

Cultural and Linguistic Effects on Diagnostic Testing in Spanish-Speaking Latin America

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Background

According to recent epidemiological studies, the lifetime prevalence of clinical depression ranges from 10% to 15% worldwide (Lépine & Briley, 2011). However, Latin America and the Caribbean (LAC) is a focal point of both low lifetime prevalence and rapidly increasing rates of clinical depression (Errazuriz and Crisostomo, 2021). We also see wide variation in the lifetime prevalence of bipolar disorder (BD) with the worldwide percentage ranging from 0.5% to 5% (Clemente et. al., 2015). Following the same trend, LAC countries show lower lifetime prevalence for bipolar disorder as with clinical depression with Colombia and Mexico displaying a lifetime prevalence of 1.3% and 1.9%, respectively (Medina-Mora et. al., 2018; Castro-Alzate et. al. 2019).

Additionally, review of the literature has found that lack of funding and primary healthcare, presence of mental health stigma and cultural collectivism are 3 major issues for mental health care in LAC countries (Caldas de Almeida, 2013). Up to 70% of LAC countries have reformed their health care in recent years but these issues still persist (Caldas de Almeida, 2013). Lack of funding continues to be a significant issue for detecting and treating individuals with mental illness with only 2% of health budgets going towards mental healthcare in most LAC countries (Caldas de Almeida, 2013). In addition to a lack of care, individuals in LAC countries were highly likely to experience stigma around mental health issues and mental health treatment within the home, in the public and with primary care physicians (Mascayano et. al. 2016; Vistorte et. al. 2018). Finally, a majority of LAC countries are identified as collectivist countries. Collectivism is often positive for a community but may have negative effects on those with mental illness (Li et. al. 2021). Collective harmony, the idea of avoiding conflict or disruption to maintain peace for others, positively correlates with mental illness, specifically depression (Knyazev et. al. 2017).

For this reason, the need for resources in LAC countries may be greater than previously indicated as the true number of individuals suffering from mental illness may be higher than detected (Broomhall et. al., 2020). We aim to investigate these concepts by analyzing two diagnostic tests for differences in scoring and reliability with expectations to see lower scores and similar reliability for LAC individuals when compared to individuals from culturally Western countries.

Methods

Participants: The total number of participants for this study is $N = 16,902$ of which 7,255 individuals responded to the Patient Health Questionnaire (PHQ-9) and 9,620 responded to the Hypomania Checklist (HCL-32). Participants were then separated into a Latin American and Caribbean, Spanish-speaking group and a culturally Western, English-speaking group for each test based on geographical location as seen in Figure 1.

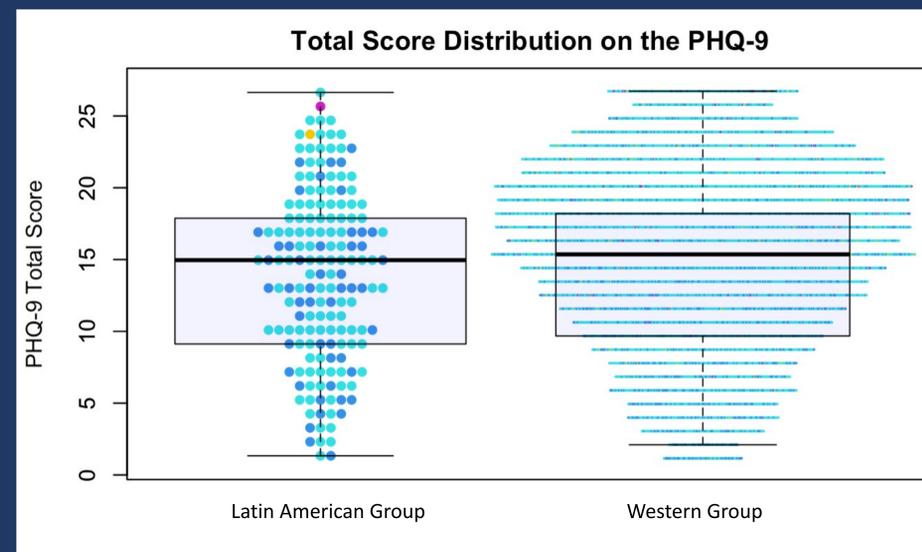
Measures: Both measures were administered on the Depression Bipolar Support Alliance (DBSA) website and were available to anyone with internet access. All items were scored according to survey guidelines for use in analysis.

