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Consumer Locus of Control Scale: Validity and Measurement Invariance Evidence in Low and High Socioeconomic Status Groups

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Abstract

Consumer locus of control is a key factor in purchase decisions, where consumers perceive outcomes as either dependent on or external to their own actions. These beliefs vary among individuals from different socioeconomic backgrounds, except when it comes to consumption. However, the assumption of measurement invariance across all socioeconomic groups has not been proven. To address this, a study was conducted to develop, validate, and test the invariance of the Consumer Locus of Control Scale. The first study ($N = 300$) involved exploratory factor analysis and reliability testing. The second study ($N = 309$) examined confirmatory factor analysis, convergent and discriminant validity, and measurement invariance. Results showed high explained variance and internal consistency. The five-factor structure demonstrated a good fit, supporting the scale's structural validity. Furthermore, the scale was invariant between high and low socioeconomic groups. This study provides valuable evidence for the reliability and validity of the Consumer Locus of Control Scale.

Keywords: Consumer behavior, economic psychology, locus of control, measurement invariance, psychometric analysis, socioeconomic status.

Escala de Locus de Control del Consumidor: Evidencias de Validez e Invariancia de Medición en Grupos de Estatus Socioeconómico Bajo y Alto

Resumen

El locus de control del consumidor es un factor clave en las decisiones de compra, donde los consumidores perciben los resultados como dependientes o externos a sus propias acciones. Estas creencias varían entre individuos de diferentes niveles socioeconómicos, excepto cuando se trata del consumo. Sin embargo, la suposición de la invariancia de las medidas en todos los grupos socioeconómicos no ha sido probada. Para abordar esto, se llevó a cabo un estudio para desarrollar, validar y probar la invariancia de la Escala de Locus de Control del Consumidor. El primer estudio ($N = 300$) involucró un análisis factorial exploratorio y pruebas de confiabilidad. El segundo estudio ($N = 309$) examinó un análisis factorial confirmatorio, validez convergente y discriminante, y la invariancia de las medidas. Los resultados mostraron una alta variación explicada y consistencia interna. La estructura de cinco factores demostró un buen ajuste, respaldando la validez estructural de la escala. Además, la escala fue invariante entre grupos socioeconómicos altos y bajos. Este estudio proporciona evidencia valiosa para la confiabilidad y validez de la Escala de Locus de Control del Consumidor.

Palabras clave: Análisis psicométrico, comportamiento del consumidor, estatus socioeconómico, invariancia de medición, locus de control, psicología económica.

IMAGINE YOU are in the supermarket and realize that the brand you used to purchase no longer produces your favorite product. Now, you are in front of the shelf, and you find more than 30 different brands of that product. Which one would you choose? More importantly, why would you say you chose it? Is it because everybody else was buying it, because it caught your attention by chance, because the salesperson suggested it to you, or just because of your actions? The variety of these responses may reflect consumers' perceived control beliefs about their purchases, as either contingent upon or external to consumer efforts. To understand how this perceived control interacts with consumer responses, it is important to have evidence regarding reliable and valid ways to assess the construct. When assessing the construct of consumer locus of control, some issues have been observed. Some studies incorporate general measures of the construct when discussing consumer responses (e.g., Cheng et al., 2020). Conversely, others as Busseri et al. (1998) have assessed it with a specific consumer-oriented Locus of Control Scale to evaluate the effect of the construct on consumer behavior. However, although this scale has been widely used, scale consistency and fitness have shown poor psychometric indices in different contexts (see Mansilla Chiguay et al., 2016). Hence, we present the development and evaluation of a novel and culturally oriented scale to examine the individual differences in perceived control beliefs in consumer scenarios.

Locus of control is defined as the learned belief that results are contingent upon actions that individuals perform or are controlled by external forces (Rotter, 1966; Rotter & Mulry, 1965). Originally, the construct was composed of a continuum where, on one hand, the internal locus of control highlights the attributions pertaining to intelligence and identification abilities of the individual as a trigger to obtain results; and on the other hand, the external locus of control refers to attributions derived from fatalism, luck, faith, and powerful others (Rotter & Mulry, 1965).

Locus of control is a relevant construct in different disciplines because it has shown predicted evidence with different behaviors. For instance, an internal locus of control enhances trust in crowdfunding (Rodríguez-Ricardo et al., 2019), and the higher the external locus of control, the lower the health insurance literacy (O'Connor & Kabadayi, 2020). In economic preferences and consumer studies locus of control has been one of the most important personality variables (Becker et al., 2012). Internal locus of control has been associated with higher income and financial socioeconomic resources (Perry & Morris, 2005), higher saving behaviors (Cobb-Clark et al., 2016), behavior based on comparisons and planning, cautious and strategic consumer orientations (Busseri et al., 1998), information search behavior (Srinivasan & Tikoo, 1992), green consumption (Cheng et al., 2020), and higher attachment to planned and purposeful purchases, which is in turn reflected in lower spending (Busseri et al., 1998). A higher external locus of control has been linked to higher positive attitudes toward indebtedness (Mansilla Chiguay et al., 2016) and consumer behavior as impulsivity and seeking immediate gratification (Becker et al., 2012).

