

Inequality Aversion and Social Norms in Resource Distribution by Costa Rican Adolescents*

[English version]

Aversión a la desigualdad y normas sociales en la distribución de recursos por adolescentes costarricenses

Aversão à desigualdade e normas sociais na distribuição de recursos por adolescentes da Costa Rica

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Pablo Chaverri Chaves **

<https://orcid.org/0000-0002-2639-4242>

Costa Rica

Itziar Fernández Sedano ***

<https://orcid.org/0000-0002-6905-2111>

España

Abstract

Objective: This study analyzes the relationship between inequality aversion and conformist and non-conformist social norms in exploring their influence on resource distribution decisions among Costa Rican adolescents. **Methodology:** This quasi-experimental cross-sectional study was conducted with a Costa Rican sample

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** Master's in Cognitive Sciences. Department of Social and Organizational Psychology, UNED Spain, and Institute of Interdisciplinary Studies of Childhood and Adolescence (INEINA), UNA Costa Rica. Email: pchaverri2@alumno.uned.es

*** PhD in Psychology. Department of Social and Organizational Psychology, UNED Spain. Email: ifernandez@psi.uned.es

(N = 285, mean age = 13.4 years, SD = .64, 51.4% female). The study focused on the influence of conformist and non-conformist social norms on decision-making in the face of inequality, through an economic interdependence game (Ultimatum Game - UG) in a work-for-pay version. Additionally, the study explored the relationship between these norms and horizontal and vertical individualist-collectivist cultural orientations, sociodemographic variables, and inequality aversion. **Results:** The induction of norms did not significantly affect participants' decisions in the UG. There was a negative relationship between household size and inequality aversion. **Conclusions:** These results suggest that inequality aversion and preference for equality are stronger than the situational influence of conformist and non-conformist social norms on decision-making in the face of inequality.

Keywords: social norms; inequality aversion; cultural orientation; conformism; priming; Ultimatum Game (obtained from the APA thesaurus).

Resumen

Objetivo: se analiza la relación entre la aversión a la desigualdad y normas sociales de carácter conformista e inconformista, para explorar su influencia en las decisiones ante la distribución de recursos entre adolescentes costarricenses. **Metodología:** este estudio cuasiexperimental transversal, realizado con una muestra costarricense (N = 285, M edad = 13.4 años, DT edad = .64, 51.4% mujeres), se enfocó en la influencia de normas sociales conformista e inconformista en la toma de decisiones frente a la desigualdad, en un juego de interdependencia económica (juego del ultimátum - JdU-) en versión de pago por trabajo. Además, se exploró la relación entre estas normas y las orientaciones culturales individualista-colectivista horizontal y vertical, las variables sociodemográficas y la aversión a la desigualdad. **Resultados:** se encontró que la inducción de normas no tuvo un efecto significativo en las decisiones de los participantes en el JdU, así como una relación negativa entre la cantidad de habitantes del hogar y la aversión a la desigualdad. **Conclusiones:** estos resultados sugieren que la aversión a la desigualdad y la preferencia por la igualdad son más fuertes que la influencia situacional de normas sociales de carácter conformista e inconformista en la toma de decisiones frente a la desigualdad.

Palabras clave: normas sociales; aversión a la desigualdad; orientación cultural; conformismo; *priming*; juego del ultimátum (obtenidos del tesoro APA).

Resumo

Objetivo: analisa-se a relação entre a aversão à desigualdade e normas sociais de caráter conformista e inconformista, para explorar sua influência nas decisões sobre a distribuição de recursos entre adolescentes costarriquenhos. **Metodologia:** ste estudo quase-experimental transversal, realizado com uma amostra costarriquenha (N = 285, M idade = 13,4 anos, DP idade = 0,64, 51,4% mulheres), focou na influência de normas sociais conformistas e inconformistas na tomada de decisões frente à desigualdade, em um jogo de interdependência econômica (jogo do ultimato -JdU-) na versão de pagamento por trabalho. Além disso, explorou-se a relação entre essas normas e as orientações culturais individualista-coletivista horizontal e vertical, as variáveis sociodemográficas e a aversão à desigualdade. **Resultados:** encontrou-se que a indução de normas não teve um efeito significativo nas decisões dos participantes no JdU, assim como uma relação negativa entre a quantidade de habitantes do lar e a aversão à desigualdade. **Conclusões:** esses resultados sugerem que a aversão à desigualdade e a preferência pela igualdade são mais fortes que a influência situacional de normas sociais de caráter conformista e inconformista na tomada de decisões frente à desigualdade.

Palavras chaves: normas sociais; aversão à desigualdade; orientação cultural; conformismo; priming; jogo do ultimato (obtidas do tesouro APA).

Introduction

Social norms are considered a significant point of convergence between cognitive sciences and culture (Barrett, 2020; Ensminger & Henrich, 2014; Fehr & Fischbacher, 2004; Hawkins et al., 2019; Henrich, 2016; House et al., 2020; Kanngiesser et al., 2022). While these norms are inherently collective, they could not exist without human cognitive complexity; without the latter, human cultural complexity would lack a foundation and thus be impossible (Boyer, 2018; Harari, 2015; Sun, 2012; Tomasello, 2021).

