Supplemental Online Material: Is Gender Primacy Universal?

This document contains supplemental materials and analysis for "Is Gender Primacy Universal?" See OSF page (http://tinyurl.com/GPrimacy) for exact materials, data, as well as pre-registration. In this document, we include more information on measures used, as well as additional analysis.

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Power Analysis

A power analysis was conducted with G*Power (3.1). We based our expected effect size on Martin and Mason (2023), who found an average effect size of $r = .31$ for gender ascription and humanization ($1 - \beta = .80$, $\alpha = .05$). This analysis suggested we needed 76 participants to achieve power. However, given differences in the measures used to assess social category ascription (i.e., 3-point vs. 5-point scales) and humanization (4-point vs. 100-point scales), as well as uncertainty about differences between the Mayangna and U.S. population, we aimed to collect as many participants we could over an 11-day period, with a minimum of 80 participants required to have adequate power.

Deviations from Pre-Registration and Disclosures for Transparency

We pre-registered our plan to collect a minimum sample of 80 and a maximum sample of 100, as well as a stopping period of 11 days. Our final sample was comprised of 102 participants (52 female, $M_{age} = 32.44$, $SD_{age} = 12.09$; $Range_{age} = 18\text{-}79$). There were a number of participants who did not show up for their allotted study time throughout the week, and we scheduled study timeslots with that in mind. This ultimately led to collecting two additional participants. Removing these participants only increases the strength of our effects; however, we believed it would be inappropriate to exclude them, given that they completed the study.

We did not pre-register data exclusions (i.e., removing datapoints where participants expressed uncertainty or confusion), as we did not foresee or forecast any comprehension issues in advance. We excluded responses from participants who indicated uncertainty around the question, as noted by the research assistant. These notes were:

- *Participant 2 (Gender):* "Participant first said both sexes equally/neither. When asked what it looks like she said definitely a man."
- *Participant 3 (Humanization):* "With the visual scale, she said it was more like a rock; when asked again whether the rock was at all like a human, she said it was more or less like a human."

- *Participant 5 (Sexual Orientation):* "Participant did not understand the question and thought I was asking about its gender."
- *Participant 10 (Humanization):* "Verbally said more or less like a human but visually pointed to 4."
- *Participant 66 (Humanization):* "Answered like a rock first, I asked again if the rock does not look like a human at all, then she answered 4."
- *Participant 82 (Humanization):* "Said doesn't look like anything on the scale, looks more like a doll."

We also bundled this pre-registration with that for another study examining empathic concern. This other study was designed to address a different research question that relied on several of the same variables and all of the same participants, but tested different hypotheses. Given that the measure of empathic concern was included as part of this other study, which was pre-registered separately, we do not report those methods or any results here (see our separate pre-registration at https://aspredicted.org/G19_PNC). Readers interested in this variable are encouraged to contact the first author.

Though not a deviation from our pre-registration (as we disclosed it within the pre-registration), it is worth noting that we collected data from five participants before pre-registering our hypotheses. These participants were run through the study to pilot test the method and ensure that there were no issues with translation or comprehension of our study materials. After piloting with five participants, we did not make any changes to our original protocol. Given concerns with achieving our goal sample size and the inability to make statistical inferences based on our pilot data, we opted to include these participants. Results are unaffected if we instead exclude the first five participants.

We pre-registered our plan to examine participants' familiarity with Western culture using a familiarity test. We report results of this test in the manuscript and below; however, we also examined whether the results hold for participants who met a number of isolation measures (e.g., internet usage, exposure to Western media) which are exploratory in nature. These analyses are

conservative tests of our hypotheses and are worth noting, so we report them below. However, we acknowledge that they were not pre-registered in advance and should be treated as exploratory.

Translation Procedure

Once finalized, study instructions and measures were translated into Spanish by co-author D.G.B. These Spanish instructions were then translated into English by a research assistant fluent in Spanish; any discrepancies were then resolved. After finalizing the instructions in Spanish, a research assistant fluent in both Spanish and Mayangna translated the instructions to Mayangna. The instructions and questions were presented to participants in Mayangna. Translation documents can be found on OSF.

Recruitment Procedure

To avoid potential selection biases, we recruited participants based on Amak's household census. We used a random number generator to select 100 households. Only one person per household was allowed to participate in the study. After identifying the list of households, a field research assistant asked the head of household if he/she or their spouse would like to participate in the study. Because elderly individuals might present with issues such as arthritis, we sought to recruit participants younger than 60 years old and aimed to recruit a similar number of men and women, whenever possible. In cases in which the head of household was older than 60 years old, a younger member of the household was invited to participate in the study. The recruitment and study took place between August 5th and August 11th, 2023. Between 8 and 12 participants completed the study each day and the study took approximately 40 minutes.

Protocol and Materials

Participants sat at a small desk with the following materials: (1) one river rock (5-7 inches), (2) stick-on googly eyes (3) a pack of paints, (4) a paint brush, (5) a plastic cup with water, (6) a

number of markers, (7) colored tape, (8) and a number of stickers. See online video for materials (http://tinyurl.com/GPrimacy).

Once seated, participants were told: *"This study aims to learn about similarities between Mayangna/Miskito and people in other parts of the world. In particular, we are interested to know how Mayangna/Miskito create human-like art. Participation in this research is voluntary. If you agree, we will ask you to watch an instructional video on the iPad (in a moment) and create a piece of art. After you are done, we will ask you questions about the art that you have just made. In addition, you will be asked some questions about yourself, such as which language you speak most often and how frequently you travel outside of the community. However, we will not collect any information that can be used to identify you. For example, your name will not be recorded, and nobody measurements, photographs, or voice recordings will be made for use in this research. The answers you provide to the questions I ask will be combined with the answers provided by other Mayangna/Miskito who participate, and all responses will be studied together.*

Each interview will take less than 1 hour to complete. As compensation for being interviewed, you will receive 85 córdobas (about 2 U.S. dollars). We chose this amount because we understand that it is approximately double the amount that people in this community earn working as agricultural laborers. If you choose to participate, you may discontinue the interview at any time. If you choose to stop participating, there will be no negative consequences. The córdobas I will give you are yours to keep either way. In addition, if you choose to participate but for any reason do not wish to answer any of the questions I ask you, please tell me and I will proceed to the next question. If you have any questions about the research before we begin the interview or after we have finished, please do not hesitate to ask me. Do you have any questions right now? Do you agree to participate?"