The main challenge in the study of locus of control is to identify evidence for reliable and valid ways to assess the construct. In the specific field of consumer behavior, locus of control has been proposed to cover what is related to control beliefs concerning consumer experiences and purchase behaviors using the Consumer Locus of Control Scale (Busseri et al., 1998). This scale evaluates internality and externality of control, showing internal consistency indices of .76 to .77 in two subsamples, while jointly explaining 25% of the variance. The scale has been shown to be beneficial in predicting purchase intentions and a better predictor of relevant behaviors than other scales, as measurements of economic locus of control (Furnham, 1986) and general locus of control (Rotter, 1966). Hence, evidence has been provided to support specificity as an improved alternative

to measurements as suggested by Georgiou and Bradley (1992). The problem arises when the measurement is used in regions or cultures other than those for which they were created. The proof of this problem was found when psychometric properties of the Spanish-translated version of the Consumer Locus of Control Scale created by Busseri et al. (1998) were assessed when applied in a different cultural context than intended (Mansilla Chiguay et al., 2016). It showed neither optimal fit indices in the confirmatory factor analysis (CFA), nor an alternative structure using exploratory factor analysis (EFA). Due to the lack of evidence on adequate psychometric properties, it may be preferable to identify a new way to assess the consumer locus of control construct. An alternative may be to understand the way in which the construct, in general terms, has been identified in the target population.

Although the construct of locus of control was first proposed as having a bipolar dimensional form of internality–externality (Rotter, 1966), this does not seem to adequately distinguish elements that have been shown and conceptualized differently. Evidence has been provided for the construct’s multidimensionality (Levenson, 1974) by separating fatalism and powerful others into different dimensions, eventually achieving a clearer understanding of the phenomenon. This has served as a basis to explore dimensions that are as exclusive as possible, ensuring better consistency and a better explanation of the construct. Recent studies have reinforced the multidimensionality of constructs. For instance, for the locus of control of athletes’ eating behaviors, primary group influences (i.e., parents and family), and secondary group influences (i.e., friends) have been identified as subscales (Paquet et al., 2016).

A key element that stands out in the study of locus of control is the recognition of idiosyncratic elements permeating the environment. Elements are influenced by the characteristics of inhabitants when elaborating an adequate measure of the construct. For example, in collectivistic cultures

like Mexico, harmonious and affective relationships are prioritized more than personal achievement and development (Soler-Anguiano & Díaz-Loving, 2017). Against this cultural background, a dimension named affective locus of control was found (Díaz-Loving & Andrade-Palos, 1984) which was not previously reported. Affective locus of control refers to situations in which individuals modify their environment through affective relationships. Therefore, this dimension provides an understanding of the harmony dynamics among members of determined groups.

Having recognized a new element in the construct, La Rosa (1986) explored locus of control in the Mexican context to identify evidence of new idiosyncratic dimensions. The results of his study converged with the dimension of internality proposed by Rotter (1966), with the segmentation of external elements of fatalism and powerful others (Levenson, 1974), and with that referring to affective control (Díaz-Loving & Andrade-Palos, 1984). Given the foregoing, La Rosa’s (1986) locus of control scale was shown to have more conceptual clarity, better structural configuration, and acceptable psychometric properties. This was reflected in an explained variance of 46% and the internal consistency of its five dimensions ranging from .78 to .89. These dimensions seem to remain a common denominator in studies with Mexican populations on locus of control measurements, such as those related to subjective well-being (Velasco Matus et al., 2015), and partner choice (Padilla-Bautista et al., 2018).

Thus, it may be suggested that scales need to be culture-specific, as a single construct may be understood differently in different cultures. It may be useful to step back to explore the construct or adapt it from those measures that have shown more accuracy on target populations, as this could help to better explain the phenomena in the places where they are developed. In this regard, the present study proposes the development of an idiosyncratic measure of locus of control based on a general instrument created in Mexico (La Rosa, 1986) and

uses the conceptual definitions to develop a scale that is specific to consumer domains.

Study 1

In the first study, we created items and assessed evidence of their validity and internal consistency.

Method

Participants

The research included 300 employed individuals who earned an income. They were selected using non-random convenience sampling. The age range of the participants was from 18 to 66 years ($M = 33.66$, $SD = 11.33$). Women and men constituted 56.6%, and 43.4% of the sample, respectively. Fifty-one percent of the participants had completed university studies, 39.9% had completed high school studies, 9.4% had completed elementary and secondary studies, and the rest had completed postgraduate studies. All participants provided verbal and written informed consent and voluntarily agreed to participate.

Instruments

Based on how La Rosa (1986) approached the locus of control construct, 30 items were created that focused on consumer behaviors. In the existing scale by La Rosa (1986), 46% of the variance was explained. La Rosa's scale has the following dimensions: 1) Internal/instrumental ($\alpha = .82$), which refers to the perception of control that individuals have according to their effort, work, and capacities (e.g., *my future depends on my actions*); 2) Affective ($\alpha = .83$), which refers to the perception of control according to individuals' affective relationships with others (e.g., *if my boss likes me, I can get better positions at my job*); 3) Fatalism/luck ($\alpha = .89$), which refers to beliefs about an orderly world, where reinforcers depend on random factors as luck and destiny (e.g., a good job is a matter of luck); 4) Macrocosm powerful ($\alpha = .87$), which refers to entities who have the power to control, are distant from the person, and have an impact

on their lives (e.g., *the problem of pollution is in the hands of the government and what I do does not change anything*); and 5) Microcosm powerful ($\alpha = .78$), referring to people who have power and are close to the individual, as an employer, mother, or father (e.g., *success at work will depend on the people who are above me*).

All the items were reviewed, evaluated, and, where appropriate, improved upon by three judges who were experts in psychometrics. Items that were judged by the experts as displaying poor or ambiguous content validity were removed. Once the item pool was formed, a pilot study was conducted with 20 people to identify and make additional adjustments to the items. The response format was based on a seven-point Likert-type scale (1 = totally disagree to 7 = totally agree). Additionally, a sociodemographic section was included where the participants were asked about their age, gender, and place of residence.