Recent scientific evidence suggests that social norms significantly influence how people perceive and make decisions regarding resource distribution (Ensminger & Henrich, 2014; House et al., 2020; House & Tomasello, 2018; Li et al., 2021; McAuliffe et al., 2017; Ruggeri et al., 2018). However, there is also evidence indicating that people have an intrinsic and generalized preference for equality (Tomasello & Vaish, 2013), along with an automatic aversion to inequality (Fehr et al., 2006; Henrich, 2016), which manifests early in development, even within the first year of life (Hamlin & Wynn, 2011). Given these findings, the question arises as to how situational social norms interact with intrinsic preferences in shaping human behavior.

Although inequality in resource distribution has traditionally been analyzed by economic sciences (Stiglitz, 2013; Piketty & Goldhammer, 2014), it has also been increasingly and fruitfully studied from a psychosocial perspective (García-Sánchez et al., 2018; Sainz et al., 2021; Jetten & Peters, 2019). From this viewpoint, alongside the dominant vision of materialistic determinism, where culture is defined by the economic system (Wang et al., 2022; Sánchez-Rodríguez et al., 2019; Sánchez-Rodríguez et al., 2020), evidence has also been found of the opposite process; that is, culture significantly influences the economy and its degrees of inequality (Binder, 2019; Gorodnichenko & Roland, 2012; Nikolaev et al., 2017).

Culture can significantly influence economic behavior, as reflected in the construction of social norms. These can condition various aspects such as the degree of generosity (McAuliffe et al., 2017), tolerance for inequality (Jiao & Zhao, 2023), respect for hierarchies (Osei et al., 2022), obedience to instructions from elders (Hoffmann & Tee, 2006), the understanding of justice (Schäfer et al., 2015), the level of competitiveness (Hofstede, 2016), or expectations regarding the behavior of others in resource distribution (Meristo & Zeidler, 2022). Nevertheless, despite the significant influence of historically predominant cultural values in a society, social norms can also be affected by situational influences over shorter time frames (Bianchi, 2016; Oyserman, 2016).

One way social norms interact with the more inherent and universal dispositions of humans is through a phenomenon known as "inequality aversion." This can be defined as the human tendency to reject unequal deals (Fehr, 1998), although inequality aversion can also be considered a generalized human tendency (Fehr & Schmidt, 1999). The way it is expressed varies significantly between societies (Schäfer et al., 2015). What explains this variation? Studies suggest that differences between societies can be partially explained by differences in their social norms, which have a significant influence on people's behavior (House et al., 2020; Kanngiesser et al., 2022).

Social norms vary in several aspects, including the degree of individual autonomy they permit and the level of conformity they expect (Gelfand et al., 2011). Consequently, societies differ in the extent to which they expect strict ("tight") or flexible ("loose") adherence to their social norms. In other words, societies differ in their norms as such and also in the degree of adherence and compliance they expect from their members regarding these norms.

An individual is averse to inequality if they dislike outcomes perceived as inequitable. This raises the problem of how individuals measure and value equality in the outcomes they obtain. A relevant factor in addressing this problem is the processes of social comparison (McIntyre & Eisenstadt, 2011). People assess the equality of outcomes through mental comparison processes, involving both cognitive quantification mechanisms and emotional evaluation mechanisms. These processes are present from early childhood but become more consolidated during middle childhood and adolescence (Sobel & Blankenship, 2021). In adulthood, comparisons of relative income have a broad and significant impact on job satisfaction and personal life (Fehr & Schmidt, 1999).

An effective way to operationalize inequality aversion in research is through the Ultimatum Game (UG) (Cochard et al., 2021; Güth et al., 1982; Ensminger & Henrich, 2014; van Dijk & De Dreu, 2021). This is a task of interdependent economic exchange where two people (one proposer, and one responder) decide how to distribute several resources, with the condition that if the responder rejects the offer, both parties get nothing; that is, the responder has veto power in this game, which conditions the proposer.

This game can serve to observe disadvantageous inequality aversion, particularly in the role of the responder because if they decide to reject any offer equal to or greater than one unit (no matter how unequal it is), they are opting for a loss, as their starting point is zero units.

Research based on the UG has found that people tend to propose offers close to equality (5:5), which are generally accepted, and tend to reject unequal offers (e.g., 9:1, 8:2, 7:3, 6:4) (Henrich et al., 2001; Henrich, 2016; Henrich & Muthukrishna, 2021).

This tendency to reject unequal distribution proposals is known as "costly punishment" (Ensminger & Henrich, 2014), as it implies that the rejecter is willing to lose resources to equalize the situation with their counterpart; that is, they prefer to get nothing but be in equal conditions, rather than get something but be in inequality compared to their counterpart in this game. Therefore, people do not only consider the resources obtained by themselves but also the relative outcome linked to what others receive, with whom they establish comparisons. Given this, that people possess an internalized automatic norm of equality has been suggested, in addition to inequality aversion. This norm guides them to prefer receiving egalitarian exchanges and offering such distributions more frequently (Henrich & Muthukrishna, 2021).

