research article

How do people understand the causes of poverty and wealth? A revised structural dimensionality of the attributions about poverty and wealth scales

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The attributional process, defined as the process of inferring the causes of the events that surround individuals in their daily lives, can potentially shape the understanding of poverty and wealth. For instance, it might influence how people behave, what they expect from poor and wealthy groups in their society, and how they judge them. However, the existing measures that capture these attributional phenomena have several limitations. Some attributional factors lack empirical support, or some implemented items lack relevance in contemporary society. Therefore, the present study is aimed to deepen the understanding of the attributional process by reviewing the factor structure of the poverty (Cozzarelli et al, 2001) and wealth attribution scales (Bullock et al, 2003), as well as adapting and verifying the validity of these scales among the Mexican population. To do so, we revised the factor structure of the poverty and wealth attribution scales to create a unified scale. We back-translated the original items, conducted exploratory and confirmatory analyses, restructured the scale's factors, and related them with other covariates. Our results indicate that these scales uniquely differentiate between internal and external attributions, demonstrating that the new factor structure is better for measuring attributional processes regarding the perceived causes of poverty and wealth than those used in previous research.

Key words attributions • poverty • wealth • scales

The attribution process, defined as the process of inferring the causes of the events that surround individuals in their daily lives, has a relevant influence on how people perceive and understand individual and group circumstances (Heider, 1958). This is especially relevant when individuals attempt to understand social outcomes such as the poverty of certain groups and the wealth of others (Cozzarelli et al, 2001; Bullock et al, 2003; Weiner et al, 2011). Within this context, people develop lay theories concerning the reasons behind society's increasing poverty rates or the hoarding of wealth by a few, which could ultimately justify socioeconomic differences (Lepianka et al, 2009).

Specifically, people tend to blame poor people for their poverty by attributing their adverse social outcomes to a lack of effort or motivation (that is, internal attributions). At the same time, they tend to underestimate the discrimination or lack of opportunities (that is, external attributions) that poor people face in their daily lives (for example, Feagin, 1975; Furnham, 1982; Cozzarelli et al, 2001). Further, people's understanding of wealth usually relies on the belief that rich people are highly motivated or possess better capabilities (that is, internal attributions). People hold this belief while failing to recognise how having access to education or resources as a consequence of the family heritage (that is, external attributions) is among the greatest sources of these groups' wealth (for example, Furnham, 1982; Bullock et al, 2003; Bullock and Fernald, 2005).

Due to the relevance of the attributional process to the justification of the status quo, previous researchers have developed instruments to classify people's attitudes towards the causes of poverty and wealth (Castillo, 2018). These attributional scales have been widely used to understand the attitudes and behaviours of individuals about socioeconomic groups. The present study aims to deepen the understanding of the attributional process by reviewing the factor structure of poverty (Cozzarelli et al, 2001) and wealth attribution scales (Bullock et al, 2003), as well as adapting and verifying the validity of these scales among the Mexican population. We decided to implement our study in the Mexican context as Mexico is a country characterised by higher rates of economic inequality: It has large sectors of the population working informally, below the poverty line, and without social security coverage (Antonio-Villa et al, 2021). Thus, Mexico constitutes an ideal scenario to propose public policies to change this social problem's attributions and increase support for policies aimed at redistributing economic resources. We believe that the adapted instrument will constitute an adequate tool for expanding research on this topic in this context, providing a renovated scale to evaluate people's understanding of poverty and wealth in the Mexican context, which could provide evidence to propose possible public policies in the near future.

Literature review on causal attributions to poverty and wealth

The attributional process has been studied thoroughly in the literature. The first models aimed to understand people's inferences about the factors that lead individuals or the self to act, feel or think in a certain way in specific situations (Heider, 1958; Kelley, 1967). This attributional process has been applied to people's understanding of socioeconomic differences. Specifically, early research on this issue proposed various factors to which people could attribute a group's deprived position (Feagin, 1972). These initial efforts mainly focused on understanding poverty, considered a more prominent social issue than hoarding wealth during these decades. However, previous

studies have been inconsistent regarding the scales proposed for capturing attributional processes, and they suggested different factors and scales in mainly English-speaking countries in recent decades.

Concerning attributions about the causes of poverty, previous studies consistently differentiated between and found empirical support for the distinction between internal and external sources of poverty (for example, Cozzarelli et al, 2001). In this sense, internal attributions highlight individuals' responsibility for their economic standing. In contrast, external attributions contribute to recognising the contributions of contextual or third-party actors to the individual's financial standing. This implies that people's attributions about poverty depend to a greater extent on where they assign responsibility, which is in line with the original literature on attribution processes (that is, locus) (Heider, 1958). In particular, people understand that poverty might be driven by individuals' behaviour or decisions regarding their deprived circumstances (for example, lack of effort, being lazy) (Cozzarelli et al, 2001). Because of attributional bias (that is, fundamental attribution error) (for more information, see Ross, 1977), people are more willing to interpret poverty as having internal causes rather than other factors such as external attributions. In this sense, external factors are the contextual or societal variables that lead people to struggle in poverty (for example, discrimination, low wages, lack of proper education). These factors, which are not controlled by the individuals who are facing scarcity, directly influence the perpetuation of poverty along generational lines. Recognising these external factors as poverty triggers are associated with more positive attitudes towards poor people or increased willingness to support redistributive policies (Cozzarelli et al, 2001; Sainz et al, 2020b). In addition, previous research on this topic highlights alternative factors in the attributional processes. This is the case for fatalistic attributions such as having bad luck in life or having physical handicaps (Feagin, 1972), or cultural contributions such as being born into poverty or the breakdown of the nuclear family (Cozzarelli et al, 2001). These complementary dimensions are less empirically consistent and often include items that can be classified in the aforementioned previous dimensions (Cozzarelli et al, 2001; Osborne and Weiner, 2015; Castillo, 2018).

