar approach to Brands et al. (2006) and Goeree, McConnell et al. (forthcoming), in our design all subjects made the three allocation decisions, but only one was paid, after it was chosen randomly<sup>3</sup>. This meant that each participant had to decide *a priori* the allocation that they would make if paired with each of three different recipients, but they were aware that only one of

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<sup>3</sup> This method presents several advantages: it produces several individual measures, minimizes the cost and length of the experimental session, and decreases the risk of contamination that could occur with several games leading to several payoffs.

these decisions would be randomly selected at the end of the session to determine their payments.

In the first allocation decision, dictators had to split the money between themselves and a fellow student. In the second DG, they were paired with a patient, and in the third one, they had to split the money with a poor person. No further details were given about the exact characteristics of the recipients. For example, we did not provide specific information about what was meant by a poor person.

### 3.3. *Experimental Procedures*

On the day of the study, all participants were gathered in one classroom in each of the data collection sites. In order to ensure anonymity between study participants, they were asked to sit at pre-determined desks sufficiently separated from each other. Each student was allocated a study number according to where they were seated.

Because the tools were used in three different countries and two languages (English and Thai), an effort was made to phrase instructions in English that ensured a straightforward translation. As in another cross-country study of bargaining experiments (Roth et al., 1991), this led to less abstract and technical terms than has typically been used in standard experiments played in developed countries in university laboratories. Instructions were also phrased as neutrally as possible, as the use of language has been shown to be important (Kahneman et al., 1986, Forsythe et al., 1994). In particular, the word 'experiment' or 'game' was never used to avoid the behavioural biases noted by Frohlich et al. who pointed out that if participants to the DG viewed it as a game, their main motivation would then be to earn money (Frohlich et al., 2001).

Instructions were read out by the experimenter, who followed a detailed script (see Appendix A). Subjects were allowed to raise their hands to ask questions during the instructions phase or afterwards, but were informed that they would be answered privately.

The experimenter explained that the recipient could be any one of three different persons (another student, a patient or a poor person) who would be paid later and would not know

anything about the origin of the money. Participants were also told that although their responses were recorded for the three possible recipients, the payment would be made to only one of them, as determined by a random drawing at the end of the experiment. Envelopes that contained a decision sheet were handed out (see Appendix B), so that each participant could record her allocation decision for each of the three recipients. At the end of the game, experimenters collected the individual response sheet that had been placed back in the envelope.

While study participants were busy completing another survey, the response sheets were passed on to a researcher sitting in separate room, who calculated individual gains and put them in a sealed envelope only identified by each participant's study number. That envelope was distributed to each participant, sitting at their desk, at the end of the session.

The recipients received the money at a later date in the form of additional contribution to scholarships for students, money received from a charity for poor populations and patients. The recipients were not aware that the money received had been given by participants in our games.

#### **4. Results**

##### *4.1. Are Nursing Students More Altruistic Than Economics Students?*

Table 1 provides a summary of the decisions made by nursing and economics students in the three dictator games, in each country.

In all three countries economics students seem less generous than nursing students towards the other student and the poor person. As illustrated in Figure 1, this is particularly striking in the classic setting of the DG where the recipient is another student. Indeed, in the three countries the game theoretic prediction of giving nothing is seen more frequently amongst economics students (36.2% of participants in Thailand, 27.3% in Kenya and 40.0% in South Africa), than it is for nursing students (13.5% in Thailand, 13.0% in Kenya and 48.5% in South Africa). A Kolmogorov-

Smirnov test<sup>4</sup> comparing the distribution of donations made by the two subject pools rejects the null hypothesis of equality of distributions at the 0.1% level for the DGs with the student and poor recipients.