After consenting to take part in the study, participants were given an iPad with video instructions (see OSF for video). To ensure participants understood the task, they were given the following instructions: "*This study aims to learn about similarities between Mayangna/Miskito and people in other parts of the world. In particular, we are interested to know how Mayangna/Miskito create art that resembles human beings. Today, you will be asked to make a rock from your community "come alive". On the table in front of you, you will see a rock and a number of art supplies. We would like you to create a "pet-rock" for us. That is, take the art-supplies you see and make a rock that resembles a human being. You will take a regular rock and turn them into a rock that resembles a human being. Many things that are not human—like you—can look and act like humans. Sometimes we see animals, god(s) or nature as if they are human, just like us. In this study, we would like you to create a rock that is like a living being. That is, give it features that humans have, like eyes and a nose. You could also give it a name and a unique personality. Imagine what experiences it would have and how your rock might behave if it were alive. While your rock should be similar to a human, it's also ok if your rock looks more like an animal or just a rock. How you decorate it is up to you. You will have about 15 minutes to do this.*

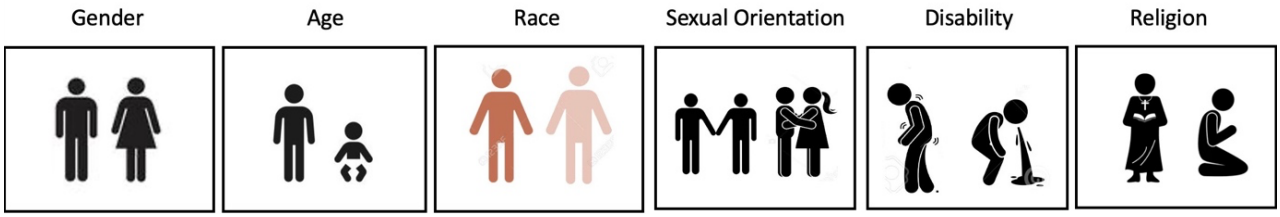
Given that this population was unfamiliar with many of the art supplies, participants were given instructions on how to use the materials (see video for exact instructions). Participants were asked if they had any questions and were given 15 minutes to complete their task.

Measures

Social category ascription. After completing their rock, participants were told: "We will now ask you about certain features of your rock. We would like to know whether you thought of any of the following social categories or groups when you were creating your rock." They were then shown six potential social categories as displayed in Figure S1. In randomized order, they were asked about: (1) gender ("Did you think about the rock as being male or female or having another

gender?"), (2) race ("Did you think about the rock as being Mayangna, Miskito or a different race group?"), (3) age ("Did you think about the rock as being a child, a teenager, or an adult?"), (4) sexual orientation ("Did you think about who this rock might be attracted to or their sexual behavior"), (5) religion ("Did you think about your rock as Catholic, Moravian, Evangelical, or a different group?"), (6) disability ("did you think about your rock as being sick or disabled?"). Participants indicated social category ascription on a three-point scale: 1 = *no, not at all*, 2 = *maybe a little*, 3 = *yes, definitely.*

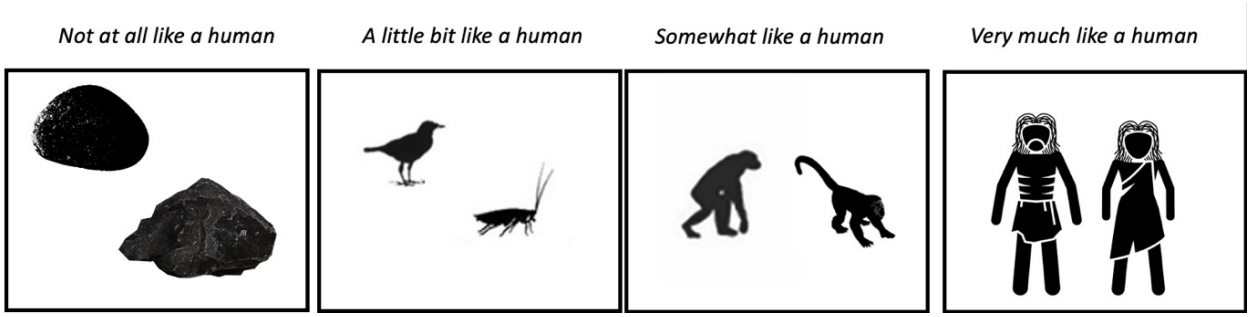
Figure S1: Social Category Depictions



Humanization

To assess humanization, we adapted a measure from Kteily et al. (2015) and Delbosc et al. (2019), which captures people's blatant ascription of "humanness." Participants were shown an image of a scale with illustrations of (1) a rock, (2) an insect and a bird, (3) a monkey and an ape, and (4) two human beings (see Figure S2). They were told by the experimenter, "People's rocks sometimes vary in how human-like they are. Sometimes they are very human and similar to you or other people you know [the experimenter pointed to the fourth image]. Sometimes they are similar, but a little different, like a monkey [the experimenter pointed to the third image]. Sometimes they are like a bug or other species that is a little bit like a human [the experimenter pointed to the second image]. And sometimes they are just like a rock and not very human at all [the experimenter pointed to the first image]. Which one was your rock? Participants indicated their humanization rating on a scale from 1 = *not at all like a human*, 2 = *a little bit like a human*, 3 = *somewhat like a human*, 4 = *very much like a human*.

