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RESEARCH PAPER

Out-group/in-group personal moral dilemmas in the Kogi worldview

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Abstract This research report studies how Kogi people (a small-scale society located in Northern Colombia, South America) answer personal moral dilemmas (PMD), specifically a cultural adaptation of the Footbridge scenario when the characters in the stories are in-group or out-group. Four moral scenarios were designed in which the indigenous had to judge the possibility of saving either one person or five (1 in-group or 5 out-group; 1 out-group or 5 in-group; 1 and 5 in-group, and 1 and 5 out-group). The main findings were: the participants opted for choices closer to the consequentialist than to the deontological option, and that the group bias allowed them to go from a consequentialist option to a deontological one. Our research suggests that moral judgment in the resolution of personal moral dilemmas is not unitary even within the same human group; it also suggests that moral judgment depends on two contextual factors: the group membership and the social relationship of the experiment's subjects with the characters of the story.

Keywords Kogi worldview · Moral dilemmas · Personal moral dilemmas (PMD) · Moral Judgement · Out-group/In-group

Introduction

When we refer to the Trolley dilemma, two scenarios are possible: the Trolley problem as proposed by Philippa Foot (1967), and the Footbridge scenario, as formulated in the following decade by Judith Jarvis Thomson (1976). Greene et al., (2001, 2004, 2009) differentiated between consequentialist judgment, such as the modal response for the Trolley problem based on a rational calculation, and deontological judgment for the Footbridge scenario based on an emotional reaction. Yet, Williams (1973) had already suggested utilitarianism as an impersonal theory when examining the Foot (1967) scenario. However, the variation in the dilemma design established a methodological distinction between impersonal moral dilemmas (IMD), as in Foot's scenario, and personal moral dilemmas (PMD) in Thomson's scenario (Rosas et al., 2014, 2019).

Only a little more than half a century has passed since Philippa Foot (1967) conceived of the Trolley dilemma. However, she could not have imagined that philosophy, and more specifically experimental ethics, would propose what was called *Trolleyology* (Aguiar

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et al., 2020; Appiah, 2008; Baltzly, 2021; Osorio & Palchik, 2022, for drawing up a guide, although not exhaustive, of the use of the word). The popularization of this neologism underscores that the Trolley problem has become the core methodological tool for researchers in experimental ethics. It also enables an understanding of how scientific experimentation has used the dilemma to show diverse concepts and scopes of central and everyday ethical notions, concepts, and theories.

Indeed, the analysis of *Trolleyology*, whether in the Trolley problem or the Footbridge scenario, has involved studies as diverse as the teaching of both the scenarios and the ethical content derived from the dilemmas (Himmelreich & Cohen, 2021; Kahane, 2013), how it has been theorized by the same person throughout his career (Graham, 2017), or variations of the dilemma for a specific discipline (Andrade, 2019), a theorization on the relationship between the Trolley dilemma and personal moral dilemmas (Baumann, 2022), and even a proposal of a relationship between the Trolley and the double effect doctrine (Di Nucci, 2012, 2014). Similarly, the effect of a second language in solving the Trolley dilemma has been studied (Andrade, 2021, 2022; Geipel et al., 2015; Maftei et al., 2021), as well as cultural comparisons aimed at establishing conditions of universality in the judgment on the proposed dilemmas (Bago et al., 2022; Mikhail, 2007, 2009). Additionally, cultural comparisons have been studied, showing diversity in moral judgments regarding the solution of the dilemma (Bart et al., 2024; Gold et al., 2015; Qian et al., 2024), and finally (without the aforementioned exhausting study) adaptations of the dilemma to judge on machines (Awad et al., 2018, 2020a).