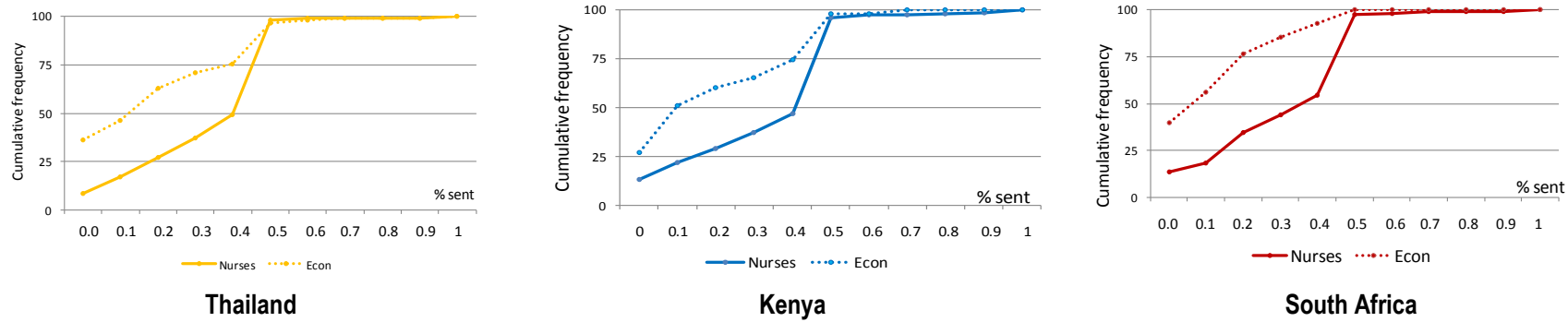
**Table 1: Basic descriptive statistics of the donation allocated by dictators to the different recipients**

	Thailand		Kenya		South Africa	
	Nursing N=342	Econ N=127	Nursing N=345	Econ N=55	Nursing N=377	Econ N=55
<b>Student recipient</b>						
<b>Average donation</b>	0.36 (0.010)	0.21 (0.019)	0.36 (0.011)	0.22 (0.028)	0.34 (0.010)	0.15 (0.022)
<b>% who shared nothing</b>	13.5	36.2	13.0	27.3	8.5	40.0
<b>% who shared 50%</b>	42.7	21.3	49.3	23.6	49.1	7.3
<b>Patient recipient</b>						
<b>Average donation</b>	0.47 (0.011)	0.48 (0.021)	0.46 (0.013)	0.46 (0.029)	0.38 (0.011)	0.39 (0.028)
<b>% who shared nothing</b>	4.0	2.4	5.5	5.5	1.2	7.3
<b>% who shared 50%</b>	22.1	26.8	24.1	36.4	29.5	16.4
<b>Poor recipient</b>						
<b>Average donation</b>	0.54 (0.012)	0.39 (0.020)	0.53 (0.015)	0.44 (0.030)	0.53 (0.013)	0.43 (0.034)
<b>% who shared nothing</b>	1.3	3.9	2.6	3.6	0.9	1.8
<b>% who shared 50%</b>	26.9	17.3	24.6	29.1	21.9	20.0

