



Comparing Three Optimism Scales in Mexican Americans

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Abstract

The main objective was to compare Life Orientation Test-Revised (*LOT-R*), Personal Optimism Scale (*POS*), and Brief Interactive Optimism Scale-G (*BIOS-G*) in construct validity, convergent validity, divergent validity, reliability, and internal convergent validity. A non-probabilistic sample of 136 Hispanic Americans, mostly Mexican Americans, participated. Their age $M=39.40$ years old, $SD=11.52$; 39 men, 97 women. Confirmatory factor analysis was used. The *LOT-R* and *BIOS-G* show construct validity, but not *POS*. *BIOS-G* achieves excellent internal convergent validity ($AVE=.78$); an approximate *LOT-R* ($AVE=.45$); *POS* ($AVE=.28$) was poor. There is convergent validity among the three scales: *BIOS-G* and $POS=r(136)=.38$ ($d=\text{moderate}$) ($90\% CI=.23, .68$); *BIOS-G* and $LOT-R=r(136)=.72$ ($d=\text{strong}$) ($90\% CI=.63, .89$); and $LOT-R$ and $POS=r(136)=.45$ ($d=\text{moderate}$) ($90\% CI=.31, .73$). Alphas and omegas were ($POS=.71, .74$, respectively); ($LOT-R=.83, .83$), and ($BIOS-G=.93, .93$). There are no differences between men and women in optimism, according to the three scales, supporting in this way its divergent validity. It is concluded that since most of participants (68.40%) had university education, *LOT-R* measures well the construct, *POS* is not recommended, and *BIOS-G* can be used reliably as well in similar samples to that of the study.

Keywords Construct validity · Mexican Americans · Three optimism scales · Convergent and divergent validity · Optimism

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Introduction

Great importance is placed on the development and validation of psychological measurement instruments, particularly when the phenomenon is not directly observable, and indicators, such as Likert-type scale items, are needed to access them (Johnson & Morgan, 2016; Munshi, 2014). The search for valid and reliable tools generally starts with the application of the universalist hypothesis that what is developed for a particular culture would also be applicable and useful for another. This is with the premise that a strict methodological cross-cultural adaptation is performed. Then, back translation and high-level statistical analysis are appropriately carried out (Bravo, 2003; Pan et al., 2017). Creation of psychological measurement instruments typical for each culture is not encouraged because there is also widespread belief that although there are distinctive characteristics, all of them share basic similarities. However, data do not support this position because there are relatively few psychological instruments that remain unchanged through different cultures (Taras et al., 2009). Moreover, some data suggest that valid and reliable instruments usually yield good results when used with high educational level samples, and conversely, if applied to participants with the lowest levels of schooling, do not show reliable results (Shepperd et al., 2016). Therefore, a more realistic position would be if an instrument might be transculturally adapted for some data comparison and to place the most appropriate one to the targeted culture. This is feasible since as Streiner et al. (2014) postulate (among others), reliability is not an intrinsic property of an instrument, but its value only has meaning for a specific cultural group. Another option, which is more time-consuming and laborious, but more scientific, is to create one's own measures, exercising semantic precision and accurate definition of the construct. This becomes feasible and practical because the instrument creator and the prospective participants are expected to belong to similar groups, if not to the same cultural group.

Research Questions

Along the line of reasoning in the aforementioned text, the main question in this study was derived: “Which one of the three scales of different cultures could better evaluate the level of optimism of Mexican-Americans participants living in the United States of America?” Specifically, by comparing in the same sample the psychometric performance of the Life Orientation Test-Revised (*LOT-R*) (Scheier et al., 1994); the Personal Optimism Scale (*POS*; Schweizer & Koch, 2001) and the Brief Interactive Optimism Scale-Garcia (*BIOS-G*; Garcia-Cadena et al., 2021), which of the three would be more valid and reliable to this particular social group? The next research question was “How much do sociodemographic variables participate in predicting optimism according to the three scales compared?”.

