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Ethnic disparity in altruism towards reforestation: A social preference experiment in Mindoro, Philippines

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WIDER Working Paper 2021/73

Ethnic disparity in altruism towards reforestation

A social preference experiment in Mindoro, Philippines

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Abstract: This paper presents a framed field experiment on ecological altruism in Mindoro, Philippines. Behavioural differences between ethnic groups in Mindoro—the Tagalogs and the Mangyans—were investigated. We designed a two-part donation task (i.e. dictator game) where the recipient of the donation was a local reforestation project. There were two treatments: participants played either the giving game (GG) or the taking game (TG). In the first part (GG), respondents were asked how much they will donate towards reforestation; in the second part (TG), respondents were asked how much money they will take away from the project and keep for themselves. The second part was the same as the first, but participants were asked what they will do if a hypothetical partner, who was either the same or different ethnicity, donated half of the initial endowment to reforestation. Results indicate that Mangyans, who are predominantly farmers, tend to give more in the TG than the GG. Tagalog respondents were not sensitive to framing. Finally, other-ethnicity dynamics did not have a strong effect.

Key words: framed field experiment, reforestation, dictator game, framing

JEL classification: C90, Q23, Q56, Q57

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1 Introduction

Deforestation has become one of the most pressing issues in the Philippines. The phenomenon of deforestation is the conversion of forest cover into other forms of land that caters to the needs of human activities (Maohong 2012). The average annual deforestation rate in the country is 3 per cent. Between 1990 and 2005, there has been a 32 per cent loss in forest cover amounting to 3 million hectares (*Mongabay.com* 2006). Deforestation is caused by several factors, but the most destructive one is urban construction, the conversion of forest lands for urban use (Liu et al. 1993). Several institutions such as the Department of Environment and Natural Resources, local government units, and non-government organizations (NGOs) like the Haribon Foundation are working to tackle this problem, with reforestation in the Philippines as their main concern. These institutions have created numerous policies with the aim of curbing deforestation (Carandang 2008). In 2011, the National Greening Program, a forest rehabilitation programme, was established. Additionally, the government of the Philippines imposed a moratorium on the harvesting of timber in the natural and residual forests of the entire country. Biodiversity was not the only goal of these government programmes. Another goal was to empower the indigenous people. More often than not, resource extraction physically displaces indigenous peoples. This was addressed through the Certificates of Ancestral Domain Claims in 1993 and the Indigenous People's Rights Act of 1997 (Bryant 2002). Much of the country's 30-million-hectare land is now categorized as a forest zone and part of the public territory inhabited by indigenous ethnic groups (De Vera 2007). A majority of the indigenous people reside in uplands which they claim to be their ancestral domain. They often depend on traditional agriculture for their livelihood and, therefore, utilize natural resources present in areas where they reside.

Specific to our study is the Philippine island of Mindoro, which has an area of almost 10,000 square kilometres. Most of the indigenous people that reside in Mindoro are called the Mangyan people. As a result of recent migrations and industrialization in areas surrounding Mindoro, the Mangyans have learnt to co-exist with the dominant Philippine group called the Tagalogs. Compared with the Tagalogs who are more economically well-off and do not depend on farming, the Mangyans remain highly dependent on natural resources for their livelihood. They depend on shifting cultivation in their ancestral lands. Because of deforestation in Mindoro, the Mangyans are also in danger of losing their cultural identity. Schult (2001) has claimed that the Philippines is destroying its forests rapidly and endangering the indigenous people's traditional way of life.

In the past, reforestation has been considered a bio-physical operation that needs only minimal involvement from the people, but the opposite is actually true (Carandang and Lasco 1998). Reforestation programmes fail to consider the contributions an individual can make towards the improvement of environmental quality. At the most basic level, an individual is capable of expressing altruism towards issues concerning the environment. Reforestation is not merely bio-physical; rather, it is also social. Consequently, appealing to an individual's altruism is necessary in encouraging environmental awareness (Daube and Ulph 2016; Shogren and Taylor 2008). A preliminary step is understanding the attitudes of the Tagalogs and the Mangyans towards their immediate environment. Also integral is how behaviour changes with social contexts. In this regard, our paper aims to measure the altruistic behaviour of different ethnicities in the context of reforestation. To do this, we conduct a framed field experiment among the Mangyans and Tagalogs in Mindoro, Philippines. This research aims to:

- determine the effect of positive versus negative framing in a modified dictator game where the recipient is a reforestation project;

- compare giving and taking behaviour between Tagalogs (non-farmers) and Mangyans (farmers);
- examine in-group and out-group dynamics between Tagalogs and Mangyans; and
- understand whether demographic factors (e.g. income, gender, and age) may affect environmental altruism.

For policy makers to increase people's awareness on ecological issues, it is helpful to study the dynamics of different ethnicities directly affected by deforestation in Mindoro. Another important contribution of our work is to provide an analysis of the potential role of other-ethnicity dynamics. Related to this is experimental literature on social identity (Jones and Rachlin 2006; Leider et al. 2009; Goeree et al. 2009). Social identity is often characterized as an individual's sense of self in connection to how one perceives membership in a certain group. It affects how individuals make certain decisions. The group that an individual perceives themself to be a part of is called in-group while the opposite is out-group (Abram and Hogg 2010; Tajfel and Turner 1979). The theoretical model of Akerlof and Kranton (2000) noted that individual utility is positively associated with one's in-group welfare. Individuals are more likely to share a public good with their in-group than with outsiders. In a survey of experimental studies, Chen and Li (2009) observed that, in general, individuals who perceive themselves to be part of a group place more weight on the welfare of their group. However, when there is insufficient competition among groups, individuals in one group may avoid decisions that actively harm other groups (Cappelen et al. 2013).