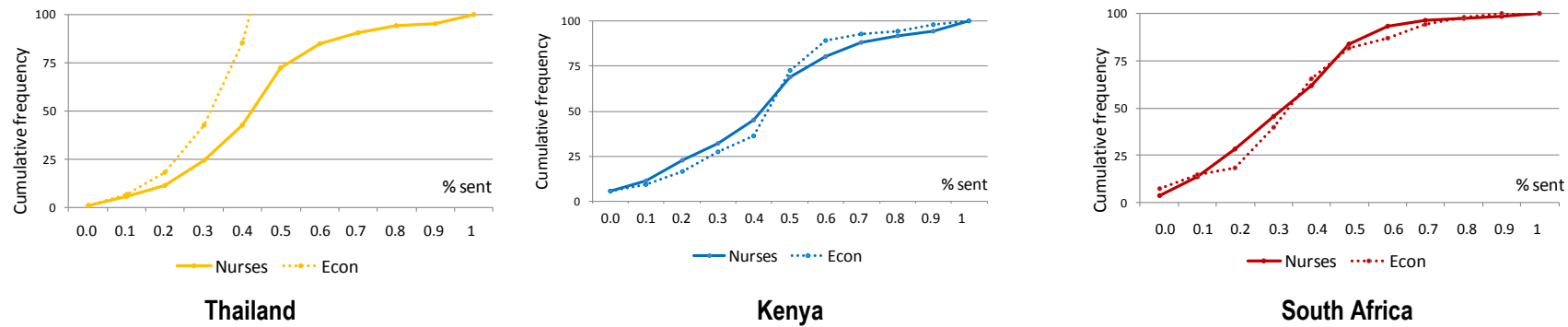
Note: standard deviation in parenthesis

<sup>4</sup> This test compares the overall distributional characteristics of two data sets, rather than just their central tendencies (as does a two-sample t test).

**Fig. 1:** Cumulative distribution of donations made to another student by economics and nursing students in Thailand, Kenya and South Africa



**Fig. 2:** Cumulative distribution of donations made to a patient by economics and nursing students in Thailand, Kenya and South Africa



By contrast, the difference in behaviours between the two populations is less obvious when it comes to allocating money to patients, as shown in Figure 2. Formally, we could not reject the null hypothesis of equality of mean donations ( $p=0.204$ ) or equality of distributions of decisions ( $p=0.574$ ) made by the two groups across the three countries.

**Table 2: The determinants of donations in dictator games**

	(1)	(2)
Constant	0.242*** (0.015)	0.249*** (0.034)
South Africa	-0.046*** (0.014)	-0.072*** (0.015)
Kenya	-0.009 (0.014)	-0.032* (0.016)
Patient recipient	0.130*** (0.007)	0.130*** (0.007)
Poor recipient	0.208*** (0.007)	0.209*** (0.007)
Nursing student	0.105*** (0.015)	0.069*** (0.016)
Male		-0.044** (0.015)
Single		-0.033* (0.017)
Age		0.003** (0.001)
Observations	3,903	3,900
Log-likelihood	-298.2	-278.0
Chi <sup>2</sup>	903.1***	943.8***

Standard errors in parentheses. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$

However, this basic analysis does not control for the potential serial correlation existing in the three consecutive choices, neither does it account for potential individual confounding factors<sup>5</sup>. Table 2 reports the results of a random-effects censored regression model<sup>6</sup> that formally tests our hypothesis while controlling for a number of individual characteristics.

<sup>5</sup> For example, the population of nursing students typically comprises a higher proportion of women, and several studies have shown that women are more generous than men in dictator games (Camerer, 2003)

<sup>6</sup> We used a Tobit model to correct for the censored nature of the data; the dependent variable was the proportion of the initial endowment relinquished by the dictator.

The first model takes into account the correlation between the three individual allocation decisions made by respondents, the identity of the recipients and the country effect. The results show that there is a significant difference between the two subject pools. Nursing students would on average send 10.5% more of their initial endowment than economics students.

After controlling for individual-level factors such as gender, age and marital status (see column 2 in Table 2), there is still a significant difference between the decisions made by economics and nursing students, with nursing students being more generous than economics students. However, this difference is smaller than it was in the first model (column 1 Table 2), as being a nursing student increases the donation by only 6.9%. This underlines the importance of controlling for potentially important individual factors, since results in Table 2 suggest that the nursing effect was partly confounded by being female and older.

#### 4.2. *Does Altruism Vary Across Countries?*

The results of the Tobit regression model presented in Table 2 formally provide a test of our second hypotheses; whether altruism is shaped by internalised societal norms.

In the first model, the results show that subjects from South Africa display more selfish behaviours than those from Thailand, making donations that are about 5% smaller. However, there is no significant difference between the Thai and Kenyan players.