Objectives

Thus, in this study, the objectives were as follows: (1) determine the goodness-of-fit (construct validity) of the three optimism scales; (2) discover the concurrent validity among them; (3) identify the internal convergent validity; (4) determine the divergent validity of the three scales; and (5) compare some internal consistency indexes among the three scales. This study is justified because, in general, there are few studies (with fewer uniform results) about the *LOT-R* psychometric properties in open population, and, particularly even less with Hispanic Americans and Mexican Americans (Glaesmer et al., 2012; Pan et al., 2017). Up to now, the evidence is not conclusive regarding the *LOT-R* factorial structure (Carver et al., 2010). The following models, at least, have been studied: (1) correlated two-factor, (2) non-correlated two-factor, (3) orthogonal method effects two-factor with a positive specific factor, and (4) one-factor (Cano-García et al., 2015; Landero Hernández & González Ramírez, 2009; Pan et al., 2017). For purposes of this study, the original recommendation of *LOT-R* creators and that of Cano-García et al. (2015) was followed, concerning the unidimensional nature of the instrument. With respect to the *LOT-R* internal consistency, D'Orazio et al. (2011)'s report, in a small sample ($N=54$) of low-income Latina (mainly, Mexican Americans) patients with cervical cancer, found a Cronbach's alpha coefficient of 0.15. Efuni et al. (2015)'s study of low-income Latinos at average risk for colorectal cancer ($N=251$) found a Cronbach's alpha coefficient of 0.59. In a study by Perczek et al. (2000) using a sample of 290 students of bilingual bachelor (English–Spanish, whose ethnical backgrounds were from some countries of Latin America, including Cuba, except Mexico), the authors found an alpha coefficient of 0.84 in the English version of *LOT-R* and an alpha coefficient of 0.79 in the Spanish version. Howarter and Bennett (2013) report an alpha of 0.65 with 236 Hispanic Americans. In a recent study of a community of Hispanic Americans (Pan et al., 2017), it was found that in a subsample of English language-preference ($N=205$), the Cronbach alpha coefficient was 0.67, while in the other one, with the Spanish language-preference ($N=217$), the alpha was 0.48.

Conceptualization of the Optimism on Which the Scales *LOT-R*, *POS*, and *BIOS-G* Are Based

LOT-R scale was designed taking into account the theory of positive expectations, so that the construct optimism is very well expressed by the following definition “Optimism is an individual difference variable that reflects the extent to which people hold generalized favorable expectancies for their future.” (Carver et al., 2010, p. 879). At the same time, the German optimism scale *POS* is also based in the positive expectations' theory, and one of its authors define the optimism construct as following: “Personal optimism applies to a restricted set of generalized expectations, the generalized expectation of a positive outcome for the own person” (Schweizer et al., 2011, p. 402). Finally, the *BIOS-G* scale is based in Kantor's interbehavioral theory (Kantor & Smith, 1975), and in Ribes-Iñesta's interactive style of personality (Ribes-Iñesta, 2009), which optimism construct may be defined as “...an interactive

style of personality...that results from the complex but positive historical and current relationship of the individual with his or her physical environment, with others, and with him/herself" (García Cadena et al., 2016, p. 23).

Method

Participants

A non-probability sample of 136 Hispanic Americans participated, most of them Mexican Americans. Their age $M = 39.40$ years old, $DE = 11.52$; 39 (28.70%) men, 97 (71.30%) women. The minimum age was 11 years old and the maximum age was 65 years old; only one of the participants had 11 years old (all the rest had 18 years or more). The participants' educational profile detailed that 68.40% have university studies: 24.30% high-school; 50.70% bachelor; 16.20% master and 1.5% doctorate. Regarding the perceived socioeconomic level, 1.50% was self-classified within the low socioeconomic level, while 2.20% was classified within a high socioeconomic level. Furthermore, 20.60% was self-classified within the medium-low socioeconomic level, while 56.60% was classified within the medium socioeconomic level. Finally, 19.10% was considered belonging to the medium-high socioeconomic level. Concerning seniority in their current jobs, 7.10% reported less than a year, while 23.90% declared to have 14 to 23 years; 47.50% affirmed to have 1 to 6 years of seniority, while 21.50% maintained to have 3 to 8 years of seniority. Most of them were of Mexican origin, living in San Antonio (Texas); some were living in Austin (Texas), Pittsburgh (Pennsylvania), Fresno (California), Manassas, Reston, Fairfax and Arlington County (Virginia), and Milwaukee (Wisconsin). There were others from El Salvador, Bolivia, and Colombia as well.

