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The Foreign Language Anxiety in a Medical Office Scale: Developing and Validating a Measurement Tool for Spanish-Speaking Individuals

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The Foreign Language Anxiety in a Medical Office Scale: Developing and Validating a Measurement Tool for Spanish-Speaking Individuals

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Communication research has been hindered by a lack of validated measures for Latino populations. To develop and validate a foreign language anxiety in a medical office scale (the Foreign Language Anxiety in a Medical Office Scale [FLAMOS]), the authors conducted a survey of low income, primarily Spanish-speaking Latinos (N = 100). The scale factored into a unidimensional construct and showed high reliability (α = .92). The Foreign Language Anxiety in a Medical Office Scale also demonstrated convergent and divergent validity compared with other communication anxiety scales (Personal Report of Communication Apprehension–24, Communication Anxiety Inventory, and Recipient Apprehension Test), and predictive validity for acculturation measures (the Short Acculturation Scale for Hispanics). The Foreign Language Anxiety in a Medical Office Scale provides a validated measure for researchers and may help to explain Latino health care communication barriers.

The U.S. Latino population is an underserved community with lower access to quality health care (American Medical Association, 2004). The Census Bureau (2006) estimated that Latinos will comprise as much as 20% of the U.S. population by 2035. Given this population shift, Healthy People 2010 noted that cultural and language barriers within a health context need to be addressed to lessen health care disparities (U.S. Department of Health and Human Services, 2001).

Language issues are a primary concern of health care providers when treating non-English speaking populations in the United States (Flores, 2005). Language barriers can create a variety of problems in a medical context, particularly when the physician and patient do not share a common language (Clark, Sleath, & Rubin, 2004). Communicating across languages can compromise patient–physician communication and the quality of information that is exchanged (Flores, 2005).

Patient fears about communicating can also influence health communication processes and the patient's willingness to seek or provide health information (Booth-Butterfield, Chory, & Beynon, 1997). Individuals may be anxious about communicating in another language and thus be less willing to provide information or ask questions, less able to adequately describe themselves, and less able to accurately interpret or translate information (Ganschow & Sparks, 1996; MacIntrye &

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Gardner, 1994). At present, the effects of high foreign language communication anxiety have only been examined in students learning a foreign language (e.g., Horwitz & Young, 1991). If this anxiety transfers to individuals in language discordant medical interactions, anxiety may inhibit patients' ability to communicate in these situations, exacerbating health care discrepancies.

One approach to explicating a construct (e.g., foreign language anxiety in medical office settings) and studying its potential causes, effects, and outcomes is to create a measurement tool to operationalize the construct (Chaffee, 1991). Several issues have hindered communication research, one of which is a lack of validated measures (Chaffee, 1991; Rubin, Palmgreen, & Sypher, 2004). This is particularly problematic to the advancement and empirical testing of communication theory, as scientific study tends to mature in direct relation to the sophistication of available measurement instruments (DeVellis, 2003; Schmidt & Hunter, 1999). The present study seeks to develop and validate the Foreign Language Anxiety in Medical Office Scale (FLAMOS). Three research topic areas informed the development of the scale: language barriers for Latinos in receiving quality health care (e.g., Flores, 2005), communication anxiety and its effects (e.g., Booth-Butterfield et al., 1997), and foreign language communication anxiety in students learning a different language (e.g., MacIntrye & Gardner, 1989). FLAMOS presents an intersection of these research areas by providing a tool to identify and improve outcomes of individuals with high anxiety about language discordant communication in medical settings.

Health Care Language Barriers for Latinos in the United States

Half of Latinos living in the United States who speak Spanish at home report having problems communicating in English (U.S. Census Bureau, 2008). Individuals with low English proficiency (LEP) can have problems negotiating the primarily English-speaking health care system in the United States (Clark et al., 2004). LEP populations have difficulty finding and interpreting health information (Vanderpool, Kornfeld, Rutten, & Squiers, 2009), are less likely to participate in preventive care, have poorer patient satisfaction, and less knowledge about available health services (Dilworth, Mott, & Young, 2009).

