Revista de Psicología, *42*(1), 2024, pp. 431-465 (e-ISSN 2223-3733)

Causal attributions for poverty in citizens of Córdoba (Argentina): Psychometric analysis using CTT and IRT

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The tripartite model proposed by Feagin (1972) is widely used, although empirical evidence does not always support it. Thus, we set out to obtain empirical evidence on the psychometric properties of a pool of items on causes of poverty using CTT and IRT. In this research/study, 280 citizens of Córdoba from 18 to 65 years old participated. Results from confirmatory factor analysis and internal consistency showed acceptable values for the three-factor models. Results derived from IRT indicate that, in general, the items estimate a wide range of values of the latent traits, discriminating between people with different levels of trait. The need to gather new empirical evidence of Feagin's proposal using complementary methods is highlighted.
Keywords: attributions, poverty, psychometry, classical test theory, item response theory

Atribuciones sobre las causas de la pobreza en ciudadanos de Córdoba (Argentina): análisis psicométrico desde la TCT y la TRI
El modelo tripartito propuesto por Feagin (1972) es extensamente utilizado, aunque la evidencia empírica no siempre apoya la teoría. Así, nos propusimos obtener evidencia sobre las propiedades psicométricas de un conjunto de ítems sobre causas de la pobreza empleando la TCT y la TRI. Participaron 280 ciudadanos de Córdoba de 18 a 65 años. Los resultados de los análisis factoriales confirmatorios y de consistencia interna indicaron valores aceptables para los modelos de tres factores. Los resultados de TRI indicaron que, en general, los ítems estiman un amplio rango de valores de los rasgos latentes y discriminan entre personas con distintos niveles de rasgo. Se destaca la necesidad de obtener nueva evidencia empírica del modelo propuesto por Feagin empleando métodos complementarios.
Palabras clave: atribuciones, pobreza, psicometría, teoría clásica de los tests, teoría de respuesta al ítem

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https://doi.org/10.18800/psico.202401.015

Atribuições sobre as causas da pobreza em cidadãos de Córdoba (Argentina): análise psicométrica do TCT e do TRI
O modelo tripartite proposto por Feagin (1972) é amplamente utilizado, embora as evidências empíricas nem sempre sustentem a teoria. Assim, propusemo-nos obter evidências sobre as propriedades psicométricas de um conjunto de itens sobre causas da pobreza usando o TCT e o IRT. Participaram 280 cidadãos de Córdoba de 18 a 65 anos. Os resultados das análises fatorial confirmatória e de consistência interna indicaram valores aceitáveis para os modelos de três fatores. Os resultados da TRI indicaram que, em geral, os itens estimam uma ampla gama de valores de traços latentes e discriminam pessoas com diferentes níveis de traços. Ressalta-se a necessidade de obtenção de novas evidências empíricas do modelo proposto por Feagin por meio de métodos complementares.
Palavras-chave: atribuições, pobreza, psicometria, teoria clássica do teste, teoria da resposta ao item

Attribution causale de la pauvreté chez les citoyens de Córdoba (Argentine): analyse psychométrique à l'aide du CTT et de l'IRT
Le modèle tripartite proposé par Feagin (1972) est largement utilisé, bien que les preuves empiriques ne soutiennent pas toujours la théorie. Ainsi, nous avons entrepris d'obtenir des preuves sur les propriétés psychométriques d'un ensemble d'items sur les causes de la pauvreté en utilisant le TCT et l'IRT. 280 citoyens de Cordoue de 18 à 65 ans y ont participé. Les résultats des analyses factorielles de confirmation et de cohérence interne ont indiqué des valeurs acceptables pour les modèles à trois facteurs. Les résultats de l'IRT ont indiqué qu'en général, les items estiment une large gamme de valeurs de traits latents et discriminent les personnes ayant différents niveaux de traits. La nécessité d'obtenir de nouvelles preuves empiriques du modèle proposé par Feagin en utilisant des méthodes complémentaires est soulignée.
Mots-clés: attributions, pauvreté, psychométrie, théorie classique des tests, théorie de la réponse aux items

Numerous studies have examined people's perceptions of the causes of poverty using the concept of attribution (e.g., Bennett et al., 2016; Castillo & Rivera-Gutierrez, 2018; Ige & Nekhwevha, 2014). Attribution refers to a process through which the causes of behavior are understood (Baron & Byrne, 2005). Feagin (1972) proposed a model on the causal attributions of poverty that has been considered as the basis for most subsequent research. In this model, poverty is attributed to three factors: internal, structural and fatalistic. The first factor shows that people are responsible for their condition of poverty through individual behavior, such as drug addiction, laziness and weakness. The second factor shows that people are poor due to contextual causes, such as limited opportunities for gaining access to work and lack of government support. The third factor proposes that people are poor because of bad luck or fate, attributing that condition to suffering from a disability or disabling disease, or from being born into poverty.

Currently, there is no single scale on causal attributions of poverty. Instead, there are various instruments grouping the items originally proposed by Feagin or developed by other researchers in different dimensions. Examples of these scales include the Poverty Attribution Survey (PAS, Bennett et al., 2016) and the Attribution of Poverty Questionnaire (Ljubotina & Ljubotina, 2007). Studies that have analyzed the factor structure of instruments on causal attributions of poverty have provided divergent evidence. Some research has found evidence of three dimensions, consistent with the original model. Other studies have identified three dimensions similar to Feagin's proposal that refer to internal, external and cultural causes. However, other researchers have found a structure of two, four, five and six dimensions. In general, in two-dimension models, the items refer to individual and external causes. In four-factor models, dimensions about micro-environmental causes and causes related to prejudice are also considered.

The five-dimension models include dimensions related to causes of nature and armed conflicts. In contrast, the six-factor models show a disintegration of Feagin's dimensions. For example, individual causes are divided into two dimensions, one about actions external to the person and another about personal actions. The dimension about structural causes is disintegrated into structural and social causes and failures in public policies. Note that different methods have been used to test evidence of structural validity. The use of principal components analysis is predominant. Some studies have used factorial analysis and fewer studies have used confirmatory analysis. The dispersion and lack of consensus on the measurement of the construct under study not only impact on the operationalization itself but also make it difficult to advance in the description of the attributional levels (see Table 1).