Previous research on wealth causes has received less attention, and the literature contains less empirical evidence. The existing literature suggests that lay theories about the causes of wealth also differentiate among various factors or sources of wealth. For instance, Forgas et al (1982) proposed a model that distinguishes between the well-known dimensions of internal or individual attributions (for example, being born with good business sense) and external or social attributions (for example, a taxation system that favours the rich), along with factors associated with family background (for example, inherited wealth from relatives) and luck or risk-taking (for example, winning the lottery). Further, Bullock et al (2003) proposed an alternative factor model that differentiated among wealth sources related to perseverance/ambition (for example, being very intelligent), corruption/pull (for example, networking and having the right 'contacts'), fatalism/luck (for example, being in the right place at the right time), and privilege (for example, inherited wealth from relatives). These attributional models of wealth have commonalities with the existing attribution models for poverty. They rely on some factors that can be understood as internal (for example, perseverance) and others that can be considered external (for example, luck or privilege). Further, as in poverty, the additional factors or sources (for example, privilege, bad luck) are less empirically consistent. They often represent a mix of

internal and external attributions that cannot be mutually exclusive (Hunt, 2004; Sainz et al, 2019b).

The attributional processes for understanding poverty and wealth have commonalities in identifying the sources of individuals' economic standing within internal or external factors. However, there are opposite consequences for perceiving poverty or wealth resulting from internal or external factors. In this sense, higher endorsement of internal attributions about poverty than external attributions leads people to help poor people less, blame them for their poverty more and favour the rejection of redistribution policies aimed at reducing socioeconomic differences (Cozzarelli et al, 2001; Bullock et al, 2003; Weiner et al, 2011; Tagler and Cozzarelli, 2013; Sainz et al, 2020b). In contrast, internal attributions about wealth are related to more positive attitudes towards the rich compared to external attributions, leading individuals to praise wealthy people for their advantaged position and reject the implementation of redistribution policies or a progressive taxation system (Alesina and La Ferrara, 2005; Bullock and Fernald, 2005; Sainz et al, 2019b).

Further, certain variables usually drive these attributional processes. This is the case, for instance, for people's adherence to political conservatism, social dominance orientation, or justification of system ideologies positively associated with internal causes of poverty and wealth and negatively associated with external causes (Furnham, 1982; Kluegel and Smith, 1986; Robinson, 2009; Bobbio et al, 2010). In addition, individual socioeconomic status (SES) can also play a role in adherence to internal attributions rather than external attributions (Edmiston, 2018). In this sense, high-SES individuals engage more easily in attributions that justify their advantaged position (that is, more internal and less external), whereas low-SES individuals favour external attributions about their wealth rather than external attributions (Bullock et al, 1999; Nasser, 2007).

Research problem

In short, the attributional process can potentially shape the understanding of poverty and wealth. Thus, it might influence how people behave, what they expect from poor and wealthy groups in their society, and how they judge them. However, the existing measures that capture these phenomena have several limitations. First, there is inconsistency and a lack of empirical support for certain factors, such as the cultural (Cozzarelli et al, 2001) and fatalist (Bullock et al, 2003) elements of poverty and wealth attribution scales. Second, previous attempts to measure attributions about poverty and wealth have focused on analysing these processes independently without proposing a unified scale that could simultaneously evaluate the approaches. Third, some items included initially in previous scales (for example, 'the breakdown of the nuclear family'; Cozzarelli et al, 2001) could lack relevance in contemporary society, as has been pointed out before (Hunt and Bullock, 2016). Last, most previous research that used these scales was conducted with western, educated, industrialised, rich and democratic (WEIRD) populations. There have been no formal attempts to explore the factor structure of both scales simultaneously with non-WEIRD samples.

Going beyond the methodological aspects, we also argue that it is necessary to test whether individuals explain poverty and wealth using the same beliefs, namely internal or external attributions, or whether different explanations are used to understand different socioeconomic positions. It might be, for instance, that individuals blame

poor people for their negative situation endorsing internal attributions, but at the same time think that wealth is due to external factors, such as luck, using external factors to explain the advantaged socioeconomic position of some people. Individuals could also use the same beliefs to explain socioeconomic differences, for instance, if they think poverty and wealth are caused by internal causes, such as individual effort.

Therefore, based on the aspects previously described, we aim to contribute to previous literature by revising the factor structure of the poverty and wealth attribution scales to create a unified and updated scale to measure this process among the Mexican population. Due to the role of this attributional process in the maintenance of the status quo, as it serves as a justification to reduce redistribution policies or social policy initiatives (Cozzarelli et al, 2001; Bullock et al, 2003), it is essential to expand the research in this area to increase our understanding of how people interpret socioeconomic differences.

