



Inequality Assessments: Construction and Validity Evidence of the Economic Inequality Representations Scale

Evaluaciones de desigualdad: construcción y evidencias de validez para escala de representaciones de desigualdad económica

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ABSTRACT

Recent research indicates that people's assessment of inequality is influenced by everyday contact with manifestations of disparity, with greater cognitive involvement among lower social strata. Information about inequality is stored, forming mental representations of inequality, a network of concepts that aid in processing new examples. However, no psychometric scale has been found that uses everyday examples to assess representations of inequality. Thus, this research aims to construct and present evidence of the validity of a scale focused on mental representations of economic inequality. The study was conducted with a sample of 1500 participants randomly divided into two data frames. A single-factor structure was identified and confirmed in both data frames, with good reliability indices ($\alpha = .88$, $\Omega = .87$) and distinctions between social classes. The measure presented evidence of convergent validity and was a negative predictor of support for economic inequality, offering an alternative instrument for studying inequality.

Keywords: Socioeconomic factors; Psychometrics; Social psychology; Economic status

RESUMEN

Investigaciones recientes sugieren que la evaluación de la desigualdad está influenciada por el contacto cotidiano con manifestaciones de disparidad, con mayor involucramiento cognitivo entre los estratos sociales más bajos. La información sobre desigualdad se almacena y forma representaciones mentales, una red de conceptos que facilita el procesamiento de nuevos ejemplos. Sin embargo, no se encontraron escalas psicométricas que utilicen situaciones cotidianas para evaluar estas representaciones. Por ello, esta investigación busca construir y presentar evidencias de validez de una escala centrada en representaciones mentales de la desigualdad económica. El estudio se realizó con una muestra de 1500 participantes divididos aleatoriamente en dos bases. Se identificó y confirmó una estructura unifactorial en ambas, con buenos índices de confiabilidad ($\alpha = ,88$; $\Omega = ,87$) y diferencias entre clases sociales. El instrumento mostró validez convergente y predijo negativamente el apoyo a la desigualdad económica, ofreciendo una alternativa para su estudio.

Palabras clave: Factores socioeconómicos; Psicometría; Psicología social; Estatus económico

INTRODUCTION

Since 2023, there has been an improvement in the socioeconomic condition of Brazilians; however, the country's economic inequality remains high, with significant disparities between the social strata (Miatto, 2024). The richest 10% of the Brazilian population has an income 40 times higher than the poorest 40% (Miatto, 2024). In the past, it was observed that people who most supported inequality reduction strategies (e.g., redistribution) were those who identified themselves as middle class (Duman, 2019; Méndez & Waltenberg, 2016), while those who had seen an improvement in their own financial condition over five years were less inclined to support redistribution (Méndez & Waltenberg, 2016).

Despite growing attention to inequality and interest in its reduction (Bavetta et al., 2017; Bussolo et al., 2021; Duman, 2019), research shows that one's behavior towards reducing inequality can be impacted by the way the phenomenon is classified (Bavetta et al., 2017; Brown-Iannuzzi et al., 2021; Lima-Nunes, 2021). Individuals may experience the same manifestation of inequality (e.g., reduced access to health services) but interpret it in different ways. This variation occurs because mental representations of economic inequality influence the processing of new information (Carlston, 2010; Lima-Nunes, 2021; Peters & Jetten, 2023).

Although there are more psychometric instruments to investigate how people evaluate inequality (Im & Shane, 2022; Valtorta et al., 2024; Wiwad et al., 2019),

no measures specifically targeting mental representations of economic inequality have been identified. Therefore, it is necessary to develop a measure that addresses everyday examples of inequality, considering cultural, social, and economic indicators. This will help us to identify which manifestations influence people's mental representations of economic inequality. The present study aims to propose and present validity evidence for a scale focused on mental representations of economic inequality.

Mental Representations and their Applicability to Study Economic Inequality

Mental representations, defined as a network of stored knowledge, serve as foundational material for various cognitive processes and social interactions (Carlston, 2010; Fiske & Taylor, 2017). It provides a valuable lens for analyzing existing research on economic inequality from a social cognitive perspective.

In daily life, individuals engage with and pay attention to both observable content (images, objects, contexts) and verbal content (people's speeches, concepts) (Hebart et al., 2020; Schnotz et al., 2022; Wyer, 2007). This information is stored in memory, alongside other data related to that content, whether consistent with or distinct from previously memorized material (Carlston, 2010; Fiske & Taylor, 2017; Smith & Queller, 2001; Wyer, 2007). Each stored concept contributes to a knowledge network, forming the basis of subsequent information processing and influencing the new storage (Smith & Queller, 2001; Velasquez et al., 2023; Zheng et al., 2019).

In Colombia, participants identified inequality in everyday life through disparities in access to services, living conditions, types of work, social comparisons of consumption, and class-based social networks (García-Sánchez et al., 2018). Similarly, in the United States, people accurately assess someone's earning power based on photos of their travels, pastime activities, frequented places, and speech patterns (Becker et al., 2017; Kraus et al., 2019). Such information contributes to an individual's perception of inequality across different social strata and shapes mental representations.

For example, healthy behaviors, such as low-fat diets and physical activity, have been associated with normative behaviors of the upper-middle class (Blondé et al., 2022). Aligned with this, in Study 3 by Kim Peters et al. (2022), participants in conditions of high inequality prioritized knowing strangers' occupations, personal income, and social status to evaluate them better.

