

Fairness and retaliation in a rural Nigerian village

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Abstract

Results from ultimatum and dictator games played in western societies routinely violate the canonical economic model. Results from non-western societies are even more problematic. In this study ultimatum and dictator games were played in the small Igbo village of Umuluwe in southeastern Nigeria. Follow-up interviews to high acceptance rates suggested that fairness, not fear of retaliation, was the overwhelming reason for high offers, suggesting the limited predictive power of the neoclassical behavioral model. The economically rational prediction of a high acceptance rate of ultimatum game offers holds in traditional societies but not for the reasons the standard model assumes.

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1. Introduction

Recent empirical studies of a large number of cultures have consistently shown deviations from the standard economic model of behavior represented by *Homo economicus* (Alesina and Ferrara, 2000; Bohnet and Frey, 1999; Cason and Mui, 1997; Eckel and Grossman, 1998; Fehr and Tougareva, 1995; Gintis, 2000; Güth and Tietz, 1990; Manski, 2000; Nowak et al., 2000; Ostrom, 2000). In general, people tend to be more apparently altruistic than the economic model predicts. Ultimatum game offers in western societies are near 50 percent and responders frequently reject offers smaller than 30 percent (Gintis). As more and more ultimatum and dictator game studies confirm that cooperation and fairness are essential components of economic behavior, these aspects of behavior have moved from “anomalies” (Thaler, 1988) to accepted facts of economic life. While economists recognize that individuals may be motivated by intrinsic considerations, such as a sense of honesty,

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trust, fairness or commitment, they have either shied away from altruism “almost comically” (Samuelson, 1993, p. 143) or have adopted an approach to altruism based on methodological individualism. Recent empirical evidence suggests that it is more analytically useful to recognize the complex and multifaceted characteristics of human behavior. People act both selfishly and cooperatively (Etzioni, 1986; Caporael, 1997), and they adhere to social norms and values that often generate immediate disutility for themselves (Elster, 1989; Boyd and Richerson, 1992).

Arguing that human behavior is more complex than the standard economic model assumes, Bowles and Gintis (1999) present a model that describes human beings as neither altruistic nor blatantly self-interested, utility maximizers. They describe human beings as *Homo reciprocans*, in the sense that they typically exhibit altruistic tendencies only toward those who cooperate with them and reciprocate their altruistic gestures. Reciprocal behavior is a tendency by individuals who perceive the behavior of others as being beneficial or harmful to themselves to respond in kind. In a dynamic game setting, this sort of behavior may be consistent with conventional economic notions of rationality. Our results depart from both behavioral models, *Homo economicus* and *Homo reciprocans*. In Umuluwe, as in many other traditional societies, fairness is an important predictor of economic behavior but retaliation is not (Henrich et al., 2001). Instead, non-cooperative behavior elicits a cooperative response.

2. The Igbo village of Umuluwe, Imo State, Nigeria

Umuluwe is situated within the predominantly Christian southeast region of Nigeria, about 33 km west of the regional capital of Owerri. Like most communities in Igboland, the Umuluwe people live in a close-knit, nucleated village of about 2000 people. The village is made up of four smaller and interdependent units—Umuezelaegbe, Umuanunu, Umurehe, and Umuagwukwu. Each of the four village units is in turn made up of a number of extended families, each of which traces its origins to common ancestors. Several small villages sharing the same cultural, social and religious practices surround Umuluwe. The village is a rallying point for Umuluwe descendants, and every individual considers the village as more important than the nation-state. Except for interaction (through marriages, the church, and trade) with other neighboring villages, Umuluwe has very limited contact with the federal government and the outside world. For instance, the first contact with Caucasians for most of the villagers was when two of the authors of this paper (Gowdy and Iorgulescu) visited the village in Spring 2001.

Although farming is the main occupation of the villagers, it is often combined with activities such as palm-wine tapping, fishing, hunting, petty trading, bricklaying, painting, tailoring, and shoe mending. The village's main economic resources are land, cash crops (palm trees and fruits), water, and paving stone. Farming is mainly for subsistence, although surpluses are sometimes produced and sold at the weekly markets in neighboring villages. Proceeds from such surpluses are used to purchase items such as meat, milk, sugar, and bread. The villagers also use the proceeds to pay community dues, school fees for their children, and health care. Prior to the introduction of Christianity in the village, the Umuluwe people practiced a traditional religion known as *Ofoism*. This native religion was based on a belief in a High God (*Chukwu* or *Chineke*), and a Supreme Being. The belief in a future life and

a lack of concern with materialism were also characteristic of this religious system (Njaka, 1974, p. 29; Basden, 1966, p. 36).