Overall, we conjectured that the dynamics between the Mangyans and Tagalogs may affect their behaviour, especially that they have varied claims on the land they share and also that they differ in socioeconomic characteristics. We designed a two-part economic psychology experiment inspired by the traditional dictator game; that is, an incentivized survey in which participants are asked how much money they will give to a certain recipient. In the first part, participants played a modified dictator game in which they were rewarded real money conditional on their decisions (for an overview of past dictator game research, see Engel 2011). We emulated previous studies (Ellingsen et al. 2012; Brañas-Garza et al. 2010) by introducing the social context in which our experiment was done. For our game, the recipient was a reforestation project by a real NGO that has done charitable work in Mindoro. Using a between-subject design, we considered two treatments that vary in framing: (1) giving game (GG) and (2) taking game (TG). In the giving treatment, participants were asked how much they will give from their money. In the taking treatment, a different set of participants were asked how much they will take away from an initial amount of donation. The taking treatment is similar to Cappelen et al. (2013). In their experiment, however, they had a within-subject design where dictators were first given the option to give and then to take as well. This is different from the between-subject design of our experiment in which participants were not given both options, that is, they only played one of the treatments. Furthermore, we considered two sets of participants from different ethnicities: (1) Tagalogs and (2) Mangyans. Our design, however, was different from previous social identity experiments that paired a dictator with a recipient belonging to a different group (Chen and Li 2009). In the second part, participants were told that they will play the same game as in the first part. But before being asked how much real money they will allocate towards reforestation in the second part, participants were asked to imagine a hypothetical person who donated 50 per cent of the allocation. This was done to avoid inducing any form of community conflict or tensions in our study site. With a between-subject design, the ethnicity of the other person was labelled as either the same as or different from the participant.

In summary, our behavioural observations imply that the Tagalogs and the Mangyans are not selfish. They exhibit altruism towards a reforestation project in Mindoro. Compared with the giving treatment of our modified dictator game, Mangyans are more altruistic in the TG. They are

more reluctant to take away money originally intended for a reforestation project. For the Tagalogs, this is not the case as they are found to be insensitive to framing. Ethnicity and age are also found to be decent determinants of environmental altruism. Monetary donations are the highest in the TG where the respondents are from the Mangyan ethnic group. Furthermore, the amount of money allocated for the reforestation project is negatively correlated with age, especially for the Tagalog participants. While there are ethnic differences in behaviour in both parts of the experiment, the effect of hypothetical same- versus other-ethnicity information is observed to have a weak impact. While there is slight free riding by the Tagalogs when they are given hypothetical other-ethnicity information, limited out-group competition is observed. The remainder of this paper is presented as follows. Section 2 summarizes the experimental design, Section 3 describes the results, and Section 4 concludes.

2 Materials and methods

2.1 Study site

This small-scale behavioural economics study was conducted in Occidental Mindoro. It is a province in the Philippines known to be affected by deforestation (De Vera 2007). The data were gathered in 2018 from the rural area of Abra de Ilog. The respondents were selected randomly and interviewed personally. The respondents were from two ethnicities in the Mindoro province, namely, the Tagalogs and the Mangyans. The Mangyan respondents were farmers, but the Tagalog respondents were not. The experimental games did not require a high level of literacy. They were administered orally in Tagalog to ensure that the respondents understood the questions. Visual cues were provided for further understanding.

2.2 Experimental design

The standard dictator game is an experiment in which a respondent is asked how much money they are willing to give a certain recipient (Engel 2011). In our study, we modified it and designed a game in which the recipient is the environment. Specifically, we chose a reforestation project that will benefit local biodiversity in Mindoro. The project involved a tree-planting effort by a real, small-scale NGO called Ecotone, which is known by the community and has done charitable work in Mindoro. The local government and NGO gave permission to the authors to conduct this study in the village. They were informed and consulted about ethical guidelines for this research. They also approved the procedures for field data collection.

Instead of having anonymous individuals or the local government as recipient, we utilized an NGO because they may provide unbiased advocacy of biodiversity conservation and indigenous people's empowerment (Bryant 2002). We performed a framed field (lab-in-field) experiment—conducted in the respondent's natural environment targeting theoretically relevant population using a validated and standardized laboratory procedure (Gaechter et al. 2010). All respondents, the dictators, were given a certain amount of money—60 Philippine pesos (PhP, approximately USD 1)—and asked to decide how much to allocate for the reforestation project. For simplicity, respondents were only allowed to allocate amounts in increments of ten. Donations towards reforestation were 0, 10, 20, 30, 40, 50, or 60 only. With a between-subject design, two treatments varying in terms of framing were considered: GG and TG. For the GG, participants were told that they can choose to keep the money for themselves or to give some of it for the reforestation project. For the TG, a different set of participants were explained that an amount of PhP 60 was allocated as donation for the reforestation project. They had the option to leave the money for reforestation or to take money away from the project to keep for themselves.

The game was played in two parts. At the start of the session, everyone was told that only one part will be paid and that part will be randomly chosen by coin toss at the end of the game. The first part was a GG or a TG where the recipient was the reforestation project. The second part was the same as the first, but the dictators were told that a hypothetical partner donated PhP 30 or 50 per cent of the initial allocation. As our experiment was conducted in a small tightly knit village, hypothetical other-ethnicity information was utilized to avoid inducing conflict within the community. After this, the dictators were again asked how much they want to donate to the reforestation project out of the PhP 60 that they were given. The second part was run with both same- and other-ethnicity partners. For same-ethnicity (other-ethnicity) partners, we wanted to know how much they would allocate towards deforestation if someone from the same (different) ethnicity as them donated PhP 30. Finally, participants were told to give their best and most honest responses. They were properly informed that they will remain anonymous and decisions will be kept confidential. Instructions were given orally in Tagalog (i.e. the Philippine language that the two ethnic groups can understand well and speak fluently) and responses were recorded by a local assistant. The game was conducted purely using visual cues. Samples of graphical representations used in the experiment are presented in Appendix A.