A possible explanation for this inherently favorable tendency toward equality and unfavorable tendency toward inequality is that humans are motivated to maintain long-term cooperative relationships, leading them to seek relationships of reciprocity, shared benefit, and mutual satisfaction, which act as a stimulus for such maintenance. In contrast, relationships of inequality, exploitation, and injustice would be a disincentive for maintaining cooperation, as they would tend to truncate it (Tomasello, 2009; Tomasello & Vaish, 2013; Henrich & Muthukrishna, 2021).

This research is additionally relevant as it was conducted in the Latin American and Central American context, regions where inequality in wealth distribution is among the highest in the world (Programa Estado de la Nación, 2021). Therefore, understanding how norms and social preferences interact in the socialization of adolescents is important, given the high sensitivity of this stage in defining values and behaviors in people's and societies' lives (Inglehart, 2018).

Type of Study

As previously mentioned, evidence suggests that social norms play a significant role in behavior toward inequality. However, the relationship between intrinsic norms, like inequality aversion, and situational norms (such as levels of conformity) remains unclear. Therefore, this quasi-experimental cross-sectional between-subjects study investigates how conformist and non-conformist social norms influence the decision-making of Costa Rican adolescents (a collectivist society) when faced with inequality, through an economic interdependence game (the Ultimatum Game - UG) in a work-for-pay version. It is expected that if inequality aversion is stronger than the influence of conformist or non-conformist

norms, participants will reject unequal offers similarly, regardless of whether they are under a conformist or non-conformist normative priming strategy, or in its absence.

Hypothesis

The induction of conformist and non-conformist social norms will have a significant effect on participants' decision-making in the UG, indicating that situational norms—induced through priming—play an important role in behavior toward inequality. In this case, participants exposed to the conformist condition are expected to accept more unequal offers, while those exposed to the non-conformist condition will reject more unequal offers compared to the control condition. This hypothesis suggests that social norms can influence participants' decision-making, even if they have an intrinsic aversion to inequality.

Methodology

Participants

A total of 285 Costa Rican adolescents were recruited, with a mean age of 13.4 years ($SD = 0.64$), 51.4% female, from four Costa Rican secondary schools. To estimate the minimum acceptable sample size, power analyses were conducted using G-Power (Faul et al., 2009). These analyses indicated that a sample size of at least 170 individuals would be sufficient to achieve a medium effect size of $f = 0.25$, an $\alpha = 0.05$, and $(1-\beta) = 0.95$ to measure the effects of priming in the ultimatum. Therefore, a target sample size of 200 was proposed; nevertheless, thanks to the cooperation of educational centers, a total sample of 285 individuals was obtained. This sample was sufficient to detect the expected effects if they existed. Parental informed consent and assent from each participant were obtained for participation. This study was approved by the Research Ethics Committee of the National Distance Education University (UNED), certified under reference code: 1-PSI-2022.

Instruments

The independent variable was normative priming in three conditions: conformist, non-conformist, and neutral (see Appendix 1). The priming strategy involved inducing participants to think about two types of norms: a conformist norm (central idea: "You should be humble and accept what others want to give you for your work") and a non-conformist norm (central idea: "You should be proud and not accept that others give you little for your work"), along with a neutral control condition. Before inducing the first two conditions, participants were asked to identify the person they thought about as a normative source. This strategy was previously validated through cognitive interviews with four adolescents, two males and two females, who demonstrated an understanding of it as expected. Previous studies confirm that this type of modeling is effective in inducing social norms (Jiao & Zhao, 2023; Oyserman & Lee, 2008; Oyserman et al., 2014; Oyserman, 2015; Oyserman, 2016; House & Tomasello, 2018; Tomasello, 2021).

The dependent variable was the Ultimatum Game (UG), as it is effective in measuring behavior toward inequality (Güth & Kocher, 2014). In this case, a work-for-pay version was applied (Fernández et al., 2023). The UG strategy used here involves a work situation, where the participant is led to think they are distributing the product of their labor with a partner, which has been shown to better measure inequality aversion than when the situation is framed as the distribution of a donation (Ensminger & Henrich, 2014; Houser & McCabe, 2014; van Dijk & De Dreu, 2021). Each participant was presented with an equal distribution option (5:5) and four unequal options (9:1, 8:2, 7:3, and 6:4).

After completing the UG, participants were asked, "How do you feel after making this distribution of the payment for your work?" This was answered on a four-point Likert scale, ranging from "very bad" to "very good."

The following are the covariates included: the Horizontal and Vertical Individualism and Collectivism scale by Triandis and Gelfand (1998), previously validated in Latin America (Díaz et al., 2020); the Perception of Inequality in Everyday Life scale (PEIEL), previously validated with Spanish-speaking youth (García-Castro et al., 2019); the level of religiosity according to Etchezahar and Simkin (2013) (consisting of a single question); and concern and self-sufficiency with money (Mani et al., 2013) (consisting of a single question). Additionally, sociodemographic variables were used, such as the number of household members, parental education, and household ownership status.