While it is true that moral dilemmas, such as the Trolley or Footbridge variant, have been used methodologically to search for and provide support to general philosophical theories, such as consequentialism or deontology (Greene et al., 2009), it is also true that cross-cultural studies have shown that the decisions made by participants have cultural variations (Awad et al., 2020b; Bago et al., 2022; Gold et al., 2015; Sorokowski et al., 2020; Winking & Koster, 2021). The evidence, thus, suggests that sacrificial decisions in resolving PMDs, such as the Footbridge, may depend on the contextual issues within a given society. This indication, moreover, seems to validate reasons for studying moral reasoning not only in cultural comparisons of large-scale WIERD and non-WIERD societies, but also in small-scale societies. To the extent that these societies, by establishing very close interpersonal relationships (Gurven, 2004) or by being outside the circuit of punitive, religious, and commercial institutions (Henrich et al., 2010), could shed greater light on cultural diversity not only in the specific framework of responding to personal moral dilemmas, but also in the generality of moral reasoning.

In studies examining cross-cultural comparisons, for example, Bago et al. (2022) replicated sacrificial dilemmas in a cultural comparison involving 45 countries. The study showed that, in relation to personal moral dilemmas, people generally show a certain aversion to making personal contact that would result in sacrificing oneself to save others. This indication seems to locate a certain tendency in cross-cultural comparison towards a deontological solution. For our report, this study is of great interest, especially because one of its predictions establishes that collectivist societies, due to their emphasis on empathy, would exhibit a lower proportion of consequencialist responses. Despite the prediction, the study did not find the sought-after association between the individualism-collectivism relationship and judgments about the moral dilemma. However, it should be noted that this research does not relate specific findings in cross-cultural comparison with small-scale societies.

On the other hand, Awad et al. (2020b) related empirical evidence on the way in which societies that could be considered collectivist act in situations of sacrificial dilemmas. This study showed that in societies with more fixed interpersonal relationships and low relational mobility, a main characteristic of small-scale societies (Gurven, 2004), people's judgments seem to lean towards more deontological options. That is, people tend to reject human sacrifices that could save more lives. These results, which seem to favor a deontological choice over a consequentialist one, have also been verified in small-scale societies (Sorokowski et al., 2020). However, it should be noted that this latest study uses an impersonal variant of the dilemma created for the experiment, which they named the "falling tree dilemma". It should be noted, finally, that studies can be found with small-scale societies where the consequentialist choice seems to

be followed in personal moral dilemmas (Winking & Koster, 2021).

Despite what is indicated in these cross-cultural comparisons, on the one hand, scientific research does not have systematic evidence on central aspects of morality, such as harm in relationships between people belonging to different social groups (Lee & Holyoak, 2020; Molenberghs et al., 2016; Moncrieff & Lienard, 2018; Navarick & Moreno, 2022; Stürmer & Snyder, 2010). On the other hand, intergroup relations have been decisive in obtaining answers to the Trolley dilemma in real scenarios (Christensen and Gomila, 2012). For example, Cikara et al. (2010) showed that Americans were more willing to save people from their social group than those they considered out-group, such as homeless people. Recently, De Poli et al. (2017) studied the influence of the media on moral judgments about refugees through a variant of the Trolley dilemma; while Van Gils et al. (2020) provided empirical evidence on how the presence of a close relationship can change both the neural process and the response to dilemmas in in-group/out-group relationships.

This might exhibit the existence of a moral bias in decision-making which has been studied in different types of social groups: children (Meidenbauer et al., 2018), women (Van Gils et al., 2020), university students (Bo & Lihua, 2024), and cross-cultural comparisons (McKee et al., 2024). In general, these studies show that the social group of people on whom the moral judgment falls (out-group/in-group) exerts an influence on who judges those actions. The evidence from these studies opens the door to investigating whether belonging to or not a social group also exerts an influence on other underrepresented social groups, such as small-scale societies.

Despite what has been said about the use and dissemination of both the problem and the neologism of *Trolleyology*, even in cross-cultural studies, the Trolley dilemma has not been systematically studied in small-scale societies. Thus, it should be noted that the few studies that have been done (Abarbanell & Hauser, 2010; Sorokowski et al., 2020; Winking & Koster, 2021) are far from constituting a systematic compendium of core aspects of morality derived from the Trolley dilemma. On the other hand, related studies have not been directed at examining the influence of in-group/out-group responses to the Trolley dilemma with small-scale participants. Examining this landscape, this research report aims to provide evidence of how people from a small-scale society (the Kogi, an indigenous group from Colombia, South America) answer PMD in in-group/out-group situations. Specifically, our research aims to answer the following questions: (a) Which option, deontological or consequentialist (within the classic classification of answers), is chosen by the indigenous Kogi in their judgments on the Trolley dilemma?; (b) Do in-group/out-group settings vary the way participants resolve moral dilemmas?, and finally, we posit gender as a covariate in the interrelation with the scenarios, (c) are there any gender differences?