Mental representation of economic inequalities can be defined as a set of basic or generic knowledge about economic inequality acquired through experiences of social interaction organized in three main dimensions: (a) Economic, which

encompasses education, housing, healthcare access, and job opportunities of an individual or group; (b) Cultural, which encompasses material goods, leisure activities and socialization of an individual or group; and (c) Social, which encompasses social network of an individual or group, made up of colleagues from their educational institution, work, friends, and family (Tomé, 2024).

Economic and class inequality are reinforced by how people interpret inequality, as individuals create varying assessments of disparity due to different levels of interaction in their social environments (Fendinger et al., 2023; Piff et al., 2017). Personal aspects such as social class, deprivation, social relations, political convictions, and beliefs of an individual, along with social aspects like macroeconomics, cultural influences, and prejudice, contribute to different interpretations of inequality (Davidai, 2022; Du & King, 2022; Kraus & Park, 2017; Piff et al., 2017). This contributes to social distancing, the maintenance of inequality, and satisfaction with the current status (Manstead, 2018; Piff et al., 2017).

Potential Relationships between Representations of Economic Inequality and Related Variables

The impact of social class on responses to disparity has been one of the most stable findings within literature. Objective measures (e.g., education levels, average salary, or occupation; Brazilian Institute of Geography and Statistics [Instituto Brasileiro de Geografia e Estatística, IBGE], 2019) and subjective indicators (e.g., how individuals perceive their social status and available resources; Adler et al., 2000) have highlighted the influence of socioeconomic status on perceptions of inequality, attributions to justify income concentration, and beliefs about inequality.

The literature suggests that this pattern reflects economic inequality between social classes, shaping cognition and neurodevelopment (Fendinger et al., 2023). The lower class faces more restrictions on services, opportunities, resource scarcity, and status anxiety, while the upper class has more financial freedom, opportunities, decision-making power, and more space to express themselves (Fendinger et al., 2023; Kraus et al., 2012; Piff et al., 2017). Given that the lower social strata are likely to accumulate more examples of inequality, we expect social class to correlate negatively with representations of inequality.

Subjective measures, such as self-identification of socioeconomic status or rating others' status, yield similar results. However, the association of subjective measures is stronger with constructs like perception, attitudes, and beliefs (García-Castro et al., 2022; Heiserman & Simpson, 2021; Tan et al., 2020). Higher social strata pay less attention to inequality (Dietze, 2019) and perceive less inequality in everyday life (García-Castro et al., 2019; García-Sánchez et al.,

2019; Haddon & Wu, 2022). The ones at the lower strata store more examples of inequality, providing an advantage in understanding social environments (Fendinger et al., 2023). Consequently, we assume that subjective socioeconomic status correlates negatively with representations of inequality and positively predicts support for economic inequality.

Regarding inequality evaluation, individuals from higher social strata tend to make internal attributions like merit (Bai et al., 2023). In contrast, the lower social strata lean toward external attributions (e.g., luck, Davidai, 2022). Interestingly, individuals who have achieved high income find it less challenging to ascend in social economic status (Koo et al., 2023). However, external events like COVID-19 lead to increased external attributions and reduced positive attitudes towards inequality (Wiwad et al., 2021). Therefore, we expect that support for inequality negatively correlates with representations of inequality.

Beliefs about income concentration significantly influence assessments of inequality. The beliefs that the world is fair and the economic system is just have correlated with lower perceived economic inequality (Valtorta et al., 2024), greater support for inequality, and reduced emotional stress (Goudarzi et al., 2020). These beliefs also predict negative interest in donations (Wiwad et al., 2019). Nonetheless, the income of the richest 10% was significantly more legitimized than that of the poorest 10%, but in Efraín García-Sánchez et al.'s (2022) study, belief in a just world was positively associated with the perception of inequality, suggesting that participants view disparity as inevitable.

Given the prevalence of results indicating that those who strongly identify disparity are less willing to accept the current state, we expect that belief in a just world will negatively correlate with inequality representations. Additionally, justification of the economic system is likely to have a negative association with representations of inequality. Finally, we assume that economic system justification positively predicts support for economic inequality.

The finding that people may perceive inequality as inevitable warrants attention. Understanding the extent to which individuals learn that their living conditions cannot improve is crucial. An alternative explanation is learned helplessness. In the study of Cleno Mendonça Neto (2022), individuals experiencing deprivation showed higher levels of learned helplessness. Based on the result, we expect that learned helplessness predicts support for economic inequality, along with fewer representations of economic inequality.

Consistent with this, studies also suggest that lower social strata experience more generalized anxiety, status anxiety, and reduced well-being (Daganzo & Bernardo, 2018; Melita et al., 2021; Schmalor & Heine, 2022; Ugur, 2021; Wienk et al., 2021).

However, no significant association was found between emotional stability and economic system justification in the Brazilian sample (Silva, 2021). Therefore, we anticipate that representations won't significantly correlate with neuroticism.

In addition, political positioning and ideology also influence how people interpret economic inequality. Conservatives tend to make more internal attributions when justifying resource concentration and oppose redistribution, while liberals lean toward external attributions (Davidai, 2022). Other studies corroborate this finding. Endorsement of social hierarchies exhibits a negative and significant correlation with the ability to recognize inequality (Du et al., 2022; Waldfogel et al., 2021). Additionally, it serves as a positive predictor of economic conservatism, alongside right-wing authoritarianism (Harnish et al., 2018). Because of that, we expect social dominance orientation to correlate negatively with representations of inequality.

METHOD

Participants

Given the lack of calculations for the appropriate sample size in an Exploratory Factor Analysis (EFA), we conducted an *a priori* sample size analysis using G*Power version 3.1.9.7 (Faul et al., 2009) for the bivariate normal correlation model. We used conservative parameters ($\alpha = .01$, 99% power, and small effect size $|p| = .20$). The result indicated a sample of 588 participants. However, to compare the scale's structure between social classes, we decided to increase the sample size to at least 300 participants per social class. Therefore, the final sample size was 1500 participants who passed the attention check, aged between 18 years old and 82 years old ($M = 37.98$, $DP = 12.83$), and residents in Brazil.