Figure S2: Social Category Depictions



Demographic and Isolation Information

Participants were also asked a number of demographic questions.

Gender. Participants were asked "what is your gender?" in an open-ended format. No participants identified outside of the gender binary, so these data are coded as: 1 = *male*, 2 = *female*.

Age. Participants were asked "what is your age?" and indicated their age in an open-ended format.

Spanish fluency. Participants were asked about their (1) speaking, (2) reading, and (3) writing abilities in Spanish. Specifically, they were asked (1) "If you can speak Spanish, how well do you speak Spanish?" (2) "If you can read Spanish, how well do you read Spanish?" and (3) "If you can write in Spanish, how well do you write in Spanish?" They indicated their ability on a scale from 1 = *I cannot [speak] [read] [write in] Spanish* – 4 = *I can [speak] [write] [read] fluently*. Most participants indicated that they could speak (M = 3.59, SD = .68), read (M = 3.23, SD = 1.02) and write (M = 3.02, SD = 1.24) in Spanish.

Native language fluency. Participants were asked to indicate their primary language. Most participants (96%) indicated that Mayangna was their primary language, with the remaining indicating either Miskito (2%) or Spanish (2%) as their primary language. Participants were asked about their (1) reading, and (2) writing abilities in their native language. Specifically, they were asked (1) "How well do you read [language]?" and (2) "How well do you write in [language]?" They indicated their ability on a scale from 1 = *I cannot [read] [write in] [language]* – 4 = *I can [write]*

[read] fluently. Most participants could read (M = 3.34, SD = 1.09) and write (M = 3.20, SD = 1.18) in their native language.

Isolation Measures. To assess participants' isolation from Western culture, we asked them a number of questions about their familiarity with, and exposure to, Western culture; we also assessed whether and how often they leave their village.

Familiarity Test

Our goal was to recruit individuals who had limited or no knowledge about Western popular culture. To ensure minimal knowledge of Western or global culture, we assessed participants' familiarity with Western and South American popular culture. To do so, we used a recognition test based on Witkower et al. (2022; 2023), who asked participants from the same population to indicate their familiarity with 13 global celebrities, *as well as* Daniel Ortega, the current president of Nicaragua. Our eight Western icons were taken from Witkower and colleagues (2022), who conducted a google search for the 'most recognizable faces in North America.' These were: Hillary Clinton, Oprah Winfrey, Will Smith, Elvis Presley, Brad Pitt, Barack Obama, Abraham Lincoln and Donald Trump. Further, based on expertise from author J.K., who has familiarity with this community, we sought to add several Nicaraguan and South American celebrities to assess whether our participants had exposure to *any* outside cultural influences. Thus, we included two Nicaraguan celebrities, Carlos Godoy and Luis Enrique (both Nicaraguan musicians), after conducting a google search for 'most famous Nicaraguan celebrities.' Further, as some Mayangna are familiar with soccer (indicated by author J.K), we included a Nicaraguan soccer player (Oscar Duarte) and Argentinian soccer player (Lionel Messi) as cultural icons. These celebrities were included based on a google search for the 'most famous Nicaraguan soccer player' as well as 'most famous soccer player in the world.' Finally, given proximity to neighboring country Costa Rica, we included a photo of Rodrigo Chavez Robles (the current president of Costa Rica).

Together, these *Western Icons* (Hillary Clinton, Oprah Winfrey, Will Smith, Elvis Presley, Brad Pitt, Barack Obama, Abraham Lincoln and Donald Trump), *Nicaraguan Icons* (Carlos Godoy, Luis Enrique, Oscar Duarte), and *South American Icons* (Lionel Messi, Rodrigo Chavez Robles) capture a broad range of individuals who represent cultural knowledge outside the Mayangna community. Of note, in our analysis of cultural icons, Daniel Ortega was excluded, as he was recognized by 89% of participants. This high level of recognition may be due to the fact that, during election time, political representatives reach the village of Amak to campaign, bringing pictures of Ortega with them. Participants' familiarity with his image, therefore, may not reflect a knowledge of broader Nicaraguan (and certainly global) culture. That said, we also report analyses of the 11 participants who recognized *no* icons (including Ortega) below, while noting that this sample size is too small to draw strong conclusions.

For each image, participants were asked, "Who is this?", and they responded aloud in an open-ended fashion. On average, participants correctly identified fewer than one of the 13 popular cultural icons not including Ortega ($M = 0.95$ images, $SD = 1.84$, Mode = 0). The majority of Nicaraguans correctly identified Ortega (89%); however, far fewer recognized the other cultural icons: Hillary Clinton (1%), Oprah Winfrey (1%), Will Smith (11%), Elvis Presley (2%), Brad Pitt (13%), Barack Obama (9%), Donald Trump (13%), Abraham Lincoln (2%), Luis Enrique (2%), Carlos Godoy (3%), Oscar Duarte (2%), Rodrigo Chavez Robles (1%) and Lionel Messi (35%).

Along with our familiarity test, we asked participants how many western movies they have viewed in their lifetime (1 = *zero* – 4 = *more than 15*) and how often they watch (1) Western television, (2) use the internet, (3) use Facebook, or (4) use WhatsApp (1 = *never* – 6 = *almost every day*). Finally, we asked participants how often they leave (1) their village and (2) Nicaragua (1 = *never* – 5 = *once a week*). See Table S1 for means and standard deviations.

Table S1: Descriptive Statistics for Isolation Questions

		M	*SD*
1	Western Movies	2.31	1.27
2	Western TV	3.15	1.91
3	Internet	3.20	2.18
4	Facebook	3.20	2.20
5	WhatsApp	3.20	2.29
6	Leave Village	3.33	1.18
7	Leave Nicaragua	1.13	0.44

Note: Table represents mean ratings and standard deviations for each of the isolation questions

Additional Social Category Information

Social Category Ascriptions

Rationale for social categories included in our study. We sought to capture, among the Mayangna, their perception of social categories that were comparable to those included in U.S. studies and that Mayangna individuals considered important and regularly used. We also sought to include all social categories that are likely to be associated with fitness-linked outcomes, to provide a stringent test of whether gender is the most primary category used in humanization.