A model that combines exploratory and confirmatory perspectives is the exploratory structural equation modeling (ESEM). This model allows any factor to load on target items; it also loads on all non-target items, as close as to zero (Marsh et al., 2014). Thus, it becomes a relevant method when data fit should be tested, allowing cross-loading. In addition, ESEM is better than CFA models in simulation and empirical studies (Marsh et al., 2009; Marsh et al., 2010). However, ESEM is not useful to obtain the total score of a pool of items without running a psychometric analysis. In this case, confirmatory models prove relevant as they offer a clear picture of factor loading since, in CFA, items are weighted in one dimension and restricted to zero in other dimensions. Therefore, a simple and parsimonious structure is achieved.

In general, the internal consistency of different scales is adequate (see Table 1). Studies that observed the same factors as those described by Feagin (1972) (individual, structural and fatalist dimensions) reported values of Cronbach's alpha higher than .80. However, two-dimension studies different to the one proposed by Feagin found values of Cronbach's alpha between .67 and .82. Other studies that identified three dimensions different to those proposed by Feagin also showed acceptable values for the external and internal attribution dimensions. However, low values of Cronbach's alpha have been observed for the

dimension of cultural attributions. Instead, in studies that have identified over three dimensions, internal consistency values were lower than .70 or .60 for some dimensions. Indeed, low values of internal consistency have led to the elimination of a factor.

Table 1

Synthesis of analyses used in studies of causal attribution of poverty

Authors and year	Analysis	Extraction or estimation method	Rotation method	Dimensions	Reliability (α)
Reyna & Reparaz (2014)	EFA, PCA	Principal axis	Promax	Cultural Attributions	α = .79
				Internal Attributions	α = .74
				External Attributions	α = .73
Castillo & Rivera-Gutiérrez (2018)	CFA	Weighted least squares means and variance adjusted		Internal Attributions	
				External Attributions	
Bennett, Raiz & Davis (2016)	EFA; CFA		Varimax	Individual	α = .94
				Cultural	α = .76
				Structural	α = .88
Bolitho, Carr & Fletcher (2007)	PCA		Varimax	Blame the poor	α = .75
				Blame nature	α = .59
	CFA			Blame conflict	α = .58
				Blame third world governments	α = .63
				Blame international exploitation	α = .50

Authors and year	Analysis	Extraction or estimation method	Rotation method	Dimensions	Reliability (α)
Ige & Nekhwevha (2014)	PCA		Varimax	Individual	α = .91
				Structural	α = .86
				Fatalistic	α = .85
Cozzarelli, Wilkinson & Tagler (2001)	PCA		Oblique rotation	External Attributions	α = .79
				Internal Attributions	α = .75
				Cultural Attributions	α = .65
Bullock (2004)	PCA		Varimax	Individualism	α = .83
				Economic/ structural	α = .75
				Prejudice/ structural	α = .75
				Factors/ fatalistic	α = .65
Nasser, Singhal & Abouchedid (2005)	PCA		Varimax	Structural (Execution)	α = .57
				Individualistic (Internal)	
				Fatalistic	
				Wrong Policy	
				Individualistic (External)	
				Social	
Ljubotina & Ljubotina (2007)	PCA		Varimax	Individual	α = .76
				Structural	α = .78
				Micro-environmental	α = .65
				Fatalistic	α = .70

Authors and year	Analysis	Extraction or estimation method	Rotation method	Dimensions	Reliability (α)
Vázquez, Panadero, Pascual & Ordoñez (2017)	PCA			Fault of the world economic structure	
				Fault of fate, nature, cultural habits, and political misconduct	
				Fault of the developing countries' population	
Wollie (2009)	EFA	Principal axis	Varimax	Individual	
				Structural	
				Fatalistic	
Nasser & Abouchedid (2001)	PCA		Varimax	Structuralist	α = .70
				Individualist (status quo)	α = .60
				Fatalist	α = .70
				Individual (blaming the poor) (societal)	α = .50
Schneider & Castillo (2015)	CFA			External	
				Internal	
Bobbio, Canova, & Manganelli (2010)	PCA	Principal axis	Varimax	Internal-Individualistic	α = .82
	EFA			External-Structuralistic	α = .74

Authors and year	Analysis	Extraction or estimation method	Rotation method	Dimensions	Reliability (α)
Brimeyer (2008)				Individualist	α = .64
				Structuralist	α = .71
				Divine Intervention	α = .57
				Fatalism	α = .28
Delavega, Kindle, Peterson, & Schwartz (2017)	EFA			Structural attribution	α = .67, .73
				Individual attribution	α = .80, .84
Segretin, Reyna, & Lipina (2022)	EFA	Weighted least squares means and variance adjusted	Geomin	Individualistic, External, Structuralistic	α =.882
	CFA			Structural/ External, Internal-Individualistic	α =.913
	CFA			Structural/ External, Internal-Individualistic	α =.749
	CFA			Structural/ External, Internal-Individualistic	α =.90
Sainz, García-Castro, Jiménez-Moya, & Lobato, (2022)	EFA	Maximum likelihood	Oblimin	External	α =.79
				Internal	α =.89
	CFA	Maximum likelihood estimator with robust estimation		External	α =.79
				Internal	α =.88

Note. EFA = exploratory factor analysis; PCA = principal component analysis; CFA = confirmatory factor analysis.

Previous studies have used the Classical Test Theory (CTT) to investigate the psychometric properties of the scale on causal attributions of poverty. However, CTT has some limitations, such as invariance of the measurements linked to the instrument used and invariance of the properties of the tests linked to the sample used (Muñiz, 2010). On the other hand, the Item Response Theory (IRT) considers the response of the subjects in each of the items and provides statistics for the items, independent of respondent's latent traits and of the items presented (Barbero et al., 2001; Vincenzi Bortolotti et al., 2013). Due to this, the use of IRT has been recommended to complement the analyses performed through CTT (e.g., Iraurgi et al., 2008).