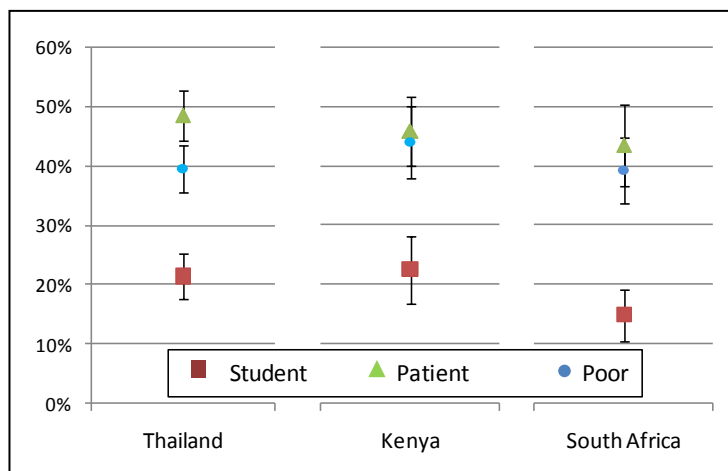
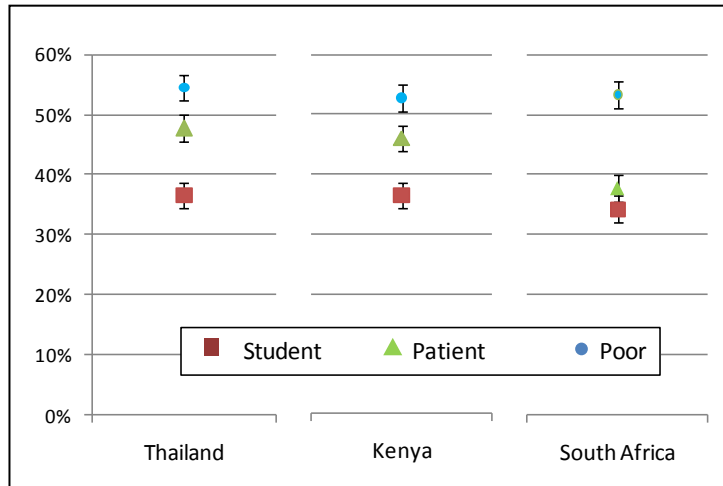
After controlling for individual characteristics (column 2), we find that the impact of national norms is wider. Indeed, both Kenyan and South African students are found less generous than Thai ones, making donations respectively 3.2% and 7.2% lower. By contrast, there is no statistical difference between the altruistic behaviours of South African and Kenyan students ( $p=0.12$ ).



### 4.3. How Does Moral Obligation Drive Altruism?

Plotting the average donations made by dictators across the three framings in each country highlights some interesting differences (see Figure 3).

**Fig. 3:** Average proportion of the initial endowment (with 95% CI) allocated by nursing students (top) and economics students (bottom), across the three framings



As expected, there is a marked difference between decisions made in the classic setting of the game (where the recipient is a fellow student), and the other two recipients used here – a patient and a poor person. Dictators are more generous towards the two more deserving recipients. This result was apparent in the regression results presented in Table 2, which denoted that overall the patient received 13.0% more than the fellow student, while the poor person received about 20.8% more.

However, a closer look at Figure 3 suggests some peculiar decision pattern by nursing students in South Africa. The size of gifts made by dictators to recipients increases with the poor framing, but are identical for the student and patient framings, which contradicts the assumption that altruism increases with 'deservingness' or that nurses should behave more altruistically with patients.

Furthermore, if we interpret the donations as a reflection of how deserving the recipient is perceived to be by the dictator, or how much of a moral obligation the dictator feels towards the recipient, these perceptions seem different for nursing students and economics students.

To test formally the extent to which moral obligation varies according to group and/or country norms, we used a Tobit model to investigate simultaneously which factors determine the donations made to the poor and patient recipients<sup>7</sup>. The results are presented in Table 3. The first two panels show the results for nursing students only, while the third and fourth panels in Table 3 show the results for economics students only.