More than half of the participants were from Northeast ($n = 408$, 27.2%) and Southeast ($n = 525$, 35%) regions. The gender distribution was balanced between feminine ($n = 777$, 51.8%) and masculine ($n = 723$, 48.2%). Regarding race, most participants identified themselves as white ($n = 760$, 50.7%) or mixed race (i.e., pardo, $n = 553$, 36.9%). The most common levels of education in the sample were high school ($n = 410$, 27.3%), higher education ($n = 568$, 37.9%), and postgraduate ($n = 205$, 13.7%). Finally, the number of participants across the four social classes was relatively even (Class A = 339, 22.6%; Class B = 405, 27%; Class C = 397, 26.5%; and Class D/ E = 359, 23.9%).

Measures

Due to the response scale of the instruments being Likert Scales of agreement, all instruments were standardized on an 11-point scale of agreement (0 = *Totally Disagree*, 10 = *Totally Agree*).

Mental Representations of Economic Inequality Scale (ERDE). The short version included 26 items covering economic, cultural, and social indicators, designed to be answered on a 7-point Likert scale. An example item: “Low-income people live in neighborhoods further away from the city center.” Details of the scale development are located in the Procedure section.

Subjective Socioeconomic Status (SSS) (Adler et al., 2000). The scale is a pictorial item (ladder) that asks participants to compare their socioeconomic status to their country’s socioeconomic status. Basically, participants are shown an image of a ladder with 10 rungs and are told that the ladder represents people’s positions in society. They are informed “the top of the ladder represents those who are the best off (the most money, best jobs, and highest education). The bottom represents those who are worst off (the least money, poorest or no job, and lowest education). Afterward, they are invited to mark which rung best represents their position in the ladder”.

Economic System Justification Scale (ESJ) (Jost & Thompson, 2000; Lima, 2016). The reduced version comprised 12 items across three factors (Social Change, Naturalization of Differences and Social Mobility; Silva, 2021), answered on a 7-point Likert scale of agreement. The Exploratory Factor Analysis (EFA) of the scale indicated a two-factor structure, with only item eight having a loading below .40. The scale structure grouped the change and mobility items into one factor (Change and Mobility $\alpha = .68$ and $\Omega = .75$) and a factor with the Naturalization of Differences items ($\alpha = .71$ and $\Omega = .74$). An example item: “It is practically impossible to eliminate poverty.”

Support for Economic Inequality Scale (SEIS) (Wiwad et al., 2019). The measure is one-factor, composed of five items, and answered on a 7-point Likert scale. EFA single-factor structure was adequate, and good reliability index were observed ($\alpha = .84$ and $\Omega = .85$). An example item: “We need to do everything possible to reduce economic inequality in today’s world.”

Social Dominance Orientation Scale (SDO) (Pratto et al., 1994; Vilanova et al., 2022). The reduced version contains eight items, divided between dominance and anti-egalitarianism factors. The EFA reinforced the two-factor structure, with good reliability indices for Dominance ($\alpha = .80$ and $\Omega = .80$) and adequate for Anti-egalitarianism ($\alpha = .70$ and $\Omega = .69$). An example item: “Our main goal should not be equality between groups.”

Semantic Differential Scale for Personality Assessment (ER5FP) (Passos & Laros, 2015). The complete scale has 20 items between five dimensions, with reliability indices ranging from .71 to .85. The dimension has four semantic comparisons, such as “Nervous-Calm”. The EFA reinforced the one-factor structure

for the Neuroticism dimension, with adequate reliability indices ($\alpha = .88$ and $\Omega = .88$).

Belief in a Just World Scale with Popular Sayings (CMJ; Linhares, 2017).

The single-factor measure is composed of seven items measured on a 5-point Likert scale. EFA reinforced the single-factor scale, and good reliability indices were observed ($\alpha = .87$ and $\Omega = .87$). An example of an item: “The justice of life delays, but does not fail.”

Learned Helplessness Scale (LHS; Couto & Pilati, 2023; Quinless & McDermott Nelson, 1988). The short version is a one-factor scale composed of six items and answered on a 4-point Likert scale. The EFA indicated that the most appropriate structure would be two factors: one factor with Stable Attributions and Personal Helplessness ($\alpha = .70$ and $\Omega = .72$), and the other factor with Unstable Attributions and Global Helplessness ($\alpha = .70$ and $\Omega = .71$). An example item: “I can find solutions to difficult problems.”

Participants’ socioeconomic status was measured through Social Class. The company hired for pre-screened research participants has a pre-social classification system based on the Brazil Criteria. They provided the socioeconomic classification of participants into four groups (i.e., Class A, Class B, Class C, and Class D/E), in line with *Cr terio Brasil 2022*. Lastly, participants’ political affiliation was measured through an item asking about political positioning, and the response scale contained Left and Right anchors at the extremes.

Procedures

Starting with the definition of the construct of mental representations of economic inequality and its three dimensions (i.e., economic, cultural, and social indicators; Tom , 2024), a set of 81 initial items were written following Luis Pasquali’s (2010) instructions. Eight experts in measure development and social psychology evaluated the content and operationalization of the items in terms of clarity, relevance, and adequacy on a five-point scale to calculate the Content Validity Coefficient (CVC; Hern ndez-Nieto, 2002). Based on the expert’s evaluation, 42 items were deleted due to pertinence and relevance CVCi values below .80. Of the remaining, 25 items with pertinence and relevance above .80 but clarity below .80 were rewritten. The initial list of 81 items was reduced to 39 items, with adequate CVC indices (CVCt Clarity = .88, CVCt Pertinence = .89, CVCt Relevance = .90).