Method

We rely on data from Mexican participants to adapt and validate the poverty (Cozzarelli et al, 2001) and wealth (Bullock et al, 2003) attribution scales. The project started by back-translating items initially developed for English speakers to determine whether they were adequate for the study's context. Then, we performed exploratory and confirmatory factor analyses to review the factor structure. We ended by providing correlations of the scales' factors with other related processes (for example, individual ideological point of view, redistribution preferences). Databases, analysis scripts, and supplemental materials can be found online: https://osf.io/w7asu/?view_only=8ea 6d8cec0314f129d0f7464e5cbdc1d.

Adaptation of items from the poverty and wealth attribution scales to the Mexican context

We used the original items of the Cozzarelli and colleges (2001) poverty attribution scale, which included 18 items along three subdimensions: internal (for example, 'lack of effort and laziness by the poor'), external (for example, 'prejudice and discrimination in hiring'), and cultural/structural (for example, 'being born into poverty') attributions. We also considered the wealth attribution scale (Bullock et al, 2003), which included 22 items within four dimensions or causes of wealth: perseverance/ambition (for example, 'hard work'), corruption/pull (for example, 'ruthlessness'), fatalism/luck (for example, 'winning the lottery'), and privilege/inheritance (for example, 'attending elite universities'). Both scales were translated from the source language (English) into the target language (Spanish) by two translators (female and male) with mastery of both languages. Later, the authors compared and discussed both translations to reach a consensus on each item. Thereafter, two independent translators (female and male) back-translated the items from Spanish into English. This back-translated version was compared with the original scale to ensure the quality of the translation process (Hambleton, 2005).

The Spanish version of the items from both scales was evaluated using expert judgement (Carretero-Dios and Pérez, 2007). Notably, four Spanish-speaking scholars with expertise in social psychology and scale construction considered the following:

(a) the wording of each item, (b) the representation of the construct of the items measured, (c) the factor to which each item ought to belong based on the original articles (Cozzarelli et al, 2001; Bullock et al, 2003), and (d) alternative versions of each item when necessary. During this process, the experts noted that the items 'the breakdown of the nuclear family' (poverty attribution scale) and 'strong trade unions that lobby for higher wages for workers' (wealth attribution scale) barely applied to the current circumstances or the specific Mexican context to which the instrument was to be adapted. The issue of the lack of today's adequacy of some of the items from these scales has been pointed out before by original authors (Hunt and Bullock, 2016) and has been supported by previously performed factor analyses (Sainz et al, 2019b; 2020b). Thus, based on a discussion with the experts, these two items were excluded from the study and were not presented to participants during the data collection process. The items selected after performing the analyses are presented in Table 1 (see the supplemental materials for the specific details of the translations and expert judgement process).

Participants and procedure

We recruited participants using Prolific Academic, a professional recruiting service. Each participant was compensated with £1 for a four-minute study conducted among Mexican participants. This was because Mexico has a high level of economic inequality (CONEVAL, 2018), making socioeconomic differences salient in social interactions and creating an ideal context for attributional processes. These studies were approved by the ethical committee of the Pontificia Católica Universidad de Chile (ID 200414006).

The total sample consisted of 523 participants (54.3% male, 45.3% female, and 0.4% other; M_{age} = 25.31, SD = 9.36), Mexican citizens, Spanish native speakers, and currently residing in Mexico. We randomly split the sample into two subsamples to perform the exploratory and confirmatory analyses. The first subsample included 255 participants (51.4% male and 48.6% female; M_{age} = 25.21, SD = 8.74) and the second subsample included 268 participants (42.2% male, 57.1% female, and 0.7% other; M_{age} = 25.40, SD = 9.92). In a simulation study by MacCallum et al (1999), a sample size of 200 yielded convergent and admissible solutions using exploratory factor analysis in at least 95 per cent of the cases where the item-to-factor ratio was 10:3 and in 100 per cent of the cases where the ratio was 20:3. Thus, our sample size of 250 was likely to yield an acceptable solution for more than three items per factor. Once participants agreed to participate, they were presented with the following scales.

Poverty attribution scale

To measure participants' attributions about poverty, we included the 17 items adapted to the Mexican speakers (see the supplemental materials for full details). The original scale developed by Cozzarelli et al (2001) differentiated among three attributional factors: internal (for example, 'lack of effort and laziness by the poor'), external (for example, 'prejudice and discrimination in hiring'), and cultural/structural (for example, 'being born into poverty') causes of poverty. Participants were asked to rate the extent to which each item represents a possible factor that causes poverty, answers ranged from 1 (*not at all*) to 7 (*completely*).

Table 1: Original and adapted items of the attribution about poverty (Cozzarelli et al, 2001) and wealth scale (Bullock et al, 2003)