The coefficient associated with the patient framing is significant in all of the first four models, meaning that there is a difference in the moral obligation that dictators feel towards patients compared to poor recipients. Interestingly however, the direction of this coefficient is different for nursing and economics students. For the latter, patients deserve a greater allocation of the money than poor people (by 9.6%) while nursing students feel less obligated towards patients than poor people, and give them 6.9% less on average. This result is confirmed by the results of the pooled analysis presented in the last two panels of Table 3. The interaction term between the patient framing and the nursing students suggests that, after controlling for the greater generosity of nursing students and individual characteristics, compared to an economics student an average nursing student would give 13.4% less to a patient recipient than she would give to a poor recipient (column 5, table 3).

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<sup>7</sup> To simplify the comparisons, we excluded from the analysis the donations made to the fellow student.

The results of Table 3 also confirm the role played by local norms, in addition to group norms. As opposed to their Thai counterparts, South African nursing students are particularly selfish towards patients, giving them about 9.2% less than they give to poor patients (column 2). We could not detect any difference between the Kenyan and Thai nursing students in their relative treatment of patients and poor recipients. Amongst economics students, the Thais appear marginally more generous towards the patient recipient (compared to the poor recipient), allocating about 7.8% more than the Kenyans and 15.3% more than the South Africans (column 4).

**Table 3: The determinants of donations in dictator games**

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.551*** (0.014)	0.530*** (0.040)	0.391*** (0.022)	0.837*** (0.252)	0.412*** (0.018)	0.429*** (0.039)
South Africa	-0.010 (0.019)	-0.042* (0.021)	0.046 (0.039)	0.103* (0.047)	0.002 (0.017)	-0.021 (0.019)
Kenya	-0.014 (0.020)	-0.043 (0.022)	0.050 (0.039)	0.128* (0.053)	-0.001 (0.018)	-0.020 (0.019)
Patient recipient	-0.069*** (0.011)	-0.069*** (0.011)	0.096*** (0.020)	0.096*** (0.019)	0.073*** (0.015)	0.071*** (0.015)
Patient recipient x SA	-0.095*** (0.016)	-0.096*** (0.016)	-0.148*** (0.036)	-0.160*** (0.035)	-0.107*** (0.014)	-0.109*** (0.014)
Patient recipient x Kenya	-0.008 (0.016)	-0.008 (0.016)	-0.081* (0.036)	-0.081* (0.035)	-0.022 (0.015)	-0.022 (0.015)
Nursing student	-	-	-	-	0.130*** (0.019)	0.090*** (0.020)
Patient recipient x nursing	-	-	-	-	-0.134*** (0.016)	-0.131*** (0.016)
Male		-0.056** (0.021)		-0.038 (0.030)		-0.052** (0.017)
Single		-0.039 (0.020)		0.007 (0.110)		-0.035 (0.020)
Age		0.003** (0.001)		-0.022 (0.012)		0.002* (0.001)
Observations	2,128	2,128	474	472	2,602	2,600
Log-likelihood	-75.58	-60.67	1.848	8.050	-77.77	-59.91
Chi <sup>2</sup>	322.5***	352.7***	28.10***	36.31***	352.2***	384.6

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 ; Standard errors in parentheses

## 5. Discussion and conclusion

In our experiments, the mean donations made by economic students to another fellow student ranged from 15% in South Africa to 22% in Thailand. These results are comparable with, although slightly more generous than, the typical experiments found in the literature from developed countries, where on average students gave about 10% (Eckel and Grossman, 1996, Hoffman et al., 1996, Bolton et al., 1998, Hoffman et al., 1994). While it is tempting to attribute these differences to a country effect, it is not possible to exclude the possibility that the greater generosity of participants our study might have stemmed from differences in experimental conditions. In particular, our experiment didn't enforce a double blind procedure as strict as the one used in some other studies (where each individual makes his decision in an isolated booth). Still, in our experiment, respondents could make their choice anonymously from others, and the experimenter who collected the respondent sheet was different from the one putting the money in the envelopes. However, the donations made by economics students in South Africa concur with the ones obtained by researchers who played the DG with undergraduate students from the university of Cape Town (Van der Merwe and Burns, 2008) and found that the mean donation was 15%. We can interpret this finding as providing some support for the validity of our study methodology, and assume that if it valid for economic students in the standard framing, the results for the other comparison groups are also valid.

