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The Aversion to Inequality in the Ultimatum Game Increases When Effort Has Been Invested in Producing the Distributed Resource

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ABSTRACT

Disadvantageous inequality aversion is considered a universal human tendency, probably because it serves as a mechanism to motivate continuous cooperation by punishing behaviors that are perceived as unfair; however, it can change depending on the circumstances, such as social norms, values, power relations, and hierarchies, all of which are part of the social and cultural contexts of the cooperative interactions. One such condition is the effort invested in the cooperation. This study investigates the effect of effort on inequality aversion, with the hypothesis that in interchanges in which people have invested effort to produce the resource under distribution, the inequality aversion will increase compared to situations with no effort involved. This is an experimental study using a version of the Ultimatum Game (UG) under three conditions: 1) with resource distribution resulting from shared effort, 2) without information about the origin of the resources, and 3) with resources that required no effort. In general, the data obtained suggest that in the UG with effort, inequality is rejected more than in the conditions without effort and without information about the origin of the distributed goods. The effort invested in producing a resource or gain can make people more inclined to reject inequality in interdependent relationships and, therefore, more likely to impose costly punishment on their counterparts.

Keywords: Inequality Aversion; Ultimatum Game (UG); Perceived Effort; Costly Punishment; Distributive Justice

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1. Introduction

Inequality aversion describes a preference for fairness and a resistance to unequal outcomes, and it is taken to be a human universal, involving reacting negatively to getting less than others (disadvantageous inequality), which is present in all human societies, probably because it plays a role in equilibrating interchanges and distributions of spoils in cooperative relationships by motivating the cease of collaboration and the punishments of abusers^[1]. This creates a transcendental difference between humans and other primates, because when distributions of gains are equal or fair to the parts involved, then they keep cooperating, but when distributions are unequal or unfair, then the part that receives the disadvantageous treatment tend to stop cooperating. This is the case both in humans and chimpanzees, but with the difference that humans tend to equilibrate more the distributions, while in chimpanzees, the more dominant individual generally takes all the spoils, with the fundamental consequence that humans tend to keep cooperation in the long run, while chimpanzees do not do this. This has implications for the comprehension of human nature because this represents a cooperative view of human behavior more than a competitive view.

Distributive justice can be defined as giving to each person their corresponding part. Possibly, the estimation of what the corresponding part is takes effort invested into account, because when people feel that their work is not being paid accordingly, they activate an aversive response, which cease cooperation. In this perspective, inequality aversion can be understood as a mechanism to respond to and prevent unequal treatments, which is at the basis of the human sense of justice^[2]. This means that justice plays a role in creating continuous cooperation, which is one of the main differences between humans and great apes.

One prominent theory posits that human morality arises from the need to resolve problems of cooperation within a social group^[3]. Instead of an agent being interested only in maximizing profit, this theory sees humans as moral beings interested in keeping equilibrated relationships. According to this theory, there is a set of possibly universal norms, which are more important than the individual increase of utility at each interaction. These social norms are: 1) help family, 2) assist the group, 3) return favors, 4) be courageous, 5) obey superiors, 6) divide resources fairly, and 7) respect the belongings of others. The present work assumes the norm six

as a key driver of human social life, largely responsible for keeping cooperation in the long run and maintaining groups united.

Humans are specially equipped for cooperation, because from a very early age (four years old of age and before) they show established special skills for social cognition, including capacities to manage communication and language, imitation, role playing, social norms, social learning, and theory of mind^[4]. Compared to other primates, human children show better skills of social cognition, not of physical cognition. This has been taken as evidence in favor of the cultural intelligence hypothesis, according to which human intelligence emerges and evolves in cultural and social learning contexts much more than in isolation. The idea is that human intelligence first merges for cooperation, and then it gives humans powerful cognitive skills that also provide individual advantage. The main idea is that the key driver of the particular human path of evolution is cooperation.

It is possible that the key factor in making humans the cultural beings they are is cooperation^[5], as the skills required to carry it out and sustain it long-term appear to be central to what distinguishes humans from other primates^[6]. As evidenced by several experimental studies with children, while the physical cognitive skills for acting on and manipulating the material world show no performance differences between children and other closely related primates (such as chimpanzees), the social cognitive skills necessary to create and maintain cooperation among individuals do show significant performance differences between children and other primates^[7,8]. This is crucial because the ability to understand and consider others plays a key role in sustaining cooperation, since when unequal or unbalanced treatment is perceived, the most disadvantaged party generally ceases to cooperate^[9].