The Umuluwe community has social and political institutions specific to West Africa (Onyeiwu, 1997). The economic behavior of the villagers of Umuluwe cannot be understood without some knowledge of these institutions. Nearly all adult members of the community belong to at least one community-based association; these village associations are mainly focused on the execution of village development projects such as roads, bridges, and electricity. Given the lack of government support, these associations play a pivotal role in the economic development of the village. There is no formal, centralized political authority in the community, nor is there an overall political leader or a traditional ruler in the village. A loose coalition of elders, charismatic members of the village, and the village associations govern the village informally. Each extended family also regulates the behavior of members of the family and has the authority to impose penalties on deviant members.

Umuluwe social customs and traditions are based on an ethical system that promotes hard work, honesty, trust, and cooperation. The Umuluwe community often rewards people who excel in their respective professions by awarding them the title of “chief” which does not lead to material rewards but rather respect and reverence. Chiefs display the qualities of trustworthiness, honesty, hard work, and high moral standards and are regarded as role models for the younger members of the community.

Obligation to the community and the individuals within it is also a distinguishing feature of the Umuluwe society. Individuals are obligated to help fellow villagers who suffer poor harvest or whose homes have been destroyed by a storm or fire. It is often said that one’s “social security” is the solidarity and support of the village as a whole. To underscore the cohesion among the Umuluwe community, it is quite unusual for a villager to take other members of the community to court or report them to the police. Although the British colonial rulers established English-style courts in Igboland as far back as 1862 (Orji, 1987, p. 108), the Umuluwe people rarely use them. Conflicts are resolved within the Umuluwe community through the mediation of elders, the extended families, and the village associations.

3. Experiment design and procedure

The ultimatum and dictator games are by now well known in the economics literature, and the results of these and other games have revealed large and consistent deviations from the standard economic model of human behavior. In the ultimatum game a proposer is offered a sum of money and is instructed to share it with a respondent. The respondent can either accept or reject the offer. If the offer is rejected neither participant receives any money. Thus, the ultimatum game captures both the motives of altruism and retaliation. In the dictator game the proposer may share as much or as little as she/he desires without fear of retaliation; the respondent cannot reject the offer.

The ultimatum and dictator games were played together on successive days in the village. On the first day the games were played in an informal setting in a private home with two groups of proposers and respondents; 11 pairs in the first group and 12 pairs in the second group. On the second day the game was played with a larger number of people, a total of 50 pairs, after Sunday mass. Although the games were played on two consecutive days, details

of the game were not revealed by the first-day players in spite of the intimacy of village life. The wife of a player who played on the first day did not know about the game when she played on the second day. Neither did the brother of a player who played on the first day. The game was explained separately to the proposers and respondents who were then separated until the game ended.

The ultimatum game was played with real money, 100 Naira worth about US\$ 1. This amount represents about 1 day's wage for casual labor and is a substantial amount of money since about one-half of the villagers surveyed earn less than US\$ 40 a year. The ultimatum and dictator games are being played worldwide in a variety of cultures (Heinrich et al.) and the standard amount played is 1 day's wage (Ensminger, 2003). The game was played in units of 10 Naira using the double anonymous framework developed by Hoffman et al. (1994). The double anonymous procedure is important; if the identity of the players is known, then an unfair offer may lead to sanction outside the game.

After the game was explained to the villagers a demonstration of it was given and then questions about the game were answered. Concern was expressed in all groups that the money given away might be "juju money," that is, money obtained as a result of magic related to human sacrifice. They were reassured by one of the authors (Onyeiwu), a former resident of the village, who explained that "Whiteman no dey do juju," that is, "white people do not practice juju." If Onyeiwu had tried to play the game without foreigners present, the fear of juju would have been a more serious problem. The idea that "easy" money is tainted is common in traditional societies and not without merit. Once the juju question was resolved, villagers showed no reluctance to accept the money. Perhaps this is due to the fact that they have experience receiving money from "wealthy" acquaintances working in cities in Nigeria or abroad.

The group was then sent outside, and individuals were brought in one by one to make offers, after which they were kept away from the people who had not yet played. Individual bids were written on pieces of paper with numbers corresponding to the names kept on another sheet. The respondents were then brought in one by one and given a randomly selected bid. For the dictator game, all ultimatum game participants were brought back together, had the dictator game explained to them, and then came forward and privately presented their offers.

On the first day an open discussion was held after the dictator and ultimatum games were played to find out the motivations for the bids. On the second day all participants were brought together after the ultimatum and before the dictator game and asked to discuss why they played as they did. We were interested to know whether this discussion would affect the results of the dictator game. We were also curious about how two very different settings, in a private home on the first day and after church on the second day, would affect the results. As discussed below no significant differences were found in the results of the game in the 2 days.