Research has demonstrated that populations with limited language abilities are particularly at risk for lower quality health care (Dilworth et al., 2009; Flores, Abreu, & Tomany-Korman, 2005). However, less attention has focused on understanding how these limited skill levels interact with, contribute to, or mediate the influence of other barriers that individuals might encounter (e.g., communication anxieties). Specifically, Flores and colleagues identified that parents who do not speak English well were more at risk for poorer parent and child health outcomes. Inquiry can focus on exploring which individuals in a specific skill level are most vulnerable, and why individuals with similar LEP may have differing levels of coping abilities.

Although LEP individuals legally have equal rights for quality health care as English-proficient populations (Chen, Youdelman, & Brooks, 2007), interpretation services are not used as frequently as they should be by many providers (Bischoff & Hudelson, 2010; Diamond, Schenker, Curry, Bradley, & Fernandez, 2009; Flores et al., 2008). Health care providers may not have access to interpretation services, particularly in rural areas, (Flores et al., 2008; Kuo, O'Connor, Flores, & Minkovitz, 2007), or may not be aware of their legal obligation to LEP individuals (Chen et al.,

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2007). Moreover, health care providers may choose to get by through the use of bilingual family members or the provider's own Spanish abilities to save time and reduce costs (Diamond et al., 2009). Thus, individuals with limited English skills may be forced to interact with health care providers through a combination of their own English abilities, the health care provider's Spanish abilities, and/or a family member's English and Spanish abilities.

Scholars have suggested that a feasible solution to the health care discrepancy is to refer LEP patients to English as a second language (ESL) educational opportunities (Flores et al., 2005). However, communication barriers that contribute to individuals' LEP may also hinder their willingness or ability to master English. One particularly salient barrier for ESL populations may be the individuals' anxiety about communicating in another language. They may feel embarrassed about making mistakes, incompetent in their language abilities, or anxious when they are not completely sure about what another person is saying (Horwitz & Young, 1991). The concept of being apprehensive about communicating in one's non-native language, or foreign language communication anxiety (FLCA), has been primarily studied in students learning a foreign language in school or in exchange students visiting a country with a different dominant language (e.g., Horwitz & Young). FLCA is distinct from an individual's proficiency with a foreign language (MacIntyre, Noels, & Clément, 1997) and from communication anxiety when communicating in one's native language (MacIntyre & Gardner, 1989).

In a medical context, general communication apprehension likely influences the quality of patient–provider communication (Booth-Butterfield et al., 1997). McCroskey (1977) identified *communication apprehension* (also known as communication anxiety; see Booth-Butterfield & Gould, 1986) as the "level of fear or anxiety associated with either real or anticipated communication with another person or persons" (p. 78). Communication apprehension in a medical setting is a common experience among patients (Bowden & Burstein, 1979), and can influence how patients and physicians interact and the patient's willingness to seek information (Booth-Butterfield et al., 1997). Communication anxious individuals often withdraw verbal communication (McCroskey, 1976) and attempt to shorten encounters (Lazarus & Averill, 1972).

MacIntyre and Gardner (1989, 1994) posited that communication apprehension in a foreign language interacts with general trait-based communication apprehension and language performance. The more apprehensive a student feels about communicating in the language, the worse they will perform in using the language—causing greater anxiety in foreign language communication and in general communication. Numerous studies have shown that high FLCA can lead to negative outcomes for students. Students with higher FLCA translated less accurately and comprehended less (Ganschow & Sparks, 1996; MacIntrye & Gardner, 1994). They also had lower quality language performance (MacIntrye & Gardner, 1989), increased difficulty with vocabulary and describing themselves (MacIntrye & Gardner, 1994), and lower final course grades than students with moderate or low anxiety (Ganschow & Sparks, 1996). However, research on FLCA has only been conducted on students in classrooms and has not explored other contexts with non-student participants.