3 Results and discussion

3.1 Aggregate effect of framing on environmental altruism

Table 1 shows the socio-demographic characteristics of the respondents. The total number of respondents was 64, half of which were Tagalogs and the other half were Mangyans. The mean age of the respondents was 42 years. The youngest respondent was aged 19 years and the oldest was 71 years. There were more female respondents than male respondents. The female respondents accounted for a little over half of the respondents. The average monthly household income of the respondents was PhP 2,000 (approx. USD 40 per month).

Table 1: Socio-demographic characteristics (*N*=64)

	n (%)	Mean (SE)	Range
Ethnicity			
Tagalog	32 (50%)		
Mangyan	32 (50%)		
Age (years)		41.8750 (13.3196)	19–71
Gender			
Male	31 (48.4375%)		
Female	33 (51.5625%)		
Monthly household income (PhP)		2,010.1563 (2,045.17267)	0–10,000

Note: SE, standard error; PhP, Philippine pesos.

Source: authors' computation.

Focusing on Part 1 of the experiment, Table 2 shows the average and standard deviation of the allocation for the reforestation project by treatment (GG and TG). Out of the highest possible donation of PhP 60, looking at overall data, an average of PhP 37 and PhP 53 were allocated for the reforestation project in the GG and TG treatments, respectively. A Mann–Whitney test shows a significant difference in final amount allocated for the reforestation project between the GG and the TG. Results also show that dictators allocated more for the reforestation project in the TG than in the GG.

Table 2: Average allocation for the reforestation project in Part 1

	GG	TG	Mann–Whitney (GG vs. TG)
All (32 observations/framing)	37.1875	52.5000	***
	(19.5488)	(13.4404)	
Tagalog	41.8750	51.2500	x
	(22.2767)	(12.5831)	
Mangyan	32.5000	53.7500	***
	(15.7056)	(14.5488)	
Mann–Whitney (Tagalog vs. Mangyan)	x	x	

Note: GG, giving game; TG, taking game. Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 per cent levels, respectively; 'x' indicates 'insignificant'.

Source: authors' computation.

These actions were also investigated across ethnicity. Tagalog dictators on average allocated PhP 42 in the GG and PhP 51 in the TG, but no significant difference was found between the two frames. However, the average allocation by Mangyan dictators was PhP 33 in the GG and PhP 54 in the TG, and the difference was significant. Mangyans were more altruistic in the TG than in the GG; they were more reluctant to take away money originally intended for the project than to not donate money given to them. Again, for the Tagalog, this was not the case.

For Part 2 of the game, Table 3 summarizes the responses of the dictators when they were given information about a hypothetical partner. The results reflect similar observations as in Part 1. On average, respondents were more likely to donate towards reforestation in the TG than the GG. The ethnicity of the hypothetical partner was found to be insignificant in their decision-making process.

Table 3: Average allocation for the reforestation project with a hypothetical partner

All (32 observations/framing)	GG	TG	Mann–Whitney (GG vs. TG)
Same ethnicity	35.0000	51.8750	***
	(19.3218)	(12.7639)	
Other ethnicity	29.3750	45.0000	**
	(20.8066)	(20.3306)	
Mann–Whitney (same vs. other ethnicity)	x	x	

Note: GG, giving game; TG, taking game. Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 per cent levels, respectively; 'x' indicates 'insignificant'.

Source: authors' computation.

We now decompose data for Part 2 for the Tagalogs and the Mangyans. In Table 4, even when given information on a hypothetical partner, there was no significant difference for the Tagalog dictators in the GG or the TG. In Table 5, the Mangyan participants in the GG allocated much less for the reforestation project than those in the TG. Like before, respondents belonging to the Mangyan ethnic group were more altruistic in the TG than in the GG. This is consistent for both sets of respondents who received different types of hypothetical information. The average difference between the GG and the TG was highly significant at the 1 per cent level. Observations at the aggregate level, however, indicate that same- and other-ethnicity information did not have a strong effect on the Mangyans.

Table 4: Average allocation by the Tagalogs for the reforestation project in Part 2

	GG	TG	Mann–Whitney (GG vs. TG)
Same ethnicity	41.2500	50.0000	x
	(21.0017)	(14.1421)	
Other ethnicity	28.7500	35.0000	x
	(26.9590)	(23.2993)	
Mann–Whitney (same vs. other ethnicity, 16 observations each)	x	x	

Note: GG, giving game; TG, taking game. Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 per cent levels, respectively; 'x' indicates 'insignificant'.

Source: authors' computation.

Table 5: Average allocation by the Mangyans for the reforestation project in Part 2