Original items of the attributions about poverty scale	Adapted items of the attributions about poverty scale
Prejudice and discrimination in hiring (E)	La discriminación laboral y el prejuicio a la hora de la contratación (E)
Failure of industry to provide enough jobs (E)	–
A federal government which is insensitive to the plight of the poor (E)	La insensibilidad del gobierno ante la situación de las personas pobres (E)
Prejudice and discrimination in promotion and wages (E)	La discriminación en los salarios y la falta de las oportunidades de ascender laboralmente (E)
Being taken advantage of by the rich (E)	La explotación por parte de las personas ricas (E)
Not having the right 'contacts' to help find jobs (E)	–
Not inheriting money from relatives (E)	–
Lack of effort and laziness by the poor (I)	La falta de esfuerzo y la vagancia (I)
No attempts at self-improvement (I)	No intentar mejorar su situación personal (I)
Lack of thrift and proper money management (I)	No intentar ahorrar ni administrar adecuadamente el dinero (I)
Alcohol and drug abuse (I)	El abuso del alcohol y otras substancias (I)
Loose morals among poor people (I)	La falta de principios morales (I)
A lack of motivation caused by being on welfare (I)	La falta de motivación para salir adelante causada por recibir ayudas sociales (I)
Having to attend bad schools (C)	–
Being born into poverty (C)	–
The types of jobs that the poor can get are often low paying (C)	Los tipos de trabajos a los que pueden acceder generalmente tienen salarios bajos (E)
Being born with a low IQ (C)	–
Original Items of the Attributions about Wealth Scale	**Adapted Items of the Attributions about Wealth Scale**
Ambition and personal drive (P)	La ambición y la motivación personal para superarse personalmente (I)
Saving money and careful spending (P)	Ahorrar dinero y gastarlo cuidadosamente (I)
The economic system makes it possible for individuals to pursue their dreams (P)	–
Being very intelligent (P)	Ser muy inteligente (I)
Great ability or talent (P)	Poseer una gran habilidad o talento (I)
A willingness to take risks (P)	Estar dispuestas a arriesgarse más para conseguir sus metas (I)
Hard work and perseverance (P)	Trabajar duro y ser perseverante (I)
Ruthlessness (Co)	–
The economic system allows the wealthy to take unfair advantage of the poor (Co)	–
Dishonesty and willingness to take what one can get (Co)	–
The tax system favors the rich (Co)	–

Table 1: Continued

Original items of the attributions about poverty scale	Adapted items of the attributions about poverty scale
Political influence or 'pull' (Co)	Tener influencia política que les beneficie (E)
Networking and having the right 'contacts' (Co)	Tener las relaciones y los contactos adecuados (E)
Investing wisely in the stock market (L)	Invertir de manera inteligente su dinero (I)
Being born with good business sense (L)	Nacer con un buen olfato para los negocios (I)
Good luck or being in the right place at the right time (L)	–
Winning money from gambling or the lottery (L)	–
Attending elite schools and universities (P)	Asistir a centros educativos y universidades de gran prestigio (E)
Better opportunities that result from being born into a well-off family (P)	Tener mejores oportunidades al nacer en una familia acomodada (E)
High salaries paid in some professions (P)	–
Inheriting wealth from parents and relatives (P)	Heredar dinero de familiares (E)

Note: I = Internal factor; E = External factor; C = Cultural factor; P = Perseverance/Ambition; Co = Corruption/Pull; L = Luck/Fatalistic; P = Privilege; – = items that are not included in the revised version of the scales.

Wealth attribution scale

To measure participants' attributions about wealth, we included the 21 items adapted to the Mexican participants (see the supplemental materials for full details). The original scale (Bullock et al, 2003; Bullock and Fernald, 2005) differentiated among four attributional factors: perseverance/ambition (for example, 'ability, hard work'), corruption/pull (for example, 'ruthlessness, networking'), fatalism/luck (for example, 'winning the lottery'), and privilege/inheritance (for example, 'attending elite universities'). Participants were asked to rate the extent to which each item represents a possible factor that causes wealth. Answers ranged from 1 (*not at all*) to 7 (*completely*).

Social dominance orientation

We included the eighth item's social dominance orientation scale (for example, 'Some groups of people are simply inferior to other groups' α = .81/75; Ho et al, 2015). Answers ranged from 1 (*completely disagree*) to 7 (*completely agree*).

System justification

We used the Spanish version of the system justification scale (seven items; for example, 'If people work hard, they almost always get what they deserve', α = .85/85) from Jaume et al (2012). Answers ranged from 1 (*completely disagree*) to 7 (*completely agree*).

Political orientation

Participants reported their political orientation by answering a single item for which answers ranged from 1 (*extreme left*) to 7 (*extreme right*; Piurko et al, 2011).

Support for redistribution policies

We included four items to measure support of redistribution actions promoted by the government (for example, 'The government should distribute wealth through large taxes on the wealthy', α = .80/76; adapted from Dawtry et al, 2015). Answers ranged from 1 (*completely disagree*) to 7 (*completely agree*).

Subjective socioeconomic status

Participants located themselves and their families on a ten-rung ladder representing the socioeconomic strata within the society (MacArthur ladder; Adler et al, 2000). Answers ranged from 1 (*low SES*) to 10 (*high SES*).

Objective socioeconomic status

Participants reported their monthly household net income and the number of individuals living in their household. We divided income by household members to compute the objective SES score (Kraus and Keltner, 2009). The average reported household income was MXN10,457 (around $523).

Finally, participants reported their demographic information (gender, age, nationality and language) and were thanked for their participation.

Data analyses

In order to analyse the data, we computed an exploratory factor analysis (EFA) with the first random subsample. This analysis intends to explore the item's factor structure and psychometric properties. Before performing the EFA, it is necessary to check the assumptions indicating that this analysis is feasible. This is characterised by a high index score in the Kaiser-Meyer-Olkin (KMO) sample adequacy index and a significant Bartlett's sphericity test. Subsequently, we calculated the recommended number of factors through a parallel analysis. Once the number of factors was known, the EFA was conducted.