Procedure

Data were collected from public places (e.g., streets, public squares), homes, and universities. Individuals were informed that the survey was intended to further the scientific understanding of daily economic exchanges. Before starting the survey, informed consent was obtained from the participants, indicating that they had read and understood the explanations and were voluntarily participating in the study. In addition, participants were informed that their data would be kept anonymous and confidential. The study and consent procedures were performed in accordance with the ethical standards of the Declaration of Helsinki (1964).

Data Analysis

Data were analyzed using IBM SPSS version 25[®] (IBM Corp., 2017). First, the distribution and high-low discrimination of the data were assessed through descriptive statistics of each item and independent-samples t-tests. Next, construct validity and internal consistency were assessed using EFA and Cronbach's alpha.

Results

Descriptive Statistics and Item Discrimination

Skewness indices were assessed for each item, with scores ranging from -1.13 to 1.34, all within the acceptable range. The kurtosis indicators ranged between -0.97 to 1.87. Item LC9 was removed from future analyses due to the index not falling within the acceptable range. Subsequently, the total score of the scale was obtained by identifying quartiles to create a new variable that divided the high and low scores. Once the variable was created, the discrimination of the items was analyzed. Under this criterion, items LC10 and LC19 did not discriminate; as a result, these items were eliminated from future analyses. The remaining items showed statistically significant differences: item LC9 at $p < .05$ and the rest at $p < .001$.

Exploratory Factor Analysis

To obtain construct validity evidence, an EFA was performed with the maximum likelihood extraction method and varimax orthogonal rotation without forcing a determined number of factors. Items with factorial weights lower than .40 or factorial weights in two or more factors with differences of .20 were eliminated. A five-factor composition with eigenvalues greater than 1 explained 60.64% of the total variance (Table 1). The factorial solution converged in six iterations, showing an adequate Kaiser–Meyer–Olkin coefficient of .845; Bartlett = 1852.41 ($df = 171$), $p < .001$. Cronbach's alpha coefficients indicated satisfactory internal consistency, and the correlations between factors also showed low to moderate coefficients (see Table 1).

Table 1

Subscales, Factor Loadings, Internal Consistency Indices, Inter-factor Correlations, and Descriptive Statistics of Consumer Locus of Control Scale

Items	Divinity	Social	Situational	Internal	Affective
LC26 The purchases I make are because God wants it that way	.877	.049	-.096	-.002	-.034
LC22 Only God knows what awaits me when making my purchases	.772	.002	.005	.050	.048
LC24 God only knows what awaits me on offers	.718	-.085	.115	-.025	.033
LC6 I prefer to purchase what family and friends suggest to me	-.047	.745	-.048	-.019	.053
LC5 The opinion of relatives guides my purchases	.070	.694	-.136	.177	-.032
LC7 I choose the products I purchase because others use them	.022	.525	.037	-.084	.104
LC3 I purchase only if a loved one is with me	-.053	.502	.118	-.038	.033
LC20 I have purchased products that I have found by chance	-.171	-.099	.648	.075	.012
LC11 The things I have bought have been because fate has put them in my way	.143	.115	.611	-.043	-.068
LC15 I am predestined to purchase certain products	.105	-.110	.594	.043	-.027
LC17 My purchases depend on my luck	.224	.034	.587	-.041	.076
LC4 Buying is the result of finding the products by accident	-.053	.297	.512	.009	-.062
LC27 My abilities determine the results when making my purchases	.111	-.004	-.082	.782	-.117
LC29 My purchases depend on my skills	.079	-.029	-.044	.588	.128
LC14 My purchases are determined by my actions	-.117	.164	.162	.489	-.100
LC21 I influence the results I have when buying	-.146	-.118	.228	.448	.227
LC18 Buying is the result of treating sellers well	-.003	.058	-.019	.104	.646
LC12 Flirting with the seller helps you get better prices when buying	-.005	.212	-.091	-.073	.608
LC16 Getting sad in front of the seller helps to get better prices	.078	-.008	.060	-.026	.606

Items		Divinity	Social	Situational	Internal	Affective
	Total					
Items number	19	3	4	5	4	3
% Explained variance	60.64	28.77	10.35	8.99	7.20	5.31
Cronbach's alpha	.84	.83	.72	.75	.68	.70
inter-factor correlations		Divinity	Social	Situational	Internal	Affective
	Social	.30**	1			
	Situational	.47**	.37**	1		
	Internal	.17**	.13**	.28**	1	
	Affective	.43**	.49*	.46**	.26**	1
Mean (theoretical mean = 3.5)		2.16	2.72	3.01	4.22	2.42
Standard deviation		1.25	1.10	1.08	1.17	1.19

* p < .05, ** p < .001

The associations between factors showed low coefficients among the internal locus of control with the rest of the factors. In contrast, affective, divinity, social, and situational locus of control showed medium association coefficients.

Study 2

CFA was performed to assess the measurement model proposed in study 1.

Method

Participants

A total of 309 gainfully employed people participated in the study. They were recruited using non-random convenience sampling (Table 2). All participants provided verbal and written informed consent and voluntarily agreed to participate.

Table 2

Demographic and Socioeconomic Characteristics of the Study 2 Sample

Variables		Total N = 309 %	Variables		Total N = 309 %
Sex			Socioeconomic status		
	Women	46.3	High		67
	Men	53.7		A/B	43.7
Educational level				C+	23.3
	Postgraduate	6.8	Low		33
	University	61.5		C	20.1
	High school	24.9		C-	8.7
	Elementary and secondary	6.2		D+	2.9
	No studies	0.6		D	1.3
				M	SD
			Age	32.95	13.55

Instruments

The scale used was designed by the authors of this study. It has 19 items divided into five factors with a seven-point Likert-type scale response format (1 = totally disagree to 7 = totally agree).