This is essential because without cooperation, there would be no way to create culture, understood as that network of shared meanings that facilitates and supports exchange, communication, and the achievement of shared goals^[10]. For example, when we refer to a society as a culture, we are not only talking about a group of people, but about something they share with each other, generally composed of collective psychosocial products such as language, beliefs, norms, symbols, values, sensibilities, identity, behaviors, and cultural products (food, dances, rituals, music, arts, technology, among others).

Even the very origin of human morality could lie in cooperation, as several authors have suggested^[11]. This cooperation would be linked to negative emotions experienced when one receives treatment considered unequal or unfair, leading to a breakdown in cooperation^[12]. This has been interpreted as meaning that morality and the sense of justice stem from human psychosocial mechanisms for stabilizing cooperation^[9], which would have been evolutionarily selected through an interaction between genes and culture to favor prosocial behaviors and punish anti-cooperative behaviors^[13].

One of the achievements attributed to experimental research with economic games is that it contradicts the idea of the rational human being as a mere utility maximizer^[14] and instead proposes an agent socio-emotionally and evolutionarily motivated to preserve equality and justice, as factors that promote the maintenance of long-term cooperation^[15].

What is better: greater profit now or preserving cooperative relationships in the long term? The current Western dominant view tends to prioritize profit, and this is based on an abstract construct of human beings as agents concerned only with increasing their utility, regardless of whether this implies losses for others, for society, or for the environment^[16]. Thus, those who obtain the most profits are presented as heroes, with much attention paid to the annual ranking of the greatest individual wealth accumulated in the world, but little or no attention given to the social effort required to produce that wealth.

This image of the human being is likely to have little relation to the deep nature of the human being, since in reality he does not act as a “homo economicus,” driven only by the lucrative interest, as consistently demonstrated by multiple experimental studies with economic games^[17].

If people were motivated only by obtaining the greatest possible gain, then they would be motivated to accept any exchange greater than zero in their distributive interactions of resources with other people, but various studies show that people do not behave as predicted by the utility maximization view^[18].

This means that inequality is counterproductive to sustaining long-term cooperation, because people are motivated to suspend cooperation when they receive unequal or unfair treatment, especially when they have put effort into obtaining the resource being distributed^[6].

In general, people from all the cultures studied, and from a very young age (even in the first year of life), show an aversion to inequality and a preference for equality^[18]. However, this aversion can be increased by the effort invested, which suggests that the more work it has taken to obtain something, the more willing people are to reject it if doing so preserves equitable treatment.

How do humans develop the sense of fairness? How are they capable of privileging justice over profit? According to a recent review^[19], there are some core psychosocial mechanisms needed at the basis to create this sense. A schematic and figurative view of these eight mechanisms is the following:

Interdependence. The understanding that parts in a relationship need each other: “I need you, and you need me.”

Cooperation. The capacity of working aligned with other persons with a shared purpose: “Let’s do this together.”

Respect. The special consideration of each person as deserving good treatment and no abuse: “You are valuable and important, and so am I.”

Theory of mind. The skill of creating representations of other people’s mind content: “I understand your intentions.”

Social norms. A psychology to create, understand, follow and enforce shared rules: “We must do it this way.”

Difference principle. The understanding that humans have diverse departing point which require differentiated treatments: “There are different needs and merits to consider.”

Inequality aversion. A negative emotion toward received unequal treatments: “It makes me angry when I’m treated unfairly.”

Punishment. A negative emotional and behavioral reaction for retaliation or revenge: “For treating me badly, you’ll get what you deserve.”

In general, these different psychosocial mechanisms show a highly complex set of human capacities that enable the species to come up with notions such as fairness. In this context, inequality aversion is one of several skills to maintain cooperation.

The Present Study

Is inequality aversion related to the degree of effort invested in the production of the unequally distributed resource? This paper explores this question using a strategy based on the Ultimatum Game (UG), a resource exchange task in a situation of interdependence that has proven to be re-

vealing and fruitful for analyzing human behavior in resource distribution^[20]. One innovative contribution of the present study is that it was made at a non-WEIRD society, which is valuable considering that the majority of research on inequality aversion comes from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) samples^[10].