We found significant differences in the decisions made by nursing and economic students. Our results show that after controlling for individual-level characteristics, national norms and the identity of the recipients, nursing students would on average send 6% more than economics students. This finding echoes the importance of subject pool differences found elsewhere (Levitt and List, 2007) and the limitations of drawing general conclusions from experiments run with economic students under laboratory conditions. Similar differences have been found in other settings where the DG was played with different subject pools. Economics students have been found to be more selfish when compared to members of the population (Carpenter et al., 2008), while the significant impact of gender and age in a bargaining experiment showed the limits of

student samples (Gueth et al., 2007). Yet, in both of these studies, the differences in findings between standard and non-standard participants might have been linked to the homogenous socio-demographic profile of student populations in developed countries. One of the strengths of the present study lies in its ability to control for important individual confounding factors such as age and gender, and the use of an identical protocol with all participants. Stemming from the comparison of two student populations that are less distant from each other than workers and students, our results strengthen previous findings warning against the necessary temptation of drawing general conclusions from economic students' behaviours. Not only are economics students clearly not representative of other population groups' behaviours, but their decisions in games are likely to reflect the social or moral norms that their constituted group has developed and internalised, which in turn drive other-regarding preferences.

Very few studies have compared the results of population groups that are likely to share many similarities, but in different countries. A famous study that carried out DGs in various small societies on different continents showed that community level factors seemed to have a greater explanatory power for interpreting the observed variation in results than individual differences (Henrich et al., 2004). They concluded that distributional norms and altruism were likely to be driven by local phenomena and economic conditions. Here, despite some deceptive similarities in the average results obtained in the three countries, the analysis showed significant differences due to the country of origin of dictators. Although, we did not have any variables to capture this, the less generous behaviours of South African and Kenyan participants may be explained by similar societal norms in countries with wide inequalities and less solidarity than is present in Thai society where harmony is recognised as a core value (Komin, 1990). Independent of these societal norms, there also seem to be trans-national social norms that unite nursing students.

This study confirms previous findings showing that the outcome of a DG changes considerably depending on the type of information provided to the participants. Here, the use of a modified response function strategy allowed comparison between the decisions made by the same individuals across different moral framings. As expected we found that the generosity of dictators increased with the perceived 'deservingness' of the recipient, with donations to poor people and

patients being greater than the ones made to the traditional recipient (an anonymous fellow student). But the hierarchy of 'deservingness' established by participants varied unexpectedly across subject pools, with nursing students being significantly less generous towards patients than poor recipients. Drawing on Aguiar et al.'s concept of moral distance, one can analyse the differences in attitudes between the nursing and economics students towards patients as a differential in the moral distance, or the degree of moral obligation that they feel they have towards recipients (Aguiar et al., 2008). While economics students can only contribute to the well-being of patients within the context of the game, nursing students are providing time and effort in attending to patients. This might explain why the greater generosity of nursing students observed for the student and poor framing is not present in the patient framing. This interpretation was in part confirmed by group discussions held after some of the experimental sessions where nursing participants justified their decisions by saying that they were "already doing enough" for patients. Furthermore, in the patient DG, South African nurses were significantly less generous than their Kenyan and Thai counterparts who took part in the study. This finding may reflect the particular historical development of nursing in South Africa (Marks, 1994). It is also not inconsistent with studies from the health services literature in South Africa that have highlighted negative attitudes of nurses to patients including limited concern for patients' rights (Raphaely, 2009), unethical behaviour and neglect (Fassin, 2008), and even outright abuse (Jewkes et al., 1998). However, it is a concern that nursing students may be demonstrating such attitudes at an early stage of their careers.