The Socioeconomic Level Questionnaire was assessed and classified according to the criteria established by the Mexican Association of Market Research Agencies (AMAI in Spanish) (AMAI, 2020). The questionnaire measures and classifies Mexican households based on their ability to meet members' needs. It comprises six questions, as the highest academic degree attained by the parents and number of rooms and bathrooms. Individuals who have undertaken professional studies, invest the most in education, and spend the least on food are categorized as A/B. Level C+ includes households that have at least one vehicle and Internet access, and dedicate a higher proportion of their income to food and transport. Level C includes households whose members have completed more than an elementary education and who spend less on education. Level C- is formed by households with little Internet access and that dedicate approximately half of their income to food, transportation, and communication. Level D+ includes households with almost no Internet access and less than half of their income earmarked for food. Households categorized at Level D are those wherein less than half of the members have completed elementary education. Level E has households with almost zero Internet access at home and that spend just over half of their income on food. Additionally, a sociodemographic data section was included where the participants were asked about their age, gender, and place of residence.

Procedure

Data were collected from public places, homes, and universities. Individuals were informed that the survey was intended to further the scientific understanding of daily economic exchanges. Before starting the survey, informed consent was obtained from the participants, indicating that they had read and understood the explanations

and were voluntarily participating in the study. In addition, participants were informed that their data would be kept anonymous and confidential. The study and consent procedures were performed in accordance with the ethical standards of the Declaration of Helsinki (1964).

Data Analysis

Data were analyzed using AMOS version 24[®] (Arbuckle, 2016) and IBM SPSS version 25 (IBM Corp., 2017). First, CFA with maximum likelihood estimation was used to assess the model fit of the five-factor structure, theoretical one-factor structure (Rotter, 1966), and theoretical two-factor structure (Levenson, 1974) for the Consumer Locus of Control Scale. The following model fit indices were assessed in the present study: the comparative fit index (CFI), the Tucker-Lewis Index (TLI), the root mean square error of approximation (RMSEA) and its 90% confidence intervals, and the standardized root mean square residual (SRMR). CFI and TLI values above .95 are commonly interpreted to indicate excellent model fit, whereas values in the range of .90 to .95 indicate acceptable fit. SRMR values close to .8, and RMSEA values close to .6 represent excellent fit (Hu and Bentler, 1999; van de Schoot et al., 2012). Results of the chi-square test (χ^2) were also reported; however, the chi-square test statistic can be considered unreliable in the context of larger sample sizes (Byrne, 2001).

To assess reliability, and convergent and discriminant validity, the composite reliability (CR), maximal reliability (MAXR(H)), average variance extracted (AVE), and square root of average AVE were used. CR and MAXR(H) values above .70 were used given that they are commonly interpreted as indicating good reliability. AVE values above .50 are interpreted as having a good value; however, this ave index has been identified as a strict criterion (Henseler et al., 2015; Malhotra and Dash, 2011).

Socioeconomic characteristics, as income and financial resources, have shown a significant effect on locus of control (Perry & Morris, 2005), and high socioeconomic status has been predicted to

lead to higher levels of internal locus of control than low socioeconomic status. To evaluate these differences, two groups were created in this study based on their socioeconomic status. One group was created by clustering participants belonging to the A/B and C+ socioeconomic levels representing high socioeconomic status. Another group was created by clustering participants belonging to the C, C-, D+, and D socioeconomic levels, which represent low socioeconomic status. These low and high clusters were assigned as proposed by the AMAI (2020). Before evaluating the comparison, measurement invariance across socioeconomic groups was assessed. Invariance was tested at configural (same structure across groups), metric (same factor loadings across groups), and scalar levels (same item intercepts across groups). These models were compared using $\Delta\chi^2$, Δdf , ΔCFI , $\Delta RMSEA$, and $\Delta SRMR$. Based on van de Schoot et al. (2012), $\Delta\chi^2$ must be statistically insignificant to show invariance. Similarly, when the sample size is ≤ 300 or when sample sizes are unequal, a change of $\leq .005$ in CFI, supplemented by a change of $\leq .010$ in RMSEA or a change of $\leq .025$ in SRMR indicates invariance (Chen, 2007).

Results

Confirmatory Factor Analysis

The locus of control construct has been identified as having different structures, as a