4. Results

Results of the ultimatum game are reported in Table 1. The mean offer in the ultimatum game was 43 percent and the mode was 50 percent. The mean and modal offers were the

Table 1
Results of the Ultimatum game played in Umuluwe village, Nigeria

Group	Number of proposers	Mean offer (%)	Modes (%)	Median (%)
Day 1 group 1	11	36	40 (5 of 11)	40
Day 1 group 2	12	48	50 (9 of 12)	50
Day 1 total	23	43	50 (11 of 23)	50
Day 2 group 3	50	43	50 (19 of 50)	40
Grand total	73	43	50 (30 of 73)	40

same for both days. The median offer was 50 percent for day 1 and 40 percent for day 2. Out of the grand total of 73 offers, only 1 offer was rejected. Low rejection rates have also been reported for the Machiguenga of Peru (1/21), The Tsimané of Bolivia (0/70), the Torguud of Mongolia (1/20) and the Achuar of Ecuador (0/16) among others (see Table 1 in Henrich et al.). Most of the comments collected from villagers after the game was played indicated that since the money was freely given by outsiders, they should freely accept it. This is perhaps because such gifts from strangers incur no obligations for reciprocity as would be the case with gifts from other villagers (Mauss [1950], 1990).

Results of the dictator game are reported in Table 2. The mean offer in the dictator game was only slightly lower than that of the ultimatum game at 42 percent. The significance of this difference may be affected by the difference in the amounts of money played in the two games (100 Naira in the ultimatum game and 40 Naira in the dictator game). The mode of the dictator game was 50 percent.

During the open discussion of motives it became apparent that fairness and compassion were the primary motives for sharing. Although the specific recipients of the sharing were not known, there was a general feeling among the participants that whoever got the money would be in need as most of the villagers are very poor. The proposers made the following comments on the first day the game was played (translated from Igbo by Stephen Onyeiwu): “Because of equity and fairness, the other person should have an equal share.” “I offered half the amount so there would be no conflict, no exploitation of the other person.” “I offered half so the other person would be happy.” “I offered half because I felt that the other person might be in need. I am well-off and it is not fair that the other person should get less.” “The other person might be poorer, more vulnerable to hunger, and it is not fair to deny someone else.” “With a free gift from God is it necessary to share.” “Since the money was freely given, I believe I should give freely to someone else. I have an obligation to be generous.”.

Table 2
Results of the dictator game played in Umuluwe village, Nigeria

Group	Number of proposers	Mean offer (%)	Modes (%)	Median (%)	High and low (%)
Day 1	42	44	50 (32 of 42)	50	75 and 0
Day 2	101	42	50 (67 of 101)	50	100 and 25
Total	143	42	50 (99 of 143)	50	100 and 0

Comments from the respondents on day 1 were: “I’m poor and old. I have no choice but to accept.” “Whatever is given to me I will take.” “I will accept if it is more than 1 Naira.” “A gift is a gift.” “Whatever is given to you, you must accept.” The question “If only 5 Naira were offered would you accept the offer?” evoked the following responses: “What is freely given is freely received”, “It doesn’t cost anything so I will take it”, “Any positive amount is acceptable.” Only one person answered “A person who gives only 5 Naira is stingy and I would reject it.” Interestingly, this was one of the lowest offers (20 percent), and the response came from a well-educated person who currently earns a relatively high income in Lagos. One person whose income is low said a 5 Naira offer would not be fair but he would take it.

Comments from proposers on the second day were: “I wanted the other person to be happy.” “Since the money is a free gift I have to give to another person.” “I believe that the other person is in the same condition as me and I want to be fair.” “If the other person is prosperous I will be happy.” “Since it is a gift from God I have to give to the other person.” “Since the money was brought by a foreigner (stranger) then why can’t I give to my brothers and sisters?”

When asked “What if only 5 Naira were offered?” they all said they would take the 5 Naira because it was a gift. The typical response was “I would take it. If someone gives you something why not take it?” For both days, out of a total of 73 offers, only one offer was rejected. The person who rejected an offer was a well-educated male who had worked in Lagos and the rejection of a low offer might have been the result of more experience in a market economy. The higher income of this individual also meant that the offered amount was not particularly important to him and he could afford to impose punishment for an unfair offer.

An examination of the dictator and ultimatum game offers revealed two outliers; one person offered 100 percent in both the ultimatum and dictator games, and one player offered 0 percent in the dictator game. The player who offered 100 percent is a very wealthy businessman, and the person who offered 0 percent is a widow with several young children.