Instruments

Sociodemographic Questionnaire

This questionnaire was intended to obtain information from participants regarding their age, gender, schooling, perceived socioeconomic level, and their current employment seniority.

Life Orientation Test-Revised (LOT-R; Scheier et al., 1994)

The Spanish version was used (Otero et al., 1998), and was validated in Mexico (García Cadena et al., 2016). This scale has 10 items: six items to assess dispositional optimism and four items to divert the test goal. Of the six items, three are phrased in negative terms (which are scored inversely) and the other three are worded in a positive way. LOT-R was applied to 2055 undergraduate university students, which 67.8% were men (Scheier et al., 1994). This scale is Likert-type, with five-level answer items: 1=I disagree a lot, 2=I disagree a little, 3=I neither

agree nor disagree, 4=I agree a little, and 5=I agree a lot. In this study, the following five optional answers were used: 5=strongly agree, 4=agree, 3=neutral, 2=disagree, and 1=strongly disagree. A positive item example is “Overall, I expect more good things to happen to me than bad,” while a negative one is “I hardly ever expect things to go my way.” Carver et al. (2010) inform alpha values of 0.78 to 0.83 and test–retest correlations of 0.56, 0.60, 0.68, and 0.79. A higher score indicates a higher construct existence. In this study, the internal consistency of alpha coefficient was 0.83, while the omega composite reliability was 0.83. Also, a score of dispositional optimism was obtained through the sum of individual scores of the six items it contains.

Personal Optimism Scale (POS; Schweizer & Koch, 2001)

This subscale is composed of eight items, being one of the three that integrated the Personal Optimism and Social Optimism Scale (POS-O; Schweizer, & Koch, 2001). Of the eight items, four are phrased positively and four ones, negatively. Negative items are scored inversely. A positive item example is “I have positive expectations,” and a negative one is: “I have expectations of failure.” Items are answered in a Likert-type form of four optional answers: 1=incorrect, 4=completely correct. The sum of scores of the eight items constitutes the subscale scoring. A higher score indicates a higher construct existence. A Cronbach’s alpha coefficient of 0.78 was reported by Schweizer and Koch (2001), while in this study, the Cronbach’s alpha coefficient was 0.79.

Brief Interactive Optimism Scale-G (BIOS-G; García-Cadena et al., 2021)

This scale is composed of four Likert-type items, with three phrased positively and one negatively. A positive item example is “Life is good,” and a negative item is “Life is ugly.” The negative item is inversely scored. Each item of the scale has four optional answers; the ones used in this study were: 4=yes, 3=maybe yes, 2=maybe no, and 1=no. The sum of each score obtained in the four items constitutes the scale score, which is assumed to represent the construct magnitude. Garcia-Cadena et al. (2021) report the following internal consistency indexes: $\omega=0.87$, $\alpha=0.86$, and ordinal $\alpha=0.91$. A Cronbach’s alpha coefficient of 0.76 was obtained in this study.

Design

A joined cross-sectional and correlational design was used.

Procedure

The authors requested the collaboration of relatives, friends, and acquaintances living in USA, asking them to answer both the sociodemographic questionnaire and study scales through [a questionnaire from Google sent by] WhatsApp and Messenger (Facebook). To a larger extent, they requested their contacts that after responding, they share

the instruments with other relatives, friends, or acquaintances. Along with the delivery of the instruments, a brief informative consent was added, respecting the principles of anonymity and willingness, and briefly explaining the objectives of the study to the participants. These tasks were performed mainly by the last two authors.

All procedures performed with the participants were with accordance of the ethical standards of the institutional research committee, the 1964 Helsinki declaration and its later amendments, and the American Psychological Association (2016) ethical standards. Informed consent was obtained from all participants.

Data Analysis

The statistical software SPSS (v.24) was used to calculate the descriptive analyses, correlations (Pearsons' r) and reliability (Cronbach's alpha), and the Mplus 7.1 (Muthén & Muthén, 2012) was used to identify the factor structure of the three scales by exploratory factor analysis (AFE) and confirmatory factor analysis (CFA). Both AFE and AFC were carried out with the factors' extraction method weighted least squares with means and variances (WLSMV). WLSMV was used as a method of factors' extraction because it is considered optimal for ordinal data CFA (Flora & Curran, 2004).