The reduced list of items was shared with five participants (one upper class, one upper-middle class, one middle class, one lower-middle class, and one lower

class) to assess the scale's understandability and adequacy. Both criteria were rated on a five-point scale. Finally, participants indicated whether the items needed to be changed with "yes" or "no" answers. The majority of participants only answered the last question (i.e., whether it was necessary to modify the items). Given this, the Fleiss Kappa index was used (Fleiss, 1981). The evaluation revealed an agreement for not changing the items, with Global Kappa = .78, $p < .01$.

A reduced version of the scale, with 23 items, was used in the data collection. All scales were made available in an online survey conducted on the hired company's platform. This platform comprises a varied panel of participants that aims to reflect the characteristics of the Brazilian population, including factors like income, race, education, and gender. The inclusion criteria were: being above 18 and residing in Brazil. The exclusion criterion was failing the attention checks.

An invitation was sent to all members through the company's exclusive platform. Before starting the survey, individuals were informed about the study's objective, guarantee of data confidentiality, duration of the study, and completed the Free and Informed Consent Form (TCLE). After agreeing to participate in the study, they provided sociodemographic data, including their age, education, race, and region of residence. Subsequently, the scales were presented in a randomized manner.

The total sample was randomly divided into two data frames, each with 750 participants. In Data 1, Exploratory Factor Analysis (EFA) and Procrustes rotation analysis were carried out to provide structure validity (Fischer & Karl, 2019). Next, a correlation analysis was performed to provide convergent and discriminant validity. The EFA was conducted in the FACTOR program version 12.04.01. The Procrustes rotations were performed in R with the psych package (Revelle, 2024) and GPArotation (Bernaards et al., 2023). Finally, the correlation analysis was also conducted in R with psych (Revelle, 2024).

A distribution with a deviation from normality was identified in Data 1 due to the significant Mardia test for kurtosis ($p < .001$), but the Kaiser-Meyer-Olkin test suggested the data presented good factorability (KMO = .88). Due to these results polychoric correlation matrix and Robust Diagonally Weighted Least Squares extraction method were adopted (RDWLS; Asparouhov & Muthen, 2010), along with a bootstrapping procedure with 500 resamples. The factor extraction was obtained through the Optimized Parallel Analysis (Timmerman & Lorenzo-Seva, 2011) and the Hull Method (Lorenzo-Seva et al., 2011). Lastly, the rotation adopted was the oblique Promin (Lorenzo-Seva & Ferrando, 2019).

Items with loadings below .40, or cross-loadings with differences above .10 were excluded (Laros, 2012). The unidimensionality indices were evaluated, with the cutoff points being MIREAL values below .30, ECV above .85, and UniCo above .95.

To assess whether the structure presented good fit indices, TLI and CFI values above .90 and RMSEA below .08 were considered adequate (Brown, 2015). Cronbach's alpha and McDonald's Omega reliability indices above .80 were considered satisfactory, and the replicability index H above .80 was considered adequate, indicating the replicability of the structure.

Procrustes rotations were performed to compare the structure of the scale between social classes. This technique allowed the comparison of the structure of the scale between pairs of classes. Class B was used as the base structure due to the greater number of participants ($n = 210$) compared to the others (Class A = 175, Class C = 193, and Class D/E = 172) (Fischer & Karl, 2019). Tucker's Phi and correlation coefficients further from 1 were considered as differences in structure between groups. To compare class structures, six rotations were carried out between two social classes using the geominQ method. The four classes presented acceptable factorability according to the KMO test (Class D/E = .86, Class C = .78, Class B = .85, and Class A = .75).

Due to the deviation from normality in Data 1, the correlation chosen was Spearman's Rho and the Bootstrap procedure with 1000 resamples was applied. Correlation coefficients between .20 and .50 were considered adequate for evidence of convergent validity, while values below .10 and non-significant were adopted for evidence of discriminant validity (Field, 2017).

In Data 2, a Confirmatory Factor Analysis (CFA) and a Multiple Linear Regression were carried out to confirm the structure and provide evidence of predictive validity, respectively. The CFA was performed in R with the lavaan package (Rosseel et al., 2023) and fit assessment was carried out according to Tim Brown (2015). RMSEA values below .08, SRMR below .06, and TLI and CFI above .90 were considered adequate. Due to the deviation from multivariate normality, identified by the significant Mardia test ($p < .001$) and the good factorability according to KMO = .84, the estimation method adopted was the Unweighted Least Squares Mean-and-Variance-adjusted (ULSMV; Kiliç & Doğan, 2021).

RESULTS

Data 1: Structure Validity, Convergent and Discriminant Validity

Five Outliers were identified by Mahalanobis distance but were kept in the sample because their absence would reduce the size of the groups for the Procrustes rotations, as three were Class D/E, one was Class C, and one was Class A.

To investigate which structure of the scale best fits the data, Exploratory Factor Analysis (EFA) was carried out. First, the correlation matrix between items was

analyzed. Low correlations were observed between items from different factors and high correlations between items belonging to the same factor. The lowest correlation was $r = -.05$ between items 15 (cultural) and 21 (social), and the highest was $r = .51$ between items 22 (economic) and 23 (economic).

The Hull Method indicated the extraction of one factor, while the Optimized Parallel Analysis suggested the extraction of two factors. In line with the parallel analysis, unidimensionality statistics reinforced the structure with more than one factor (ECV = .69, UniCo = .78 and MIREAL = .27). Unlike expected, the Promin rotation allocated the items to two factors instead of the three factors (i.e., economic, cultural, and social), with most items allocated to the first factor.