Overview of the research and context

Ethnographical context

The Kogi are a small-scale society located in the Sierra Nevada de Santa Marta (SNSM) mountain range in northern Colombia, South America. They coexist with three other indigenous groups: *Wiwa*, *Ik*, and *Kankuamo*. Each group, except the *Kankuamo*, speaks its own language: *kogian*, *Damana*, and *Ikn*. They collectively call themselves the *Four Peoples* and consider themselves the Elder Brothers of humankind. They consider that, as the Elder Brothers, they must take special care of Nature, which they conceive as their Universal Mother. They also strive not to cause any damage to Nature or the material or spiritual beings that inhabit it. To sum up, they are caregivers, so they are the elder brothers. Still, the Four Peoples consider the Kogi to be the wisest and, thus, the most appropriate *Elder Brothers* among the *Four Peoples*.

The Kogi are classified as a small-scale society for two primary reasons. First, they exhibit close social relations among their members (Gurven, 2004). Individuals commonly recognize and distinguish members of different families and clans; when personal recognition fails, individuals can identify another's clan (*Toke*) by interpreting the distinct lines woven into their handbags. Second, they live outside of the three main features of Western society: market integration, world religions, and penal institutions (Heinrich et al., 2010). Regarding their economy, the Kogi consider that they obtain their food from small family crops and rely on an established ancestral system of exchange and circulation involving material and spiritual goods.

In respect to Religion, they do not adhere to any of the six major world religions, maintaining instead an ancestral spiritual practice heritage. Finally, they have their own penal institution, which consists of some works of thought that are made with ancestral elements, such as the weaving of the handbag (*Sgamé*) for women, and the use of the *Poporo (Sugi,* a lime gourd*)* for men, guided by a form of ancestral oracle called *Zhátukua*, rather than relying on common western incarceration or physical punishment.

For the Kogi the SNMS is the sacred mountain and the origin of humankind. The village called *Awiaka*, the location used for this study, holds particular significance. In *Kogian*, their language, *Awiaka* means "the place where tigers live". The village was established for two distinct, sacred purposes. First, the Kogi people worship the tiger (in fact, Kogi means, in Kogian, "the tiger people"), considered to be the first *Mama* (wisdom man) who lived in the Sierra. They also worship the rock where this first Mama taught the foundational knowledge of Nature to people. Second, the construction of *Awiaka* was essential to the Kogi´s mission of rescuing these *Ezuamas* (sacred sites) and protecting their ancestral territory until they reach the *Séîshizha* (-black line or the thread of *Sé*, the first and main Kogi law), which marks the mythic and sacred border of the Sierra.

Finally, it is important to give a brief description of the Law of Origin (*Sé*), which consists of both rituals, politics, and social rules that regulate each of the material and inmaterial dimensions of the Kogi's life. *Sé* was given since the beginning of the cosmos and consists of the biggest and hardest work of the Kogi people. Mama (wisdom man) and Zaka (wisdom woman) have this knowledge in a special manner called Shibuldama. The wise people say to the Kogi people, first, the main prescriptions about spiritual works needed in rituals. Second, like rituals, political organization has been established since the beginning of time and expressed in Kogi's origin myths. In this field, the task of Mama and Zaka consists of ensuring that these prescriptions are fulfilled and maintained. Finally, *Sé* regulated both the daily tasks and the way in which they should be performed by Kogi people, especially regarding gender distinctions. Thus, for example, men perform some tasks (cut certain fruits) and women others (collect certain products).