CFA was used to evaluate the construct validity of each of the optimism scales compared (*LOT-R*, *POS*, and *BIOS-G*) using five goodness-of-fit indicators: χ^2/df (chi square/df ratio), *CFI* (Bentler's comparative fit index), *RMSEA* (Steiger-Lind root mean square error of approximation), *NNFI* (Tucker-Lewis non-normed fit index), and *WRMSR* (weighted root mean square residual). Values close to the following magnitudes were considered representatives of a fine goodness-of-fit: *CFI* and *NNFI* ≥ 0.95 , $\chi^2/df \leq 2$, *RMSEA* ≤ 0.06 (Hu & Bentler, 1999), and 1.0 for *WRMSR* (Yu, 2002). Likewise, the correlation coefficient of Pearson product-moment (r) was used to calculate the correlations between the scales compared. To determine the divergent validity of the three scales compared, the differences between optimism scores per gender were calculated by Student's t test (Glaesmer et al., 2012; Pan et al., 2017). To determine the internal consistency of the three scales, the following indexes were obtained: (1) reliability of scores through Cronbach's alpha coefficient (Cronbach, 1951), (2) inter-item mean correlation (John & Soto, 2009), and (3) composite reliability of optimism construct, or McDonald's omega coefficient (McDonald, 1999). To evaluate the internal convergent validity of the scales, the average variance extracted (AVE) of each one of them was used, establishing a criterion of at least 0.50 as the appropriate value (Fornell & Larcker, 1981). Finally, multiple regression analysis was used to determine the predictive value of sociodemographic variables of the optimism scores, measured by the three scales. The SPSS (v24) statistics software was used to process the information.

Results

Exploratory Factor Analysis

Two of the three scales show adequate indices of validity. The Kaiser–Meyer–Olkin sample adequacy index (KMO) is greater than 0.80, which indicates interdependence between all the items. The sphericity Bartlett's test shows values with a $p=0.000$ in the three scales. In just one of the scales, the total variance explained is lesser (less than 50%) than the other two scales (see Table 1).

The factor loadings are high in almost all the items of the three scales (between 0.368 and 0.998), except in one pertaining to the Personal Optimism Scale. Thus, it is met the criterion of factor loadings greater than $\lambda=0.40$ (Williams et al., 2010) (see Table 2).

Confirmatory Factor Analysis

LOT-R obtained good values in four of the five goodness-of-fit indicators: (1) $X^2/df=2.567$, (2) $CFI=0.997$, (3) $NNFI=0.961$, and (4) $WRMSR=0.501$. However, this scale did not obtain an acceptable value in one goodness-of-fit indicator: (5) $RMSEA=0.107$. In short, *LOT-R* reached four acceptable indicators and one unacceptable indicator of goodness-of-fit. On the other hand, *POS* did not pass acceptable goodness-of-fit indicators: (1) $WRMSR=1.088$; (2) $X^2/df=3.379$, (3) $CFI=0.897$, (4) $NNFI=0.856$, and (5) $RMSEA=0.143$. Finally, *BIOS-G* obtained all five acceptable goodness-of-fit indicators: (1) $X^2/df=0.656$, (2) $CFI=1.000$, (3) $NNFI=1.000$, (4) $RMSEA=0.000$, and (5) $WRMSR=0.122$ (see Table 3).

Convergent Validity

There is convergent validity among the three scales since the correlations between them are positive, with certain magnitude, as expected theoretically if they measure the same. *BIOS-G* and *POS* = $r(136)=0.38$ (effect size, d =small) (90 $CI=0.23$, 0.68); *BIOS-G* and *LOT-R* = $r(136)=0.72$ (effect size, d =medium) (90 $CI=0.63$, 0.89); and *LOT-R* and *POS* = $r(136)=0.45$ (effect size, d =small) (90 $CI=0.31$, 0.73).