In Table 1, it is possible to observe that the first factor grouped economic, cultural, and social items, forming a dimension of daily indicators that are considered inequality. The second dimension, on the other hand, was made up of negative items, which reinforced the opportunity for everyone, regardless of income. Depending on the content of each factor, the first was called Representations of Inequality and the second Representations of Rejection of Inequality.

Table 1. Result of the Exploratory Factor Analysis of the Scale

Items	Factor Loading		h^2
	Repres Ineq	Reject Ineq	
ERDE1. A pessoa se dedicar exclusivamente aos estudos indica que ela possui uma renda alta. (A person dedicating themselves exclusively to their studies indicates that they have a high income.)	.37		.73
ERDE2. Na minha cidade, os estudantes de escolas particulares têm mais dinheiro. (In my city, students at private schools have more money.)	.70		.62
ERDE3. Pessoas de baixa renda possuem maior dificuldade em manter os filhos na escola. (People in low-income have more difficulty keeping their children in school.)	.60		.65
ERDE4. As oportunidades de contratação em um emprego são iguais para todos, independente da renda (R). (Job opportunities are equal for everyone, regardless of income.)		.54	.55
ERDE5. As pessoas de baixa renda moram em bairros mais distantes do centro da cidade. (People in low-income live in neighborhoods further from the city center.)	.64		.65
ERDE6. A segurança do bairro onde se mora está relacionada à renda dos moradores da região. (The safety of a neighborhood is related to the income of the residents in that area.)	.49		.53

(Continua)

Table 1. Result of the Exploratory Factor Analysis of the Scale (*Continua*)

Items	Factor Loading		h^2
	Repres Ineq	Reject Ineq	
ERDE7. Ter acesso a mais de um tipo de meio de transporte particular é um indicativo de uma alta renda. (Having access to more than one type of private transportation is an indicator of high income.)	.57		.62
ERDE8. O nível de renda de uma pessoa tem impacto no seu acesso aos serviços de saúde. (A person's income level impacts their access to healthcare services.)	.58		.62
ERDE9. As pessoas de alta renda têm mais alternativas para cuidar da própria saúde. (Individuals in high-income have more options for taking care of their own health.)	.65		.83
ERDE10. A espera prolongada por atendimento médico acontece somente com pessoas de baixa renda. (Prolonged waiting times for medical care only occur among low-income individuals.)	.53		.65
ERDE11. Na cidade onde eu moro, os eventos artísticos gratuitos têm mais pessoas de baixa renda. (In the city where I live, free artistic events attract more low-income people.)	.43		.46
ERDE12. As pessoas que frequentam shows musicais são aquelas que possuem muito dinheiro. (People who attend music concerts are those who have a lot of money.)	.42	-.33	.61
ERDE13. O teatro é inacessível para aqueles que têm menos renda. (The theater is inaccessible to those with lower income.)	.43		.69
ERDE14. Na minha cidade, há mais pessoas de alta renda frequentando shoppings por lazer. (In my city, there are more high-income people frequenting shopping malls for leisure.)	.44		.40
ERDE15. Uma alimentação nutritiva é alcançável para todos, independente da renda (R). (A nutritious diet is attainable for everyone, regardless of income.)		.61	.64
ERDE16. Viajar mais de uma vez por ano é um indicativo de renda elevada. (Traveling more than once a year is an indicator of high income.)	.62		.54
ERDE17. Pessoas de baixa renda possuem celulares de última geração (R). (People in low-income own latest generation cell phones).		.47	.54
ERDE18. É possível identificar a condição financeira de alguém pelas suas roupas. (It is possible to identify someone's financial status by their clothing.)	.44	-.35	.92
ERDE19. A forma como uma pessoa fala sinaliza a sua condição financeira. (The way a person speaks signals their financial status.)	.47	-.42	.52
ERDE20. Há mais pessoas com pós-graduação em famílias de baixa renda (R). (There are more people with postgraduate degrees in low-income families.)		.59	.69

Table 1. Result of the Exploratory Factor Analysis of the Scale (*Continua*)

Items	Factor Loading		h^2
	Repres Ineq	Reject Ineq	
ERDE21. A oportunidade de escolher quais experiências profissionais se quer obter é possível para todos, independente da renda (R). (The opportunity to choose which professional experiences one wants to obtain is available to everyone, regardless of income.)		.58	.75
ERDE22. As pessoas com condições financeiras mais baixas são vistas fazendo os trabalhos que outras não se interessam em fazer. (People with lower financial means are often seen doing the jobs that others are not interested in doing.)	.64		.66
ERDE23. As profissões braçais são realizadas por pessoas de baixa renda. (Manual labor jobs are performed by people in low-income).	.64		.76
Eigenvalue	6.18	2.79	
Cronbach's Alpha	.80	.72	
McDonald's Omega	.81	.75	
H-Index	.97	.78	

Note: Repres Ineq = Representations of Inequality. Reject Ineq = Representations of Rejection of Inequality. h^2 = Communality. Direct item translations are available for clarity but should not be used as operational items prior to adaptation procedures.

Item 1 was excluded due to its factor loading below .40, and items 12, 18 and 19 removed due to cross loading above .10. A new EFA was carried out without the items, again suggesting the two-factor structure, with more items in the first factor. Item 13 presented a factor loading below .40, being excluded from the analyses. The structure without the five items presented good fit indices (CFI = .98, TLI = .97, BIC = 562.389, RMSEA = .03 90% CI [.01, .05]), but the inter-correlation among the factors was low ($r = .22$), and the explained variance of the first factor was much higher than the second factor, with 30.3% and 13.6%, respectively.