Objectives and hypotheses

The primary objective of this research is to utilize an experimental task to investigate how the Kogi, a small-scale society, make moral judgments in Personal Moral Dilemmas (PMD), thereby providing empirical evidence in an area that has received little attention, and thus broadening the understanding of morality. A secondary objective is to introduce in-group/out-group variants in the treatments to determine whether the classic responses to PMD, characterized as deontological and consequentialist (Greene et al., 2009), are affected by group bias. Finally, and based on the cultural prescriptions that the Kogi people have established for carrying out their ritual and daily activities (the prohibition and permission of men or women to perform a particular task), the research posits gender as a covariate to determine whether the participants' gender influences the results obtained in the experimental task.

The moral commitment of the Kogi people detected both in the ethnographic literature (Mestre & Rawitscher, 2018; Parra Witte, 2018; Preuss, 1993; Reichel-Dolmatoff, 1950, 1951, Uribe, 1990) and in the field work carried out by the authors, would allow us to hypothesize that the responses to personal moral dilemmas will generally align with what has been evidenced in experimental studies for other types of societies. The second hypothesis, as informed by related experimental literature (Bo & Lihua, 2024; McKee et al., 2024; Meidenbauer et al., 2018; Van Gils et al., 2020), suggests that in-group/out-group contexts could lead participants to make different moral judgments. Accordingly, deontological-type responses could be obtained for one treatment, and consequentialist responses for another. Finally, the research anticipates, based on ethnographic literature and fieldwork, that given the very marked gender roles among the Kogi for both ritual and everyday activities (Angarita & Viciana, 2022), gender could show differences in moral judgments to some of the treatments proposed in the study.

Materials and methods

Ethics approval

All procedures used in this research report were approved by the Ethics Committee on Scientific Research at the Industrial University of Santander (CEINCI-UIS), an organization that governs the ethical policies of scientific investigation at our University (UIS) (ethical identification number: bill 12 of 16/07/2021). Additionally, due to the nature of this report, the Kogi people's ancestral authority approved the whole study. Finally, hypotheses, sample size determination, and exclusion criteria were pre-registered at aspredicted.org.

Participants

Forty Kogi adults (N = 40; 20 women and 20 men) participated in this experiment. All participants were recruited from a Kogi village called *Awiaka* at the bottom of the Sierra Nevada de Santa Marta, and they were interviewed in a private space of the community. *Awiaka* is a village of 40 houses built in 2020. All the people of *Awiaka* come from San Antonio and Pueblo Viejo, two villages at the top of the Sierra.

Design and measures

The study employed a within-subjects design and had four counterbalanced moral scenarios (see Table 1) with an adaptation of the Footbridge scenario (Thomson, 1976). In each scenario, we evaluated moral judgments in the relationship between indigenous people (in-group) and Western people (out-group). Specifically, participants judged whether it is morally permissible to push a person to save five others, consistent with the structure of Thomson's (1976) PMD.

The dilemmas were presented in *Kogian*, although they were originally written in Spanish. The stories were then translated into *Kogian* with the assistance of an indigenous teacher of Kogi language and culture from an institute in the Sierra Nevada. Subsequently, the material underwent a back-translation process into Spanish by a secondary indigenous teacher who was blind of both the research and its main purposes, to ensure semantic and conceptual equivalence.

In our research report, four measures were recorded, one for each moral scenario. Specifically, our experiment, from a classical view of ethics, presents the deontological option (saving one person) versus the consequentialist option (saving five people). However, a slight variation was made in the design so that the deontological or consequentialist options were supported in the in-group or out-group of the characters in the stories. The dilemmas, finally, were devised with cultural elements of the Kogi people's daily life.

In general, the participant judged the possibility of pushing a sitting person to interrupt the passage of an oxen herd and thereby saving five people who were walking down a slope or, on the contrary, not pushing the sitting person and allowing the death of the five walkers. While the narration was taking place, the participant was shown an image that depicted the scenario (see complementary materials). In the first story, the sitting person was a Kogi and the walkers were Western people; in the second story, the sitting person was a Westerner and the walkers were Kogi people; for the third dilemma, all characters were Kogi, and, in the last one, all characters were Western people.

Results

Statistical analysis

The sample size was calculated using G*Power 3.1.5.9 (Faul et al., 2007), with the following data: effect size f = 0.25; significance level $\alpha = 0.05$; power (1-β err prob) = 0.90; correlation among repeated measures = 0.5; non-sphericity correction = 0.75. Under these conditions, previous analysis recommended a sample size of 37 subjects, for an actual power of 0.9058719. Our study had 40 participants (20 women and 20 men), all adult people, who live in Awiaka, the Kogi town where the experiment was conducted.