We computed confirmatory factor analyses (CFA) with the second random subsample. This analysis is used to confirm that the grouping of items into different factors is correct. To perform this analysis, it is necessary to check the multivariate normality assumption. If this assumption is not met, it is required to use a robust method to perform the CFA. This analysis yields different indicators: comparative fit index (CFI), Tucker-Lewis index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardised Root Mean Square Residual (SRMR). The fit is satisfactory if CFI and TLI $\geq$ 0.90 and RMSEA and SRMR $\leq$ 0.08. In addition, there is another estimator, Akaike (AIC). This indicator does not contribute anything on its own, but compared with others, the lower it is, the better the model's fit.

Finally, we computed Pearson's bivariate correlations to assess the relationship between the factors and other similar constructs. This analysis allows us to estimate whether a statistical relationship exists, the sign of the relationship (whether it is positive or negative), and its strength. The higher the index obtained, the higher the relationship. The statistical package R was used to perform the different analyses.

Results

Exploratory factor analyses

First, we conducted an EFA with the poverty attribution scale using the first random subsample. This analysis allows us to explore how the translated items relate to each other and identify the factors that arise in the study. To do so, we used a listwise method to address missing data because no more than 1 per cent of data were missing for any item on the scale. Next, we employed the Kaiser-Meyer-Olkin (KMO) sample adequacy index and Bartlett's sphericity test. The KMO index score was .84, and Bartlett's test of sphericity was statistically significant ($\chi^2(136) = 1642.06, p < .001$), suggesting that the factor analysis was viable. Parallel analysis with the Watking program (2000) using 100 replications in simulation endorsed a two-factor solution. Thus, we computed an EFA using the maximum likelihood procedure with Oblimin rotation because we expected the factors (for example, internal and external) to have a certain relationship. The psychometric properties and factor loadings are presented in Table 2.

The resulting factor structure comprised two factors that explained 40.59 per cent of the total variance. The EFA showed a different grouping pattern regarding the loadings than the original scale. Furthermore, some items presented psychometric properties (factor loadings and communalities) that did not conform to our expectations.

Table 2: Mean, standard deviation, item-total correlation, and Cronbach's alpha if the item is eliminated, factor loading, and communality for the items of the attributions about poverty scale

Items	Original dimensions	*M* (*SD*)	Skew	Kurto-sis	R IT-c	α without item	Factor loadings F1	F2	h^2
1	External	5.71 (1.40)	−1.18	1.17	.33	.73	−.102	.765	.585
2	External	4.65 (1.62)	−0.39	−0.48	.27	.74	−.006	.446	.201
3	External	5.11 (1.59)	−0.62	−0.20	.22	.74	−.152	.547	.309
4	External	5.77 (1.30)	−1.07	1.18	.31	.74	−.080	.714	.510
5	External	5.23 (1.61)	−0.72	−0.15	.25	.74	−.107	.597	.359
6	External	5.15 (1.59)	−0.73	0.05	.37	.73	.001	.522	.275
7	External	4.10 (2.19)	−0.12	−1.37	.27	.74	−.065	.430	.186
8	Internal	3.34 (1.85)	0.39	−0.87	.40	.73	.842	−.164	.716
9	Internal	3.87 (1.93)	0.02	−1.11	.31	.74	.783	−.209	.631
10	Internal	4.41 (1.83)	−0.32	−0.84	.45	.72	.696	.007	.489
11	Internal	4.00 (1.83)	0.03	−1.02	.45	.72	.740	−.024	.549
12	Internal	2.83 (1.79)	0.76	−0.49	.43	.73	.688	−.060	.474
13	Internal	4.00 (1.91)	−0.07	−1.04	.39	.73	.761	−.111	.581
14	Cultural	4.26 (1.93)	−0.29	−1.02	.30	.74	.106	.266	.088
15	Cultural	5.03 (1.89)	−0.65	−0.69	.23	.74	−.196	.520	.292
16	Cultural	5.93 (1.23)	−1.20	1.23	.33	.74	−.055	.621	.386
17	Cultural	2.53 (1.75)	0.88	−0.35	.37	.73	.517	−.031	.268
					Explained variance (%)		23.56	17.03	

Note: Items in bold were excluded from the scale.

Therefore, following common recommendations (Tabachnick and Fidell, 2013), we removed the items that did not meet the minimum inclusion criteria. We retained items that (a) had coefficients exceeding .40 on the target factor, (b) loaded at least twice as strongly on the target factor as on the next highest loading factor, (c) did not load more than .30 on multiple factors, and (d) had communalities exceeding .20. We were left with a pool of 11 items that loaded onto two factors, and we excluded items 2, 6, 7, 14, 15 and 17 based on the statistical analyses. The internal factor presented a Cronbach's alpha of .89, and the external factor had a score of .79.

Next, we conducted another EFA with the wealth attribution scale using the same subsample. Again, a KMO index of .88 and Bartlett sphericity test ($\chi^2(210) = 2181.34$, $p < .001$) supported the EFA's feasibility. Parallel analysis with the Watking program (2000) using 100 replications in simulation supported a two-factor solution. Therefore, an EFA was computed using the maximum likelihood procedure with Oblimin rotation. The psychometric properties and factor loadings are presented in Table 3.