As a result, an EFA was run without the five items composing Dimension 2. The EFA without the items showed satisfactory factorability (KMO = .92), but the parallel analysis suggested a single-factor structure. This structure was reinforced by unidimensionality statistics, with ECV = .85, UniCo = .95 and MIREAL = .24. The model fit indices indicated that the one-factor structure fits the data, as the CFI = .99, TLI = .99, BIC = 304.808, and RMSEA = .04 90% CI [.03, .04] were within the cutoff point and the BIC decreased. All items presented loadings above .40 and the single-factor structure presented good reliability, and replicability indexes (see Table 2).

Table 2. Result of the One-factor Structure

Item	Factor Loading	h^2
ERDE2. Na minha cidade, os estudantes de escolas particulares têm mais dinheiro. (In my city, students at private schools have more money.)	.71	.50
ERDE3. Pessoas de baixa renda possuem maior dificuldade em manter os filhos na escola. (People in low-income have more difficulty keeping their children in school.)	.58	.34
ERDE5. As pessoas de baixa renda moram em bairros mais distantes do centro da cidade. (People in low-income live in neighborhoods further from the city center.)	.65	.42
ERDE6. A segurança do bairro onde se mora está relacionada à renda dos moradores da região. (The safety of a neighborhood is related to the income of the residents in that area.)	.46	.21
ERDE7. Ter acesso a mais de um tipo de meio de transporte particular é um indicativo de uma alta renda. (Having access to more than one type of private transportation is an indicator of high income.)	.55	.31
ERDE8. O nível de renda de uma pessoa tem impacto no seu acesso aos serviços de saúde. (A person's income level impacts their access to health-care services.)	.63	.40
ERDE9. As pessoas de alta renda têm mais alternativas para cuidar da própria saúde. (Individuals in high-income have more options for taking care of their own health.)	.71	.51
ERDE10. A espera prolongada por atendimento médico acontece somente com pessoas de baixa renda. (Prolonged waiting times for medical care only occur among low-income individuals.)	.57	.32
ERDE11. Na cidade onde eu moro, os eventos artísticos gratuitos têm mais pessoas de baixa renda. (In the city where I live, free artistic events attract more low-income people.)	.47	.22
ERDE14. Na minha cidade, há mais pessoas de alta renda frequentando shoppings por lazer. (In my city, there are more high-income people frequenting shopping malls for leisure.)	.43	.19
ERDE16. Viajar mais de uma vez por ano é um indicativo de renda elevada. (Traveling more than once a year is an indicator of high income.)	.61	.37
ERDE22. As pessoas com condições financeiras mais baixas são vistas fazendo os trabalhos que outras não se interessam em fazer. (People with lower financial means are often seen doing the jobs that others are not interested in doing.)	.69	.47
ERDE23. As profissões braçais são realizadas por pessoas de baixa renda. (Individuals in high-income have more options for taking care of their own health.)	.67	.45
Cronbach's Alpha	.88	
McDonald's Omega	.87	
H-Index	.83	

Note: h^2 = Communality. The items of the Scale don't have to be reversed-coded. Direct item translations are available for clarity but should not be used as operational items prior to adaptation procedures.

To assess whether the single-factor structure is similar across social classes, Procrustes rotations were performed. These indicated that the single-factor version of the scale adjusts well to the four social classes. Although there were differences in the factor loadings of some items like item 5 (living in distant neighborhoods), 7 (access to more than one private transport), 8 (access to health services), 10 (long wait for medical care), 14 (shopping malls for leisure), 16 (traveling more than once a year), and 22 (jobs that others are not interested in), the structure was similar.

Tucker’s Phi above .90, shows most groups presented similar matrices, with a linear and congruent relationship, since the correlation coefficients were close to 1. Only the comparison of class D/E with class A showed a low correlation coefficient, suggesting limited similarity for endorsement of items between the two groups (see Table 3).

Table 3. Comparison of Scale Structure Between Classes with Procrustes Rotations

Items	Factor Loading					
	Class B and Class A	Class B and Class C	Class B and Class D/E	Class A and Class C	Class A and Class D/E	Class C and Class D/E
	F1	F1	F1	F1	F1	F1
ERDE2	.68	.68	.68	.53	.53	.60
ERDE3	.54	.54	.54	.45	.45	.45
ERDE5	.56	.56	.56	.64	.64	.34
ERDE6	.45	.45	.45	.40	.40	.57
ERDE7	.50	.50	.50	.47	.47	.35
ERDE8	.48	.48	.48	.38	.38	.48
ERDE9	.51	.51	.51	.46	.46	.47
ERDE10	.50	.50	.50	.30	.30	.46
ERDE11	.50	.50	.50	.44	.44	.41
ERDE14	.49	.49	.49	.36	.36	.20
ERDE16	.54	.54	.54	.51	.51	.26
ERDE22	.57	.57	.57	.47	.47	.27
ERDE23	.56	.56	.56	.67	.67	.41
Tucker’s Phi	.99	.98	.98	.98	.96	.98
Correlation Coefficients	.57	.62	.51	.62	.10	.63

Note: Factor loadings below .40 are in bold

In order to build a nomological network for the construct representations of inequality, a correlation analysis was carried out with the final one-factor structure presented in Table 2.