The outcomes influenced by FLCA in a classroom and communication apprehension in a medical setting could have far-reaching implications if they are replicated in patients seeking medical care offered in their secondary language (e.g., monolingual or primarily Spanish-speaking Latinos living in the United States).

First, if patients are high in FLCA and less able to accurately interpret, translate, and comprehend medical information, they will be more likely to have problems pursuing preventive health practices, receiving lower quality health care, and understanding and adhering to medical treatment. Furthermore, patients high in FLCA may be less able to give quality self-descriptions of health problems, leading to misdiagnoses, mistreatment, or a lack of diagnosis. Second, general communication apprehension negatively influences "levels of question-asking, understanding, and length of contacting," as well as information seeking and positive descriptions of patient–physician interactions (Booth-Butterfield et al., 1997, p. 246). FLCA may also adversely influence patient–physician communication. Third, individuals that report frustrations or difficulty finding health information are less likely to be in good health (Hoffman-Goetz, Meissner, & Thomson, 2009). Thus, the increase of limited information seeking as a result of FLCA could serve to widen already-existing disparities. Last, physicians are less likely to give as much medical information to patients high in communication anxiety compared to patients low in communication anxiety (Graugaard, Eide, & Finset, 2003); therefore, patients with high FLCA may experience poorer quality health care.

The effects of FLCA in a medical setting for non–English-speaking individuals could be far reaching, yet no research has addressed this phenomenon. The theoretical basis of FLCA indicates that apprehension about communicating in a language is not synonymous with proficiency in that language (MacIntyre et al., 1997); therefore English proficiency measures may not detect FLCA. For example, an individual may feel anxiety about speaking the language even when their skill is adequate for the task. Furthermore, the theoretical claims and empirical testing of FLCA in the classroom indicates that FLCA is unique from general communication apprehension in a native language (MacIntyre & Gardner, 1989). One way to explore FLCA in a medical setting is to describe and explicate the construct as a unique contributor to health disparities.

The description and explication of FLCA can be approached in a variety of paradigmatic and methodological ways. Qualitative approaches, such as ethnographies, interviews, and focus groups, can provide important insight to identifying and understanding a construct; for example, Abbe, Simon, Angiolillo, Ruccione, and Kodish (2006) found that foreign language anxiety is a salient concern for parents discussing their children's health with a doctor. In addition, quantitative measures, such as questionnaires, can provide tools for social scientific prediction (DeVellis, 2003). The goal of the present study was to identify a measure that can be used to advance researchers' abilities to explore the interaction of FLCA with previously identified barriers for this population (e.g., LEP). Thus, the present study focused on the development of a scale that can be used to measure FLCA in a medical setting.

Self-report measures are one way to capture communication anxiety (Wheeless, 1975). Since this anxiety is a type of fear created by the way that individuals cognitively process situations, the individuals themselves are reliable sources to report cognitive processes produced by psychological and physiological anxiety. Although self-report scales have been developed to measure FLCA, these scales are specific to academic settings (e.g., MacIntrye & Gardner, 1989). Items from these scales reflect context-specific anxieties that are not appropriate for non-student populations (e.g., "I tremble when I know that I'm going to be called on in language class"; Horwitz, Horwitz, & Cope, 1986, p. 129). FLCA may manifest itself differently in a medical setting than in other contexts, such as in classroom-based interactions.

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To create a measurement tool (e.g., a scale), attention must be given to psychometric properties (Crano & Brewer, 2002; DeVellis, 2003). A psychometrically sound measure is reliable ("the proportion of variance attributable to the true score of the latent variable"; DeVellis, 2003, p. 27) and valid ("whether the variable is the underlying cause of item covariation"; DeVellis, 2003, p. 49). The proposed scale, the FLAMOS, is hypothesized to be internal reliable, and to demonstrate convergent, divergent, and predictive validity (see DeVellis, 2003). The proposed scale is predicted to measure a unidimensional construct that is related to, but unique from, measures of general communication apprehension (Personal Report of Communication Apprehension [PRCA-24], McCroskey, Beatty et al., 1985; Communication Anxiety Index, Booth-Butterfield & Gould, 1986; Receiver Apprehension Test, Wheeless, 1975). The measure should also account for participant reported acculturation related to language use (e.g., English vs. Spanish) to establish the predictive validity of the scale. As FLAMOS should address communication behaviors specific only to a medical setting, the scale is not expected to predict acculturation outside of a medical context (e.g., media or ethic social relations acculturation).