In particular, the UG reflects a preference for equality, an aversion to disadvantageous inequality, and a willingness to impose costly punishment, which contradicts the idea of rationality as mere profit maximization. However, previous evidence^[21] indicates that these effects are amplified depending on the source of the resources. Thus, when resources under distribution are perceived as the fruit of personal effort, equality is valued more highly than when the resources are seen as coming from a donation. This means that people not only consider the quantitative value of resources relative to others, but also the degree of relative effort invested in obtaining them.

So, what is the effect of the effort invested on behavior towards inequality? The objective here is to analyze the effect of effort invested on behavior towards inequality in a resource distribution game in two versions: effortless donation and work, in the position of the recipient, along with a third version without information about the effort made (control condition).

Our hypothesis proposes that participants in the donation version will be more accepting of unequal offers than those in the pay-for-work version and in an effort-neutral version (control), because the effort invested increases inequality aversion. In other words, people presented with the distributive situation as the product of effort will show greater inequality aversion compared to those who perceived the situation as not resulting from effort or who were not given any information about it.

2. Materials and Methods

This is an experimental study between subjects with three types of Ultimatum Game (UG) as the independent variable: 1) with effort, 2) without effort, 3) undefined (control group), and the results of acceptance or rejection of the offers as the dependent variable in 5 offers, 4 disadvantageously unequal and one equal: 9:1, 8:2, 7:3, 6:4 and 5:5, respectively. The present study has the approval of the Ethics

Committee of UNED Spain.

2.1. Participants

A total of 230 people participated, all university students from the Universidad Nacional (UNA), from Costa Rica, at the Heredia campus. The mean age was 21.5 years, with a standard deviation of 3.71, and 53% were women. All participants provided informed consent before the instruments were administered. Data were collected between August and September 2024 using self-administered closed-ended questionnaires on the Qualtrics platform.

2.2. Instruments and Proceedings

The independent variable was a modified version of the ultimatum game (UG) of payment per equal job between two parties, under three conditions: 1) with effort, 2) without effort, and 3) indefinite (control group). These three conditions are shown below as they were presented to the participants in this study. Each participant received only one condition.

UG with effort. “Imagine that you and a colleague have just finished a job in which you put the same effort, but your boss tells you that he does not know who worked more and who worked less. You will have to divide the money between you and your partner as follows: Your colleague will make five different proposals for how to divide the money, and in each case, you can only accept or reject the offer. If you accept, you both keep your colleague’s proposal for that instance. If you reject it, you both get nothing for that instance.” In total, five thousand colones (C\$5,000) (Costa Rican currency, approximately US \$10) will be divided into five installments.

UG with no effort. “Imagine that you and a colleague have just received some money as a gift, but the person who gave it to you says that you must divide the money between you as follows. Your colleague will make five different proposals for how to divide the money, and in each case, you can only accept or reject the offer. If you accept, you both keep your colleague’s proposal for that portion. If you reject it, you both get nothing for that portion.” In total, five thousand colones (C\$5,000) will be distributed in five installments.

UG indefinite (no information). “Imagine that you and a colleague have to divide some money between the two of you, but you must do so in the following way. Your col-

league will make five different proposals for how to divide the money, and in each case, you can only accept or reject the offer. If you accept, you both keep your colleague's proposal for that installment. If you reject it, you both get nothing for that installment." In total, five thousand colones (C5,000) will be divided into five installments. Under this condition, no information was provided about the origin of the money.

Each participant received only one of the three former conditions, which were randomly assigned using the Qualtrics software, ensuring that everyone had an equal chance of receiving any one of them. Participants had no time constraints for responding to the proposed offers.

After receiving the information of one of the three conditions above, each participant proceeded to perform the UG in the receiver position, responding to the following 5 offers whose order was randomized with the Qualtrics software:

Offer 1: "From an initial sum of one thousand colones (C1,000), your colleague proposes to keep nine hundred (C900) and give you one hundred (C100)."

Offer 2: "From a second sum of one thousand colones (C1,000), your colleague proposes to keep five hundred (C500) and give you five hundred (C500)."

Offer 3: "From a third sum of one thousand colones (C1,000), your colleague proposes to keep eight hundred (C800) and give you two hundred (C200)."