Regarding evidence of convergent validity, the representation scale showed a significant association with the selected measures. ERDE showed a negative and significant correlation with the Change and Social Mobility (ESJ) factor: $r = -.38$, 90% IC [-.32, -.49], $p < .05$; negative correlation with Support for Economic Inequality $r = -.38$, 90% IC [-.45, -.32], $p < .001$; negative correlation with the Dominance factor (SDO): $r = -.33$, 90% IC BCa [-.39, -.26], $p < .001$; and negative correlation with Anti-egalitarianism (SDO): $r = -.09$, 90% IC BCa [-.15, -.01], $p < .05$.

Surprisingly, a positive correlation was observed between representations and belief in a just world, $r = .20$, 90% IC BCa [.11, .26], $p < .001$. However, subjective socioeconomic status ($r = -.03$, 90% IC BCa [-.03, .13], $p = .17$) and the Naturalization of Differences (ESJ; $r = -.05$, 90% IC BCa [-.12, .04], $p = .33$) did not show significant correlations with representations.

Evidence of discriminant validity was not achieved, as the representations scale showed a small but significant correlation with Neuroticism ($r = .08$, 90% IC BCa [.03, .17], $p < .01$). On the other hand, political positioning, objective social class, and level of education did not present significant correlations with ERDE (see Table 4).

Data 2: Structure Confirmation and Predictive Validity

Six outliers were found in Data 2, but it was decided not to exclude these because this time five were in Class D/E and one in Class C. The Mardia Test indicated kurtosis deviation and absence of normality ($p < .001$), but factorability was adequate (KMO = .84).

A Confirmatory Factor Analysis was carried out to check the adjustment of the structure obtained in the last EFA of Data 1. The single-factor solution presented loadings above .40. The fit indices suggest a model is parsimonious and adjusted to the data: $\chi^2/\text{gl} = 4.44$, Robust CFI = .91, Robust TLI = .89, RMSEA Robust = .07, 90% CI BCa [.07, .08], SRMR = .04. However, two residual covariances above 10 were found (items 8 and 9 = 25.393; items 7 and 16 = 24.803). Given the content of items 8 and 9 are about health, item 8 was excluded. The adjustment of the 12-item scale was adequate ($\chi^2/\text{gl} = 3.61$, Robust CFI = .94, Robust TLI = .92, RMSEA Robust = .06, 90% CI BCa [.05, .07], SRMR = .04).

Finally, a multiple regression analysis was performed to measure whether subjective socioeconomic status, political affiliation, beliefs that naturalize inequality, representations of inequality, and learned helplessness predict support for economic inequality. The assumptions were partially met. The Durbin-Watson test indicated the absence of autocorrelation of residuals (Durbin-Watson = 1.97, $p = .32$). No multicollinearity was identified, as VIF values were not below 5 or

Table 4. Correlation Matrix for Convergent and Discriminant Validity of ERDE

	M	SD	1	2	3	4	5	6	7	8	9	10	11
1.ERDE	7.45	1.5	—										
2.SEIS	1.83	1.94	-0.38***	—									
3.SSS	5.56	2.26	0.03	0.07	—								
4.CMJ	7.46	2.07	0.20***	-0.11***	0.18***	—							
5.SDO Dom	3.97	1.81	-0.33***	0.43***	0.03	-0.2***	—						
6.SDO Anti	4.67	1.98	-0.09*	0.34***	0.22***	0.15***	0.27***	—					
7.ESJ Chang	2.99	1.96	-0.38*	0.39***	-0.1**	-0.18***	0.4***	0.08*	—				
8.ESJ Natur	4.89	2.1	-0.05	0.31***	0.28***	0.31***	0.13***	0.41***	0.05	—			
9.Neuro	2.89	0.69	0.08**	-0.07*	0.13***	0.16***	-0.09*	0.15***	-0.11*	0.19***	—		
10.Edu	5.12	1.43	-0.04	0.08*	0.33***	-0.15***	0.07	0.03	0.06	-0.05	-0.01	—	
11.Pol Posit	5.72	3.42	-0.02	0.14***	0.16***	0.14***	0.05	0.19***	0.08*	0.25***	0.1***	0.05	—
12.Class	2.48	1.08	-0.01	-0.05***	-0.34***	0.08*	-0.05	-0.04	0.01	0.02	0.01	-0.58***	-0.03

Note: * indicates $p < 0.05$. ** indicates $p < 0.01$. *** indicates $p < 0.001$. ERDE = Mental Representations of Economic Inequality. SEIS = Support for Economic Inequality. SSS = Subjective Socioeconomic Status. BJW = Belief in a Just World with Popular Sayings. SDO Dom = Dominance. SDO Anti = Anti-egalitarianism. ESJ Chang = Change and Social Mobility. ESJ Natur = Naturalization of Differences. Neuro = Neuroticism. Edu = Education level. Pol Posit = Political Positioning. Class = Social Class.

above 10, and the tolerance values were close to 1. However, heteroscedasticity was identified in the residuals. As a result, the regression adopted was Weighted Least Squares (WLS).

The proposed model was significant in predicting support for inequality, $F(6, 743) = 59.41$, $p < .001$, representing an adjusted error reduction of 32% compared to the null model (R^2 adjusted = .32). Representations of Inequality was the largest negative predictor of positive attitudes towards inequality ($b = -.40$, 95% CI BCa [-.45, -.30], $p < .001$), while naturalization of differences was the largest positive predictor ($b = .25$, 95% CI BCa [.21, .30], $p < .001$). Contrary to expectations, the second factor of learned helplessness (i.e., sense of global helplessness with unstable attributions) and political affiliation were not significant predictors (see Table 5).