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Methods

Participants

We recruited low-income, Spanish-speaking adults ($N = 100$) for this study. Participants were predominately female ($n = 83$) and ranged from 18 to 71 years of age ($M = 34.85$, $SD = 11.48$). Participants mainly reported Mexico as their country of origin ($n = 89$) and were native Spanish speakers ($n = 91$). Forty-two participants did not speak English, 10 spoke "some" or "a little," and 25 reported that they had spoken English for 3 years or more ($M = 13.28$, $SD = 9.75$). Nineteen participants reported being U.S. citizens, seven naturalized citizens, six legal immigrants, 25 permanent residents, 25 undocumented immigrants, and 18 did not report their citizenship status. The completed education level of participants ranged from no formal education ($n = 2$), between Grades 1 and 6 ($n = 35$), Grades 7 and 8 ($n = 10$), Grades 9 and 11 ($n = 20$), and a high school graduate or higher ($n = 30$).

Procedure

Participants were recruited by two bilingual employees of a university extension program from Lake County, Indiana and were compensated $25 in cash for participating. Low-literacy participants were given the option of having the consent form and the survey read to them. The study's protocol was approved by a university institutional review board.

Scale Creation

Horwitz and colleagues (1986) created and validated the Foreign Language Classroom Anxiety Scale, which has been used extensively in FLCA classroom research. Items were adopted from that measure and modified to fit a medical setting. FLAMOS is intended for use in Latino populations who face language barriers and health care difficulties (i.e., populations that have may have low health literacy; Hoffman-Goetz et al., 2009). As these individuals might be overwhelmed or

discouraged by lengthy questionnaires, only 12 of the original 33 items were modified for the present study.

FLCA scale items address five components of foreign language anxiety in the classroom: (a) degree of anxiety, (b) extent of understanding, (c) fear of making mistakes, (d) feeling of competence, and (e) divergence from general communication apprehension. The current scale modifies items from each of the five components of FLCA. An example item measuring the degree of anxiety is "I get nervous and confused when I speak in the doctor's office." The item "I get nervous when I do not understand every word the doctor says" measured the extent of understanding, and the item "I get nervous when the doctor asks me questions that I have not prepared in advance" measured the fear of making mistakes. Items also measured feelings of competence or of being judged (e.g., "I fear that the doctors or nurses will laugh at me when I speak the foreign language") and divergence from general communication apprehension (e.g., "I am overwhelmed by the number of rules you have to learn to speak a foreign language"). Following the response items used by Horwitz et al. (1986) and as suggested by Baxter and Babbie (2003), items were assessed on a 5-point Likert-type scale ranging from 1 (*strong disagree*) to 5 (*strongly agree*).

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Measures

Only one of the measures used in the present study was originally available in Spanish (SASH; Marín, Sabogal, Marín, Otero-Sabogal, & Perez-Stable, 1987). All measures that were previously available only in English were translated into Spanish by a professional translation service that was certified in medical and legal Spanish translation. Measures were then back-translated into English to ensure accurate translation. The translated versions of all measures are included as appendices.

PRCA-24–Dyadic Subscale

McCroskey, Beatty, and colleagues (1985) developed the PRCA-24 as a trait-based measure to measure communication apprehension in the four general communication situations: public speaking, group interactions, meetings, and dyadic interactions. Given that FLAMOS specifically refers to interpersonal interactions, the six-item interpersonal subscale was used to measure communication apprehension between dyads (see Appendix A). Participants answered each question on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Inconsistent with previous research, the scale did not exhibit adequate internal reliability (Cronbach's $\alpha = .55$).