Offer 4: "From a fourth sum of one thousand colones (C1,000), your colleague proposes to keep six hundred (C600) and give you four hundred (C400)."

Offer 5: "From a fifth amount of one thousand colones (C1,000), your partner proposes to keep seven hundred (C700) for himself and give you three hundred (C300)."

Acceptance of each offer was coded as one (1) and rejection as zero (0). Five hundred colones are equivalent to approximately one US dollar at the exchange rate in effect during the data collection period. Responses to offers were hypothetical in the sense that participants responded to them only in questionnaires, not accepting or rejecting real amounts of money.

2.3. Analysis

The frequency of acceptances and rejections in the effort condition was compared with the no-effort condition and the control group (undefined effort) using a contingency

analysis to identify overall differences with a chi-square test (χ^2), as well as a one-way analysis of variance (ANOVA) to determine if there was a significant difference between the experimental conditions. Subsequently, a post-hoc analysis was performed to identify the relationships between each of the experimental conditions and the other two, for each of the offers in the UG (Ultimatum Game), namely: 9:1, 8:2, 7:3, 6:4, and 5:5. Finally, a binomial logistic regression was run with the UG with effort as the predictor variable and the inequality acceptance as the criteria. The analyses were performed using SPSS and the Jamovi software from the R statistical package.

3. Results

Overall, our results confirm a trend of rejecting offers of unequal exchanges and accepting offers of equal exchanges. In all unequal exchanges, rejections were higher than acceptances, while in equal exchanges, the tendency was to accept them in almost all cases. However, consistent with our hypothesis, this rejection of inequality changed significantly depending on the information provided to participants about the origin of the outcomes. Thus, people under the condition of invested effort showed greater aversion to inequality than people under the conditions of no effort and no information about the origin of the resources under distribution.

Figure 1 shows the results for the 9:1 offer in the Ultimatum Game (UG), in which the offeror keeps 9 units and gives 1 to their counterpart. This figure shows a significant relationship ($p < 0.05$) between the experimental condition and the rejection of inequality. As can be seen in this graph, people who were told that the distributed resource was the product of shared effort with their counterpart increased their rejection of the offer, which rose to 96.3%. In contrast, those who were not given information about the effort made (undefined condition) or were explicitly told that they had not made any effort showed lower rejection rates, at 85.1% and 88.7%, respectively. In other words, the results show that the vast majority of participants preferred to receive nothing rather than be treated unequally, but this effect was amplified by the perception of the effort made to obtain the distributed resources.

The aforementioned behavior showed the same pattern in all other unequal offers (8:2, 7:3, and 6:4), as rejection of

inequality was greater under the effort condition, although, in general, it tended to decrease as the distributive inequality decreased (see **Figure 2**). These effects disappear in the equal distribution (5:5), where widespread acceptance was expressed under all three experimental conditions (98.3%), with no significant differences between them, which reflect a robust preference for equality.

Table 1 presents the analysis of variance (ANOVA) for each of the UG offers, which shows a significant difference in all unequal offers but not in the equal offer. **Table 2**

then shows the details of all comparisons between the three experimental conditions. As can be seen, in all cases the condition with effort was significantly different from the undefined condition, but not with respect to the condition without effort. The difference between the effort condition and the no effort condition was statistically significant in the 8:2 and 6:4 distributions, and not significant in the 9:1 and 7:3 conditions. The values in the bars of **Figures 1** and **2** are percentages of the acceptance and rejection of the exchanges for each of the three experimental conditions.