Table 3: Mean, standard deviation, item-total correlation, and Cronbach's alpha if the item is eliminated, factor loading, and communality for the items of the attributions about wealth scale

Items	Original dimensions	M (SD)	Skew	Kurto-sis	R IT-c	α without item	F1	F2	h^2
							Factor loadings		
1	Perseverance	4.85 (1.73)	−0.63	−0.39	.39	.70	.761	−.048	.581
2	Perseverance	4.77 (1.77)	−0.61	−0.56	.35	.70	.713	−.042	.510
3	Perseverance	4.48 (1.91)	−0.33	−0.95	.21	.71	.018	.257	.068
4	Perseverance	4.18 (1.76)	−0.28	−0.78	.38	.70	.781	−.092	.609
5	Perseverance	4.28 (1.69)	−0.36	−0.57	.27	.71	.635	−.175	.414
6	Perseverance	4.55 (1.74)	−0.49	−0.53	.36	.70	.760	−.114	.579
7	Perseverance	4.68 (1.78)	−0.62	−0.49	.28	.71	.854	−.236	.748
8	Corruption	3.64 (1.75)	0.12	−0.97	.22	.71	−.230	.463	.245
9	Corruption	5.24 (1.66)	-0.68	−0.29	.13	.72	−.381	.555	.409
10	Corruption	4.26 (1.67)	−0.33	-0.57	.22	.71	−.241	.485	.270
11	Corruption	4.99 (1.80)	−0.66	−0.52	−.01	.73	−.470	.415	.352
12	Corruption	5.66 (1.38)	−1.04	0.59	.24	.71	−.231	.659	.458
13	Corruption	6.10 (1.18)	−1.46	2.20	.38	.70	.005	.621	.392
14	Fatalism	5.43 (1.46)	−0.95	0.53	.35	.70	.742	−.074	.550
15	Fatalism	4.25 (1.75)	−0.31	-0.59	.50	.69	.651	.109	.459
16	Fatalism	4.55 (1.73)	−0.38	-0.58	.31	.70	.130	.304	.120
17	Fatalism	2.12 (1.38)	1.41	1.89	.22	.71	.063	.145	.027
18	Privilege	5.42 (1.54)	−0.97	0.40	.30	.70	−.068	.564	.318
19	Privilege	6.11 (1.19)	−1.64	2.96	.34	.70	−.197	.752	.578
20	Privilege	5.60 (1.34)	−0.90	0.32	.31	.71	.067	.460	.227
21	Privilege	5.79 (1.32)	−1.17	1.29	.19	.71	−.318	.597	.419
					Explained variance (%)		26.06	13.63	

Note: Items in bold were excluded from the scale.

This time, the resulting factor structure comprised two factors that explained 39.69 per cent of the total variance. The EFA showed a different grouping pattern than the original scale, and some items presented psychometric properties that did not conform to our expectations. Thus, we removed those items that did not meet the minimum inclusion criteria, following the same recommendations as in the previous analysis (Tabachnick and Fidell, 2013). Consequently, we excluded Items 3, 8, 9, 10, 11, 16, 17 and 20. Thereafter, we found that the new two-factor structure did not conform to the original dimensions. We looked for similarities with the other scale and reviewed how the items were written. We found that the first factor corresponded to internal attributions and the second corresponded to external attributions. Accordingly, the internal factor presented a Cronbach's alpha of .91 and the external factor had a score of .79.

Confirmatory factor analyses

After confirming that a two-factor structure was more appropriate for each scale, we decided to test the factor fit of these structures using the second random subsample. This was done to ensure that the factor structure in the exploratory analyses could be confirmed and that the factors have adequate properties. Thus, we performed CFA to test different models. The first corresponded to the scales' original structure, whereas the second corresponded to the two-factor structure found in the EFAs. Given that the multivariate normality using Mardia's normalised coefficients showed multivariate kurtosis (374.78 for the poverty attribution scale and 571.08 for the wealth attribution scale), we decided to test the two models using the maximum likelihood estimator with robust estimation (Satorra-Bentler scaling corrections) (Satorra and Bentler, 2001). The *lavaan* R package was used to estimate the models (Rosseel, 2012) fit statistics for both scales.

The results showed a better fit for the two-factor solutions in both scales in the case of the attributions about poverty: three factors fit ($\chi^2_{(116)}$ = 382.05, $p < .001$; CFI = .81; TLI = .77; RMSEA [90% CI] = .10 [.09, .11]; SRMR = .12; AIC = 16727.49); two factors fit ($\chi^2_{(43)}$ = 87.94, $p < .001$; CFI = .96; TLI = .94; RMSEA [90% CI] = .07 [.05, .09]; SRMR = .05; AIC = 10351.83). But also, in the attributions about wealth: four factors fit ($\chi^2_{(183)}$ = 422.68, $p < .001$; CFI = .85; TLI = .83; RMSEA [90% CI] = .08 [.07, .09]; SRMR = .09; AIC = 19229.66); two factors fit ($\chi^2_{(64)}$ = 140.46, $p < .001$; CFI = .93; TLI = .91; RMSEA [90% CI] = .08 [.06, .09]; SRMR = .07; AIC = 11405.69). These results indicate that, for both scales, the items cluster better in a two-factor model than in three- and four-factor models. Further, an ANOVA confirmed that there were statistically significant differences between the original model and the two-factor model for the poverty attribution scale ($\Delta\chi^2$ = 296.32, $p < .001$) and for the wealth attribution scale ($\Delta\chi^2$ = 282.79, $p < .001$), being the two-factor model better. Finally, Cronbach's alpha was calculated to check internal reliability. For the poverty attribution scale, the internal factor presented a Cronbach's alpha of .88 and the external factor had a score of .80. For the wealth attribution scale, the internal factor showed a Cronbach's alpha of .90 and the external factor had a score of .75.