Table 1 Kaiser–Meyer–Olkin sample adequacy measures, Bartlett's sphericity test, total explained variance and Cronbach's alpha of three optimism scales

	<i>KMO</i>	Bartlett's test			<i>TEV</i>		α
		X^2	<i>df</i>	Sig	Total	% Variance	
<i>BIOS-G</i>	.820	532.472	6	.000	3.613	90.320	.929
<i>POS</i>	.648	271.851	28	.000	3.712	46.400	.710
<i>LOT-R</i>	.852	254.005	15	.000	3.485	58.080	.830

KMO Kaiser–Meyer–Olkin, X^2 Chi-square, *df* degrees of freedom, *Sig* significance, *TEV* total explained variance, α Cronbach's alpha

Table 2 Exploratory factor analysis' factor loadings for three optimism scales

Scale	Items	λ
<i>Brief Interactive Optimism Scale-G</i>	I1. Life is ugly	.954
	I2. Life is beautiful	.998
	I3. Life is Good	.980
	I6. Human beings are good	.803
<i>Personal Optimism Scale</i>	P1. I believe in Success	.571
	P2. I have positive expectations	.756
	P3. I am dissatisfied with life	.592
	P4. I am worried	.824
	P5. I have expectations of failure	.368
	P6. I am not worried	.624
	P7. I have negative expectations	.731
	P8. I am happy with life	.738
<i>Life Orientation Test-Revised</i>	LO1. In uncertain times I usually expect the best	.650
	LO3. If something can go wrong for me it will	.703
	LO4. I am always optimistic about my future	.707
	LO7. I hardly ever expect things to go my way	.650
	LO9. I rarely count on good things happening to me	.761
	LO10. Overall I expect more good things to happen to me than bad	.783

λ factor loading

Table 3 Scales' goodness-of-fit indices

Scale	X^2/df	<i>NNFI</i>	<i>CFI</i>	<i>RMSEA</i>	<i>WRMSR</i>
<i>BIOS-G</i>	0.656	1.000	1.000	0.000	0.122
<i>LOT-R</i>	2.567	0.961	0.997	0.107	0.501
<i>POS</i>	3.789	0.856	0.897	0.143	1.088

Estimation method: *WLSMV*, weighted least squares means and variance adjusted; X^2/df , Chi-square/degrees of freedom; *NNFI*, non-normed fit index; *CFI*, comparative fit index; *RMSEA*, root mean square error of approximation; *WRMSR*, weighted root mean square residual

Divergent Validity

Results indicate that the three scales have divergent validity because there are no statistically significant differences in optimism between both genders, according to each scale: *LOT-R*: $t(136) = -0.79$, $p = 0.42$; *POS*: $t(136) = -1.357$, $p = 0.18$; *BIOS-G*: $t(136) = -1.361$, $p = 0.17$.

Reliability

Internal consistency coefficients (alpha, omega, and inter-item average correlations) of the three scales were acceptable ($POS=0.710$, 0.740 , and 0.257 , respectively), except for inter-item average correlation, since John and Soto (2009) established a minimum of 0.30 to be acceptable, very good ($LOT-R=0.830$, 0.832 , and 0.448 , respectively), and excellent ($BIOS-G=0.929$, 0.937 , and 0.763 , respectively) (see Table 4). The first two reliability categories (acceptable: from 0.70 to 0.80 and very good: from 0.80 to 0.90) are attributed to DeVellis (2003), but the third one (excellent: from 0.90 and so on) is from the authors of this study.

Internal Convergent Validity

As the minimum value expected for a scale to be considered to have an internal convergent validity is 0.50 (Fornell & Larcker, 1981), it can be said that *BIOS-G* achieves an excellent internal convergent validity ($AVE=0.78$); *LOT-R* reaches an approximate value ($AVE=0.45$), and *POS* acquires a very poor value ($AVE=0.28$).

Factorial Structure of LOT-R, POS, and BIOS-G

The following three tables (Table 5, Table 6, and Table 7) condense their unidimensional factorial structures to *BIOS-G*, *LOT-R*, and *POS*, showing the mean, standard deviations, and correlations between the items.