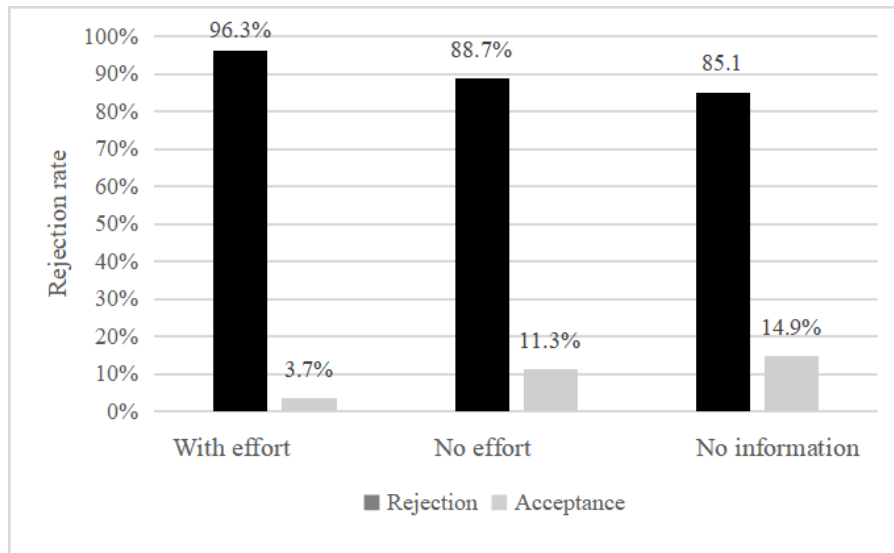


Figure 1. Interchange 9:1.

Note: $X^2(2, 230) = 6.04, p < 0.05$.

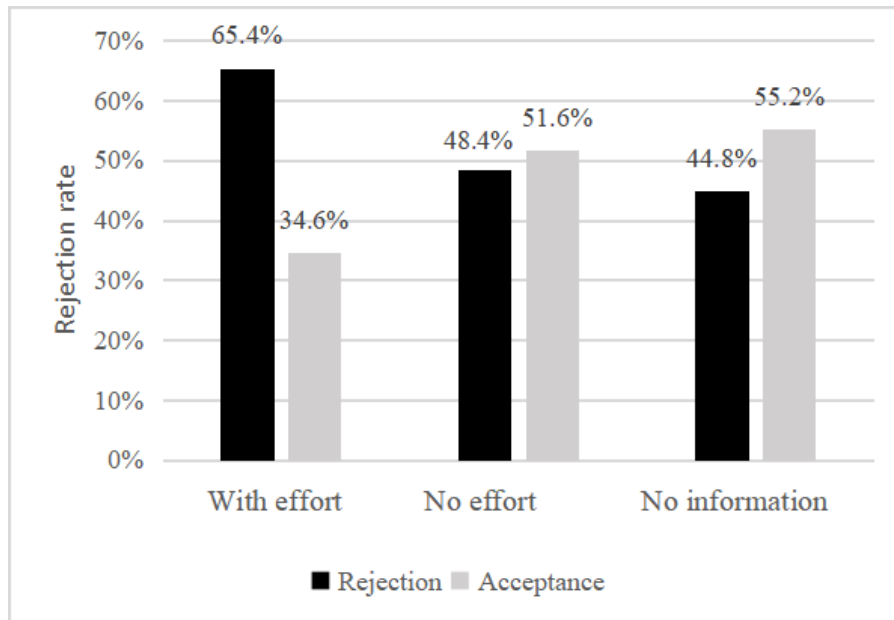


Figure 2. Interchange 6:4.

Note: $X^2(2, 230) = 7.889, p < 0.05$.

Table 1. One-factor analysis of variance.

UG	F	df1	df2	p
9:1	3.889	2	130	0.023
8:2	5.419	2	129	0.005
7:3	3.448	2	144	0.034
6:4	4.125	2	144	0.018
5:5	0.136	2	144	0.873

Table 2. Multiple comparisons among experimental conditions.