We were primarily interested in comparing the salience of three categories previously found to generalize across diverse societies: gender, age, and "arbitrary set" (i.e., a salient and relevant ingroup/outgroup distinction within a culture, such as race; Fiske, 2017; Sidanius et al., 2018). Based on expertise from co-author J.K., who is a leading expert on the Mayangna with over 20 years of experience working with this population, we identified the primary "arbitrary set" category among the Mayangna as "race." The Mayangna distinguish between those who share their race (i.e., Mayangna; the race of all participants), Mestizo individuals (outsiders, the predominant/majority ethnic group of Nicaragua), Miskito (the predominant race of members of neighboring communities). As examples of this category's importance, nicknames based on skin-color are common, darker-skinned indigenous populations tend to endure prejudice, and indigenous parents sometimes respond favorably when their offspring are born with pale skin (Koster, 2018; Herlihy, 2002). Along with

race, religion may also be a salient category in the Mayangna community; as such, we included this social category as an alternative "arbitrary set" category. Variance in sexual preferences is present in most, if not all, known human societies (Rahman et al., 2020; Whitam & Mathy, 1986) and there are members of the Mayangna who experience same-sex attraction. Similarly, heterogeneous health and fitness are also individual differences that are perceived as important in all human societies (Buss, 2015) and may be especially important to the Mayangna given the physical nature of their livelihood and means of sustenance. Thus, following Martin and Mason (2022), we asked participants to judge the extent to which their rock could be distinguished along each of these six relevant categories.

Breakdown of social categories. After being asked whether their rock had a given social category (e.g., gender, race), those participants who answered "maybe, a little" or "yes, definitely" were asked to elaborate in an open-ended format. We here report the breakdown of social category information provided by those participants who indicated "maybe, a little" and "yes, definitely," when asked if their rock had a given social category (See Table S2).

Table S2: Breakdown of Social Categories Ascribed to Rocks

Gender	N	%	Age	N	%
Total	97	100.0%	Total	93	100.0%
Male	48	49.5%	Child	19	20.4%
Female	48	49.5%	Adolescent	15	16.1%
Both/Other	1	1.0%	Adult	59	63.4%
Race	**N**	**%**	**Religion**	**N**	**%**
Total	82	100.0%	Total	65	100.0%
Mayangna	66	80.5%	Catholic	43	66.2%
Miskito	8	9.8%	Evangelical	11	16.9%
Mestizo	5	6.1%	Morova	8	12.3%
Other	3	3.7%	Other	3	4.6%
Sexual Orientation	**N**	**%**	**Disability**	**N**	**%**
Total	62	100.0%	Total	34	100.0%
Straight	58	93.5%	Sick	22	64.7%
Gay	4	6.5%	Disabled	10	29.4%
Other	0	0.0%	Psychological	2	5.9%

Other descriptors. Participants had the opportunity to elaborate on their rock in an open-ended format, and several used additional descriptors, which were documented by the experimenter. Several participants spontaneously referred to the rock's personality (i.e., "disciplined" [P2], "slow" [P73], "lazy" [P88], "generous" [P58], "professional" [P88], "likes to hang around" [P96]). Four participants mentioned physical characteristics like weight (i.e., "well-fed" [P59]), eye-color (i.e., "blue" [P7]) and appearance (i.e., "wears make-up" [P96], "hairy" [P68]). Notably, no two participants spontaneously listed the same trait, descriptor, or additional social category in their descriptions.

Additional Information on Results:

Multivariate Regression

Below, we report additional analyses referred to in the main manuscript. First, we report a correlation table presenting the relationships between variables in Table S3. Further, the multivariate regression is reported in Table S4, including all social categories as simultaneous predictors of humanization. Figure S3 provides a visual depiction all the relationships between ascription of each social category and the extent of humanization.

Table S3: Correlation Table

	Variable	1	2	3	4	5	6
1	Gender						
2	Age	.64**					
3	Race	.26**	.37**				
4	Sexual Orientation	.30**	.40**	.18			
5	Disability	.07	.07	.03	.11		
6	Religion	.26*	.22*	.27**	.19	.13	
7	**Humanization**	**.28****	**.12**	**.17**	**.05**	**−.12**	**.13**

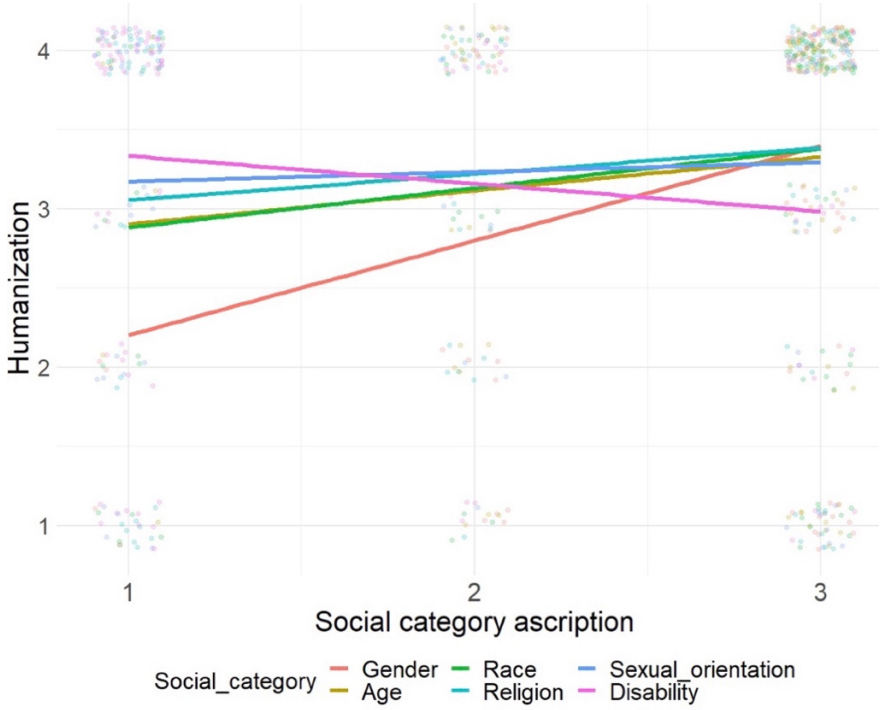
Note: **p < .01, *p < .05; Sex Orient = Sexual Orientation