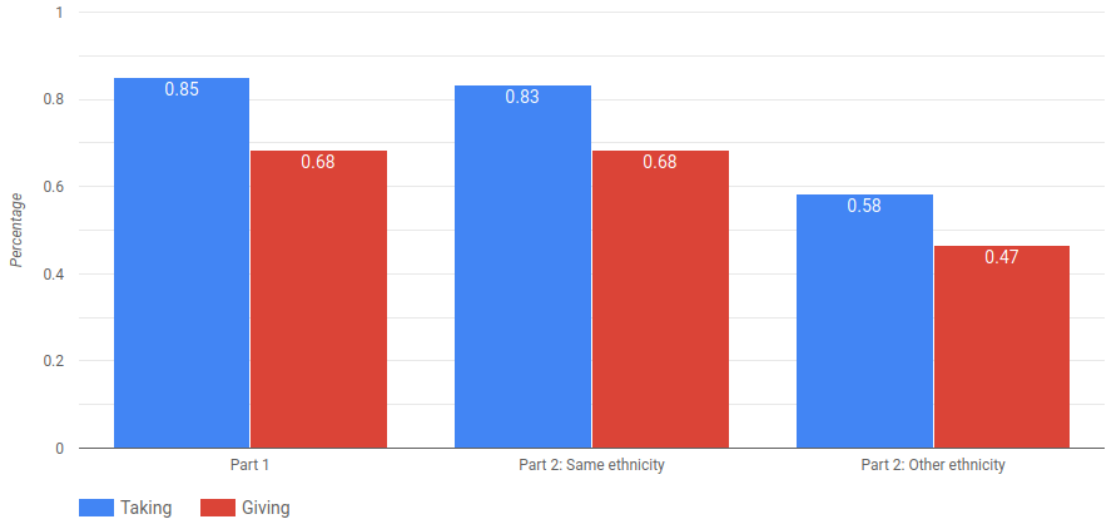
	GG	TG	Mann–Whitney (GG vs. TG)
Same ethnicity	28.7500	51.2500	***
	(16.4208)	(18.0772)	
Other ethnicity	30.0000	55.0000	***
	(14.1421)	(10.6904)	
Mann–Whitney (same vs other ethnicity, 16 observations each)	x	x	

Note: GG, giving game; TG, taking game. Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 per cent levels, respectively; 'x' indicates 'insignificant'.

Source: authors' computation.

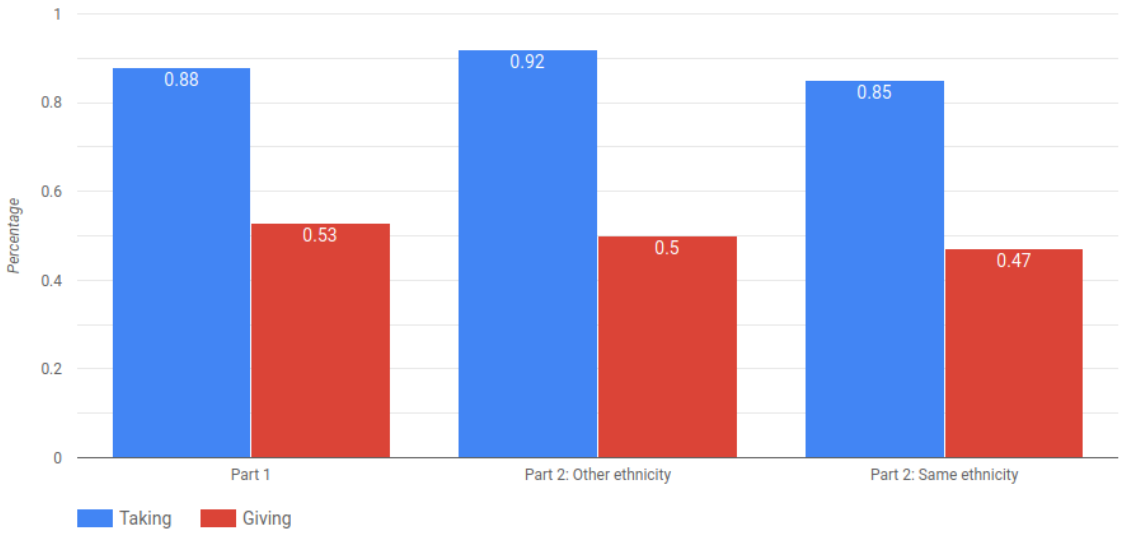
To summarize, we observed that the Mangyans are sensitive to framing, but the Tagalogs are not. Mangyan respondents exhibited more environmental altruism in the TG than in the GG. In Figures 1 and 2, we provide graphical representation of the mean allocation (in percentage, out of PhP 60) by the Tagalog and Mangyan respondents. Although the result is statistically insignificant in the non-parametric tests mentioned above, Tagalog dictators were somehow affected by the ethnicity of their hypothetical partner in Part 2. They tended to allocate the least amount in the GG when their partner was from a different ethnicity (i.e. 46 per cent or an average of PhP 28 out of PhP 60). In the GG for Parts 1 and 2 with a hypothetical Tagalog partner, the Tagalogs allocated 68 per cent towards reforestation. This might imply that a Tagalog dictator, knowing that a member of another ethnicity has already given some money for the reforestation project, does not feel they have to give as much. The same pattern was observed in the TG. Although there was no in-group competition, the Tagalogs could free-ride in Part 2 when their hypothetical partner was of different ethnicity. They contributed less to reforestation when given information that a hypothetical Mangyan contributed 50 per cent. Meanwhile, as shown in Table 9, Mangyan participants behaved differently. They were significantly affected by the framing of the game, whether or not they were given hypothetical information. They exhibited less altruism in the GG (i.e. only approximately PhP 30 or 50 per cent of the highest possible allocation). They contributed to reforestation the most in the TG, with allocations towards reforestation ranging from 88 to 91 per cent of PhP 60. Mangyan respondents in the TG with other ethnicity gave 91 per cent. This is a significant contrast to Tagalog participants who only allocated 58 per cent to reforestation under TG with other ethnicity. Finally, we also observe that Mangyan dictators were neutral to the ethnicity of their partner.

Figure 1: Mean allocation (in percentage, out of PhP 60) towards reforestation by Tagalog participants



Source: authors' computation.

Figure 2: Mean allocation (in percentage, out of PhP 60) towards reforestation by Mangyan participants



Source: authors' computation.

Overall, compared with Tagalog participants, Mangyan respondents were affected by how the game was framed because of their occupation as farmers. They are in contact with the core of the environmental issue, the forest. They could be less inclined to take money from a reforestation project believing that this action would be in direct opposition to their livelihood. A reforestation project can actually advance the livelihood of the farmers, so taking away money allocated for reforestation would stall their own progress. Since the Mangyans are farmers, they may believe that donating money for the reforestation project might improve their environment and, by extension, their crop yields which is their main source of income.