Interchange Compared Conditions			Differences of the Mean	Standard Error	p	Confidence Interval at 95%	
						Inferior Limit	Superior Limit
09:01	With effort	Indefinite	0.112*	0.046	0.015	0.02	0.20
		Without effort	0.076	0.050	0.133	-0.02	0.17
	Indefinite	With effort	-0.112*	0.046	0.015	-0.20	-0.02
		Without effort	-0.037	0.050	0.462	-0.13	0.06
	Without effort	With effort	-0.076	0.050	0.133	-0.17	0.02
		Indefinite	0.037	0.050	0.462	-0.06	0.13
08:02	With effort	Indefinite	0.135*	0.052	0.011	0.03	0.24
		Without effort	0.128*	0.057	0.026	0.02	0.24
	Indefinite	With effort	-0.135*	0.052	0.011	-0.24	-0.03
		Without effort	-0.006	0.056	0.908	-0.12	0.10
	Without effort	With effort	-0.128*	0.057	0.026	-0.24	-0.02
		Indefinite	0.006	0.056	0.908	-0.10	0.12
07:03	With effort	Indefinite	0.163*	0.062	0.009	0.04	0.29
		Without effort	0.042	0.068	0.541	-0.09	0.18
	Indefinite	With effort	-0.163*	0.062	0.009	-0.29	-0.04
		Without effort	-0.121	0.067	0.071	-0.25	0.01
	Without effort	With effort	-0.042	0.068	0.541	-0.18	0.09
		Indefinite	0.121	0.067	0.071	-0.01	0.25
06:04	With effort	Indefinite	0.206*	0.076	0.007	0.06	0.36
		Without effort	0.170*	0.083	0.042	0.01	0.33
	Indefinite	With effort	-0.206*	0.076	0.007	-0.36	-0.06
		Without effort	-0.036	0.082	0.665	-0.20	0.13
	Without effort	With effort	-0.170*	0.083	0.042	-0.33	-0.01
		Indefinite	0.036	0.082	0.665	-0.13	0.20
05:05	With effort	Indefinite	-0.011	0.020	0.601	-0.05	0.03
		Without effort	-0.004	0.022	0.865	-0.05	0.04
	Indefinite	With effort	0.011	0.020	0.601	-0.03	0.05
		Without effort	0.007	0.022	0.754	-0.04	0.05
	Without effort	With effort	0.004	0.022	0.865	-0.04	0.05
		Indefinite	-0.007	0.022	0.754	-0.05	0.04

Note: * = The difference of the means is significant at the level 0.05.

Table 3 presents the summary of the binomial logistic regression analysis. The model compared effort versus no effort conditions, and resulted statistically significant ($p < 0.05$), although with a small amount of explained variance, since the UG with effort only explains 8% of the variance in the acceptance of inequality. The B value was negative (-1.431), which means that the experimental condition with

effort tends to decrease the probability of accepting unequal exchanges. The Odds Ratio was 0.239, which implies that the effort condition influences in the diminishing of the acceptance of unequal exchanges in the UG. In summary, this model confirms that the effort in the production of the distributed good tends to decrease tolerance to inequality, which implies an increase in inequality aversion.

Table 3. Binomial logistic regression of inequality acceptance.

Predictor Variable	B	SE	OR	R ²	Wald	p
UG with effort	-1.431	0.66	0.239	8%	4.756	0.029

4. Discussion

The previous results show that people who have invested effort in producing the resources being distributed are more motivated to punish those who offer them an unequal distribution of those resources, compared to those who have not invested any effort. This phenomenon is called costly punishment when it involves a loss for the one who inflicts it. People who have worked hard to obtain a resource are, paradoxically, more willing to forgo this payment for their labor if it is distributed unequally or disproportionately to the amount of effort invested. This implies that people tend to move further away from rational maximization behavior when they perceive that their effort is not recognized proportionally.

People evaluate their situation, resources, and status by comparing themselves to others rather than by valuing what they have on their own^[22,23], which implies that greater inequality is associated with a greater aversion to inequality^[24]. However, this pattern is not necessarily present at the macrosocial level and appears to differ across cultures. While people with fewer resources in Western societies tend to have a greater aversion to inequality, this is not the case in Eastern societies^[25].

According to the present results, there is a tendency among people who have invested effort in producing a distributed product, which is that they are more willing to reject unequal treatment than when they have not made any effort or have not been given information about the effort invested. The more it has cost them to obtain a resource, the more willing they are to go without anything if they have been treated unequally. This means that aversion to inequality increases when effort is involved. This finding is in line with the rejection of the rational choice theory because it proposes a human interested only in increasing gains^[26], while the results presented here imply a moral being more interested in fairness than profit in the circumstances here under scrutiny.

Thinking in the possible broader social implications of these results, it could be suggested that the high levels of unrest, anger, insecurity and conflict observed in societies with highly unequal wealth distribution^[27] could be related to an increase in inequality aversion, which could be a factor leading to outrage, instability, and large-scale violence^[28,29].