Table S4: Model with All Social Category Predictors Entered Simultaneously

	DV: Humanization					
	B	SE	t	p	LCI	UCI
(Constant)	1.63	0.67	2.44	.017	.30	2.95
Gender	0.72*	0.28	2.56	.012	.16	1.28
Age	−0.29	0.26	−1.14	.258	−.80	.22
Race	0.22	0.16	1.33	.188	−.11	.54
Sexual Orientation	0.01	0.14	0.09	.931	−.26	.29
Disability	−0.19	0.15	−1.27	.208	−.48	.11
Religion	0.06	0.13	0.43	.667	−.21	.32

Note: The table reports regression results for gender ascription on humanization with other social category ascriptions included as simultaneous predictors

Figure S3: Relationships Between Social Category Ascription and Humanization



Additional Analyses: Full Results with No Exclusions

We next report results without excluding participants who expressed confusion about the study questions. Using pairwise *t*-tests to compare gender to each other category, our main result does not change. That is, gender was more strongly ascribed to the rocks than was age, $t(101) = 2.16$, $SE = .05$, $p = .033$, $d = .21$, $CI_{95} = .01, .23$, race, $t(101) = 3.48$, $SE = .08$, $p < .001$, $d = .34$, $CI_{95} = .12$,

.45, sexual orientation, $t(101) = 7.08$, $SE = .09$, $p < .001$, $d = .70$, $CI_{95} = .46, .82$, disability, $t(101) = 13.52$, $SE = .09$, $p < .001$, $d = 1.34$, $CI_{95} = 1.04, 1.39$, and religion, $t(101) = 6.135$, $SE = .40$, $p < .001$, $d = .61$, $CI_{95} = .40, .78$. Next, we examined whether the extent to which participants ascribed gender was related to the extent to which they humanized their rocks. A significant and positive relationship between gender ascription and humanization emerged, $b = .51$, $SE = .20$, $t(100) = 2.50$, $p = .014$, $CI_{95} = .10, .91$. That is, the more that participants ascribed gender to their respective rocks, the more "human-like" they believed them to be. See Tables S5 through S7 for more analyses.

Table S5: Descriptive Statistics for Full Results with No Exclusions

			Distribution		
Social Category	M	SD	No	A little	Yes
Gender	2.72	0.55	5	19	78
Age	2.60	0.65	9	23	70
Race	2.43	0.80	20	18	64
Sexual Orientation	2.08	0.92	39	16	47
Disability	1.50	0.77	68	17	17
Religion	2.13	0.92	37	15	50

Note: Means indicate the extent to which each social category was ascribed (1 = *no, not at all* – 3 = *yes, definitely*). Distribution indicates how many participants chose each response.

Table S6: Pairwise Comparisons for Full Results with No Exclusions

Comparison	t	SE	df	p	d	LCI	UCI
Gender vs. Age	2.16	0.05	101	.033	0.21	0.01	0.23
Gender vs. Race	3.48	0.08	101	<.001	0.36	0.12	0.45
Gender vs. Sex Orient	7.08	0.09	101	<.001	0.70	0.46	0.82
Gender vs. Disability	13.52	0.09	101	<.001	1.34	1.04	1.39
Gender vs. Religion	6.14	0.10	101	<.001	0.97	0.40	0.78

Note: The table reports t-values, standard errors (SE), degrees of freedom (df), p-values, Cohen's d effect sizes (d). LCI = Lower Confidence Interval, UCI = Upper Confidence Interval (95%)

Table S7: Correlation Table for Full Results with No Exclusions

	Variable	1	2	3	4	5	6
1	Gender						
2	Age	.59**					
3	Race	.30**	.37**				
4	Sex Orient	.32**	.40**	.18			
5	Disability	.08	.07	.03	.10		
6	Religion	.21*	.22*	.27**	.20*	.13	
7	**Humanization**	**.24***	**.12**	**.22***	**.09**	**−.10**	**.16**

Note: **p < .01, *p < .05; Sex Orient = Sexual Orientation

Additional Analyses: Results with Participants Who Have Never Used the Internet

We next tested whether our effects were robust to exclusions of those who had used the internet at least once. To do so, we examined only participants who had never used the internet. Due to the sample size (n = 44), we did not have enough power to test for between-subject effects; however, we can test our hypotheses regarding within-subject effects. Using pairwise t-tests to compare gender to each other category, the primacy of gender hypothesis was supported: gender was more strongly ascribed to the rocks than was age, $t(44) = 2.93$, $SE = .07$, $p = .005$, $d = .44$, $CI_{95} = .06, .34$, race, $t(44) = 2.87$, $SE = .12$, $p = .006$, $d = .43$, $CI_{95} = .11, .61$, sexual orientation, $t(43) = 5.68$, $SE = .12$, $p < .001$, $d = .86$, $CI_{95} = .45, .96$, disability, $t(44) = 7.97$, $SE = .14$, $p < .001$, $d = 1.19$, $CI_{95} = .83, 1.39$, and religion, $t(44) = 4.81$, $SE = .14$, $p < .001$, $d = .72$, $CI_{95} = .39, .95$. These results suggest that even participants who had never used the internet tended to ascribe gender to their rocks more than any other category. See Tables S8 and S9 for more analyses.