3.2 Determinants of environmental altruism

To further understand the effect of how the game is framed—whether the respondent is giving to the reforestation project or taking from the reforestation project—ordinal regressions were run. We analysed the relationship between the amount allocated for the reforestation project and several factors such as the framing dummy (GG=0, TG=1), ethnicity dummy (Tagalog=0, Mangyan=1), partner's ethnicity dummy (Tagalog=0; Mangyan=1), gender (male=0, female=1), age, and monthly household income. For our dependent variable, the respondents were only allowed to allocate amounts in increments of ten. To ensure unbiased analysis, the amount allocated was treated as ordinal data. The amount that the respondents allocated was given a corresponding rank. If a respondent allocated the lowest possible amount, then they were given a score of zero pertaining to 'very selfish'. The amount allocated by the respondent was coded as a certain rank. The corresponding levels of altruism and selfishness are as follows:

- Allocated PhP 60 for the reforestation project (very altruistic)=6
- Allocated PhP 50 for the reforestation project (altruistic)=5
- Allocated PhP 40 for the reforestation project (slightly altruistic)=4
- Allocated PhP 30 for the reforestation project (egalitarian)=3
- Allocated PhP 20 for the reforestation project (slightly selfish)=2
- Allocated PhP 10 for the reforestation project (selfish)=1
- Allocated nothing for the reforestation project (very selfish)=0

For Part 1, where there was no hypothetical information, framing and age were most significant determinants (Table 6). Again, those under the TG allocated more towards reforestation. Furthermore, the amount allocated for the reforestation project was negatively affected by age. A younger dictator allocated a higher amount for the reforestation project than an older dictator.

Table 6: Ordinal regression of amount allocated for the reforestation project in Part 1

Regressors	Coefficients	Standard error	*P*-value
Framing (GG=0, TG=1)	1.0337	0.4672	0.0269
Ethnicity (Tagalog=0, Mangyan=1)	−1.1823	0.5916	0.0457
Gender (male=0, female=1)	−0.3637	0.5217	0.4857
Age	−0.0360	0.0148	0.0152
Monthly household income	0.0001	0.0002	0.6033
Ethnicity×Monthly household income	0.0001	0.0005	0.0000
Framing×Ethnicity	1.7547	0.3256	0.8160
Number of observations		64	

Note: GG, giving game; TG, taking game.

Source: authors' computation.

For the case when hypothetical information was given, we performed separate analyses for the two ethnic groups. Table 7 (Table 8) shows the regressions for Tagalog (Mangyan) dictators in Part 2. These indicate that the behaviour of the Tagalogs remained unaffected by framing. Older participants and Tagalogs with a hypothetical Mangyan partner allocated less to reforestation. For Mangyan respondents, framing remained the significant determinant in Part 2. Gender and the amount allocated for the reforestation project were found to be weakly but negatively correlated. A male Mangyan dictator allocated more money than a female Mangyan dictator, but the coefficient was found to be statistically insignificant. Age was not a significant factor for the Mangyan dictators. Their behaviour was not affected by ethnic dynamics nor by same-ethnicity or other-ethnicity information.

Table 7: Ordinal regression of amount allocated for the reforestation project by a Tagalog dictator with a hypothetical partner

Regressors	Coefficients	Standard error	*P*-value
Framing (GG=0, TG=1)	0.8461	0.5652	0.1344
Partner's ethnicity (Tagalog=0, Mangyan=1)	−1.6030	0.5352	0.0027
Gender (male=0, female=1)	−0.1829	0.4867	0.7071
Age	−0.0564	0.0180	0.0017
Monthly household income	−0.0002	0.0003	0.5423
Framing×Partner's ethnicity	2.6315	0.2824	0.0000
Number of observations		32	

Note: GG, giving game; TG, taking game.

Source: authors' computation.

Table 8: Ordinal regression of amount allocated for the reforestation project by a Mangyan dictator with a hypothetical partner

Regressors	Coefficients	Standard error	*P*-value
Framing (GG=0, TG=1)	3.3806	0.7312	0.0000
Partner's ethnicity (Tagalog=0, Mangyan=1)	−0.0118	0.7210	0.9869
Gender (male=0, female=1)	−0.4671	0.7562	0.5368
Age	−0.0094	0.0229	0.6818
Monthly household income	0.0001	0.0003	0.6468
Framing×Partner's ethnicity	0.3382	0.4923	0.4921
Number of observations		32	

Note: GG, giving game; TG, taking game.

Source: authors' computation.

Finally, supplementary analyses in Tables 9 and 10 measured the difference between the amount allocated for the reforestation project for Parts 1 and 2 of the game—with and without a hypothetical partner.

Table 9: Changes in the ordinal rank of allocations for Parts 1 and 2, Tagalog only

Regressors	Coefficients	Standard error	*P*-value
Partner's ethnicity (Tagalog=0, Mangyan=1)	0.6498	0.6665	0.3296
Gender (male=0, female=1)	−1.0505	0.4754	0.0271
Age	0.0003	0.0167	0.9859
Monthly household income	0.0002	0.0003	0.3619
Number of observations		32	

Source: authors' computation.

Table 10: Changes in the ordinal rank of allocations for Parts 1 and 2, Mangyan only

Regressors	Coefficients	Standard error	*P*-value
Partner's ethnicity (Tagalog=0, Mangyan=1)	−0.5826	0.6507	0.3706
Gender (male=0, female=1)	−1.6921	0.5021	0.0008
Age	−0.1045	0.0324	0.0013
Monthly household income	0.0003	0.0004	0.4725
Number of observations		32	

Source: authors' computation.

For male Tagalog dictators, the difference between the amounts allocated in the two parts was greater than for female Tagalog dictators. The same result holds true for male Mangyan dictators.