All analyses were run in R using maximum likelihood with the package lme4 (Bates et al., 2020). To establish the results to answer the three main questions of our study (the deontological or consequentialist option, the incidence of out-group/in-group scenarios in the choices, and gender differences as covariate) an F test was obtained, specifically, a repeated measures ANOVA.

Table 1 Number of people saved in each scenario

Participant	Gender	Order	Task 1	Task 2	Task 3	Task 4
1	Female	1,2,4,3	1	5	1	1
2	Female	3,1,4,2	1	1	1	1
3	Female	1,3,2,4	1	5	1	5
4	Female	4,2,1,3	5	1	1	5
5	Female	2,4,3,1	5	5	5	5
6	Female	2,1,4,3	1	5	5	1
7	Female	1,4,2,3	1	5	1	1
8	Female	3,4,2,1	5	5	5	5
9	Female	4,3,1,2	1	5	5	5
10	Female	4,3,1,2	1	1	5	1
11	Female	4,1,3,2	1	5	5	5
12	Female	1,3,4,2	5	1	5	1
13	Male	1,3,4,2	1	5	5	5
14	Female	4,1,3,2	5	5	5	5
15	Male	1,4,2,3	1	5	5	5
16	Male	1,2,3,4	1	5	5	5
17	Female	3,1,2,4	5	5	5	1
18	Female	2,3,4,1	5	1	5	1
19	Male	2,1,3,4	5	1	5	1
20	Female	2,4,1,3	1	5	5	1
21	Male	2,3,1,4	1	5	5	5
22	Female	4,3,1,2	1	5	5	1
23	Male	1,3,2,4	1	1	1	1
24	Male	3,4,1,2	1	5	5	5
25	Female	1,4,2,3	1	5	5	5
26	Male	2,3,1,4	1	5	1	5
27	Female	3,4,2,1	1	5	5	5
28	Female	3,1,4,2	1	5	1	1
29	Male	1,4,3,2	1	5	1	5
30	Male	3,2,1,4	1	5	1	5
31	Male	2,1,4,3	5	5	5	5
32	Male	1,2,4,3	5	5	5	1
33	Male	2,3,4,1	5	5	5	5
34	Male	2,4,3,1	5	1	5	5
35	Male	2,3,4,1	1	5	5	5
36	Male	4,2,1,3	1	1	5	5
37	Male	2,4,1,3	1	5	5	5
38	Male	1,2,3,4	5	1	5	5
39	Male	2,4,1,3	1	1	5	5
40	Male	3,4,2,1	5	5	5	5

Due to the test run's specificity, an ANOVA of repeated measures, in the coding of the data, the following procedure was carried out. First, the number of people saved for each of the moral scenarios was established (see Table 1). According to this, each participant, in each of the four scenarios, would have the number 1 (for having indicated that it is not morally permissible to push one person to save five

people, the deontological option) or number 5 (who indicated that it is morally permissible to sacrifice one person to save five people, the consequentialist choice). Subsequently, the choices were averaged (See Table 2). With this average, the analyses were carried out.

Deontological and consequentialist options

When examining the choices of participants, we noted that Kogi people's responses, in general, are on the side of the consequentialist option. Indeed, the total scores (See Table 2), show that, out of a maximum of 5, the Kogi obtained a total score of 3.47. Translated into the ethical terms of the research carried out, it is evident that the Kogi in each of their choices decided to save as many people as possible; that is, their option seems to be closer to a consequentialist choice than to a deontological one. In short, the results show that when the Kogi solve the tram dilemma, they make a remarkable effort to maximize profits. This finding puts them in a striking position concerning other human groups, since, as is widely reported, the responses to the Footbridge scenario (or any other personal moral dilemma) tend to be deontological (Greene et al., 2001, 2004).