Multiple Regression Analysis

A multiple regression analysis was carried out to assess the variance on optimism offered by each one of the scales, considering the following predictive variables: age, number of years in the current employment, perceived socioeconomic level, and schooling. In Table 5, standardized beta values of each predictive variable can be observed, according to each scale, their significance level, and adjusted explained variance (R^2) calculated, pursuant to *BIOS-G*, *LOT-R*, and *POS*.

Data accessibility is available from the corresponding author if personally requested.

Table 4 Factorial structure of the *BIOS-G*, descriptive statistics, and correlations among the items

Items	<i>M</i>	<i>SD</i>	<i>Sk</i>	<i>K</i>	<i>Item 1</i>	<i>Item 2</i>	<i>Item 3</i>	<i>Item 4</i>
1. People are good	3.16		-.911	-.354	1	-	-	-
2. Life is beautiful	3.36	1.159	-1.420	.193	.*	1	-	-
3. Life is good	3.34	1.137	-1.388	.198	**	.936**	1	-
4. Life is ugly	3.25	1.203	-1.155	-.463	.638**	.832**	.837**	1

M, mean; *SD*, standard deviation; *Sk*, skewness; *K*, kurtosis; * $p < .05$, ** $p < .01$

Table 5 Factorial structure of the LOT-R, descriptive statistics, and correlations among the items

Items	<i>M</i>	<i>SD</i>	<i>Sk</i>	<i>K</i>	<i>Item 1</i>	<i>Item 2</i>	<i>Item 3</i>	<i>Item 4</i>	<i>Item 5</i>	<i>Item 6</i>
1. Overall, I expect more good things to happen to me than bad	3.81	1.291	-.905	-.314	1	-	-	-	-	-
2. If something can go wrong for me, it will	3.22	1.087	-.029	-.668	.453**	1	-	-	-	-
3. I hardly ever expect things to go my way	3.14	1.162	-.018	-.899	.418**	.445**	1	-	-	-
4. I rarely count on good things happening to me	3.34	1.284	-.334	-1.065	.442**	.541**	.470**	1	-	-
5. I'm always optimistic about my future	3.61	1.218	-.653	-.466	.550**	.412**	.415**	.473*	1	-
6. In uncertain times, I usually expect the best	3.50	1.167	-.519	-.495	.516**	.345**	.352**	.460**	.550**	1

M = mean; *SD* = standard deviation; *Sk* = Skewness; *K* = Kurtosis; **p* < .05, ***p* < .01

Table 6 Factorial structure of the POS, descriptive statistics, and correlations among the items

Items	<i>M</i>	<i>SD</i>	<i>Sk</i>	<i>K</i>	<i>Item 1</i>	<i>Item 2</i>	<i>Item 3</i>	<i>Item 4</i>	<i>Item 5</i>	<i>Item 6</i>	<i>Item 7</i>	<i>Item 8</i>
1. I have expectations of failure	3.09	1.08	-.852	-.629	1	-	-	-	-	-	-	-
2. I have positive expectations	3.65	.650	-1.775	2.373	.008	1	-	-	-	-	-	-
3. I am worried	3.02	.882	-.629	-.310	.162	.350**	1	-	-	-	-	-
4. I am not worried	2.49	1.04	.119	-1.153	.318**	.168*	.530**	1	-	-	-	-
5. I am happy with life	3.59	.661	-1.487	1.506	.239**	.470**	.397**	.261*	1	-	-	-
6. I have negative expectations	3.64	.663	-1.900	3.222	.117*	.459**	.470**	.255*	.234*	1	-	-
7. I am dissatisfied with life	3.62	.799	-2.096	3.380	.048	.081	.433**	.118*	.373**	.255*	1	-
8. I believe in success	3.79	.478	-2.179	4.024	.080	.459**	.117*	.076	.283*	.317**	.095	1

M, mean; *SD*, standard deviation; *Sk*, skewness; *K*, kurtosis; * $p < .05$, ** $p < .01$

Table 7 Regression of optimism on age, socioeconomic level, number of years at current work, and degree of schooling according to the *LOT-R*, *POS*, and *BIOS-G* optimism scales among Mexican Americans