The Horizontal and Vertical Individualism and Collectivism scale, developed by Triandis and Gelfand in 1998 and refined over time (Triandis & Gelfand, 2012), is a measurement instrument used to assess the cultural dimensions of individualism and collectivism in a society. The scale was previously validated in

Latin America by Díaz and colleagues in 2020, and it has been observed that the distinction between horizontalism and verticalism is important for understanding social inequality phenomena (Chaverri & Fernández, 2022).

This scale consists of 16 items presented as statements, and participants are asked to indicate their agreement or disagreement level with each statement. The scale validity was psychometrically evaluated in the present study, revealing good internal consistency and an adequate factor structure. General collectivism obtained a Cronbach's alpha of 0.73, horizontal collectivism showed an alpha of 0.70, and vertical individualism of 0.69, thus these were accepted as reliable measures. General individualism, vertical collectivism, and horizontal individualism were rejected due to reliability indices below 0.60.

The Perception of Economic Inequality in Everyday Life scale (PEIEL) consists of 11 items referring to different aspects of daily life, such as knowing people with very different income levels, differentiated access to health services, knowing people who can and cannot go on vacation, among other aspects (García-Castro et al., 2019). Participants were asked to indicate their level of agreement with each statement on a four-point scale. The reliability and validity of this scale were evaluated through psychometric analyses, revealing good internal consistency, with a Cronbach's alpha of 0.86 and an adequate factor structure, generating a single factor that explains 42% of the variance. Furthermore, the PEIEL has been shown to discriminate between people with different levels of perceived inequality.

Procedures

A paper-and-pencil questionnaire was administered to seventh-year students at four public secondary schools in Costa Rica. The instrument was previously validated through cognitive interviews with four 13-year-old adolescents (two females and two males), which reflected an adequate understanding of the questionnaire. The three priming conditions were randomized.

Participants were approached during their regular classes. Completing the instrument with all the measures took approximately thirty minutes. The principal author of this article was present during all questionnaire administrations to supervise the process. Most adolescents had no issues filling out the questionnaire, and any doubts were promptly addressed. After each session, the questionnaires were reviewed to ensure they were fully completed. If any questions were omitted, participants were asked to provide those responses.

Analysis Plan

Initially, descriptive analyses of the variables were conducted separately to observe their frequency distributions. Following this, reliability analyses of the scales (using Cronbach's alphas) were performed, followed by factor analyses to select and estimate those scales that showed acceptable psychometric properties. Next, Pearson's bivariate correlations were carried out to examine the linear associations between variables. Subsequently, ANOVAs were conducted with the type of priming as the factor and the acceptance or rejection decisions in the different UG distributions as the dependent variables. Finally, post hoc analyses were performed to estimate the significance of the mean differences.

Results

The applied normative priming strategy showed several significant correlations, as presented in Table 1. Under nonconformist priming, religiosity was found to be lower ($r = -0.11$, $p < 0.1$), the reported feeling after the UG tended to be less pleasant ($r = -0.11$, $p < 0.1$), and concern about money tended to be higher with this priming ($r = 0.11$, $p < 0.1$). Under conformist priming, participants were more likely to think of their mother as the normative source compared to other people ($r = 0.16$, $p < 0.05$). In the nonconformist priming condition, the perception of having enough money to buy what one wants tended to be lower ($r = -0.14$, $p < 0.05$). Collectively, these results suggest that the normative induction (conformist-nonconformist) was effective, as it showed expected interactions with other relevant variables, such as the degree of religiosity, the level of emotional rejection following an unequal treatment, concern about money, and the person who represents the normative source.

The other covariates of the study, although they did not show significant interactions with the experimental conditions (type of priming), did show relevant associations among themselves, as shown in Table 2. Notably, the Perception of Inequality in Everyday Life (PEIEL) showed significant positive correlations with horizontal collectivism ($r = 0.21$), general collectivism ($r = 0.26$), and vertical collectivism ($r = 0.13$). Horizontal collectivism was associated with general collectivism ($r = 0.82$) and negatively with vertical individualism ($r = -0.28$).

General collectivism also showed a negative relationship with vertical individualism ($r = -0.25$) and with the set of unequal exchanges in the ultimatum ($r = -0.12$), as well as positive correlations with the positive feeling after the UG (r

= 0.12) and the number of household members ($r = 0.13$). As expected, the feeling after the UG showed a negative correlation with the set of unequal offers in this game ($r = -0.18$), indicating that the feeling after such offers tend to be negative. Finally, the number of household members showed a negative correlation with the set of unequal exchanges in the UG ($r = -0.27$). Additionally, it was found that the more household members there were, the greater the tendency to accept unequal offers (6:4, $r = -0.13$; 7:3, $r = -0.22$; 8:2, $r = -0.25$; 9:1, $r = -0.26$), with statistically significant associations in all cases.