Furthermore, the difference was also greater when the Mangyan dictator was younger. For older Mangyan dictators, the difference between the amount allocated with and without a hypothetical partner was less than for younger Mangyan dictators. The hypothetical partner's ethnicity did not yield a significant coefficient, implying that out-group dynamics are good. There is no indication of out-group enmity wherein dictators would indirectly compete with out-group members.

4 Conclusions and recommendations

There is an immediate concern for the rate of deforestation on the island of Mindoro in the Philippines. This calls for an effective course of action such as a reforestation project (Carandang 2008). However, the inhabitants of the island play an important role in whether such a project will be a success or a failure. Two groups of inhabitants are the Tagalogs and the Mangyans. The former are mostly engaged in commercial activities outside the agriculture sector, whereas the latter are predominantly farmers who utilize natural resources for their livelihood. In this study, through a framed field experiment in a small, remote village, we measured the two ethnicities' altruism towards the environmental project. We employed a framed field experiment of a modified dictator game in which the recipient was a local reforestation project. Giving versus taking frames were constructed, and the amount of money allocated for the reforestation project was compared between these two frames. The results affirmed the observations of Ellingsen et al. (2012) and Brañas-Garza et al. (2010) wherein framing was a significant factor in influencing an individual's altruism. Upon further decomposition, the effect of framing was actually isolated to only the Mangyans. This shows that they were reluctant to take from the money allocated to the reforestation project. The framing effect was not present with the Tagalogs.

With disaggregated analysis for the Tagalogs and the Mangyans, age was also found to be a significant factor in this study. For the Tagalogs, as dictators grew older, the amount that they allocated for the reforestation project became less. An interesting result was that monthly household income was not a strong determinant of altruism. A possible reason for this is that the dictators were explicitly told that the money they would give or take in both framing was not earned; that is, they did not have to work for the money that they would give or take (Cappelen et al. 2013). Lastly, results from the second part of the game indicate that other-ethnicity information was insignificant. While there was slight free riding by the Tagalog participants when they were given hypothetical information on the Mangyans, other-ethnicity competition was not relevant. Group dynamics and potential conflict between the Tagalogs and the Mangyans were not strong factors, which could prevent them from being altruistic towards the reforestation project.

Although our study was only able to measure the level of altruism of individuals towards the reforestation project in terms of monetary values, the results are promising. The results show that individuals who are directly affected by environmental issues are willing to cooperate towards a worthy cause. That there is no enmity between the two ethnicities is also a good sign. Deforestation is a social problem that can be resolved through cooperative social dynamics. Adding that to the capability of individuals to adopt an altruistic behaviour towards an environmental problem provides a decent potential for the reforestation project to succeed. Possible avenues for future research include expanding our area of study to other Philippine provinces or ethnic groups, and investigating the role of framing on other environmental campaigns such as wildlife protection.

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Appendix A: Visual aids for the game, in the Philippine language

Introductory remarks, Part 1

(These were the verbal instructions given by the assistants. Participants did not need to read. The whole game was done orally with graphical illustrations.)

Salamat po sa inyong pagpunta. Matapos ang inyong partisipasyon, mamaya kayo ay bibigyan ng libreng merienda.

Kayo ay sasali sa laro na may dalawang parte: Parte 1 at Parte 2.

Sa larong ito, kayo ay kikita ng pera. Ang perang ito ay depende sa inyong sagot. Isa lamang sa Parte 1 o Parte 2 ang babayaran. Kaya kagalingan niyo sa dalawang parte.

Ang inyong mga sagot ay mananatiling sikreto. Hindi malalaman ng ibang tao kung ano ang pangalan ng mga sumagot. Kaya siguraduhin niyong totoo at magaling ang inyong pag sagot.

Sa larong ito, kayo bibigyan ng numero bilang inyong ID.

Huwag ninyong itapon ang ID na ito hanggang matapos ang laro at merienda. Kailangan ito upang makuha ang inyong perang mapapanalunan sa mga laro.

Isa-isa kayong tatawagin sa kwarto para ibigay ang inyong mga sagot. Matapos nito, kayo ay ililipat sa kabilang kwarto upang maghintay para sa Parte 2.

Bawal ninyong kausapin ang kahit na sinong tao. Kung kayo ay may mga tanong at kung hindi niyo maintindihan ang laro, ito ay sabihin niyo sa mga 'bantay' na nasa kwarto. Ang mga pangalan ng bantay ay: _____. Sila lamang ang pwede ninyong kausapin.

Bawal ninyong sabihin ang inyong sagot sa ibang tao, kaya kayo ay manatiling tahimik lamang.

Kapag kayo ay kumausap ng ibang tao, hindi namin ibibigay ang kita niyo mula sa laro.

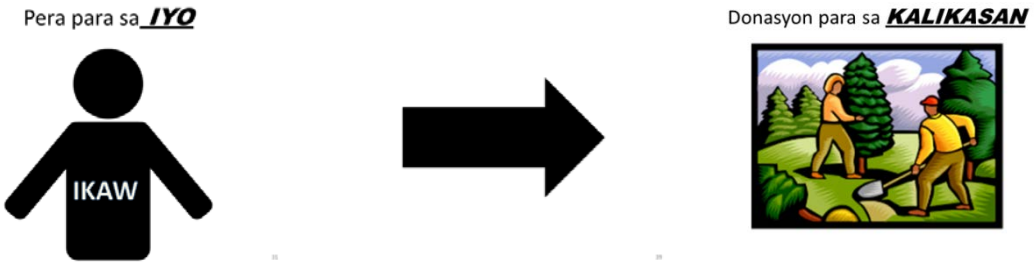
Give treatment

Sa simula ng laro, kayo ay bibigyan namin ng P60 (sixty pesos).