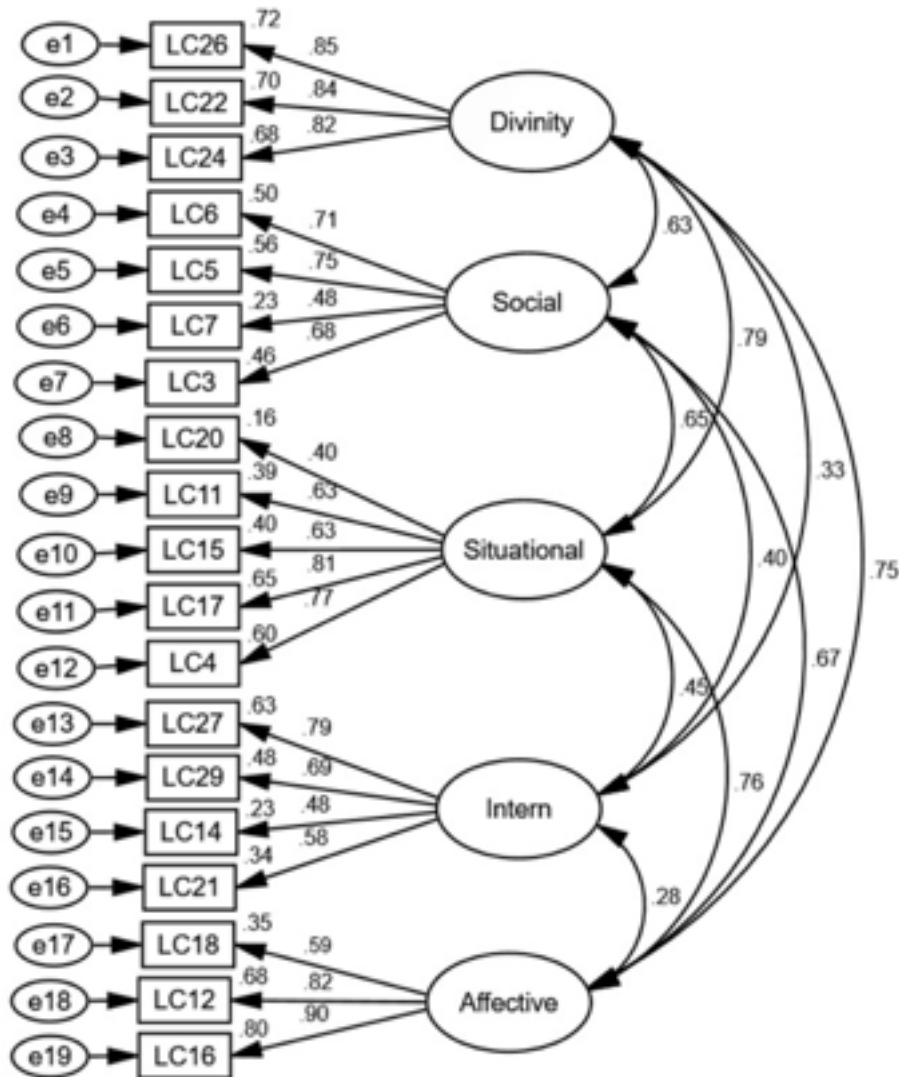
unidimensional internal–external structure proposed by Rotter (1966) and found for the Consumer Locus of Control Scale when used in a Canadian population (Busseri et al., 1998). In addition, other studies have identified internality and externality as different dimensions, along with diverse models that include various external factors (e.g., Levenson, 1974; Paquet et al., 2016). Accordingly, to assess the best structure, the model fit of the five-factor structure identified in the present study was compared with that of unidimensional and two-factor models previously reported. First, structural validity evidence of the five-factor Consumer Locus of Control Scale through model fit was assessed using CFA (Fig. 1). Then, to identify the best factor structure of the construct, two different models were tested for the best goodness-of-fit index values. First, a two-factor model was established in which items belonging to the divinity, situational, social, and affective factors were grouped in one dimension, while internal factors were set alone. In contrast, a one-factor model was established in which all items were grouped in one dimension. The model fit of the three models highlighted that the five-factor structure of the Consumer Locus of Control Scale was the only one that showed a good fit with the data (see Table 3). These results provide structural validity evidence for the consumer locus of control construct's multidimensionality.

Table 3

Model Fit for Unidimensional, Two-Factor, and Five-Factor Structure Confirmatory Factor Analysis of the Consumer Locus of Control Scale

Model	χ^2	CFI	TLI	RMSEA (90% CI)	SRMR
Unidimensional	756.60	.755	.725	.114 (.106 - .122)	.088
Two-factor	557.16	.836	.814	.093 (.085 - .102)	.068
Five-factor	271.90	.947	.937	.054 (.045 - .064)	.055

Figure 1
Confirmatory Factor Analysis of the Consumer Locus of Control Scale



Convergent and Discriminant Validity Evidence

Reliability and convergent and discriminant validity were assessed based on CR, MAXR(H), AVE, and the square root of AVE (Table 4). All scales showed adequate reliability. Regarding convergent validity, AVE values of the social, situational, and internal dimensions showed low values; however,

it has been suggested that AVE is a strict criterion, and therefore, CR values are enough to confirm the evidence of convergent validity (Malhotra & Dash, 2011). The scale was also found to have good discriminant validity because the square root of AVE was higher than the correlations of the dimensions (Hair et al., 2018).

Table 4
Reliability, Convergent and Discriminant Validity Evidence of the Consumer Locus of Control Scale

	CR	AVE	MaxR(H)	Affective	Divinity	Social	Situational	Internal
Affective	.82	.60	.87	.78				
Divinity	.87	.69	.87	.76*	.83			
Social	.75	.43	.77	.66*	.63*	.66		
Situational	.79	.44	.83	.75*	.79*	.65*	.66	
Internal	.73	.41	.77	.28*	.32*	.39*	.44*	.64

a Values in the diagonal represent the square root of ave

*p < .001

Measurement Invariance by Socioeconomic Status

The measurement model was assessed based on socioeconomic invariance. For this, the configural, metric, scalar, and residual invariance were evaluated using multigroup modeling (Table 5). In accordance with these results, it may be said

that socioeconomic status-based differences that will be detected using the scores obtained from the measurement tool are not detected by any defect in the measurement. From this procedure, configural, metric, and scalar invariance are ensured, but not residual invariance. Overall, strong invariance indicators were determined according to Widaman and Reise (1997).