Table 1. *Bivariate Correlations between Independent Variable and Covariates.*

	Religiosity	Feeling	Sufficient Money	Concern about Money	Normative Source person
Non-conformist Priming	-.11*	-.11*	-.14**	.11*	-.16**
Religiosity	-	-.07	-.05	-.10*	.03
Feeling after UG		-	-.02	.11*	.16**
Sufficient Money			-	-.13**	.04
Concern about Money				-	.10

Table 2. *Bivariate Correlations Among Covariates.*

	Horizontal Collectivism	General Collectivism	Vertical Individualism	Ultimatum Feeling	Household Number Members	Unequal Ultimatum
PEIEL	.21**	.26**	.13*	.03	-.02	.04
Horizontal Collectivism	-	.82**	-.28**	.10	.10	-.05
General Collectivism		-	-.25**	.12*	.13*	-.12*
Vertical Individualism			-	.01	.05	-.05

	Horizontal Collectivism	General Collectivism	Vertical Individualism	Ultimatum Feeling	Household Number Members	Unequal Ultimatum
Ultimatum Feeling				-	.04	-.18**
Household number members					-	-.27**

* $p < .05$, ** $p < .01$

The UG results generally demonstrate a trend of rejection toward inequality and acceptance of equality. Unequal offers were predominantly rejected, with a 90% rejection rate for the 9:1 distribution (see Figure 1). This rejection decreases as the level of inequality in the offer decreases: 86% for the 8:2 distribution, 80% for the 7:3 distribution, and 59% for the 6:4 offer (see Figure 2). Meanwhile, rejection falls to only 3.5% for the equal 5:5 distribution, confirming that acceptance of equal offers tends to be widespread (see Figure 3).

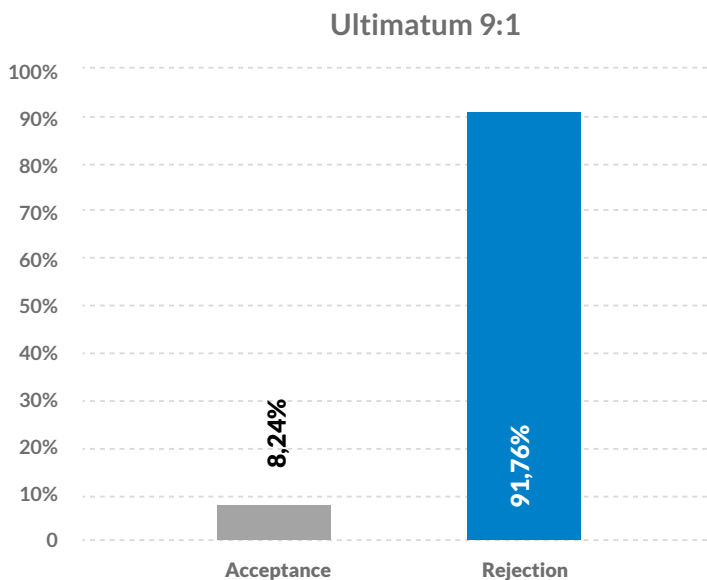


Figure 1. *Ultimatum 9:1.*

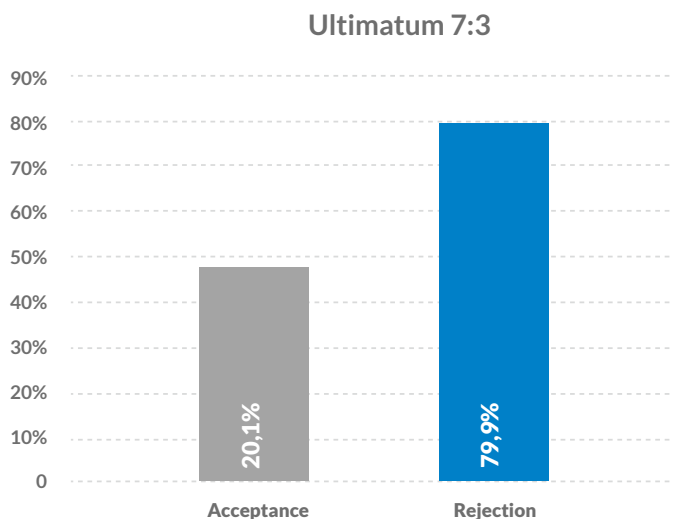


Figure 2. *Ultimatum 7:3.*

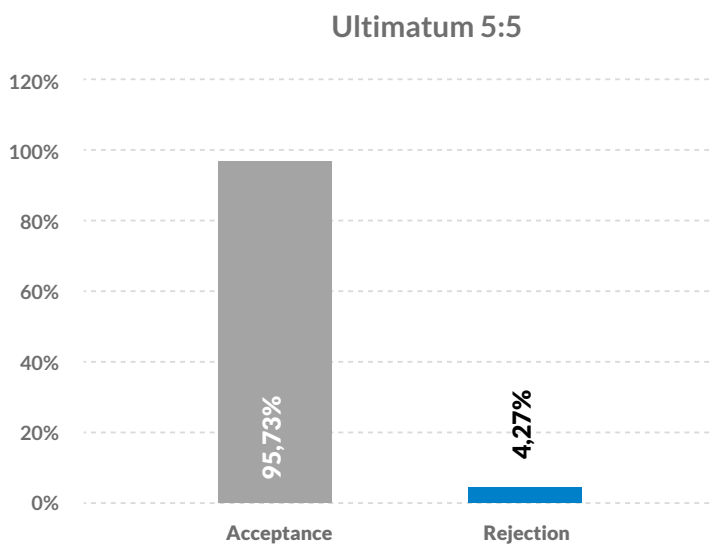


Figure 3. *Ultimatum 5:5.*

After reviewing the previous general results, the relationship between normative priming and the UG was analyzed. Responses to the different offers were found to not be affected by the type of conformist or non-conformist normative priming. This suggests that the inequality aversion measured by this

game was not influenced by the induction of these situationally induced social norms.