1) Maaari niyong itago ang P60 ng buo, para sa iyo lamang.

o

2) Ibahagi ang iyong P60. Pwede kang magbigay ng parte ng P60 bilang donasyon para sa proyekto ng pagtatanim ng puno.

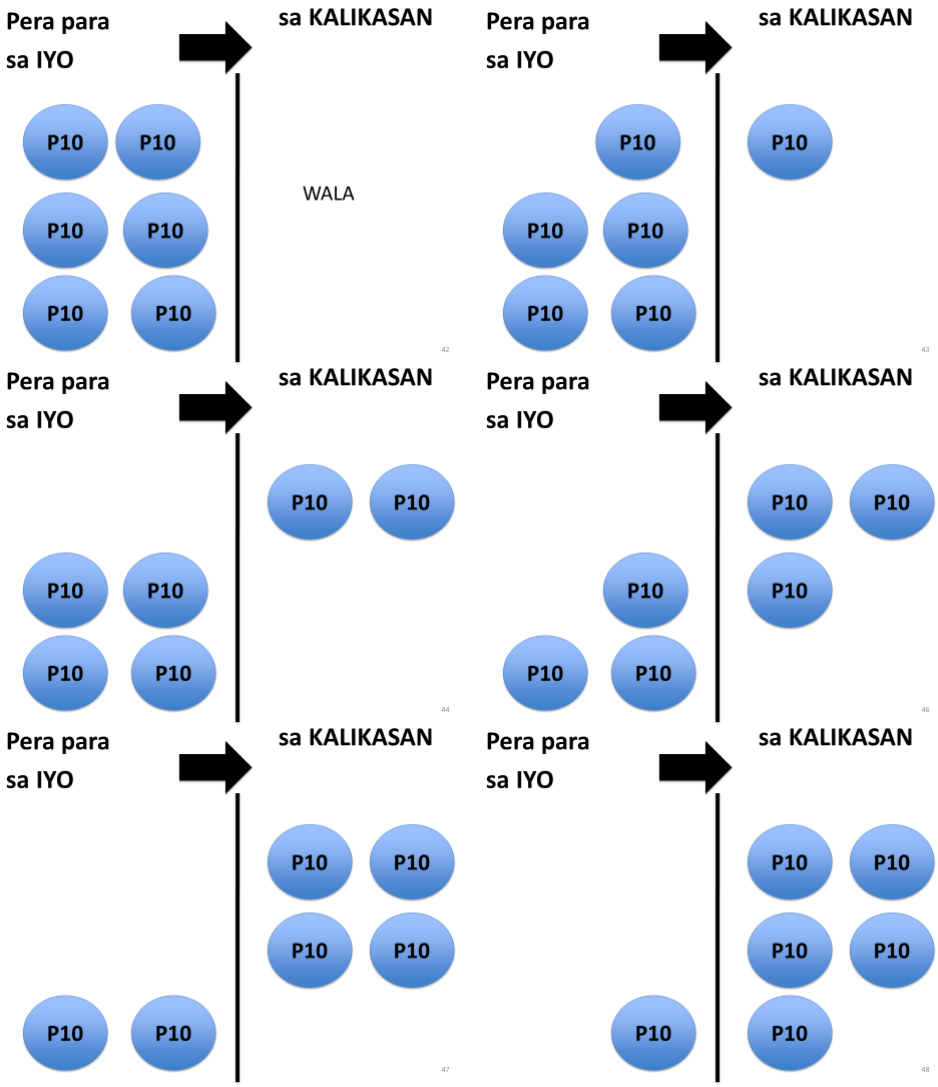


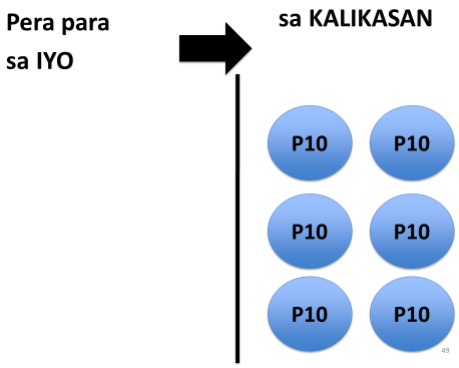
Kung ikaw ay magbibigay ng donasyon, ang kita mong pera na P60 ay mababawasan.

Ang donasyon ay mapupunta sa proyekto na may benepisyo sa lahat ng mga Mangyan at Tagalog. Ito ay gagamitin para sa pagtatanim ng puno.

Ikaw ay dapat pumili sa listahan sa ibaba kung magkano ang ibibigay mo bilang donasyon: P0, P10, P20, P30, P40, P60.

Ikaw ay may P60. Magkano ang ibibigay mong pera bilang donasyon para sa proyekto ng pagtatanim ng puno? Pumili lamang ng 1 larawan sa ibaba.





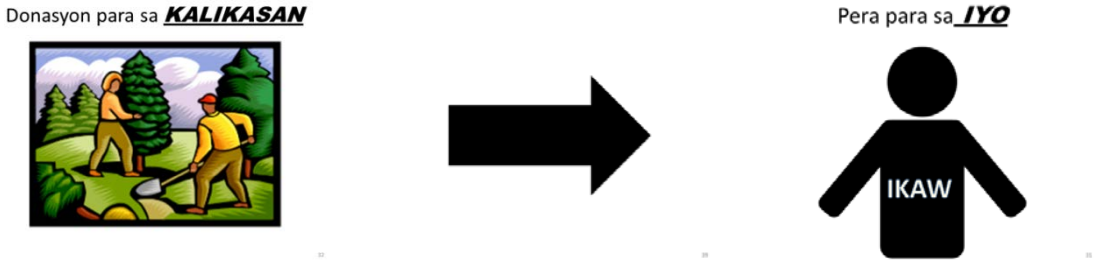
Take treatment

Sa simula ng laro, mayroong nakalaang P60 (sixty pesos) bilang donasyon para sa proyekto ng pagtatanim ng puno.