Table 5
Testing for Factorial Invariance Across Socioeconomic Status Groups

Model	χ^2	df	CFI	RMSEA (90% IC)	SRMR	Model Comparison	$\Delta\chi^2$	Δdf	ΔCFI	$\Delta RMSEA$	$\Delta SRMR$
(M0)	476.93**	284	.925	.047 (.040 - .054)	.088						
(M1)	495.98**	298	.923	.047 (.039 - .054)	.088	M0 – M1	19.35	14	.002	.000	.000
(M2)	539.44**	332	.919	.045 (.038 - .052)	.093	M1 – M2	43.46	34	.004	.002	.005
(M3)	584.09**	351	.909	.047 (.040 - .053)	.095	M2 – M3	44.64*	19	.010	.002	.002

a M0 = configural, bM1 = metric, cM2 = scalar, dM3 = residual.

* p < .05, ** p < .001

In the present study, comparisons of consumer locus of control were examined in terms of low and high socioeconomic status. To assure the assumptions, first, we assessed the skewness and kurtosis Z-values (Cramer 1998; Cramer & Howitt 2004; Doane & Seward 2011), and a visual inspection of their histograms, normal Q-Q plots, and box plots showed that the dimensions of the

locus of control scale were normally distributed for the low and high socioeconomic status groups. The divinity dimension showed Zskewness = 1.435 and Zkurtosis = 1.219 for low socioeconomic status group, and Zskewness = 1.579 and Zkurtosis = 1.820 for high socioeconomic status group, The social dimension showed Zskewness = 0.845 and Zkurtosis = 0.393 for low socioeconomic status

group, and Zskewness = 0.759 and Zkurtosis = 0.570 for high socioeconomic status group, The situational dimension showed Zskewness = 0.527 and Zkurtosis = -0.240 for low socioeconomic status group, and Zskewness = 0.616 and Zkurtosis = 0.063 for high socioeconomic status group, The internal dimension showed Zskewness = 0.092 and Zkurtosis = -0.533 for low socioeconomic status group, and Zskewness = 0.040 and Zkurtosis = -0.433 for high socioeconomic status group, and the affective dimension showed Zskewness = 1.384

and Zkurtosis = 1.668 for low socioeconomic status group, and Zskewness = 1.428 and Zkurtosis = 1.780 for high socioeconomic status group.

A marginal difference was found in terms of internal locus of control, where the high socioeconomic status group demonstrated a higher internal locus of control compared with the low socioeconomic status group (Table 6).

Table 6
Comparison of consumer locus of control between low and high socioeconomic status groups

	Socioeconomic status				Confidence Interval 95%	t (gl)	d	1 - β
	Low		High					
	M	SD	M	SD				
Divinity	2.12	1.61	2.02	1.50	[-0.26, 0.47]	0.554(307)	0.06	0.63
Social	2.42	1.28	2.47	1.17	[-0.34, 0.23]	-0.369(307)	0.04	0.72
Situational	2.86	1.34	2.90	1.35	[-0.35, 0.28]	-0.220(307)	0.02	0.82
Internal	3.69	1.49	4.01	1.46	[-0.66, 0.03]	-1.740(307)*	0.21	0.51
Affective	2.12	1.34	2.03	1.32	[-0.22, 0.41]	0.580(307)	0.06	0.61

* $p = .081$

General discussion

The present study aimed to create a Consumer Locus of Control Scale and assess its psychometric properties from a culturally oriented perspective. The Consumer Locus of Control Scale presents a conceptually coherent and theoretically sound construct, highlighting validity and reliability evidence. The consumer locus of control construct shows conceptual correspondence with the existence of beliefs that guide and determine the attribution of the results that individuals obtain, in line with the conceptualization originally proposed by Rotter (1966). The factorial composition of the Consumer Locus of Control Scale is in line with that previously identified by Levenson (1974), according to dimensions adjacent to external control. In addition, the factorial configuration for the consumer locus of control in this study has supported the structural configuration found by La

Rosa (1986) previously in a Mexican population. Further, congruence of the locus of control construct with the specific measurement in purchasing scenarios was identified providing evidence of the improvement in the measurement when it is adapted to the behavior or objective variable (Busseri et al., 1998; Georgiou & Bradley, 1992).

The factors identified in this scale provide an understanding of control beliefs that guide individuals' purchase behaviors. The first factor, divinity locus, refers to entities farthest from the individual that control individuals' purchases. The second factor, called social locus, refers to beliefs about groups and people close to the decision-maker who control the way of making purchases, as relatives, friends, and loved ones. In the third factor, situational locus, the elements of chance and situations are attributed as resources of control. The fourth factor, called internal locus, reflects

attributions that an individual's abilities, intelligence, performance, and actions are determinants of the results at the time of purchase. Finally, the fifth factor, affective locus, corresponds to an evocation of affections toward others to obtain desired results, whether they are better prices or products. These dimensions follow the line of findings identified in studies of locus of control in the general Mexican population (La Rosa, 1986), children (Díaz-Loving & Andrade-Palos, 1984), and even in measurements in specific scenarios, as the choice of a partner (Padilla-Bautista et al., 2018). Specifically, cultural patterns can be seen in the consumer locus of control construct composition with the affective locus of control, an idiosyncratic dimension found in the locus of control assessment in Mexican children (Díaz-Loving & Andrade-Palos, 1984), and not previously found when exploring the construct in another contexts. The affective dimension seems to be explained and formed by sociocultural elements of the population, which in this case are collectivistic cultures like Mexico, where harmonious and affective goals are prioritized (Soler-Anguiano & Díaz-Loving, 2017).