From the need of an instrument adapted to the local context with evidence of its psychometric properties, we analyzed the factorial structure of a pool of items on causes of poverty using CTT (specifically ESEM and CFA) and IRT. We recovered this pool of items from various studies based mainly on Feagin's proposal. We also tested evidence for the internal consistency of each of the dimensions obtained in the confirmatory analysis.

Methods

We carried out an instrumental study according to the classification proposed by Montero and León (2007).

Participants

In the study, 280 inhabitants from Córdoba, Argentina, aged 18 to 65 (M = 36.58, SD = 13.95) of both sexes (50% male, 50% women) have taken part. A multistage sampling was used. In a first stage, fractions and census radii were randomly selected. Then, the blocks to survey within each radius were randomly defined. In each block a systematic procedure was followed for the selection of households, and in each household, a person within the age range under study was surveyed, trying to reach 50% of each sex. The confidence level was 95.5%, with a ± 6% margin of error.

Instruments

Scale of Causal Attributions for Poverty

A pool of 31 items from different scales (Bobbio et al., 2010; Bolitho et al., 2007; Bullock, 2004; Cozarelli et al., 2001; Ige & Nekhwevha, 2014; Ljubotina & Ljubotina, 2007; Nasser & Abouchedid, 2001; Nasser et al., 2005; Reyna & Reparaz, 2014; Wollie, 2009) was initially used. Some items were: "Lack of skill and talent", "Being born in poverty", "A government that is insensitive to the plight of poor people". Items on English were translated using a back-translation procedure. Two English language experts and a psychometrist performed this task. Discrepancies were resolved in conjunction with the researchers responsible for the study. The items were scored on a Likert scale of 5 points (1 = not important, 5 = very important).

Socio-demographic data questionnaire

We registered information on the interviewee's sex, age, income level and educational level. We did not use these variables in the analyzes that are the subject of this paper.

Procedure

Pollsters were properly trained to homogenize data collection. In their house, participants responded individually to a paper questionnaire as a pollster asked the different questions. Data collection was carried out in December 2015.

Data analyses

First, we conducted a preliminary analysis of cases and variables. Cases with Z values > ± 3.29 were considered as univariate outliers, whereas multivariate outliers were assessed at a p value <.001 (Tabachnick & Fidell, 2001). Skewness and kurtosis values in the range ±1 was excellent, and in the range ±1.5 were acceptable (George & Mallery, 2001). After that, we proceeded with analyses to explore the internal structure.

Second, we examined dimensionality through Cattell's scree test and Horn's parallel analysis. Third, we assessed models of two (A), three (B) and four (C) dimensions using exploratory structural equation modeling (ESEM). We considered global fit indicators and factorial loadings. After that, starting from the three-factor model obtained with ESEM, we applied confirmatory methods (CFA, models D, E and F). Both in ESEM and CFA, variables were treated as categorical and the robust weighted least squares method (WLSMV) was used, a method that fits better data of ordinal nature. In ESEM we required factor rotation to facilitate interpretation. Although several rotation methods are available in the software used (e.g., varimax, quartimin, geomin, target), the choice of either method is a current research area; hence, we decided to use the geomin rotation method (Marsh et al., 2009). Different indicators were considered (Hu & Bentler, 1999) [the values that indicate a good fit are shown in parentheses]: χ^2, mean square error of approximation (RMSEA, < 0.05 and 90% confidence interval), Tucker-Lewis Index (TLI, > .95) and comparative fit index (CFI, > .95). The standardized regression coefficients of the model that presented the best fit were interpreted.

Fourth, the item-total correlation and internal consistency were analyzed through Cronbach's alpha coefficient (Cronbach, 1951). Additionally, McDonald's Omega coefficient was computed, which offers an estimate with greater precision than that of Cronbach's alpha (McDonald, 1970). For both indices, 95% confidence interval is also reported.

We then analyzed the psychometric properties of the scale under the framework of IRT. For this purpose, we started from the model F evaluated above. Taking into account the response format of the items and the extension of the scale, we applied a graded response model (GRM, de Ayala, 2009; Wang & Chen, 2005). Specifically, we used the Samejima's GRM (1969) implemented in the IRTPRO 4.2 software. Two basic assumptions were considered: one-dimensionality and local independence. For the former, the results of confirmatory factor analyses were taken into account. For the latter, the standardized statistical χ^2 of local dependence provided by the software was considered for each pair of items (LD, Chen & Thissen, 1997), values > |10| indicate dependency

problems. The adjustment of each item was also evaluated through S-X2 statistic (Orlando & Thissen, 2000), which evaluates the degree of similarity between the frequency of responses predicted by the model and the empirical ones; statistically significant values indicate that the model does not fit an item. In this case, a level of 1% was used (Stone & Zhang, 2003). Subsequently, parameters of discrimination and difficulty of the items were evaluated. The information function of the items and information function of the test for each model were also analyzed.

Finally, taking into account results from CTT and IRT we conducted an additional confirmatory factor analysis (G) excluding items poorly informative. We also repeated the analysis of item-total correlation and consistency analysis.

The analyses in the framework of the CTT and comparison analysis were carried out with the statistical programs SPSS 20 (IBM SPSS), MPlus 7 (Muthén & Muthén, 1998-2011), R 4.0.2 (R Development Core Team, 2018) and the MBESS package (v4.8, Kelley, 2007). And the analyses corresponding to IRT were performed with IRTPRO 4.2 (Cai et al., 2011).

Ethical issues

In all this study we followed the ethical guidelines for research with humans recommended by the American Psychological Association (American Psychological Association [APA], 2017) and the ethical issues considered by local law (Federación de Psicólogos de la República Argentina [FEPRA], 2013). Participants gave their informed consent orally after receiving information on anonymity, confidentiality and voluntariness.