The incidence of moral scenarios in the choices

As stated from the beginning, the second part of the results has been aimed at evaluating whether the moral scenarios influence the moral judgments of the Kogi, to the point that a significant variation can even be observed. On this particular topic, repeated measures ANOVA shows a statistically significant ($F = 6.452$, $p < .001$) (See Table 3). A Turkey post-hoc test allowed us to identify that the first task presents statistically significant differences from the other three in the average number of people saved, as indicated by the confidence intervals ($p < .05$). Additionally, since the limits of the confidence intervals are both positive (lwr and upr), it is evident that in Task 1 the decision seems to be closer to the deontological option, as it has, on average, fewer people saved than the other tasks (See Table 4).

To summarize, when making a comparison between the four tasks, it can be noted that Kogi people seem to move from a deontological option in the first task (when it comes to choosing between the life of an in-group and that of 5 out-groups) to a consequentialist one in the other three (when they must choose between 1 out-group and 5 in-group or when all are in-group or all out-group).

Table 2 Average of choices

Gender	Task 1	Task 2	Task 3	Task 4	(ALL)
FEMALE	2.4	4.0	3.8	2.8	3.250
MALE	2.4	3.8	4.2	4.4	3.700
(ALL)	2.4	3.9	4.0	3.6	3.47

Gender differences

Regarding gender, two aspects were examined. First, the research posits gender as a covariate to determine whether the gender of the participants influences the results obtained in the experimental task (See Table 3). In this case, our research report does not show any significant statistical differences in the interaction of the gender and applied tasks (See Table 3). Second, nevertheless, when comparing each task separately, an interesting special variation can be noticed, even though it is not statistically significant. According to the results, in the first three tasks, the average is similar, but in the last case (Task 4: when participants examine the scenario with out-group people), the variation can be noted (See Fig. 1). In fact, in task 4, the average of the female answers is 2.8, while men's is 4.4 (See Table 2).

Discussion

The results of the three main research questions (the deontology/consequentialism relationship, the incidence of moral scenarios in participant judgment, and the examination of gender as a covariate) require an explanation that has, as its main reference, the core cultural aspects of the Kogi worldview. To examine and explain the results obtained as carefully as possible, each of the central research questions will be addressed in what follows.

Table 3 Summary of the ANOVA of repeated measures about gender

	Df	Sum Sq	Mean Sq	F value	Pr(> F)
Tasks	3	65.1	21.700	6.452	0.000385 ***
Gender	1	8.1	8.100	2.408	0.122761
Tasks:gender	3	19.5	6.500	1.933	0.126666
Residuals	152	511.2	3.633		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 4 Turkey test post-hoc

	Diff	P value	Signif	LCL	UCL
Task1–Task2	– 1.5	0.0003	***	– 2.310.174	– 0.689826
Task1–Task3	– 1.6	0.0001	***	– 2.410.174	– 0.789826
Task1–Task4	– 1.2	0.0040	**	– 2.010.174	– 0.389826
Task2–Task3	0.1	0.8077		– 0.910174	0.710174
Task2–Task4	0.3	0.4656		– 0.510174	1.110.174
Task3–Task4	0.4	0.3309		– 0.410174	1.210.174