Table S8: Descriptive Statistics for Participants Who Have Never Used the Internet

			Distribution		
Social Category	M	SD	No	A little	Yes
Gender	2.71	0.55	2	9	34
Age	2.51	0.76	7	8	30
Race	2.36	0.86	11	7	27
Sexual Orientation	2.00	0.92	18	8	18
Disability	1.60	0.84	28	7	10
Religion	2.04	0.95	19	5	21

Note: Means indicate the extent to which each social category was ascribed (1 = *no, not at all* – 3 = *yes, definitely*). Distribution indicates how many participants chose each response.

Table S9: Pairwise Comparisons for Participants Who Have Never Used the Internet

Comparison	t	SE	df	p	d	LCI	UCI
Gender vs. Age	2.93	0.07	44	.005	0.44	0.06	0.34
Gender vs. Race	2.87	0.12	44	.006	0.43	0.11	0.61
Gender vs. Sex Orient	5.68	0.12	43	<.001	0.86	0.45	0.96
Gender vs. Disability	7.97	0.14	44	<.001	1.19	0.83	1.39
Gender vs. Religion	4.81	0.14	44	<.001	0.72	0.39	0.95

Note: The table reports t-values, standard errors (SE), degrees of freedom (df), p-values, Cohen's d effect sizes (d). LCI = Lower Confidence Interval, UCI = Upper Confidence Interval (95%)

Additional Analyses: Results with Participants Who Have Never Seen Western Media

We next tested whether our effects were robust to exclusions of those who had some exposure to Western media. Thus, we examined only those who had never had exposure to Western media. Due to the sample size (n = 27), we did not have enough power to test for between-subject effects; however, we can test our hypotheses regarding within-subject effects. Using pairwise t-tests to compare gender to each other category, our hypothesis was supported: gender was more strongly ascribed to the rocks than was age, $t(27) = 2.27$, $SE = .09$, $p = .031$, $d = .43$, $CI_{95} = .02, .41$, race, $t(27) = 3.86$, $SE = .16$, $p < .001$, $d = .73$, $CI_{95} = .29, .93$, sexual orientation, $t(26) = 3.65$, $SE = .16$, $p = .001$, $d = .70$, $CI_{95} = .26, .93$, disability, $t(27) = 6.13$, $SE = .18$, $p < .001$, $d = 1.16$, $CI_{95} = .74, 1.48$, and religion, $t(27) = 3.58$, $SE = .18$, $p = .001$, $d = .68$, $CI_{95} = .27, 1.01$. Therefore, even participants who had never seen any Western media (i.e., internet, television, movies, magazines, newspapers) tended to ascribe gender to their rocks more than any other social category. See Tables S10 and S11 for more analyses.

Table S10: Descriptive Statistics for Participants Who Have Never Seen Western Media

			Distribution		
Social Category	M	SD	No	A little	Yes
Gender	2.75	0.59	2	3	23
Age	2.54	0.79	5	3	21
Race	2.14	0.97	12	2	15
Sexual Orientation	2.15	0.91	10	5	13
Disability	1.64	0.87	18	4	7
Religion	2.11	0.99	12	1	16

Note: Means indicate the extent to which each social category was ascribed (1 = *no, not at all* – 3 = *yes, definitely*). Distribution indicates how many participants chose each response.

Table S11: Pairwise Comparisons for Participants Who Have Never Seen Western Media

Comparison	t	SE	df	p	d	LCI	UCI
Gender vs. Age	2.27	0.09	27	.031	0.43	0.02	0.41
Gender vs. Race	3.86	0.16	27	<.001	0.73	0.29	0.93
Gender vs. Sex Orient	3.65	0.16	26	.001	0.70	0.26	0.93
Gender vs. Disability	6.13	0.18	27	<.001	1.16	0.74	1.48
Gender vs. Religion	3.58	0.18	27	.001	0.68	0.27	1.01

Note: The table reports t-values, standard errors (SE), degrees of freedom (df), p-values, Cohen's d effect sizes (d). LCI = Lower Confidence Interval, UCI = Upper Confidence Interval (95%)

Additional Analyses: Results with Participants Who Did Not Recognize Any Cultural Icons

We next tested whether our effects were robust to exclusions of those who recognized at least one cultural icon. That is, we examined the effects using only participants who could not recognize any of the cultural icons (excluding Ortega). Due to the sample size (n = 60), we did not have enough power to test for between-subject effects; however, we can test our hypotheses regarding within-subject effects. Using pairwise t-tests to compare gender to each other category, this hypothesis was supported: gender was more strongly ascribed to the rocks than was age, $t(60)$ = 3.88, SE = .06, p < .001, d = .50, CI_{95} = .11, .35, race, $t(60)$ = 4.01, SE = .09, p < .001, d = .51, CI_{95} = .19, .57, sexual orientation, $t(59)$ = 5.77, SE = .12, p < .001, d = .74, CI_{95} = .44, .90, disability, $t(60)$ = 12.58, SE = .11, p < .001, d = 1.61, CI_{95} = 1.13, 1.56, and religion, $t(60)$ = 5.36, SE = .12, p < .001, d = .69, CI_{95} = .40, .88. Thus, even participants who recognized none of the cultural icons (including those from South America), tended to ascribe gender to their rocks more than any other social category.