Evidence of convergent validity

Using the new two-factor factor structure for each scale, we tested correlations with other variables looking for convergent validity (to evaluate how close each factor is

to similar or related constructs in the literature). We expected positive relationships between internal attributions and ideological variables and negative associations with external attributions. Further, as previous research has shown (for example, Sainz et al, 2019b; 2020b), we also expected a negative relationship between internal attributions and support for redistribution policies and positive relationships with external attributions. Finally, we expected participants' SES to be positively related to internal attributions and negatively associated with external attributions. The descriptive statistics and Pearson's bivariate correlations are presented in Table 4.

As expected, the relationships between the factors within each scale were negative. In contrast, internal attributions towards poverty and wealth were positively related to external attributions. Likewise, the scales' factors were associated with the ideological variables: higher scores of social dominance orientation, system justification, and right-wing political orientation related positively to internal and external attributions. Further, the same pattern of results can be applied to redistribution policies. Finally, participants' SES did not relate consistently to the scale's internal and external factors. Uniquely, subjective SES was positively associated with internal attributions about wealth.

Discussion

In this study, we argue that, in the current societies, poverty and wealth might be changing concepts according to social changes that are taking place worldwide. Thus, we aimed to revise the factor structure of existing poverty (Cozzarelli et al, 2001) and wealth (Bullock et al, 2003) attribution scales. These scales did not provide a consistent factor structure. Some of their items lacked relevance in today's society or were designed uniquely for English-speaking participants based on the expert's judgement. Thus, we adapted them to address these limitations and provide a revised and unified factor structure for these scales among Mexican participants. This analysis will contribute to further understanding of how individuals explain the causes of poverty and wealth nowadays.

Our results indicate that, among Mexican participants, the poverty and wealth attribution scales differentiate among two negatively related factors: internal and external attributions about their respective targets (that is, poor and rich groups). This scales' emergent factor structure was identified in the EFA, in which several items from the original scales were excluded due to their poor psychometric properties. This highlights how previous scales included items not ascribed to internal or external attributions but simultaneously saturating both dimensions. Further, the CFA showed that the alternative factor structure (that is, two-factor scales) had a better fit than the instruments' original factor structure, confirming that the simplified factor structure is adequate for measuring the attributional process in this Mexican context with a Spanish-speaking sample.

Further, the result showed that participants who think external factors cause poverty and wealth do not use internal factors to explain why some individuals are poor or rich. In the same way, participants who explained poverty and wealth using internal factors do not consider the external reasons that might provoke poverty and wealth. Further, internal attributions about poverty and wealth were positively correlated, and external attributions about poverty and wealth were also positively associated. Said otherwise, it seems that individuals use the same beliefs to explain poverty and

Table 4: Descriptive statistics and Pearson's bivariate correlations

	M (SD)	1	2	3	4	5	6	7	8	9	10	M (SD)
1. Internal attributions of poverty	3.74 (1.48)	–	-.22***	.59***	-.15*	.38***	.62***	-.23***	.26***	.13*	-.07	3.64 (1.48)
2. External attributions of poverty	5.55 (1.05)	-.16*	–	-.21**	.54***	-.49***	-.42***	.46***	-.18**	-.09	.04	5.55 (1.12)
3. Internal attributions of wealth	4.62 (1.33)	.60***	-.25***	–	-.19**	.36***	.64***	-.36***	.33***	.16*	-.07	4.46 (1.35)
4. External attributions of wealth	5.82 (0.98)	-.16*	.51***	-.22***	–	-.33***	-.34***	.32***	-.20**	-.03	.09	5.82 (0.88)
5. Social dominance orientation	2.60 (1.09)	.46***	-.41***	.38***	-.25***	–	.51***	-.38***	.34***	.08	-.06	2.58 (1.03)
6. System justification	3.99 (1.25)	.64***	-.33***	.63***	-.28***	.48***	–	-.40***	.34***	.19**	-.07	3.77 (1.30)
7. Redistribution	4.57 (1.45)	-.33***	.45***	-.41***	.28***	-.50***	-.45***	–	-.41***	-.05	.09	4.60 (1.37)
8. Political orientation	3.78 (1.09)	.40***	-.20**	.43***	-.15*	.25***	.42***	-.36***	–	.16*	-.14*	3.75 (1.13)
9. Subjective socioeconomic status	5.93 (1.09)	.12	-.06	.16*	-.07	.07	.14*	-.01	.02	–	.24***	5.81 (1.44)
10. Objective socioeconomic status	16663.44 (79555.56)	.04	-.05	.09	-.02	.04	-.01	-.09	.04	.13*	–	10457.55 (32469.70)

Note: *** $p < .001$, ** $p < .01$, * $p < .05$; Subsample 1 below the diagonal; Subsample 2 above the diagonal.

wealth, namely internal or external attributions. Specifically, this implies that people who blame the poor for their plight also praise the rich for their advantaged position. In both cases, socioeconomic positions are explained based on internal aspects of the individuals, ignoring external barriers to overcoming poverty and external reasons that contribute to improving wealth.