Means, standard deviations, standard errors, and confidence intervals in the UG are shown in Table 3. The higher the mean, the greater the rejection of the offer, since acceptance was coded as 1 and rejection as 2. Table 4 presents the post hoc variance analyses comparing the means in the UG under the two types of normative priming and the neutral condition. The differences between the means, the standard error, the level of statistical significance, and the confidence interval are reported.

Table 3. Mean Scores in the Ultimatum Game According to the Type of Priming Applied.

Priming		N	Mean	Standard Deviation	Standard Error
Ultimatum 9:1	Non-conformist	94	1.90	0.296	0.031
	Conformist	90	1.92	0.269	0.028
	Neutral	95	1.93	0.263	0.027
	Total	279	1.92	0.276	0.016
Ultimatum 8:2	Non-conformist	93	1.84	0.370	0.038
	Conformist	92	1.87	0.339	0.035
	Neutral	95	1.83	0.376	0.039
	Total	280	1.85	0.361	0.022
Ultimatum 7:3	Non-conformist	93	1.76	0.427	0.044
	Conformist	91	1.85	0.363	0.038
	Neutral	94	1.79	0.411	0.042
	Total	278	1.80	0.402	0.024
Ultimatum 6:4	Non-conformist	94	1.63	0.486	0.050
	Conformist	91	1.59	0.494	0.052
	Neutral	95	1.57	0.498	0.051
	Total	280	1.60	0.491	0.029
Ultimatum 5:5	Non-conformist	93	1.04	0.204	0.021
	Conformist	93	1.04	0.204	0.021
	Neutral	95	1.04	0.202	0.021
	Total	281	1.04	0.203	0.012

Table 4. Mean Comparisons in the Ultimatum Game According to the Type of Normative Priming and Neutral Condition Applied.

Relationship Between Types of Priming			Mean Differences with Priming	Standard Error	p-value
Ultimatum 9:1	Non-conformist	Conformist	-0.018	0.041	0.660
		Neutral	-0.022	0.040	0.584
	Conformist	Non-conformist	0.018	0.041	0.660
		Neutral	-0.004	0.041	0.920
	Neutral	Non-conformist	0.022	0.040	0.584
		Conformist	0.004	0.041	0.920
Ultimatum 8:2	Non-conformist	Conformist	-0.031	0.053	0.563
		Neutral	0.007	0.053	0.893
	Conformist	Non-conformist	0.031	0.053	0.563
		Neutral	0.038	0.053	0.474
	Neutral	Non-conformist	-0.007	0.053	0.893
		Conformist	-0.038	0.053	0.474
Ultimatum 7:3	Non-conformist	Conformist	-0.083	0.059	0.164
		Neutral	-0.024	0.059	0.686
	Conformist	Non-conformist	0.083	0.059	0.164
		Neutral	0.059	0.059	0.320
	Neutral	Non-conformist	0.024	0.059	0.686
		Conformist	-0.059	0.059	0.320
Ultimatum 6:4	Non-conformist	Conformist	0.034	0.072	0.637
		Neutral	0.059	0.072	0.409
	Conformist	Non-conformist	-0.034	0.072	0.637
		Neutral	0.025	0.072	0.730
	Neutral	Non-conformist	-0.059	0.072	0.409
		Conformist	-0.025	0.072	0.730
Ultimatum 5:5	Non-conformist	Conformist	0.000	0.030	1.000
		Neutral	0.001	0.030	0.976
	Conformist	Non-conformist	0.000	0.030	1.000
		Neutral	0.001	0.030	0.976
	Neutral	Non-conformist	-0.001	0.030	0.976
		Conformist	-0.001	0.030	0.976

Note: No mean differences were significant below 0.05, nor were they marginally significant below 0.1.

Figure 4 depicts the mean acceptance and rejection for the 9:1 distribution under the three experimental conditions in the UG. Figure 5 shows the case of the 5:5 distribution. In both cases, the response behavior in this game can be observed to not differ with the type of priming or condition applied, while it does vary with respect to the equality or inequality of the offer.