1) Maaari niyong hindi galawin ang buong P60 para sa donasyon.

o

2) Ibahagi ang P60. Pwede kang kumuha ng parte ng P60. Ang kukunin mong pera ay iyo lamang.

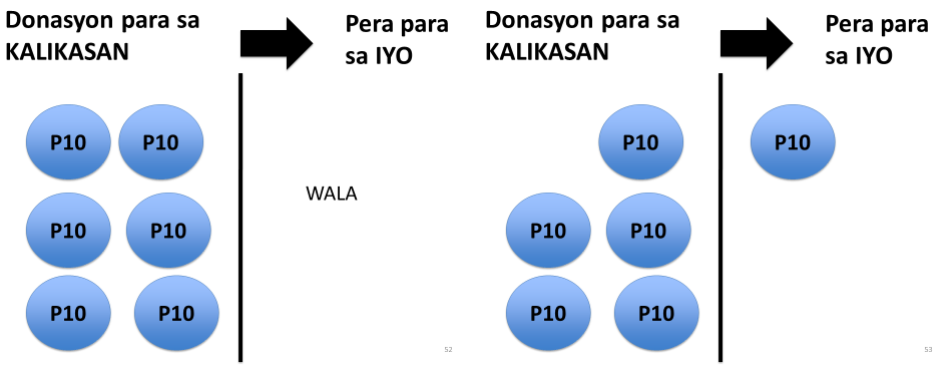


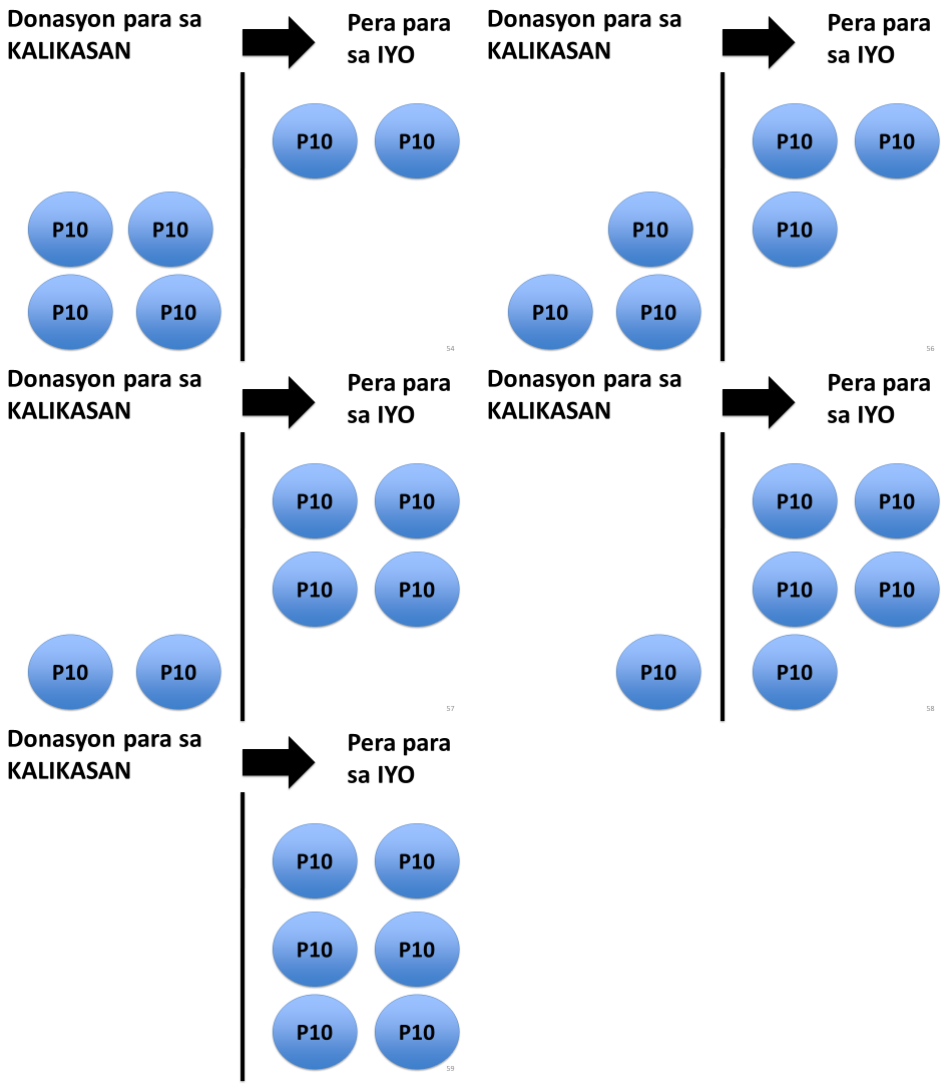
Kung ikaw ay kukuha ng iyong parte, ang donasyon na P60 ay mababawasan.

Ang donasyon ay mapupunta sa proyekto na may benepisyo sa lahat ng mga Mangyan at Tagalog. Ito ay gagamitin para sa pagtatanim ng puno.

Ikaw ay dapat pumili sa listahan sa ibaba kung magkano ang kukunin mong pera para sa iyo: P0, P10, P20, P30, P40, P60.

May donasyon na P60 para sa proyekto ng pagtatanim ng puno. Magkano ang kukunin mong pera para sa iyo? Pumili lamang ng 1 larawan sa ibaba.





Sample add-on instructions for Part 2 (other-ethnicity treatment)

'Isipin mo na ikaw ay may kaparehang taong naiiba ang etnisidad sa iyo. Kunyari ay PhP 30 (kalahati ng PhP 60) ay nilaan niyang pera para sa pagtatanim ng puno. Ano ngayon ang iyon magiging desisyon?'