	<i>LOT-R</i>		<i>POS</i>		<i>BIOS-G</i>	
	<i>B</i>	<i>Sig</i>	β	<i>Sig</i>	β	<i>Sig</i>
Age	-.380	.035	-.300	.079	-.667	.000
Socioeconomic level	-.285	.118	-.468	.009	-.219	.166
Number of years at current job	.082	.628	.269	.100	.309	.04
Degree of schooling	.117	.486	-.093	.56	.130	.37
Adjusted R^2	.086		.166		.310	

Discussion

Regarding the questions of the study, the first one was about which of the three scales (*LOT-R*, *POS*, and *BIOS-G*) could better measure the optimism construct, in terms of validity and accurateness. From the evidence obtained here, it may be said that practically, there are no differences between *LOT-R* and *BIOS-G*, except that, regarding accurateness, *BIOS-G* is higher ($\alpha=0.93$, $\omega=0.93$) than *LOT-R* ($\alpha=0.83$, $\omega=0.83$). This leads to the provisional conclusion that *BIOS-G* may be used not only for research purposes but also for making decisions about a person's life, meaning, about the professional work of the psychologist and/or about any other human support professional (Nunnally et al., 1995). Naturally, these conclusions must be delimited based on the specific characteristics of the study sample. Work was made on a biased sample according to schooling because seven out of the ten participants had university studies, either undergraduate or postgraduate (68.40%). In this sense, the generalization of these findings is limited because an atypical sample of Mexican Americans living in the USA was studied. There is a huge difference between this 68.40% and the percentage of the individuals who had a university-level educational profile in the study of Schwaba et al. (2019): 19% of women and 15% of men, all of them Mexican Americans, with an $N=1\ 040$ participants. Even alphas obtained from *LOT-R* in this study, through four moments in a 7-year period, were: 0.51, 0.56, 0.59, and 0.62; it may be interpreted as these deficient alpha coefficients that could result from the sample with low schooling (the median of those individuals who finished or not the secondary school was 9 years, for both genders). These findings coincide with those of other studies (Shepperd et al., 2016) which indicate that in general, Likert-type scales show better psychometric properties in higher-schooling samples. Data from some recent studies (Nichols & Anthony, 2020) show that there is still a severe lag in the higher education of Latin Americans, since almost 70% of white students achieved university level after 6 years, compared with 51.50% of Latinos who achieved this level in that same period.

With respect to *POS*, data indicate that there is a lack of accurateness or construct validity, but it does measure something accurately, even if in doubt, it is about optimism, although it correlates positively with *LOT-R* and *BIOS-G*.

Concerning the second question, related to the predictive value of some sociodemographic variables, data obtained from *LOT-R* and *BIOS-G* do not entirely coincide. According to *LOT-R*, it does not have a predictive value about optimism, a regression model integrated by variables like age, perceived socioeconomic level, schooling, and seniority in their current job found an $R^2=0.086$, but *BIOS-G* reported an $R^2=0.310$, almost four times higher than the one found by *LOT-R*, under the same regression model. However, according to the regression model, age has a significant negative weight on optimism, both in *LOT-R* ($\beta=-0.380$, $p=0.035$), and *BIOS-G* ($\beta=-0.667$, $p=0.000$), meaning, the younger the sample participants, the higher the optimism. These results coincide with findings from You et al. (2009) in Hong Kong Chinese people, but in regard to Americans, it was the opposite (older people show higher optimism than young people). This may be explained according to some factors shared by Chinese and Mexican societies, for example, the fact to classify these groups more as collectivistic and North American society more as individualistic (Triandis, 2001). Moreover, the socioemotional selectivity theory (Carstensen et al., 1999) could help in understanding why these findings occurred. Socioemotional selectivity theory affirms that young people are more focused on acquiring information and knowledge, while older people are more interested on goals about the meaning of life and the value of emotions. The theory lies on the premise that time perception is behind these differences because younger people sense an almost unlimited temporary horizon; meanwhile, older people know they have less time that such a non-renewable source is restricted for them. The young think about and are motivated about their future; elders live in the here and now. However, another study with Chinese children and adolescents ($N=2\ 738$; $M=12.75$ years old; $SD=2.53$; age range=9–19) reports that the older they are, the higher optimism they have (Zou et al., 2016), although age range was very little. On the other hand, Isaacowitz (2005), using *LOT-R*, did not find differences in optimism across different ages, in 280 participants comprised of young, middle-aged, and older adults.