Table 5. Result for Predictor Variables of Support for Economic Inequality

Variables	<i>b</i>	<i>B</i>	<i>SE</i>	<i>T</i>	Sig	95% IC	
						Inf	Sup
(Intercept)	2.85		.40	7.024	< .001	2.04	3.66
Pol Posit	-.01	-.04	.01	-1.178	.24	-.04	.02
SSS	.06	.08	.02	2.401	.02	.01	.12
ESJ_Natur	.25	.35	.02	10.329	< .001	.21	.30
LHS_F1	.08	.10	.03	2.891	.01	.02	.15
LHS_F2	.02	.05	.02	1.395	.16	-.02	.07
ERDE	-.40	-.34	.04	-10.579	< .001	-.45	-.30

Note: Pol Posit = Political Positioning. SSS = Subjective Socioeconomic Status. ESJ Natur = Naturalization of Differences. LHS_F1 = Stable Attributions and Personal Helplessness. LHS_F2 = Unstable Attributions and Global Helplessness. ERDE = Mental Representations of Economic Inequality. The arithmetic mean of the items in each set of variables was calculated by adding all the values and dividing the result by the total number of items in that set.

A new model controlling age and education was run to evaluate the influence of these variables on the model. Only age was significant ($b = -.01$, $p < .001$), but it did not change the model's predictive power, since the analysis of variances indicated that the difference between the models was not significant, $F(3,740) = .75$, $p = .52$.

DISCUSSION

After careful examination, we assume the objective was achieved, and a useful version of mental representations of economic inequality scale was obtained. Although we did not achieve the three-factor structure, the validated measure remains suitable for use. The one-factor solution comprises items addressing economic, social, and cultural manifestations of economic inequality. These items allowed us to delve into the categorizations used to evaluate economic

disparity. Thus, our scale facilitates comparisons of representation structures across social classes, revealing differences in agreement due to factor loadings difference.

Evidence of Structure Validity for Unidimensional Version

The prevalence of items allocated to the first dimension likely results from their focus on observable manifestations of economic inequality, concrete examples that people may have experienced or observed in their lives. Individuals draw information from visual and verbal experiences when evaluating economic inequality; however, the organization of accessed information is influenced by external demand (Fendinger et al., 2023; Peters & Jetten, 2023; Phillips et al., 2023). More specifically, the contact with economic inequality shapes one's social cognition to focus on disparity in everyday life.

Different concepts are used to characterize a context, and these are used when needed (Schnotz et al., 2022). In the case of economic inequality, it is possible that people have a database of visual and verbal experiences about inequality, which they access as needed to make sense of new social information. Nonetheless, the organization of the information accessed is influenced by external demand. In Martin's Hebart et al. (2020) and Charles Zheng et al. (2019) studies, people's judgments about images were supported by similar observed characteristics; for example, gold and silver objects were grouped in a valuable items dimension. In addition to perceptual identification, other dimensions such as functionality, taxonomy, and more specific knowledge about the observed objects can be activated.

As identified in other countries (Becker et al., 2017; Blondé et al., 2022; García-Sánchez et al., 2018), people rely on observable examples to make sense of inequality. Due to cultural, economic, or social manifestations used, the result of the present study aligns with the discussion that different living conditions enhance the formation of cognitive biases when interpreting disparity. Asking participants whether the specific situation reflects high income or low income makes them resort to an explicit activation of their representations, accessing their knowledge network to evaluate the example and indicate their level of agreement (Carlston, 2010; Peters & Jetten, 2023; Smith & Queller, 2001). This contributes to explaining why items like traveling more than once a year may receive a greater endorsement as examples of inequality for some and not others.

Evidence of Convergent, Discriminant, and Predictive Validity

The measure allows us to investigate one side of the evaluation process, contributing as an additional measure to understand the attitudes, beliefs, and ideolo-

gies associated with economic inequality. Unlike studies in the global north that identified positive correlations between belief in a just world and attitudes favoring inequality (Wiwad et al., 2019) and negative correlations with perception of inequality (Valtorta et al., 2024), ERDE showed positive correlations with Belief in a Just World and negative correlations with Change and Mobility. These support the results discussed by Efraín García-Sánchez et al. (2022), that people can perceive and store multiple examples of inequality but evaluate the situation as inevitable, resorting to beliefs that reduce suffering.

Contexts with high economic inequality increase the reduction of well-being and status anxiety (Melita et al., 2021; Schmalor & Heine, 2022; Wienk et al., 2021). In the present study, neuroticism showed a positive correlation with representations of inequality, suggesting an increase in one variable is associated with an increase in the other. Although this result was not expected, and discriminant validity was not achieved, the association contributes to an expanded understanding of aspects that can influence the evaluation process of representations of inequality.

The regression result is partially in line with the literature, as the increase in subjective socioeconomic status, more naturalizing beliefs about economic differences, higher levels of self-sufficiency (e.g., Factor 1 of helplessness learned with items about personal support and stable attributions), and fewer representations of inequality enhance the increase in support for economic inequality (Mendonça Neto, 2022; García-Castro et al., 2019; Valtorta et al., 2024). Although political affiliation was not significant, the present study aligns with the discussion that people may exhibit greater tendencies toward economic conservatism (Bai et al., 2023; Du & King, 2022; Harnish et al., 2018). Still, a limitation of this study is that the political affiliation measure consisted of only one item. For future studies, we suggest another measure, such as right-wing authoritarianism.

Another limitation identified is the prevalent use of reduced version measures. The instruments showed significant associations with ERDE, but performance with the full versions could be different. An example is the neuroticism dimension but with a minimal correlation coefficient.

In conclusion, the scale presented good fit indices and associations like those observed in other studies. Therefore, it is expected that the measure will contribute as an alternative strategy to study inequality. For future studies, we suggest the use of the scale in experimental designs to investigate the stability of representations with inequality manipulations.

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