Results

Preliminary analysis

First, we examined variables and cases. Any variable presented over 5% of missing values. Five cases were outliers. The Little's MCAR test showed a χ^2 value = 705.212, df = 556, p < .000, indicating data missing

not completely at random. Taking this into account, we decided not to replace missing data and to exclude outliers. Hence, the sample analyzed comprised 275 cases. Skewness and kurtosis values (Table 2) were between acceptable limits; an exception to this was item 30 "It is God's will", which showed higher values.

Table 2

Descriptive statistics

	N	*M*	*SD*	S	C
i01. Falta de esfuerzo para auto-superarse.	275	3.55	1.20	-0.49	-0.71
i02. Falta de motivación y vagancia.	275	3.66	1.22	-0.61	-0.62
i03. Los ricos se aprovechan de los pobres.	274	3.55	1.28	-0.49	-0.83
i04. Enfermedad o discapacidades.	275	3.02	1.28	0.00	-1.05
i05. Solo es mala suerte.	274	1.55	0.80	1.39	1.15
i06. Abuso de alcohol y drogas.	274	3.42	1.22	-0.50	-0.65
i07. Fracaso de los sectores productivos y de servicios para ofrecer suficientes empleos.	273	3.87	0.97	-0.69	0.08
i08. Prejuicios y discriminación en la contratación de personas pobres para trabajar.	275	3.73	1.17	-0.70	-0.33
i09. Falta de habilidad y talento.	274	2.83	1.28	0.13	-1.02
i10. Falta de motivación causada por la sensación de bienestar.	273	3.16	1.23	-0.17	-0.96
i11. Falta de moral de los pobres.	275	2.46	1.30	0.47	-0.89
i12. Prejuicios y discriminación en los ascensos laborales y en los salarios.	273	3.51	1.14	-0.40	-0.66
i13. Haber nacido en la pobreza.	273	2.99	1.44	-0.12	-1.37
i14. Haber nacido con un bajo coeficiente intelectual.	274	2.99	1.33	-0.06	-1.17
i15. Tener muchos hijos.	273	3.17	1.27	-0.23	-1.00
i16. La desintegración de la familia nuclear (padres e hijos).	275	3.25	1.28	-0.26	-0.95
i17. Los tipos de trabajos que los pobres pueden obtener son frecuentemente mal pagos.	275	4.01	0.93	-0.98	0.88
i18. Tener que asistir a malas escuelas.	273	3.63	1.19	-0.63	-0.46

	N	*M*	*SD*	S	C
i19. No heredar dinero ni bienes de parientes.	273	2.37	1.29	0.48	-1.01
i20. Falta de ahorro y manejo inapropiado del dinero por parte de la gente pobre.	273	3.26	1.24	-0.17	-0.90
i21. No tener los contactos adecuados que ayuden a encontrar trabajo.	274	3.32	1.31	-0.40	-0.95
i22. Un gobierno que es insensible a la difícil situación de la gente pobre.	273	3.70	1.17	-0.66	-0.40
i23. Estar desempleado.	275	3.76	1.22	-0.80	-0.31
i24. La gente pobre no planifica.	275	3.02	1.30	-0.05	-1.06
i25. Las políticas de gobierno para abordar la pobreza son deficientes.	272	3.85	1.05	-0.65	-0.17
i26. El gobierno no ofrece suficientes fuentes de trabajo.	274	4.02	0.96	-0.96	0.70
i27. El gobierno no provee suficiente acceso a la educación.	274	3.66	1.25	-0.65	-0.54
i28. Dependencia de planes sociales.	274	3.49	1.31	-0.40	-0.98
i29. Falta de formación para el trabajo.	273	3.90	1.04	-0.81	0.14
i30. Es la voluntad de Dios.	275	1.62	1.12	1.90	2.63
i31. Reducida red de sostén social que permita salir de situaciones económicas desfavorables.	272	3.34	1.10	-0.08	-0.60

Internal structure analysis

Cattell's scree test and Horn's parallel analysis (95th percentile) suggested the extraction of four factors. Considering this and the previous research, we decided to assess two, three and four-dimension models using ESEM and CFA.

Using ESEM, the four-factor model (C) showed the best fit according to most indicators (Table 3). Nevertheless, the inspection of factorial loading revealed a complex structure: the first factor comprised only two items on fatalistic causes and several items with negative and high load on internal causes; the second factor comprised items on fatalistic and socio-structural causes; the third factor included items on internal causes; and the last one comprised item on socio-

structural causes. Because of such complexity, we decided to consider the structure of three factors in detail. The global fit of model A was acceptable according to most indicators, except for the comparative fit indicators that did not achieve the cut-off suggested for an acceptable model (Table 3). The interpretation of this model was clearer and simple (Table 4). The first factor comprised items on internal causes, the second factor included items on fatalistic causes (negative loadings) and also some items on internal causes but lower than in the first factor, and the third factor grouped items on socio-structural causes. Almost all items presented factorial loadings greater than .40 in the mentioned factor. The items 4 ["Illness or disability"], 28 ["Dependence of social plans"], 29 ["Lack of training for work"] and 30 ["It is God's will] showed low loads and were not consistent with what was expected according to the theory.

Table 3

Adjustment indices of CFA and ESEM models

	Model	χ^2	*df*	RMSEA [90% CI]	CFI	TLI
ESEM						
A	2-factors	1246.816	404	0.087 [0.082-0.093]	0.747	0.708
	3-factors	882.897	375	0.070 [0.064-0.076]	0.847	0.811
	4-factors	615.397	347	0.053 [0.046-0.060]	0.919	0.892
CFA						
D	3-factors	1141.364	374	0.086 [0.081-0.092]	0.766	0.746
E	3-factors modified	908.344	363	0.074 [0.068-0.080]	0.834	0.814
F	3-factors modified	728.509	307	0.071 [0.064-0.077]	0.869	0.851
G	3-factors modified	373.518	160	0.070 [0.060-0.079]	0.898	0.878

Taking the three-factor model obtained with ESEM as a starting point, we tested confirmatory models (Table 3). The items were associated with the factor in which they showed the highest load. In model D, items 29 and 30 were excluded as factorial loads lower than .30.