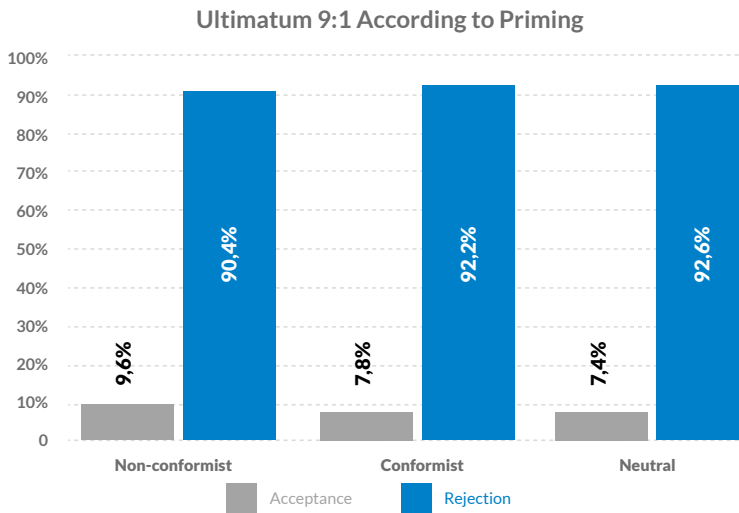


Figure 4. Ultimatum 9:1 According to Priming.

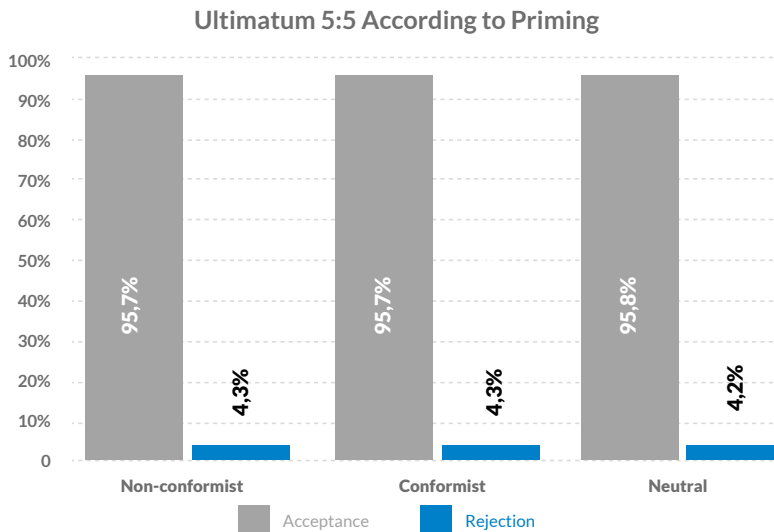


Figure 5. Ultimatum 5:5 According to Priming.

Conclusions

The previous results confirm a robust human tendency toward equality preference and inequality aversion (Engelmann & Tomasello, 2019). This tendency is notably present in early adolescence (12-13 years old), where individuals demonstrate the capacity to uphold these preferences even in the face of social norms from authority figures that explicitly advocate for humility and acceptance of any payment offered for work done. Additionally, there is evidence of the effectiveness of the applied conformist and non-conformist priming, as it significantly correlated with relevant variables indicating a more conservative attitude toward inequality, such as a more positive reported feeling and higher religiosity. This suggests that while the conformist and non-conformist priming influenced participants' perceptions, it did not change their behavior of rejecting inequality and accepting equality.

In other words, the results show that the priming strategy obtained a significant interaction with other relevant study variables (religiosity, emotional acceptance, perception of having insufficient money, greater concern for money, and the maternal figure as a normative source), which are consistent with having a more conformist attitude and greater submission to social norms. However, neither of the two induced norms made a significant difference in decision-making in the UG version of payment for shared effort, suggesting that inequality aversion has a greater influence than situationally induced norms on adolescent behavior toward economic inequality.

The fact that the UG involves a loss of resources when rejecting any exchange equal to or greater than one unit demonstrates a willingness to exert costly punishment (Henrich et al., 2006) as an action to, presumably, assert reciprocity (Bowles & Gintis, 2004). This could be taken as an indication of what Fehr and Gächter (2002) called strong reciprocity, which increases the prospects of norm application, in this case, an implicit norm of inequality aversion that uses the receiver's veto power in the UG and suspends cooperation in the face of a perceived unfair deal, overriding an explicit instruction not to apply it; since, under conformist priming, participants are induced to be humble and accept whatever they are offered for their work.

Humans exhibit an early and inherent tendency toward cooperation and pro-sociality (Hamlin & Wynn, 2011), where equality, justice, and mutual respect help sustain such cooperation over the long term (Tomasello & Vaish, 2013). This tendency is a key trait in explaining the cultural evolution of humans. How strong is this inequality aversion in 13-year-old Costa Rican adolescents? Does it persist even in the face of social norms inducing conformism? The previous

results suggest that this aversion is already present at this age and does indeed persist despite norms that seek to subvert it.

Although recent evidence in cultural psychology indicates that social norms strongly influence behavior toward inequality (House & Tomasello, 2018), the interaction between chronic norms and situational norms in shaping behavior toward inequality remains unclear. This study verified a preference for equality and a costly aversion to inequality, as these tendencies persisted even when participants were mandated to accept inequality. This suggests that an inherent norm of inequality aversion manages to overcome a situational norm toward social conformity in the face of unequal treatment, even when the former implies a loss.

This inequality aversion effect was influenced by the number of household members, as a greater number of people in the household correlated with a lower tendency to reject unequal exchanges. This association might be because, with more people in the household, existing resources must be divided among more parties, making those in larger families more accustomed to settling for smaller portions when distributing resources or benefits. Conversely, those living in families with fewer members would be more accustomed to receiving a larger proportion and, therefore, would have less tolerance for receiving what they perceive as a smaller amount of resources or benefits.