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

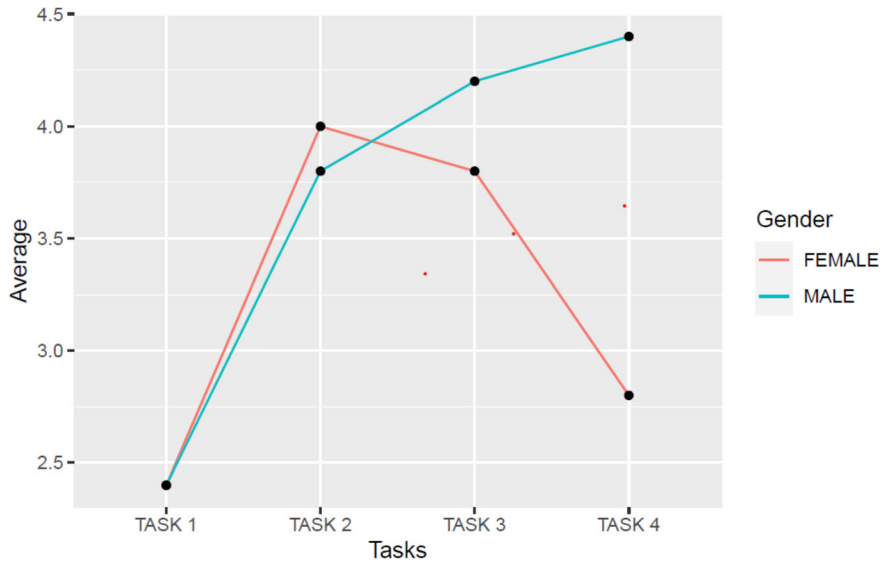

Fig. 1 Judgments by gender

Deontological and consequentialist options

The variation between the deontological and consequentialist options in solving moral dilemmas has been explained by the methodology used (Rosas et al., 2014, 2019). Indeed, when personal moral dilemmas (PMD) are used (situations in which one harms another through physical contact), results close to deontological frameworks were obtained; while in the impersonal moral dilemma (IMD) (when there is no physical contact), the modal response seems to lean towards the consequentialist alternative.

The results show that the modal response of the Kogi participants is closer to consequentialism than to the deontological option, unlike what occurs in other cultures around the world, and especially with the WEIRD population (Greene et al., 2001, 2004), in the resolution of personal moral dilemmas (and specifically in the cultural variant to the Footbridge scenario). Yet this choice seems to be shared by other small-scale groups (Winking & Koster, 2021).

Regardless of the closeness or distance in conceptions with small-scale societies in other parts of the world, it seems that the modal option of the Kogi (the choice of a consequentialist response) lies in their

cultural frameworks. At this point, it is convenient to reiterate the fact that these indigenous people identify themselves as Elder brothers. Due to this peculiarity, the Kogi consider themselves guardians and promoters of life (Mestre & Rawitscher, 2018; Parra Witte, 2018; Preuss, 1993 [1927]; Reichel-Dolmatoff, 1950–1951; Uribe, 1990). In this capacity, a response that is aimed at saving as many lives as possible may seem much more appropriate, even at the cost of the difficulty that may be involved in considering the sacrifice of one human life to be morally permissible. This social motivation has been recorded. Indeed, it has been shown that when the social ties between people are stronger, there is a tendency towards consequentialist-type choices in the resolution of personal moral dilemmas, op0tions that are even superior to those obtained with impersonal moral dilemmas (Lucas & Livingston, 2014).

The incidence of moral scenarios in the choices

The results show significant differences in the application of the scenarios. Specifically, it is shown that in the events in which the participants, when judging between 1 in-group and 5 out-group (First scenario), prefer the deontological version. But, on the other hand, when evaluating the relationship between 1 out-group and 5 in-group or when all the characters are in-group or all out-group (scenarios 2, 3, and 4), moral judgment seems to embrace the consequentialist option. How to explain this variation?

First of all, it should be noted that the Kogi are closer to consequentialism than to deontology in resolving personal moral dilemmas and, specifically, in the adaptation of the Footbridge scenario presented in this research report. However, the variation in the scenario also shows a modification in the expression of moral judgment. What has been said implies, first of all, that the moral judgment in the Footbridge variation depends on the design's specificities, at least in what has to do with the stories' characters. Second, the results show that the group bias is so strong that it can ostensibly vary the moral judgment (Cikara et al., 2010): moving from a consequentialist option (scenarios 2, 3, and 4) to a deontological one (scenario 1). Third, and in a general way, moral judgment seems to depend on the contextual specificities in which people's choices are manifested. This indication shows, finally, that the moral judgment, and specifically the answers to the Footbridge dilemma, cannot be interpreted as something unitary, not even within the same human group.

Gender differences

The repeated measures ANOVA did not show significant differences in gender as a covariate. Thus, in general terms, it can be indicated that there are no significant differences between men and women when deciding on the life of the characters in the four moral scenarios proposed in the methodology. However, a variation can be seen in the fourth scenario (when the possibility of pushing 1 out-group to save 5 out-groups was evaluated): men mostly opted for the consequentialist variant; while the women's judgment, strangely and unlike what happened in the other three scenarios, remained close to the midpoint of lives saved (2.5). Indeed, the score for women in scenario 4 was 2.8 (See Table 2).