Over the course of 10 days socio-economic data was collected from a survey of about 300 villagers. From this survey we matched a smaller sample from ultimatum and dictator game participants with information about age, income, gender, and education. Information about the socio-economic characteristics of Umuluwe was obtained from a questionnaire completed by 81 villagers who participated in the ultimatum and dictator games. Most of the participants (about 74 percent) in the games are subsistence farmers, and the rest have the following occupations: mechanical/welding/bricklaying (4.9 percent), trading (6.2 percent), tailoring (4.9 percent), teaching (2.5 percent), palm-wine tapping (2.5 percent), and others (4.9 percent). Only a little more than one-half of the sample population has an average annual income of more than N4000 (about US\$ 40); slightly over one-fifth of the participants has average incomes of between N5000 and N9000 (US \$50 and 90); about 14 percent have incomes of between N10,000 and N19,000 (US\$ 100 and 190); only 11 percent have an average income of N20,000 (US\$ 200) and above. One-third of the participants are aged 60 and above; about a quarter are between 50 and 59 years of age; about 23 percent are in their forties, and 19 percent are aged 39 years or below. Another interesting piece of information is that 47 percent of the participants have no formal education; 40 percent have a primary education, 10 percent have a secondary education, and only 4

Table 3
Linear regression of Ultimatum game offer

Variable	Coefficient	Standard error	P-value
Gender dummy	1.920	3.846	0.622
Income	7.0E–05	7.1E–05	0.329
Age	–0.192	0.146	0.194
Education	–0.101	0.394	0.799
Intercept	51.841	8.282	1.2E–07

percent have a post-secondary (tertiary) education. The socio-economic characteristics of the game participants were regressed against ultimatum and dictator game bids; the results are reported in Tables 3 and 4 below.

As shown in Table 3, the only remotely significant explanatory variable for the ultimatum game was age. The *t*-value for age was significant only at the 80 percent confidence interval for a two-tailed test. This result gives little support to the argument that age matters in playing the game. Gender, income, and education were not significantly correlated with the ultimatum game offer. These results are not surprising given the lack of variation in the offers.

Table 4 shows the regression results for the dictator game. Gender, income, age, and education are not statistically significant. It appears that the ethic of sharing in Igbo society cuts across income, gender, and educational levels.

Gender differences have been reported in ultimatum game and dictator game experiments in western cultures (Eckel and Grossman) so we calculated the mean offers for both genders in the Umuluwe sample. In western cultures, evidence exists that women are more generous than men in charitable giving, intergenerational transfers, and income sharing within households (Andreoni and Vesterlund, 2001; Eckel and Grossman, 1998).

Using the names of all the participants for the dictator ($N = 143$) and ultimatum ($N = 73$) games (total sample), proposers were grouped according to gender. In the ultimatum game the mean, median, and modal offers from males were all higher. For the ultimatum game, from males the mean offer was 47 percent of the total amount, the median and the mode were both 50 percent, and from females the mean was 42 percent, and the median and mode were both 40 percent. In the dictator game the mean offer from males was also higher (45 percent from men and 41 percent from women), but the median and modes were the same (50 percent). From their socio-economic characteristics one would expect women to be less

Table 4
Linear regression of dictator game offers

Variable	Coefficient	Standard error	P-value
Gender dummy	2.909	4.129	0.483
Income	–2.5E–05	8.7E–05	0.777
Age	0.078	0.139	0.577
Education	–0.263	0.455	0.565
Intercept	38.406	7.941	6.0E–06

Table 5
Statistical test results

Test description	Game	Statistic	P-value
<i>F</i> -test of equal variances*	Dictator game	1.605	<0.026
Z-test of equal means**	Dictator game	1.570	<0.058
<i>F</i> -test of equal variances†	Ultimatum game	2.708	<0.002
Z-test of equal means**	Ultimatum game	1.123	<0.131

* Critical value for significance of 0.95 = 1.365 for one-tailed test.

** Critical value for significance of 0.95 = 1.645 for one-tailed test.

† Critical value for significance of 0.95 = 1.743 for one-tailed test.

altruistic than men for the following reasons: many are widows with no government support, women in Umuluwe have no land ownership rights (an important asset in the village), and women often have the responsibility to provide food for their children and husband.

Using the total sample for the dictator and ultimatum games, we tested the null hypothesis of no significant difference in mean donations by gender (Table 5). The Z-test of equal means could not be rejected for either game, so we conclude that the differences in mean donations are not significant. Differences in variances of donations were also examined. The *F*-test of equal variances was significant at the 95 percent level for both games. Thus, the hypothesis of no difference in variances of donations by males and females was rejected. One male who played both games was a very wealthy individual who gave 100 percent of his Naira in both games. When this player was removed from the sample, the *F*-test of equal variances was rejected for the ultimatum game but not for the dictator game.