Although the previously developed measurement of consumer locus of control has been shown to have adequate psychometric properties (see Busseri et al., 1998), its stability and psychometric properties are distorted when it is translated for Spanish-speaking regions (see Mansilla Chiguay et al., 2016). These results seem to suggest that cultural aspects can be involved in understanding the construct and shaping behaviors in certain regions. The Consumer Locus of Control Scale developed in the present study provides evidence that the cross-cultural adequation of the construct is more useful for identifying elements belonging to the construct.

Even though assessments of locus of control have shown different structures across time, multidimensionality appears to be consistent in recent studies (e.g., Paquet et al., 2016; Velasco Matus et al., 2015). In the present study, the CFA showed a particularly better fit of the five-factor structure

over the two-factor and unidimensional structures previously proposed. These results are in line with a multidimensional perspective when measuring constructs (see La Rosa, 1986; Levenson, 1974). The Consumer Locus of Control Scale showed minor concerns when displaying convergent validity evidence. The AVE for the social, situational, and intern dimensions did not meet the strict criterion of convergent validity evidence, but previous literature suggests relying on other indices to ensure evidence of convergent validity, as proposed by Malhotra and Dash (2011). The discriminant validity was fully satisfied.

Most of the consumer responses have been associated with people's financial resources. Socioeconomic status is an index that can help to understand consumers' income and financial resources. Due to the variety of said resources in consumers, it is important to assess the applicability of the consumer locus of control construct with people from different socioeconomic backgrounds. The developed Consumer Locus of Control Scale has been shown to be invariant by socioeconomic status. In other words, participants from low and high socioeconomic status groups in the present study perceived the consumer locus of the control construct similarly. With this, differences in factor scores could not be attributed to differences in understanding the construct. The invariant property of the scale allowed us to compare socioeconomic status; as a result, the internal consumer locus of control showed a marginal difference between socioeconomic status groups. Participants with high socioeconomic status scored higher in the internal locus of control compared to those with low socioeconomic status, coinciding with previous research (e.g., Perry & Morris, 2005). In this way, the identified differences can be read upon the environment-dependent and learned belief of control. An environment of low socioeconomic status could be perceived as an uncontrollable event producing a generalized feeling of helplessness translating into a lack of control. This hypothesis is based on the perception of uncontrollability or

external controllability to explain inescapability or learned helplessness (Hiroto, 1974; Miller & Seligman, 1975). This perception of controllability has been identified as a key element in consumer responses, as intentions to purchase green products (Sandoval-Díaz & Neumann, 2023). In this way, noncontingent reinforcement generates a perception that events are uncontrollable or are not initiated by instrumental responses.

The results of the present study might contribute to cultural sensitivity when creating psychometric scales. It is important to prove the hypothesis that cultural factors can permeate differences while understanding and presenting the construct. With this, future studies are needed to assess consumer locus of control in different cultures to identify those idiosyncratic and universal elements that increase understanding of consumers' control beliefs.

References

- AMAI. (2020). Niveles socioeconómicos de la Asociación Mexicana de Agencias de Inteligencia de Mercado y Opinión Pública AC [Socioeconomic levels of the Mexican Association of Market Intelligence and Public Opinion Agencies AC]. <http://www.amai.org/NSE/index.php?queVeo=niveles> [Accessed September 22, 2023]
- Arbuckle, J. L. (2016). Amos (24.0) [Computer software]. IBM SPSS
- Becker, A., Deckers, T., Dohmen, T., Falk, A., and Kosse, F. (2012). The relationship between economic preferences and psychological personality measures. *Annual Review of Economics*, 4, 453-478. <https://doi.org/10.1146/annurev-economics-080511-110922>
- Busseri, M. A., Lefcourt, H. M., & Kerton, R. R. (1998). Locus of control for consumer outcomes: Predicting consumer behavior. *Journal of Applied Social Psychology*, 28, 1067-1087. <https://doi.org/10.1111/j.1559-1816.1998.tb01668.x>
- Byrne, B. M. (2001). Structural equation modeling: Perspectives on the present and the future. *International Journal of Testing*, 1, 327-334. <https://doi.org/10.1080/15305058.2001.9669479>
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, 14, 464-504. <https://doi.org/10.1080/10705510701301834>
- Cheng, Z. H., Chang, C. T., & Lee, Y. K. (2020). Linking hedonic and utilitarian shopping values to consumer skepticism and green consumption: the roles of environmental involvement and locus of control. *Review of Managerial Science*, 14, 61-85. <https://doi.org/10.1007/s11846-018-0286-z>
- Cobb-Clark, D. A., Kassenboehmer, S. C., and Sinning, M. G. (2016). Locus of control and savings. *Journal of Banking & Finance*, 73, 113-130. <https://doi.org/10.1016/j.jbankfin.2016.06.013>
- Cramer, D. (1998). *Fundamental statistics for social research*. London: Routledge.
- Cramer, D., & Howitt, D. (2004). *The SAGE dictionary of statistics*. London: SAGE Publications, Inc.
- Díaz-Loving, R., & Andrade-Palos, P. (1984). Una escala de locus de control para niños mexicanos [A locus of control scale for Mexican children]. *Revista Interamericana de Psicología*, 18, 21-33.
- Doane, D. P. & Seward, L. E. (2011). Measuring skewness: A forgotten statistic? *Journal of Statistics Education* 19(2), 1-18. <https://doi.org/10.1080/10691898.2011.11889611>
- Furnham, A. (1986). Economic locus of control. *Human Relations*, 39, 29-43. <https://doi.org/10.1177/001872678603900102>
- Georgiou, A., & Bradley, C. (1992). The development of a smoking-specific locus of control scale. *Psychology & Health*, 6, 227-246. <https://doi.org/10.1080/08870449208403186>
- Hair, J. F., Babin, B. J., Anderson, R. E., & Black, W. C. (2018). *Multivariate Data Analysis* (8th ed.). United Kingdom: Cengage.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115-135. <https://doi.org/10.1007/s11747-014-0403-8>