The present results underscore that fairness matters, but this importance is even greater when effort has been in-

vested in producing the resources that are distributed. Thus, organizations, communities and societies that undervalue the efforts of their inhabitants are spreading negative emotions that will eventually break down cooperative relationships, harming those at both the top and bottom of the social hierarchy, since those at the top cannot maintain their position if those at the bottom stop cooperating. Policy interventions may benefit by incorporating a new conception of human being that is motivated also by fairness, and not only by profit. For example, making deliberate efforts to improve equity and fairness in public policies can be viewed as part of its sustainability and a criterion for their implementation and evaluation.

Understanding human rationality outside of its social context and its emotional and moral implications is arguably a dehumanized view of human thought and behavior, since every human action happens in a social context. Our results highlight the importance of advancing an ecological understanding of human cognition, which becomes more complete when situated within the complex interpersonal and cultural environments that are natural to it^[4,30]. Just as a fish cannot be fully understood out of water, human beings cannot be understood outside of their sociocultural context.

Investing effort in an exchange to receive an unequal payment increases the perception of injustice and, therefore, resentment. Inequality produces aversion because human beings are “wired” to maintain cooperation through fairness^[31]. This aversion has negative consequences for cooperation, as highly unequal societies generate conflict, unrest, and related problems such as poor health due to increased levels of stress^[32].

One of the factors that can affect behavior toward inequality is the effort expended to obtain a good. If effort has been incurred, then there will be greater aversion to inequality with respect to the distribution of that good or the rewards linked to it. A paradox in this regard is that people and societies that work longer hours do not necessarily earn higher wages, which could be a predictor of increased aversion to inequality and, therefore, a lower willingness to cooperate and an increase in negative emotions, which is a predictor of rejection to cooperate^[22,31].

The aversive effect identified here likely occurs because unfair treatment generates stronger negative emotions, as individuals perceive greater entitlement to a distributed

good when they have worked to obtain it compared to when it was obtained at no cost. However, this creates the paradox that the more effort one has made, the more willing one is to lose the good if the proposed exchange is unequal. This idea is consistent with Tomasello's proposal that people seek respectful treatment rather than mere equality or gain^[33].

Therefore, the cost of acquiring a good (effort) can lead to a greater willingness to accept a higher loss by rejecting an unequal exchange and ending up with nothing, as established by the rules of the UG. In other words, people would be more willing to inflict a costly penalty, preferring to receive nothing rather than be treated unfairly, especially when effort has been invested in obtaining the good through distribution.

However, other studies on inequality aversion with the UG show that the disposition to reject inequality is associated with other variables related to the level of dependence of people in the distributive situation, such as socioeconomic status, independent self-concept and the perception of being different from others^[24]. This means that aversion to inequality is a complex behavior related to different situational factors.

In short, when effort has been made to obtain a good or produce a product, sensitivity to and intolerance of inequality in the distribution of that good increases compared to when the resource is a gift or when no information is provided about the effort involved. The effort invested likely increases the perception of being entitled to a proportional share of the good that one helped to produce. This means that the desire for fairness may be bigger than the mere desire for profit in situations like the ones described in this study. This behavior may be rooted in a human social psychology specialized for sustained cooperation^[34].

The contribution of the present study consists of applying and testing a modified version of the UG, explicitly distinguishing between effort and no effort in the production of the spoils in a sample from Latin America. It is important to keep in mind that the present results are based on a undergraduated university student sample in a specific cultural context, with hypothetical stakes, which limit generalizability to other populations. Future studies can sample new and diverse populations outside of university campuses in continuing to analyse how inequality aversion and effort relate.

5. Conclusions

Our results suggest that when people have invested effort in generating the good being distributed, they seem to be more willing to reject unequal treatment than when they made no effort or were not given information about the effort invested. Paradoxically, the more it has cost to obtain a resource, the more people seem to be willing to go without anything if they have been treated unequally. This means that inequality aversion increases when effort is involved in producing unequally distributed resources. In other words, the more something costs, the more willing people seem to be to lose everything if they are treated unequally when the benefits are distributed. This evidence would support the inequality aversion theory^[2] and the costly punishment theory^[9] and contradict the utility-maximization theory of rationality^[26].

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of UNED in Spain, approval number: 1-PSI-2022, date of approval: 30th of June 2022.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data from this research is available to interested parties upon request via email to the author.

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Conflicts of Interest

The author declares no conflict of interest.

AI Use Statement

The author declares that no artificial intelligence (AI) tools were used in the preparation of this manuscript.

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