Another contrast between *LOT-R* and *BIOS-G* was regarding the predictive value of optimism of the time variable in one's current job: *LOT-R* did not have significance ($\beta=0.082$, $p=0.628$), however, *BIOS-G* did have significance ($\beta=0.309$, $p=0.04$), implying that a greater number of years in the current job report higher optimism. In this sense, it may be said that another advantage of *BIOS-G* over *LOT-R* is its capacity or sensitivity to detect the feasible predictive power of some variables, like current job seniority.

Limitations and Future Research

Naturally, the study has limitations. Among them, the authors can mention the use of self-report measures which must be solved by using other observations and registries, such as opinion from parents, siblings, or friends of participants regarding their level of optimism. In this sense, it would be convenient to include a social desirability measure to know how much it influences the participants' bias response. Secondly, test–retest reliability, both of *LOT-R* and *BIOS-G* scales, with Mexican

Americans sample, should be researched to compare them in temporary stability. A third limitation is the small sample size (136), which tends to invalidate generalizations, even on the same Mexican Americans cultural group, because of, as it was mentioned already, the high schooling of the sample. A fourth limitation deals with sample disproportion between women and men. There were only three men per seven women for every 10 participants. This imbalance affected the evaluation of factorial invariance per gender so as to know if both men and women were interpreting in the same way the semantic contents showed in the items of the three scales (Bowen & Masa, 2015). Factorial invariance allows to determine if there is conceptual equivalence to both genders equally, or if there are differences concerning this (Byrne, 2016). A fifth limitation is the lack of important information about the sample. For example, it does not report which percentage of participants were born in the USA and which ones were born in Mexico or other countries and how long they have lived in the USA, if immigrants. Even though the authors noted that most of the participants were informally advised they were born in the USA, it is insufficient. Although the high percentage of the sample having a university level (68.40%) logically makes it true that most of the participants were born in the USA and have a higher socioeconomic level because of schooling, the information concerning this matter is insufficient. Future research should consider replicating this study, but using participants with low-level schooling or educational background to assess *LOT-R* and *BIOS-G* validity and reliability.

Main Contribution of This Study

The literature reporting the use of the American scale *LOT-R* in Mexican Americans shows solid unfavorable evidence that optimism can be measured with reliability in this social group with this instrument. Therefore, it is relevant to evaluate in Mexican Americans if there are differences in validity and reliability by comparing the *LOT-R* with two other scales, one German and the other Mexican, which they also intend to measure optimism. In this sense, one of the main contributions of this comparative study which analyzes three scales used simultaneously to measure the construct in the same ethnic group, in which its results could favor, contradict, or allow the theoretical compatibility of their underlying conceptual assumptions. Although it could be considered provisionally, and only for Mexican Americans with a high schooling, the results in this study show that the American and Mexican scales are similar in terms of validity and reliability even though the theoretical approaches of them are different. This may be explained due to not only the high schooling of the samples but also the acculturation of their parents, and finally, because apparently, the majority were born in the American culture. Theoretically, apparently, the temporal dimension of the future is present in the *LOT-R* but not in the *BIOS-G*, and the temporal dimension of past and present is in *BIOS-G*, but not in *LOT-R*. Garcia Cadena et al. (2016) showed the factual possibility of to fuse *LOT-R* and *BIOS-G* in a third version valid and reliable. In short, they complement one with another.

Author Contribution All authors contributed to the study conception and design. Data was collected by Ana K. Gutierrez and Claudia B. Barillas. Also, they revised it critically for important intellectual content. Cirilo H. Garcia-Cadena analyzed the data and Oscar M. Lara Pinales used the Mplus software to analyze the data utilizing the extraction method named weighted least squares with means and variances (WLSMV) instead of maximum likelihood (ML). The first draft of the manuscript was written by Cirilo H. Garcia-Cadena and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Data Availability Data will be made available on reasonable request.

Declarations

Ethics Approval Approval was obtained from the ethics committee of Universidad Autónoma de Nuevo León. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

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

Competing Interests The authors declare no competing interests.

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