In the same way, participants who explained poverty based on external factors also seem to understand that wealth is due to external variables. Thus, interestingly, we can affirm that individuals endorse the same type of beliefs, namely internal or external attributions, to explain and understand poverty and wealth. Additionally, each scale's internal and external factors were negatively related, showing that holding a specific set of attributions (internal or external ones) is incompatible with the opposite narrative about poverty or wealth. This latter point is essential for practitioners or applied campaigns because influencing one of these factors (for example, internal) might modify the other (for example, external). In short, these results are useful for understanding how individuals explain the causes of socioeconomic differences between poor and rich people.

In addition, the scales that we included to test the validity of the revised version of the poverty and wealth attribution scales showed the expected pattern of results. Participants' adherence to ideological variables that favoured maintaining the status quo related positively to internal attributions and negatively to external attributions. This implies that people blame poor people for their poverty while praising wealthy people for their advantaged position (García-Castro et al, 2021). This meritocratic view of poverty and wealth increases people's internal attributions and minimises the external barriers that maintain socioeconomic differences, thus justifying the status quo. This pattern of attributions also relates to people not recognising the usefulness of redistribution policies as they believe that poor people waste their income (Sainz et al, 2020a), while hard-working, affluent individuals or groups do not deserve to be punished by taking part of their wealth (Sainz et al, 2019b).

Finally, we identified an inconsistency between participants' SES and the attribution process. Even though we expected that higher SES would be related to maximising internal attributions and minimising external attributions, this pattern did not emerge in our results. Even when this lack of effect could be unexpected (Edmiston, 2018), we should take it carefully. This is because, in the first place, a more detailed analysis with a more representative sample of individuals from different socioeconomic positions should be performed to confirm or not the lack of effect of the socioeconomic status on the attributional process. Second, we acknowledge that individual perceptions and worldviews are often triggered to a greater extent by ideological orientations than by personal standing. This effect has been found regarding similar processes in the literature, such as classist attitudes (Jordan et al, 2021) or the tendency to dehumanise poor people (Sainz et al, 2019a): individuals' economic standing is less relevant than their ideological positioning when it comes to predicting their level of classism or their tendency to dehumanise poor individuals. Thus, our findings seem to align with these patterns of results identified in related issues.

This project had certain limitations. First, the scales were adapted using a sample of Mexican participants from the general population, which constitutes progress relative to previous research. However, considering the diversity of Spanish-speaking countries and people, it seems necessary to test the factor structure in a broad, diverse sample that includes geographically distinct samples of Spanish speakers (Lobato et al, 2020). Second, our adaptation of these scales used items previously implemented in the

original instruments. This is a partial limitation, as we have already acknowledged, because certain items no longer apply to the current context. Thus, before collecting our data, we eliminated those items suggested by the expert judges.

The implications of this work are threefold. First, data indicated that causes to which people attribute poverty and wealth can be categorised as either internal or external, simplifying the factorial structure of the previously used scales. Second, individuals who give an internal attribution for poverty are likely to give an internal attribution for wealth showing the interdependence between the attributional process about poverty and wealth. Third, a tendency to give internal attributions is associated with certain ideological points of view such as social dominance and the rejection of redistribution policies among other possible outcomes. These implications are relevant for policy recommendations. For instance, education interventions can be developed in order to enable people to better understand how their attributional processes work and the consequences of these processes on how they understand socioeconomic differences. Media interventions can be also promoted to create individuals' sensitivity to the plight caused by the existing levels of economic inequality and favour the understanding of how external barriers make poor people unable to overcome their deprived position. This in turn might affect people's attitudes regarding redistribution preferences favouring social change and demanding higher taxation of the rich. Further, policy efforts should be put primarily into targeting individuals who are more prone to justify the current unequal economic systems (for example, individuals reporting high levels of conservative beliefs) as they seem more willing to make internal attributions rather than considering the external factors based on our results.

All in all, future studies might focus on exploring people's current lay theories or arguments regarding the causes of poverty and wealth. The appearance of new reasons related to contemporary scenarios such as the economic crisis or the COVID-19 pandemic might play a role in understanding socioeconomic differences. Future studies could also incorporate additional dimensions, such as the controllability factor (Weiner et al, 2011), which can be incorporated into the existing internal and external factors for poverty and wealth sources. This will increase the depth of understanding regarding how internal or external factors can be perceived as permanent factors (for example, a lack of intelligence) or modified by individuals in the long term (for example, being born into poverty).

Conclusion

Redefining the structural dimensions of the scale of poverty and wealth improves the measurement of these constructs. This work constitutes a starting point for performing renovated analysis and studies of how individuals understand socioeconomic differences. Based on the bifactor structure of each scale that differentiated between external and internal factors, researchers could also understand how attributional processes about poverty and wealth are related. Additionally, this work will help design applied interventions aimed at modifying the bias on the attributional process that lead individuals to blame the poor and praise the rich for their economic standing. Due to these reasons, the revised internal and external poverty and wealth attribution scales constitute a robust renewal of the traditional instruments implemented in the literature that will help expand research in this area and could be useful for policy recommendations.

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Data availability statement
Databases, analysis scripts, and supplemental materials can be found online: https://osf.io/w7asu/?view_only=8ea6d8cec0314f129d0f7464e5cbdc1d

Ethical statement
These studies were approved by the ethical committee of the Pontificia Católica Universidad de Chile (ID 200414006).

Informed consent
Informed consent was obtained from all participants included in the study.

Conflict of interest
The authors declare that there is no conflict of interest.

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