These results contribute to the construction of knowledge regarding understanding cultural normative dynamics, as they serve to decipher and assess the relationships and differences between different normative levels (intrinsic and situational in this case), whose interactions have not been clarified. In turn, such advances can be useful in refining predictive models of human behavior in various circumstances, given the complexity and impact of norms inherent to the cultural world they construct and inhabit.

That these results were obtained in a society with a collectivist tendency and high levels of socioeconomic inequality, in a sample in the early adolescence stage is striking. This could imply a certain perspective of generational social change. Because the extent that people are willing from early ages to reject unequal treatment (even disobeying a norm that asks otherwise) is a trend more likely to be consolidated in future adult generations (Inglehart, 2018).

Limitations and Recommendations

One limitation of this study is that the UG was presented to participants as a hypothetical or imaginary situation. While this method is valid for studying decision-making processes (Ensminger & Henrich, 2014; van Dijk & De Dreu,

2021), future studies should consider conducting this game in a more realistic context to enhance its ecological validity. However, this approach often leads to a significant reduction in sample size.

In future research, the findings of this study could be replicated in other Latin American contexts, as well as in other cultural regions, to verify this inequality aversion effect in the face of norms that request its disregard.

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Appendices

Appendix 1: Conformist, Nonconformist, and Neutral Normative Priming

Conformist Normative Priming

Please start by answering the following question:

Think about the person with the most authority in your family and imagine a situation where that person reminds you that you must always be humble and accept whatever others want to give you for your work, and that you should not complain or get angry when you are given very little for your work, because the most important thing is to always be humble and quiet.

Then answer the following questions:

1. Who is the person you thought of?
2. What was the situation in which they asked you to be humble and quiet? Please describe it below:

Nonconformist Normative Priming

Please start by answering the following question:

Think about the person with the most authority in your family and imagine a situation where that person reminds you that you must always be proud and not accept others giving you little for your work, and that you should complain and get angry when you are given very little for your work, because the most important thing is to have self-respect and not allow any injustice.

Then answer the following questions:

1. Who is the person you thought of?
2. What was the situation in which they asked you to have self-respect and not allow any injustice? Please describe it below:

Neutral Condition

Reading comprehension exercise. Please read the following text and then answer the question about it:

A coincidence without comparison in the solar system: the diameter of the Sun is 400 times greater than that of the Moon, and the Moon is 400 times closer to the Earth than the Sun, which allows the Moon to cover the Sun when it passes between the Earth and the Sun. If the diameter of the Moon were 225 kilometers smaller, the total coverage would not occur, and a total solar eclipse would never be seen. Eclipses have long been dated through their records; it is believed that a Chinese scribe was the first to document one about four thousand years ago. Total solar eclipses will eventually disappear because the Moon is moving away from the Earth at a rate of about four centimeters per year, so in the distant future, thousands of years from now, it will be too far away to cover the entire Sun.

Mark with an X: What is the main idea of the above text?

- a. The relationship between the Sun's diameter and the Moon's proximity to the Earth makes it possible for us to witness total solar eclipses. ()
- b. A Chinese scribe was the first to establish an accurate record of one of the solar eclipses that occurred 4,000 years ago. ()

- c. The Moon is closer to the Earth than the Sun, but it is moving away at a rate of four centimeters per year, which endangers eclipses. ()
- d. The diameter of the Sun is 400 times greater than that of the Moon, and this property allows solar eclipses to be visualized. ()

Appendix 2: Ultimatum Game - Work Payment Version

Please read the following instruction carefully before answering and let us know if you have any questions:

Imagine that you and a colleague have just finished a job in which you both put in the same effort, but your boss says they don't know who worked more and who worked less, so you will have to split the money between you in the following way. Your colleague will make you several different proposals for dividing up the money, and in each case, you can only accept or reject the offer. If you accept it, both of you will keep your colleague's proposal in that case. If you reject it, both of you will get nothing in that case. The money will be distributed over several rounds.

Offer 1: Mark with an X the option of your choice in each case. From an initial amount of one thousand colones (C1000), your colleague proposes to keep nine hundred (C900) and give you one hundred (C100).

I accept the offer / __/ (the money is distributed according to the offer made)

I reject the offer / __/ (both get nothing in this case)

Offer 2: From a second amount of one thousand colones (C1000), your colleague proposes to keep five hundred (C500) and give you five hundred (C500).

I accept / __/

I reject / __/

Offer 3: From a third amount of one thousand colones (C1000), your colleague proposes to keep eight hundred (C800) and give you two hundred (C200).

I accept / __/

I reject / __/

Offer 4: From a fourth amount of one thousand colones (C1000), your colleague proposes to keep six hundred (C600) and give you four hundred (C400).

I accept / __/

I reject / __/

Offer 5: From a fifth amount of one thousand colones (C1000), your colleague proposes to keep seven hundred (C700) and give you three hundred (C300).

I accept / __/

I reject / __/