Model E was similar to model D, yet allowing correlation between the errors of the items (within each dimension). Model F was developed from model D, excluding two items (4 and 28) that loaded on factors without theoretical relevance and allowing correlation between errors. The confirmatory models E and F showed an acceptable fit according to the RMSEA index, although neither achieved the acceptable cut-off in the comparative indices. We decided to interpret the factorial loadings of model F. The first factor included 11 items on internal causes; the second factor included 4 items on fatalistic causes; and the third factor included 13 items on socio-structural causes. All items presented factorial loadings higher than .40 (Table 4).

Table 4

Factor loadings of ESEM (A) and CFA (E, F) models

Items/Factors	ESEM		CFA (F)				CFA (G)		
	1	2	1	1	2	3	1	2	3
Internal causes									
i02. Falta de motivación y vagancia.	**0.756**	**0.704**	0.013	**0.478**			**0.452**		
i01. Falta de esfuerzo para auto-superarse.	**0.752**	**0.698**	0.007	**0.468**					
i11. Falta de moral de los pobres.	**0.726**	-0.018	-0.196	**0.545**			**0.661**		
i09. Falta de habilidad y talento.	**0.657**	-0.01	-0.103	**0.598**			**0.678**		
i20. Falta de ahorro y manejo inapropiado del dinero por parte de la gente pobre.	**0.605**	**0.194**	-0.045	**0.523**			**0.470**		

Items/Factors	ESEM			CFA (F)			CFA (G)		
	1	2	1	1	2	3	1	2	3
i24. La gente pobre no planifica.	**0.605**	**0.179**	-0.019	**0.521**			**0.503**		
i10. Falta de motivación causada por la sensación de bienestar.	**0.528**	0.075	0.036	**0.457**			**0.642**		
i14. Haber nacido con un bajo coeficiente intelectual.	**0.467**	-0.027	0.102	**0.535**			**0.477**		
i06. Abuso de alcohol y drogas.	**0.463**	**0.365**	-0.057	**0.363**					
i15. Tener muchos hijos.	**0.447**	**-0.18**	0.029	**0.462**					
i28. Dependencia de planes sociales.	**0.366**	**0.327**	-0.066						
i16. La desintegración de la familia nuclear (padres e hijos).	**0.315**	**-0.223**	0.238	**0.621**					
i29. Falta de formación para el trabajo.	**0.274**	0.135	0.084						
i30. Es la voluntad de Dios.	**0.279**	-0.217	0.155						
Fatalistic causes									
i19. No heredar dinero ni bienes de parientes.	-0.011	**-0.71**	0.139		**0.565**			**0.565**	
i13. Haber nacido en la pobreza.	0.047	**-0.526**	0.264		**0.716**			**0.716**	

Items/Factors	ESEM		CFA (F)				CFA (G)		
	1	2	1	1	2	3	1	2	3
i05. Solo es mala suerte.	0.051	**-0.432**	0.249		**0.564**			**0.564**	
i21. No tener los contactos adecuados que ayuden a encontrar trabajo.	**0.187**	**-0.325**	0.297		**0.835**			**0.835**	
i18. Tener que asistir a malas escuelas.	**0.233**	-0.058	**0.317**			**0.499**			
Socio-structural causes									
i26. El gobierno no ofrece suficientes fuentes de trabajo.	-0.045	**0.327**	**0.753**			**0.546**			**0.525**
i22. Un gobierno que es insensible a la difícil situación de la gente pobre.	-0.044	0.009	**0.741**			**0.69**			**0.687**
i08. Prejuicios y discriminación en la contratación de personas pobres para trabajar.	-0.099	-0.079	**0.722**			**0.693**			**0.736**
i25. Las políticas de gobierno para abordar la pobreza son deficientes.	0.074	0.247	**0.638**			**0.475**			**0.461**
i12. Prejuicios y discriminación en los ascensos laborales y en los salarios.	0.014	-0.139	**0.612**			**0.69**			**0.718**

Items/Factors	ESEM		CFA (F)				CFA (G)		
	1	2	1	1	2	3	1	2	3
i07. Fracaso de los sectores productivos y de servicios para ofrecer suficientes empleos.	-0.104	0.076	**0.591**			**0.508**			**0.520**
i17. Los tipos de trabajos que los pobres pueden obtener son frecuentemente mal pagos.	0.014	-0.087	**0.56**			**0.619**			**0.619**
i27. El gobierno no provee suficiente acceso a la educación.	0.037	0.233	**0.549**			**0.408**			**0.361**
i03. Los ricos se aprovechan de los pobres.	-0.008	-0.256	**0.513**			**0.612**			**0.655**
i23. Estar desempleado.	-0.061	0.004	**0.477**			**0.422**			
i31. Reducida red de sostén social que permita salir de situaciones económicas desfavorables.	0.04	-0.133	**0.379**			**0.43**			
i04. Enfermedad o discapacidades.	0.047	0.223	**0.366**						
i18. Tener que asistir a malas escuelas.	**0.233**	-0.058	**0.317**			**0.499**			

Note. Bold values are significant at p < .001, underlined values are significant at p < .01, and italic values are significant at p < .05.

Internal consistency

Reliability according to Cronbach's Alpha was adequate for the dimensions of internal and socio-structural attributions. However, it was lower for the dimension of fatalistic attributions. McDonald's Omega values were very similar. For item-total correlation, values higher than .30 were observed (Table 5).