Analyses: Statistical analyses were completed in R studio and Excel. Packages haven, psych, dbplyr, and tidyverse were used in R studio to find and compare descriptive statistics using independent samples T-tests and linear regression analyses, measure reliability (internal consistency) and examine corrected item-to-total correlation. Excel was used to compare reliability using Feldt's test of alphas' differences and create figures.

Results

As stated, 7,255 participants completed the PHQ-9 survey and 9,620 participants completed the HCL-32 survey. All participants self-identified as being between the ages of 18 and 90 with a mean age of 34.03 ± 13.76 and a mode of 19. The age distribution was significantly positively skewed as seen in Figure 2. The Latin American group showed significantly lower total scores ($M = 13.88$; $p = .006$) and lower internal consistency ($\alpha = 0.78$; $p = .056$) on the PHQ-9. The Latin American group also showed significantly lower scores ($M = 3.24$; $p = .023$) on the sunny subscale of the HCL-32 used to measure energetic/euphoric hypomanic symptoms. Males showed significantly lower total scores on the PHQ-9 than females in both the Latin American ($M = 12.33$; $p = .048$) and Western ($M = 13.80$; $p < .001$) groups. Finally, there was a significant negative correlation between total score and age on the HCL-32 in the Western sample ($R^2 = 0.03$; $F = 338.10$; $p < .000$)

Spanish-speaking Latin American and Caribbean individuals showed lower total scores and internal consistency on a well-known depression scale than individuals from culturally Western, English-speaking countries.



Discussion

Based on our results, we believe differences in scoring and reliability on the PHQ-9 may be related to cultural differences in LAC countries. It could be that the PHQ-9 does account for cultural differences such as intense stigma and collectivism. Additionally, respondents who speak English as a second language may interpret item meanings differently and thus scoring may be impacted.

While there were no differences in total scores and reliability on the HCL-32, differences in scores on the sunny subscale may indicate a difference in hypomanic presentation in LAC countries. This could be attributed to the idea of collective harmony that pushes individuals to suppress emotion in an effort to maintain peace. However, this contradicts ideas of machismo in LAC culture so this will likely require further investigation.

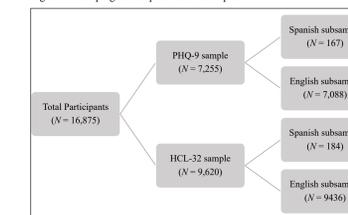
Finally, differences in total score between males and females on the PHQ-9 may indicate lower reliability overall due to gender differences in both the LAC and Western group. Where age is concerned, the significant negative correlation between total HCL-32 score and age may indicate the need for greater investigation of age differences in hypomania.

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Figures

Figure 1. Grouping of Samples and Subsamples

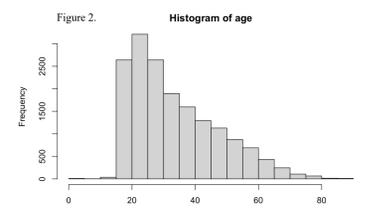


Means, Standard Deviations and Independent Samples T-tests for Measures and Subscales

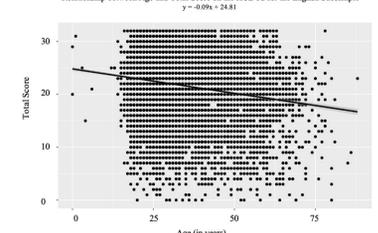
Subsample	Spanish-speaking		English-speaking		T	df	p
	M	SD	M	SD			
PHQ-9	13.88	6.20	15.24	6.65	-2.80	175.12	0.006
HCL	22.47	6.21	21.71	6.37	-1.65	190.60	0.101
Sunny	3.24	3.66	3.87	3.96	-2.29	191.46	0.023
Dark	3.59	2.44	3.71	2.35	-0.65	189.7	0.514

Means, Standard Deviations and Independent Samples T-tests for Gender

Gender	Female		Male		T	df	p
	M	SD	M	SD			
PHQ-9							
Spanish-speaking	14.34	6.17	12.33	5.79	-2.01	95.94	0.048
English-speaking	15.75	6.44	13.80	7.01	-10.74	3322.60	<0.000
HCL							
Spanish-speaking	22.71	6.53	21.87	5.35	-0.86	97.79	0.389
English-speaking	21.73	6.34	21.51	6.61	-1.40	3314.50	0.162



Relationship between Age and Total Score on the HCL-32 for the English Subsample



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