Hoffman et al. (1996) found that offers dropped in the dictator game when additional efforts were made to insure the anonymity of the offer. We considered the possibility that offers were similar in the ultimatum and dictator games because of village norms and possible sanctions, not because of simple preferences to share. For instance, the notion of retributive justice after death is very strong and pervasive in Umuluwe. Because people believe that sins and injustices committed on Earth will be punished after death, they strive to conform to high moral and ethical standards. There is also the possible influence of *Igwekala*—a demi-god worshiped and revered by the Igbo. It is believed that *Igwekala* observes everyone's behavior and brings misfortune to those who cheat and exploit other people.

Forsythe et al. (1994) construct a “fairness hypothesis” using an *F*-test of the hypothesis that the distributions of offers are the same in the ultimatum and dictator games. They reason that the ultimatum game shows both fairness and retaliation while the dictator game shows only fairness. If there is no significant difference in offers in the two games, retaliation is not important. Forsythe et al. (1994) reject the fairness hypothesis for their sample of US college students. Regression results comparing the Umuluwe dictator and ultimatum offers indicate no statistical difference between the mean offers. Thus, we accept the fairness hypothesis for the Umuluwe sample. This result is consistent with other game-theoretic studies of traditional cultures. Ultimatum and dictator games played by Chaldean emigrants showed higher offers in the dictator and ultimatum game (Henrich, 2001). Henrich attributes this to cultural specific rules of behavior cued by each of these games.

In view of the fact that, for all practical purposes, no one rejected an ultimatum game offer, future researchers should consider the benefits of using a variation of [Henrich and McElreath's \(2002\)](#) "titration" method of eliciting UG responses. In this method, individuals are not immediately told of the offer. They are first asked if they would accept 20 percent, then 30 percent, and so on. Although Henrich and McElreath found that an individual's risk preference did not predict their UG offer, this method might elicit more rejections and thus provide a richer set of data, especially in traditional societies, which typically have low rejection rates.

5. Concluding comments

Nigeria, like many other African countries, has experienced economic crises during the past 20 years. The negative effects of national economic downturns have been pronounced in the rural areas. The daily wage of an unskilled worker is now equivalent to the price of a loaf of bread. The average monthly wage is equivalent to what an American can earn in 4 h. According to a study undertaken by the Union Bank of Switzerland, the average Nigerian worker must work at least six times longer than an American in order to afford a simple meal. Rising prices have decreased consumption at an annual rate of 7 percent during the past decade, and material standards of living are now lower than they were in the 1950s. Private consumption as a percentage of GDP fell from 83 percent in 1965 to 70 percent in 1989 (ILO, 1992).

The dire situation of Nigerians, particularly those living in isolated rural communities, raises the question of why Umuluwe residents have retained traditional values of sharing and cooperation. One would expect people in very desperate situations to behave more selfishly. The persistence of altruism in Umuluwe may be explained by a number of factors, including (1) weak market institutions, (2) local institutions promoting fairness and cooperation, (3) a high level of illiteracy which necessitates reliance on oral communication and a great deal of face-to-face social interaction, and (4) the strong religious philosophy of the community-based on Roman Catholicism, reinforcing traditional beliefs of rewards and punishment after death.

Several significant findings came out of this study. First, the "canonical model" ([Henrich et al., 2001](#)) of standard economic theory that individuals are primarily wealth seeking is not a good predictor of human behavior. Secondly, we confirm the results of ultimatum and dictator games played across cultures, showing that retaliation is much less common in traditional cultures than in Western societies. Third, we find that offers are uncorrelated with income or educational level. There is only weak evidence that ultimatum game offers were negatively correlated with age. Differences in mean offers by males and females are not statistically significant, but the variance of offers in both the ultimatum and dictator games of males and females is significantly different. These results confirm other findings that individual level economic and demographic variables are not good predictors of behavior either within or across cultures. The fact that this and many other behavioral experiments have consistently shown that group differences are a better explanation of economic behavior than individual differences has profound implications for economic theory. Fourth, behavior in the ultimatum and dictator games is consistent with Igbo social values. Finally, responses

of the villagers to the games seem to indicate that people care about where the money comes from. This could have significance beyond Igboland. These results show that an ethic of fairness and social solidarity prevails in Igbo culture that cuts across individual attributes. This confirms work done to date showing that differences among cultures are large and are correlated with group norms and values, not individual attributes.

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