Table 5

Corrected item-total correlations and internal consistence of the items of Causal Attributions for Poverty

Items	Model F			Model G		
	F1	F2	F3	F1	F2	F3
	Corrected item-total correlation					
i01.	0.487					
i02.	0.506			0.374		
i06.	0.344					
i09.	0.482			0.520		
i10.	0.407			0.425		
i11.	0.486			0.497		
i14.	0.419			0.352		
i15.	0.377					
i16.	0.299					
i20.	0.479			0.448		
i24.	0.463			0.476		
i05.		0.328			0.328	
i13.		0.400			0.400	
i19.		0.574			0.574	
i21.		0.396			0.396	
i03.			0.389			0.418
i07.			0.440			0.441
i08.			0.524			0.562

Items	Model F			Model G		
	F1	F2	F3	F1	F2	F3
	Corrected item-total correlation					
i12.			0.517			0.531
i17.			0.442			0.430
i18.			0.347			
i22.			0.594			0.590
i23.			0.326			
i25.			0.501			0.470
i26.			0.551			0.553
i27.			0.375			0.353
i31.			0.345			
Cronbach's Alpha	.779	.633	.797	.730	.633	.791
95% IC	[.73-.821]	[.56-.70]	[.756-.839]	[.666-.783]	[.56-.70]	[.746-.832]
McDonald's Omega	.772	.668	.80	.732	.633	.795
95% IC	[.694-.851]	[.606-.731]	[.759-.841]	[.674-.789]	[.606-.731]	[.752-.837]

Item Response Theory

Taking into account the results of CFA, we conducted these analyses based on model F. We studied each dimension separately. The analysis for factor 1 (internal causes) showed problems of dependence between items 1 and 2 (local dependence = 14.3), and the adjustment was not adequate for those items ($p < .001$). The elimination of item 1 solved the problem. The following analyses did not include that item. As observed in Table 6, values of the LD statistic were in an acceptable range for all dimensions, which indicates that there are no dependence problems. The values of the S-χ2 statistic also indicate an adequate fit for all items.

Table 6

Item response theory – Adjustment statistics

Factor / Items	LD	*S-χ2*	*gl*	*p*
Factor 1 - Internal causes	-0.2 a 7.7			
i02		72.6	66	0.270
i06		84.2	71	0.135
i09		58.1	64	0.686
i10		79.4	67	0.143
i11		74.6	61	0.113
i14		90.2	72	0.072
i15		76.8	72	0.328
i16		76.5	75	0.431
i20		46.8	65	0.957
i24		73.5	66	0.245
Factor 2 - Fatalistic causes	-0.2 a 3.5			
i05		37.8	25	0.049
i13		29.1	33	0.663
i19		27.5	26	0.385
i21		35.1	31	0.279
Factor 3 - Socio-structural causes	-0.9 a 7.6			
i03		89.1	69	0.053
i07		64.7	56	0.198
i08		59.1	55	0.327
i12		66.5	63	0.357
i17		51.4	49	0.380
i18		67.4	68	0.498
i22		69.1	53	0.067
i23		79.3	68	0.163
i25		54.6	55	0.492
i26		56.2	49	0.222
i27		61.9	66	0.621
i31		81.8	71	0.118

Note. LD = standardized statistic of local dependence; S-χ2 = statistic of item fit.

The estimated parameters for each item are presented/shown in Table 7. The discrimination parameters of the items of all dimensions were around or higher than 1, except for item 16 of factor 1 (a = .696) and item 18 for factor 3 (a = .794). Regarding the level of difficulty, the values cover a relatively wide range of the continuum for factor 1 (-3.066 to 2.176) and factor 3 (-3.844 to 1.928). The spectrum of values is narrower for factor 2 (-1.903 to 1.783).

Table 7

Item response theory: Parameter estimation

	a	se	b1	se	b2	se	b3	se	b4	se	b average
Factor 1 - Internal causes											
i02	1.061	0.171	-2.898	0.436	-1.588	0.246	-0.475	0.138	0.933	0.184	-1.007
i06	0.861	0.152	-2.884	0.492	-1.668	0.299	-0.247	0.157	1.765	0.323	-0.759
i09	1.419	0.199	-1.368	0.178	-0.333	0.108	0.732	0.135	1.809	0.236	0.210
i10	1.135	0.175	-2.253	0.314	-0.883	0.156	0.282	0.127	1.834	0.273	-0.255
i11	1.496	0.211	-0.732	0.124	0.141	0.103	1.081	0.158	2.044	0.254	0.634
i14	1.044	0.167	-1.688	0.259	-0.557	0.143	0.507	0.145	1.997	0.308	0.065
i15	0.948	0.162	-2.336	0.373	-0.995	0.192	0.178	0.143	2.019	0.338	-0.284
i16	0.696	0.145	-3.066	0.622	-1.523	0.335	0.260	0.191	2.176	0.459	-0.538
i20	1.307	0.192	-2.168	0.281	-1.006	0.152	0.233	0.117	1.326	0.200	-0.404
i24	1.302	0.189	-1.628	0.216	-0.616	0.127	0.456	0.127	1.678	0.233	-0.028
Factor 2 - Fatalistic causes											
i05	0.989	0.191	0.609	0.168	2.257	0.394	3.852	0.713			2.239
i13	1.071	0.173	-1.3	0.223	-0.498	0.153	0.303	0.142	1.783	0.28	0.072
i19	3.997	1.219	-0.403	0.089	0.239	0.083	0.787	0.096	1.639	0.159	0.566
i21	1.206	0.179	-1.903	0.269	-1.022	0.18	0.001	0.128	1.417	0.212	-0.377