Though the sample size is small to make strong statistical inferences, we nonetheless next explored effects including only participants who could not recognize any cultural icons including Daniel Ortega (N = 11). Results are consistent, though marginally significant. Gender (M = 2.73, SD = .65) was marginally more ascribed than age (M = 2.45, SD = .82), $t(10)$ = 1.96, SE = .14, p = .082, d = .58, CI_{95} = -.04, .59, race (M = 2.09, SD = .94), $t(10)$ = 2.06, SE = .31, p = .067, d = .62, CI_{95} = -.05, 1.33, and sexual orientation (M = 2.18, SD = .98), $t(10)$ = 2.21, SE = .25, p = .054, d = .67, CI_{95} = -.01, 1.10, and significantly more ascribed than disability (M = 1.45, SD = .82), $t(10)$ = 4.67, SE = .27, p < .001, d = 1.41, CI_{95} = .67, 1.88, and religion (M = 1.82, SD = .87), $t(10)$ = 2.89, SE = .32, p = .016, d = .87, CI_{95} = .21, 1.61. See Table S12 and S13 for more analyses.

Table S12: Descriptive Statistics for Participants Who Did Not Recognize Any Cultural Icons

			Distribution		
Social Category	M	SD	No	A little	Yes
Gender	2.82	0.47	2	7	52
Age	2.59	0.69	7	11	44
Race	2.44	0.79	12	12	38
Sexual Orientation	2.15	0.94	23	7	31
Disability	1.48	0.74	42	11	9
Religion	2.18	0.94	22	6	34

Note: Means indicate the extent to which each social category was ascribed (1 = *no, not at all* – 3 = *yes, definitely*). Distribution indicates how many participants chose each response.

Table S13: Pairwise Comparisons for Participants Who Did Not Recognize Any Cultural Icons

Comparison	t	SE	df	p	d	LCI	UCI
Gender vs. Age	3.88	0.06	60	<.001	0.50	0.11	0.35
Gender vs. Race	4.01	0.09	60	<.001	0.51	0.19	0.57
Gender vs. Sex Orient	5.77	0.12	59	<.001	0.74	0.44	0.90
Gender vs. Disability	12.58	0.11	60	<.001	1.61	1.13	1.56
Gender vs. Religion	5.36	0.12	60	<.001	0.69	0.40	0.88

Note: The table reports t-values, standard errors (SE), degrees of freedom (df), p-values, Cohen's d effect sizes (d). LCI = Lower Confidence Interval, UCI = Upper Confidence Interval (95%)

Additional Analyses: Results with Participants Who Rarely Leave their Village

We tested whether our effects were robust to exclusions of those who leave their village once a year or more. Thus, we analyzed only those participants who leave their village rarely (i.e., once a year or less). Due to the sample size (n = 55), we did not have enough power to test for between-subject effects; however, we can test our hypotheses regarding within-subject effects. Using pairwise t-tests to compare gender to each other category, this hypothesis was supported: gender was more strongly ascribed to rocks than was age, $t(55) = 2.41$, $SE = .06$, $p = .020$, $d = .32$, $CI_{95} = .02, .26$; race, $t(55) = 3.80$, $SE = .12$, $p < .001$, $d = .51$, $CI_{95} = .45, .94$; sexual orientation, $t(55) = 5.71$, $SE = .12$, $p < .001$, $d = .76$, $CI_{95} = .45, .94$; disability, $t(55) = 11.29$, $SE = .12$, $p < .001$, $d = 1.51$, $CI_{95} = 1.09, 1.56$; and religion, $t(55) = 5.98$, $SE = .14$, $p < .001$, $d = .49$, $CI_{95} = .55, 1.10$. Thus, even participants who rarely or never leave their village tended to ascribe gender to their rocks more than any other social category. See Table S14 and S15 for more analyses.

Table S14: Descriptive Statistics for Participants Who Rarely Leave Their Village

			Distribution		
Social Category	M	SD	No	A little	Yes
Gender	2.73	0.59	4	7	45
Age	2.59	0.71	7	9	41
Race	2.27	0.90	18	7	32
Sexual Orientation	2.04	0.95	25	6	26
Disability	1.41	0.76	43	5	9
Religion	1.91	0.96	28	5	24

Note: Means indicate the extent to which each social category was ascribed (1 = *no, not at all* – 3 = *yes, definitely*). Distribution indicates how many participants chose each response.

Table S15: Pairwise Comparisons for Participants Who Rarely Leave Their Village

Comparison	t	SE	df	p	d	LCI	UCI
Gender vs. Age	2.41	0.06	55	.020	0.32	0.02	0.26
Gender vs. Race	3.80	0.12	55	<.001	0.51	0.22	0.71
Gender vs. Sex Orient	5.71	0.12	55	<.001	0.76	0.45	0.94
Gender vs. Disability	11.29	0.12	55	<.001	1.51	1.09	1.56
Gender vs. Religion	5.98	0.14	55	<.001	0.80	0.55	1.10

Note: The table reports t-values, standard errors (SE), degrees of freedom (df), p-values, Cohen's d effect sizes (d). LCI = Lower Confidence Interval, UCI = Upper Confidence Interval (95%)

Additional Analyses: Most Isolated Subsample

We next tested our hypothesis on the most isolated subsample, which includes only those individuals who have never used the internet, never seen a Western movie, could not recognize any of the 13 popular icons in our recognition quiz (excluding Ortega), and rarely leave their village. Given that this subset analysis contains only 21 participants, we do not have enough power to test for relationships between participants; we can, however, test pairwise comparisons within participants. Using pairwise *t*-tests to compare gender to each other category, this hypothesis was supported: gender was more strongly ascribed to the rocks than was age, $t(20) = 2.50$, $SE = .10$, $p = .021$, $d = .55$, $CI_{95} = .04, .44$, race, $t(20) = 3.08$, $SE = .20$, $p = .006$, $d = .67$, $CI_{95} = .20, 1.04$, sexual orientation, $t(20) = 2.68$, $SE = .18$, $p = .014$, $d = .59$, $CI_{95} = .11, .85$, disability, $t(20) = 6.16$, $SE = .21$, $p < .001$, $d = 1.35$, $CI_{95} = .85, 1.72$, and religion, $t(20) = 2.77$, $SE = .22$, $p = .012$, $d = .61$, $CI_{95} =$

.15, 1.10. Thus, even participants who have extremely little exposure to outside cultural influences demonstrate the primacy of gender. See Table S17 and S18 for more analyses.