- Hiroto, D. S. (1974). Locus of control and learned helplessness. *Journal of Experimental Psychology*, 102, 187–193. <https://doi.org/10.1037/h0035910>
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6, 1–55. <https://doi.org/10.1080/10705519909540118>
- IBM Corp. (2017). IBM SPSS Statistics for Macintosh (25.0) [Computer software]. IBM Corp.
- la Rosa, J. (1986). Escalas de locus de control y autoconcepto: Construcción y validación [Locus of control and self-concept scale: Construction and validation]. [Dissertation]. [Mexico City]: Universidad Nacional Autónoma de México.
- Levenson, H. (1974). Activism and powerful others: Distinctions within the concept of internal-external control. *Journal of Personality Assessment*, 38, 377–384. <https://doi.org/10.1080/00223891.1974.10119988>
- Malhotra, N. K., & Dash, S. (2011). *Marketing Research: An Applied Orientation*. New York: Pearson.
- Mansilla Chiguay, L., Denegri Coria, M., & Álvarez Escobar, B. (2016). Relación entre actitudes hacia el endeudamiento y locus de control del consumidor en estudiantes universitarios [Relationship between attitudes toward indebtedness and consumer locus of control in university students]. *Suma Psicológica*, 23, 1–9. <https://doi.org/10.1016/j.sumpsi.2015.11.002>
- Miller, W. R., & Seligman, M. E. (1975). Depression and learned helplessness in man. *Journal of Abnormal Psychology*, 84, 228–238. <https://doi.org/10.1037/h0076720>
- O'Connor, G. E., and Kabadayi, S. (2020). Examining antecedents of health insurance literacy: The role of locus of control, cognitive style, and financial knowledge. *Journal of Consumer Affairs*, 54(1), 227–260. <https://doi.org/10.1111/joca.12266>
- Padilla-Bautista, J. A., Díaz-Loving, R., Reyes-Lagunes, I., Cruz-Torres, C. E., & Padilla-Gómez, N. (2018). Locus de control en la elección de pareja: Una validación etnopsicométrica [Locus of control in mate choice: Ethno-Psychometric validation]. *Revista de Psicología*, 36, 217–238. <https://doi.org/10.18800/psico.201801.008>
- Paquet, Y., Scoffier, S., & d'Arripe-Longueville, F. (2016). Étude de la validité interne et externe d'une échelle multidimensionnelle de Locus de contrôle spécifique aux comportements alimentaires des sportifs (LOCSCAS) [External and internal validity of a multidimensional Locus of control scale of eating attitudes for athletes (LOCSCAS)]. *Encephale*, 42, 434–440. <https://doi.org/10.1016/j.encep.2016.03.003>
- Perry, V. G., & Morris, M. D. (2005). Who is in control? The role of self-perception, knowledge, and income in explaining consumer financial behavior. *Journal of Consumer Affairs*, 39, 299–313. <https://doi.org/10.1111/j.1745-6606.2005.00016.x>
- Rodriguez-Ricardo, Y., Sicilia, M., and López, M. (2019). Altruism and internal locus of control as determinants of the intention to participate in crowdfunding: The mediating role of trust. *Journal of Theoretical and Applied Electronic Commerce Research*, 14(3), 1–16. <https://doi.org/10.4067/S0718-18762019000300102>
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80, 1–28. <https://doi.org/10.1037/h0092976>
- Rotter, J. B., & Mulry, R. C. (1965). Internal versus external control of reinforcement and decision time. *Journal of Personality and Social Psychology*, 2, 598–604. <https://doi.org/10.1037/h0022473>
- Sandoval-Díaz, J. & Neumann Langdon, P. (2023). Green Products Purchase Intention in Chilean Consumers: Comparing Three Models Using Structural Equations. *Revista Colombiana de Psicología*, 32(1), 83–101. <https://doi.org/10.15446/rcp.v32n1.92739>
- Soler-Anguiano F. L., & Díaz-Loving, R. (2017). Validación de una escala de individualismo y colectivismo [Validation of a scale of individualism and collectivism]. *UARICHA Revista de Psicología*, 14, 44–52
- Srinivasan, N., & Tikoo, S. (1992). Effect of locus of control on information search behavior. In J. F. Sherry & B. Sternthal (Eds.), *Advances in Consumer Research* (Vol. 19, pp. 498–504). Association for Consumer Research.

- van de Schoot, R., Lugtig, P., & Hox, J. (2012). A checklist for testing measurement invariance. *European Journal of Developmental Psychology*, 9, 486-492. <https://doi.org/10.1080/17405629.2012.686740>
- Velasco Matus, P. W., Rivera Aragón, S., Díaz Loving, R., & Reyes Lagunes, I. (2015). Construcción y validación de una escala locus de control-bienestar subjetivo [Construction and validation of a locus of subjective well-being and control scale]. *Psicología Iberoamericana*, 23, 45-54
- Widaman, K. F., & Reise, S. P. (1997). Exploring the measurement invariance of psychological instruments: Applications in the substance use domain. In K. J. Bryan, M. Windle, & S. G. West (Eds.), *The science of prevention: Methodological advances from alcohol and substance abuse research*. (pp. 281-324). <https://doi.org/10.1037/10222-009>