Simple economic experiments such as the one used in this study challenge the universalist assumptions implicitly or explicitly made by economists in their attempt to model human behaviour in economics. Indeed, normative models often assume that humans everywhere "*deploy the same cognitive machinery for making economic decisions and, consequently, will respond similarly when faced with comparable economic circumstances*" (Henrich, 2000). In this study, we showed how simple tests of individual altruism could produce different results across countries and between constituted groups. The differences obtained across countries and student groups, as well as the effects of individual factors on the decisions made, emphasise the difficulty

of generalising findings from particular subject pools in specific contexts (Carpenter et al., 2008). This calls for more caution in the generalisation of experimental results that are mostly obtained from economics students from developed countries.

The results of this study also suggest that economic analysis should not exclude context-specific social norms, as the decisions observed in the DG seem to be the complex product of internalised societal and group norms. Experimental economists are usually reluctant to frame the games, as difficulties or biases can arise due to differential interpretation between individuals of the proposed framing (Rege and Telle, 2004, Levin et al., 1998). If not a different interpretation, there was most certainly here a different appreciation or meaning of the different framings for economic and nursing students. But far from ruling out the value of using framed experiments, the present study underlines their usefulness in exploring the social norms of different groups in relation to their direct environment. Indeed, experimental methodology provides a very useful tool to explore the importance and consequence of context, and of social norms. The development of behavioural economics has evolved to take social and psychological factors into account in the study of economic decision making. This is particularly true for the investigation of the concern of others in decision-making, and, in the context of experimental economics, social factors can only be introduced by abandoning some degree of abstraction.



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## Appendix A - Economic game introduction and instructions

### WELCOME ANNOUNCEMENT AND INTRODUCTION TO THE SESSION

Good morning, welcome and thank you for agreeing to participate in this study.

You will participate here in two tasks on decision making. These tasks are not designed to test you. In these tasks you will be presented with various options or choices. What we want to know is what choices you would make. There is no right or wrong answer, the only right answer is what you really want to choose. Your choices will remain anonymous. This means that nobody will be told what choices you have made. Not even the persons sitting around you will know which choices you make now or even later.

We think you will find these tasks interesting, because you will be using real money. Believe it or not for this type of methods this is a requirement to use real money! The use of real money ensures that you take this activity seriously.

How much you take home will depend partly on the choices you make and partly on chance (like the luck of the draw in a lottery). Whatever money you win in the session will be yours to keep and take home. I will explain later how [fieldworker's name] will calculate the payment for each of you.

Before we begin I want to make some general comments about what we are doing here today and explain the rules that we must follow.

It is important that you listen as carefully as possible. The instructions are simple, and it will help you if you follow them carefully.

You cannot talk to each other while here in the group. This is very important. Please be sure that you obey this rule.

If one person talks about the game while sitting in the group, we would not be able to continue today. Do not worry if you do not completely understand the rules: each of you will have a chance to ask questions in private to be sure that you understand how to play: raise your hand and someone will come near you to explain whatever aspect you may not have understood.

### DECISION TASK 1

We will now begin. You can now open the first envelope that is on your desk.

With this first task, you have to decide how to divide R 100 between yourself and another person. You will never be told who exactly that person is, either during or after the session, and he or she will not be told who you are.

We do not reveal the identity of that person, the recipient, on purpose, because it is part of the principles of these methods to understand how you make decisions with very limited information.

What you must understand is that we are going to give you at the end of the morning the money corresponding to your decisions and we will give the money you will have decided to send to that other person.

**We are going to ask you 3 times to divide R 100.** Each time you are going to be *paired*, or *joined* with a different person:

- The first time (QA) you are going to decide how you want to divide the money between yourself and another nursing student, not necessarily here in that college. This person will be different for each of you.
- The second choice is how to divide the R 100 between yourself and a patient. This patient will be different for each of you.
- The third choice is how to divide the R 100 between yourself and a person who is poor. This poor person will be different for each of you.