	a	se	b1	se	b2	se	b3	se	b4	se	b average
Factor 3 - Socio-structural causes											
i03	1.114	0.166	-2.521	0.351	-1.431	0.21	-0.275	0.131	0.897	0.183	-0.833
i07	1.21	0.172	-3.844	0.571	-2.353	0.308	-0.873	0.149	0.915	0.174	-1.539
i08	1.64	0.218	-2.293	0.263	-1.478	0.168	-0.499	0.106	0.649	0.129	-0.905
i12	1.359	0.186	-2.649	0.338	-1.316	0.175	-0.174	0.114	1.223	0.183	-0.729
i17	1.312	0.186	-3.585	0.512	-2.398	0.305	-1.248	0.171	0.692	0.145	-1.635
i18	0.794	0.142	-3.633	0.64	-2.093	0.371	-0.671	0.192	1.377	0.291	-1.255
i22	1.934	0.25	-2.156	0.226	-1.31	0.136	-0.426	0.094	0.71	0.127	-0.796
i23	0.822	0.146	-3.482	0.601	-2.148	0.371	-0.936	0.208	0.912	0.231	-1.414
i25	1.349	0.195	-3.139	0.429	-2.101	0.263	-0.591	0.123	0.668	0.148	-1.291
i26	1.693	0.235	-2.94	0.365	-2.071	0.231	-0.953	0.123	0.485	0.121	-1.370
i27	1.069	0.169	-2.682	0.39	-1.729	0.252	-0.488	0.139	0.831	0.186	-1.017
i31	0.852	0.146	-3.804	0.643	-1.849	0.314	0.498	0.181	1.928	0.349	-0.807

Figure 1 shows the information function of the items and the test of each factor. Factor 1 shows a maximum information value of 5.13 at a theta level = -0.1, with relatively constant values between -1.5 and 1.5. Items 16, 6 and 15 were the least informative. Factor 2 reaches the maximum information of 6.60 corresponding to theta = 0.5. In this case, there is also another high value of information (6.05) corresponding to theta = 1.5. It is remarkable the information provided by item 19. Finally, factor 3 shows a maximum information value of 7.25 at a theta level = -1.5, with relatively constant values between -2 and 0.5. Items 18, 23 and 31 do not seem to provide much more information on the trait under study.

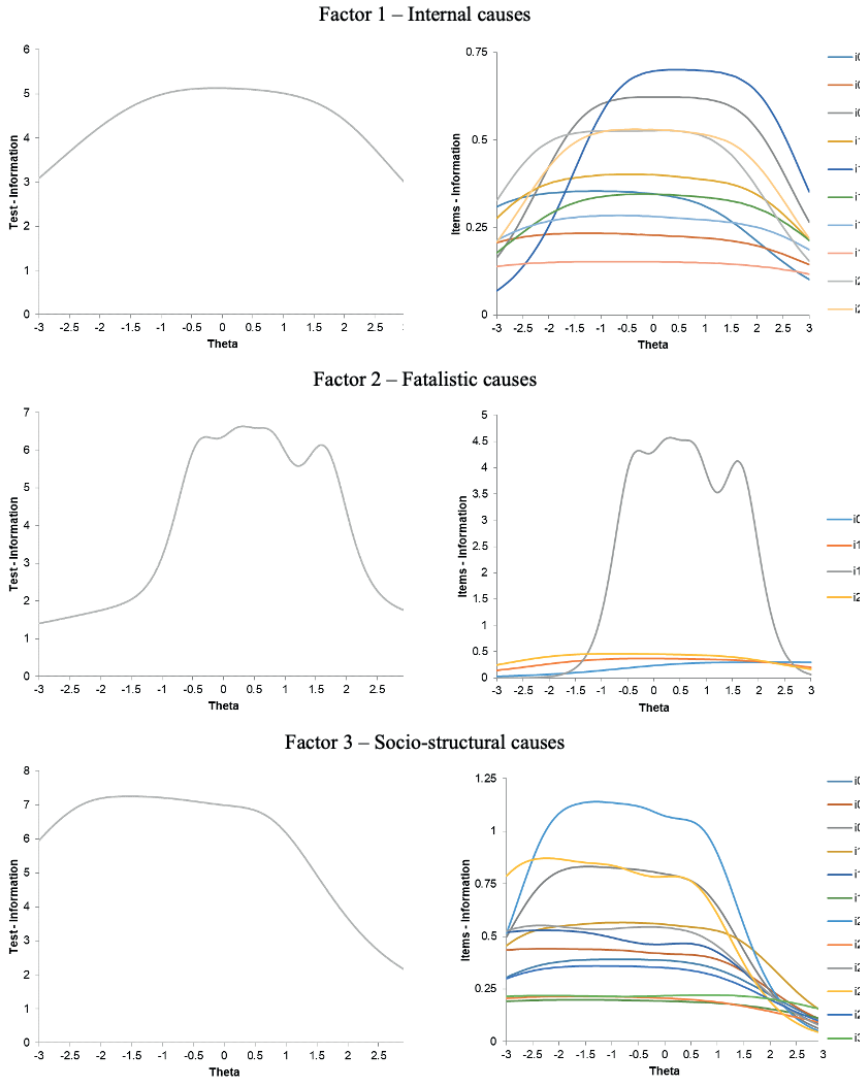

Figure 1. Item response theory: Information function

Additional analyses

Model G excluding item 1 and items poorly informative (6, 15, 16, 18, 23, 31) was evaluated. As observed in Table 3, the global fit indices were subtly better than those of model E. All items showed a factor loading higher than .40, except item 27 (.361) (Table 4). Regarding reliability, the values remained quite similar to those previously reported. All values of item-total correlation were higher than .35 (Table 5).

Discussion

The study of the causal attributions of poverty dates back several decades, and the classic tripartite model (internal, structural and fatalistic attributions) proposed by Feagin (1972) has been key for the understanding of its theoretical dimensions. However, the measurement of the construct is not unequivocal. There is no classical or standard instrument for testing causal attributions of poverty. Most research has developed or recovered items from previous studies and only some research has explored their psychometric properties of validity. In addition, researchers have used different analyses to explore the structure of the items. Thus, we provided evidence on the factorial structure and internal consistency of a Scale of Attributions on the Causes of Poverty using CTT and IRT.