The anthropological literature on the Kogi shows gender differences among the Kogi in relation to do with daily activities and rituals. There are many examples of this, from classics such as Preuss (1993 [1927]) or Reichel-Dolmatoff (1950–1951) to recent studies in book format directed by the Kogi themselves (Mestre & Rawitscher, 2018) or doctoral theses (Parra Witte, 2018; Uribe, 1990) as well as the ethnographic work carried out by the authors. However, the variety and diversity of tasks undertaken by men and women are well-distributed, whether it is a routine action of daily work, ritual or not (such as cutting coca leaves or selecting maguey leaves (Angarita & Viciana, 2022)) or even a cosmic action. The Kogi people even believe that their actions and the fact that they are carried out by a man or a woman, as appropriate, guarantee the survival of the Kogi as a culture, and also that of the universe itself.

This diversity in the performance of daily tasks and rituals, explained and ordered from the Law of Origin (*Sé*), guarantees the ethical status of the Kogi, that is, their consideration of themselves as elder brothers of humanity, without any distinction by gender. In fact, neither in the anthropological texts nor in the fieldwork carried out by the authors was there any difference that would allow inferring an ethical superiority of men or women; on the contrary, an equal ethical commitment between the two genders was always evidenced. This indication was fundamental when predicting the difference in judgment when studying the gender variable.

Notwithstanding the above, it is convenient to explain what happens in scenario 4, the gender difference. Although not statistically significant, according to what was warned from the investigation's pre-registration, we must ask ourselves why the majority of Kogi women stopped opting for an option, be it in favor of the person who is seated (deontological: as occurs in scenario 1) or the group that is walking (consequentialist: as occurs in scenarios 2 and 3). Or, in more concrete terms, we could inquire why Kogi women seem to judge the out-group as if they did not care, as if their examination had the same result as that of tossing a coin many times, which, in its result, tends to average the options, or leave things to chance. Based on this peculiarity, it is possible to risk two responses, one contained in ancestral knowledge and the other rooted in social aspects of moral judgment, but derived from what is established in the cultural framework of the Kogi.

In the ancestral myth's contents, there is evidence of a specific relationship of women (whether or not she has the category of deity) with the ancestral knowledge that will be bequeathed to all Kogi women. For example, this can be verified, on the one hand, in the myths of Jaba Nabuba (Mother of water, mother of the trees, mother of disease, *Muldbatá*), and mother of fire, *Gukkseʼ*) and, on the other hand, the myth of *Wakamáia* (wife of *Jízhuksa* and knower of all the songs of the animals in the morning). Specifically, Kogi women, according to what is prescribed in their myths, have the best characteristics to access knowledge, but it is men who communicate it (gender difference in the relationship with knowledge). Due to this cultural peculiarity, in practice, men relate more with people from their group and other social groups.

Perhaps the social relationships that men establish with the out-group make men maintain a mostly consequentialist position when they judge people who are not from their group (scenario 4). In the same way, this indication may help explain the difference in the judgment of the Kogi woman in scenario 4. Thus, and for the interests of this investigation, women seem to be indifferent to people with whom they do not have social relationships. This assumption may, secondly, suggest that perhaps the moral judgment, and specifically the one made in the Trolley dilemma in the Footbridge scenario, may be affected by the type of social relationship one has with the characters in the moral scenario. This hypothesis of social connection has been shown with scientific evidence (Lucas & Livingston, 2014).

In conclusion, our main findings show that, first, the Kogi people, unlike large-scale societies, are closer to the consequentialist option rather than deontological considerations in resolving the cultural adaptation of the Footbridge dilemma. Second, empirical evidence shows that consequentialist and deontological choices may depend on contextual factors of moral judgment, such as whether the characters in the stories are in-group or out-group. And, finally, there are no statistically significant differences when we posit gender as a covariate in the interrelation with the scenarios, even though it is suggested that the social relationships established between the experiment's subjects and the characters of the moral dilemmas can be key in the moral judgment.

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Declarations

Conflict of interest The authors declare no competing interests.

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