Again, as I said before, this game is played for real. The figures that you see on these sheets are real, for you and for the person who will receive it. We are really going to give you in the end whatever you earn, and will also give whatever money you allocated to the recipients.

To divide the money, you have to choose 1 out of 11 possible divisions shown on your answer sheet (*Show answer sheet on the projector*).

### **HOW DO YOU MAKE YOUR CHOICE?**

You can see the three different options referred to as A, B and C (*Show sheet on the projector*):

- the first question A refers to the division where you have to decide how to divide the money between yourself and another nursing student;
- The second one B refers to the division where you have to decide how to divide the money between yourself and a patient;
- The third one C refers to the division where you have to decide how to divide the money between yourself and a person who is poor.

For the three divisions, you have to indicate how you want to divide R 100, by circling the corresponding number at the bottom.

### **CONCERNING THE PAYMENT**

How much money you will earn depends directly on the choices you make but also partly on chance. To simplify the payment and because we had some budget constraints, we will not be able to pay you the 3 decisions altogether, but just one.

Instead, we will randomly choose one of the three options A, B or C. Someone will come at the end and draw a paper from this box, and the paper chosen will decide which question we pay. Ermin will take all the sheets and calculate for each corresponding id number how much you take home.

To make sure everything is clear, I will give you one example [*show with a response sheet at the same time*]:

A person can decide to make the following choices: to keep nothing 0% for her and allocate 100% to another student; to keep 50% for her and allocate 50% to the patient; to keep 100% for her and allocate 0% to the poor person. Overall, that person will hand in an answer sheet that looks like that [*show at the same time on a response sheet*].

At the end, someone will draw a token randomly; if it is PAPER B then for this person with id number 000 [fieldworker's name] will put R50 in the envelope with study number 000. And at the end of the morning we will distribute the envelopes. The corresponding R50 for the patient will also be paid later this month, but we cannot tell you to whom.

Therefore it is very important that you give the same level of care to each choice, because any of the three could determine the money allocated to you and to someone else. Again, there is no right or wrong answer, the only right answer is what you really want to choose.

If you have any question, please raise your hand. You will then be able to ask your question privately.

If you are all ready, you can complete the problem. When you are finished please put your sheet face down on the right of your desk and someone will collect them.

Appendix B – Response sheet (example from the South African study)

For each question (A, B and C), circle the number of the option you choose

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9	Option 10	Option 11	
<b>A</b>	<b>You get</b>	100% R 100	90% R 90	80% R 80	70% R 70	60% R 60	50% R 50	40% R 40	30% R 30	20% R 20	10% R 10	0% R 0
	<b>Another student gets</b>	0% R 0	10% R 10	20% R 20	30% R 30	40% R 40	50% R 50	60% R 60	70% R 70	80% R 80	90% R 90	100% R 100
<b>YOU CHOOSE:</b>		1	2	3	4	5	6	7	8	9	10	11

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9	Option 10	Option 11	
<b>B</b>	<b>You get</b>	100% R 100	90% R 90	80% R 80	70% R 70	60% R 60	50% R 50	40% R 40	30% R 30	20% R 20	10% R 10	0% R 0
	<b>A patient gets</b>	0% R 0	10% R 10	20% R 20	30% R 30	40% R 40	50% R 50	60% R 60	70% R 70	80% R 80	90% R 90	100% R 100
<b>YOU CHOOSE:</b>		1	2	3	4	5	6	7	8	9	10	11

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9	Option 10	Option 11	
<b>C</b>	<b>You get</b>	100% R 100	90% R 90	80% R 80	70% R 70	60% R 60	50% R 50	40% R 40	30% R 30	20% R 20	10% R 10	0% R 0
	<b>A poor person gets</b>	0% R 0	10% R 10	20% R 20	30% R 30	40% R 40	50% R 50	60% R 60	70% R 70	80% R 80	90% R 90	100% R 100
<b>YOU CHOOSE:</b>		1	2	3	4	5	6	7	8	9	10	11