Table S17: Descriptive Statistics for Most Isolated Subsample

			Distribution		
Social Category	M	SD	No	A little	Yes
Gender	2.62	0.67	2	4	15
Age	2.38	0.87	5	3	13
Race	2.00	1.00	10	1	10
Sexual Orientation	2.14	0.96	8	2	11
Disability	1.33	0.73	17	1	3
Religion	2.00	1.000	10	1	10

Note: Means indicate the extent to which each social category was ascribed (1 = *no, not at all* – 3 = *yes, definitely*). Distribution indicates how many participants chose each response.

Table S18: Pairwise for Most Isolated Subsample

Comparison	t	SE	df	p	d	LCI	UCI
Gender vs. Age	2.50	0.10	20	.021	0.55	0.04	0.44
Gender vs. Race	3.08	0.20	20	.006	0.67	0.20	1.04
Gender vs. Sex Orient	2.68	0.18	20	.014	0.59	0.11	0.85
Gender vs. Disability	6.16	0.21	20	<.001	1.35	0.85	1.72
Gender vs. Religion	2.77	0.22	20	.012	0.61	0.15	1.09

Note: The table reports t-values, standard errors (SE), degrees of freedom (df), p-values, Cohen's d effect sizes (d). LCI = Lower Confidence Interval, UCI = Upper Confidence Interval (95%)

Additional Analyses: Examining the Relationship Between Humanization and Social Category Ascription Using Alternative Models

For robustness, we also conducted analyses using "humanization" as a binary dependent variable, comparing low humanization (scale-points 1, 2, and 3) to high humanization (scale-point 4) scores. That is, we combined all values less than "fully human" (i.e., scale-points 1, 2, and 3) and compared these to "fully human" (scale-point 4), where 0 = *less than human* and 1 = *human*. When examining the relationship using a binary humanization variable, we see the same pattern, $b = 1.05$, $SE = .42$, $Wald\ \chi^2 = 6.21$, $p = .013$. Moreover, this remained the case when we included other social categories in the model, $b = 1.41$, $SE = .58$, $Wald\ \chi^2 = 5.86$, $p = .015$. Results also held when treating gendering as a binary variable by combining values less than three ("definitely has a gender"), such that 0 = *low gendered*, 1 = *high gendered*, $b = .72$, $SE = .27$, $t(95) = 2.67$, $p = .009$, $CI_{95} = .19, 1.25$;

this result also held when including other social categories (0 = *low [social category]*, 1 = *high [social category]*) in the model as well, $b = .74$, $SE = .33$, $t(89) = 2.23$, $p = .028$, $CI_{95} = .08, 1.40$.

Additionally, when using an ordinal regression, these results remained the same. Given that cell counts for the lowest level of the gender rating were small ($n = 4$), we dichotomized the exploratory variable (0 = *rating of 2 or lower*, 1 = *rating of 3*). Using ordinal regression, gender is a significant predictor of humanization (OR = 3.274, $B = 1.186$, $p = 0.011$); the odds of high humanization was 3 times greater for high values of gender as compared to lower ones. Lastly, we explored whether applying monotonic effects, which can handle discrete predictors that are on an ordinal or higher scale, to our model would improve our prediction estimates (see Bürkner & Charpentier, 2020). We compared two sets of models, each set having one monotonic and one non-monotonic model. The first set treated our gender ascription predictor as continuous, and the second set treated it as ordinal. Humanization was our response variable. Using the R package *brms,* we generated each model and compared the performance across them all to assess whether a continuous modeling of our gender ascription predictor was appropriate. We validated our models using LOOCV (leave-one-out cross-validation) and found that neither the monotonic models, nor the non-monotonic ordinal model, provided any significant improvements to our prediction estimates (see Sivula, Magnusson, and Vehtari 2020). Table S19 provides a summary of the model comparisons. We also looked at the effect estimates of the monotonic models to check for equidistance across the levels of our gender ascription predictor. In both models, 46% of the response effect is from the difference of the first two levels of our predictor category (i.e., 1 = no, definitely not, 2 = maybe a little) and 54% is from the second two levels (i.e., 2 = maybe a little and 3 = yes, definitely), indicating that the levels of our gender ascription predictor contribute relatively equally to our response variable (see Table S20). Based on these results, we feel confident that a continuous gender ascription predictor variable is sufficient for our models.

Table S19: LOOCV Model Comparison

Predictor Type	Monotonic	$ELPD_{diff}$	SE_{diff}
Continuous	No	0.0	0.0
Continuous	Yes	-0.7	0.3
Ordinal	Yes	-0.8	0.3
Ordinal	No	-1.3	0.4

Note: Comparison of Leave-One-Out Cross-Validation (LOOCV) models based on different predictor types and monotonic constraints. The table presents the differences in expected log predictive density (ELPDdiff) and its standard error (SEdiff) across models.

Table S20: Simplex Parameter Estimates

	Estimate	Est. Error	LCI	UCI	Rhat	BulkESS	TailESS
Simplex Parameters							
Continuous Model							
Gender (1)	.46	.24	.02	.92	1.01	1795	1183
Gender (2)	.54	.24	.08	.98	1.01	1795	1183
Ordinal Model							
Gender (1)	.46	.24	.04	.90	1.00	2140	2021
Gender (2)	.54	.24	.10	.96	1.00	2140	2021

Note: Estimates of simplex parameters for continuous and ordinal models including gender effects. The table provides parameter estimates, standard errors, lower confidence intervals (LCI), upper confidence intervals (UCI), Rhat values, bulk effective sample size (BulkESS), and tail effective sample size (TailESS)

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