For structural validity, we found evidence through different methods. With ESEM we explored the scale structure and tested the data fit allowing cross-loading. With CFA we obtained confirmatory evidence on the structure most consistent with theory and parsimonious descriptions. In addition, we used IRT to complement the analysis performed through CTT. None of the models tested with ESEM or CFA offered an acceptable fit with the comparative indicators, whereas three-factor models showed an acceptable fit according to RMSEA. The factor loadings of a reduced model F were interpreted. In that model, we allowed the correlation between the errors of the

items of each dimension and eliminated items 4, 28, 29 and 30 based on model D since they did not correspond theoretically to the factor in which they loaded. The first factor comprised 11 items on internal attributions as a cause of poverty; the second factor grouped 4 items on fatalistic attributions; and the third clustered 13 items on socio-structural attributions.

Results from IRT show that, removing item 1, the items in each dimension estimate a wide range of values for the latent traits and generally discriminate between people with different levels of the latent trait, although the range of values was narrower for the second factor. The information function of the items indicates that items 6, 15, 16, 18, 23 and 31 were poorly informative. There are no previous studies that used IRT in a scale of Attributions on the Causes of Poverty. Hence, our results are difficult to interpret in view of previous evidence. Taking into account the results of IRT, we repeated CFA excluding item 1 and items poorly informative (Model G). In this case, the results of CFA show that the global fit indices were better than those of model F and most items had adequate factor loads. Considering our results and the benefits of combining IRT with CTT (see Iraurgi et al., 2008), we propose that future studies replicate this analysis strategy with different populations.

We gathered evidence through CFA that contributes to the understanding of the structure of the Scale of Causal Attributions of Poverty developed with items from previous studies. We found a three-factor model that coincides with Feagin's (1972) theoretical proposal and with empirical antecedents consistent with Feagin's model (see e.g., Wollie, 2009). In contrast, a two-factor model did not present a good fit which is opposite to recent previous studies (e.g., Sainz, García-Castro, Jiménez-Moya, & Lobato, 2022). In our work, items 29 ("Lack of training for work") and 30 ("It is God's will") showed factorial loads lower than .30, while items 4 ("Illness or disabilities") and 28 ("Dependence on social plans") showed low and shared loads between two factors, making their interpretation difficult; therefore, they were eliminated in the final model. Although it is difficult to

compare these results with those of studies that used different items and estimation methods, we recovered research that found problems with similar items. For example, Bennett et al. (2016) observed that items on low incomes received by poor people and dependence on social plans showed low factor or shared loads between two dimensions, thus they were excluded. Bolitho et al. (2007) reported that the item on the number of children from poor people presented a complex factor load to interpret, therefore, it was eliminated.

In relation to internal consistency, Cronbach's alpha and McDonald's omega indices provided evidence of adequate internal consistency (greater than .70) for the dimensions of internal (11 items) and sociostructural attributions (13 items), and less than acceptable but greater than .60 for the dimension of fatalistic attributions as a cause of poverty (four items). Loewenthal (2001) suggests that lower values are acceptable (around .60) on scales with a few items, with good evidence of validity or for theoretical-practical reasons. As mentioned above, studies that found an internal structure in line with the theoretical dimensions proposed by Feagin showed evidence of good properties of internal consistency, even higher than that observed in our study.

Note that the interpretation of these results reveals certain limitations. In the present study we investigated the structural validity of the scale using ESEM, CFA and IRT in a specific pool of items, without considering all available items in the literature on causal attributions for poverty. Additionally, it is important to point out that the dimension of fatalistic attributions was made up only of 4 items and that the items loaded in each dimension do not coincide completely with what is reported in previous research. These results and the inconsistencies in the dimensions found between studies that explore the structure of the scale show the difficulty faced by the measurement of the causal attributions, leading us to further their study. Although we started with a broad set of items used in the literature, it would be advisable to expand the review of existing items to encompass a wider range of causal attributions of poverty. Moreover, we emphasize the potential need to develop new items that, after appropriate content validation,

can capture the peculiarities of the current social structure. In addition, we used specific estimation methods to explore the structure of the scale. Hence, future studies could inquire about the structure of the scale using other estimation models or methods, such as the commonly used exploratory factor analysis.

Moreover, in line with the work of Sainz et al. (2022), future studies could advance the collection of validity evidence related to an external criterion (e.g., convergent or predictive validity). In this regard, we highlight the importance of investigating the relationship between causal attributions of poverty and other relevant psychological constructs such as self-efficacy, locus of control, and attitudes toward poverty. Understanding the interrelationships among these constructs can provide a more comprehensive insight into the underlying mechanisms of causal attributions of poverty.

Furthermore, we also acknowledge that the results of IRT and CTT tests may be influenced by contextual factors, such as the testing environment or participants' familiarity with the tests. While the use of survey methods to gather attitudes is becoming increasingly common, it would be beneficial to incorporate methods and techniques complementary to traditional psychometric tests. For instance, qualitative techniques like in-depth interviews could be employed to gain a deeper understanding of causal attributions of poverty.

In summary, beyond certain limitations, we found evidence on the psychometric properties of a scale that measures the causal attributions of poverty in the local context, generating a new version that can be used in research contexts and serve as a starting point for future psychometric studies. Having validated instruments through different psychometric approaches contributes to the design and development of more precise and sensitive tools, enabling a more robust evaluation of causal attributions of poverty. The convergent use of different psychometric paradigms can contribute to obtaining evidence of the measurement stability of the dimensions of causal attributions of poverty over time, facilitating a more accurate monitoring of changes in causal attributions over time. Moreover, the combination of different

paradigms enhances the understanding of attributions about the causes of poverty, offering a more comprehensive view of the involved dimensions while reducing biases and limitations inherent to each paradigm. Simultaneously, by using different paradigms, it is possible to capture more detailed and specific aspects of causal attributions, facilitating the identification of distinctive patterns and individual differences in perceptions and explanations of poverty. This can generate inputs for the promotion of public policies aimed at poverty eradication, in line with the Sustainable Development Goals of the 2030 Agenda. Future research could continue using this complementary approach to provide evidence that may help to clarify the operationalization of the causal attributions of poverty.

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Recibido: 19/02/2023
Revisado: 25/05/2023
Aceptado: 20/07/2023