A principal components factoring with varimax rotation revealed that the three positively worded items and the three negatively worded items loaded on two separate factors. It is possible that when translated into Spanish, the negatively worded items did not represent the same construct to participants as the positively worded items. Thus, the three positively worded items were averaged to create a variable, which is henceforth labeled *communication apprehension*. The three items did not show good internal reliability (Cronbach's $\alpha = .67$), but were retained to represent the communication apprehension construct.

Communication Anxiety–Form Trait

The Communication Anxiety Inventory–Form Trait (see Appendix B) was created by Booth-Butterfield and Gould (1986) as an alternative to the PRCA-24 to measure

general trait-based communication anxiety. Participants respond to 21 items on a 4-point Likert-type scale ranging from 1 (*almost never*) to 4 (*almost always*). The scale demonstrated good internal reliability (Cronbach's $\alpha = .88$) and is henceforth referred to as *communication anxiety*.

Receiver Apprehension Test
Wheeless (1975) created the Receiver Apprehension Test to isolate communication anxiety when consuming information versus initiating communication. The Receiver Apprehension Test is a 20-item measure (see Appendix C). Participants answered each question on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale demonstrated excellent internal reliability (Cronbach's $\alpha = .90$).

Comfort Speaking/Reading English and Spanish
Four items created for this study assessed participant comfort in speaking and reading English and Spanish (see Appendix D). All four items were measured on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The two items measuring comfort reading and speaking Spanish were averaged and demonstrated excellent internal reliability (Cronbach's $\alpha = .97$). The two items assessing comfort reading and speaking English were averaged and demonstrated good internal reliability (Cronbach's $\alpha = .83$).

Short Acculturation Scale for Hispanics
Marín et al. (1987) created the Short Acculturation Scale for Hispanics (SASH) to measure three dimensions of acculturation: language use, media, and ethnic social relations. Five items measure language use and three items measure media on a 5-point Likert-type scale ranging from 1 (*only Spanish*) to 5 (*only English*). Four items measure the ethnic social relations dimension on a 5-point Likert-type scale ranging from 1 (*only Latinos*) to 5 (*only Americans*). Language use and media demonstrated good internal reliability (Cronbach's $\alpha = .89$ and .81, respectively). Ethnic social relations demonstrated adequate internal reliability (Cronbach's $\alpha = .72$).

FLAMOS
The scale created for this study (see Appendix E) consisted of eight items assessed on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) and demonstrated high internal reliability (Cronbach's $\alpha = .92$). These eight items were written at a sixth-grade reading level.

Results

Preliminary analyses were run to ensure that the data met the assumptions of normality. The Comfort-Spanish scale was extremely leptokurtic (kurtosis = 16.61) and negatively skewed (skewness = −4.11), and the SASH language component was slightly leptokurtic (kurtosis = 2.36) and positively skewed (skewness = 1.73). However, given that this sample comprises primarily Spanish-speaking individuals, these results are expected. The variables were not transformed as they were considered representative of the sample. All other variables were considered normal (see Table 1 for descriptive statistics).

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Table 1. Descriptive statistics

	Minimum	Maximum	*M*	S_EM	*SD*	Skewness	Kurtosis
FLAMOS	1.00	5.00	3.12	.12	1.23	−.05	−1.142
Recipient apprehension	1.00	3.80	2.42	.07	0.72	−.14	−.75
Communication apprehension	1.00	5.00	3.04	.10	0.95	−.30	−.15
Communication anxiety—trait	1.05	4.00	2.29	.05	0.54	.07	1.23
Comfort speaking/ reading Spanish	1.00	5.00	4.76	.08	0.81	−4.11	16.61
Comfort speaking/ reading English	1.00	5.00	3.26	.15	1.41	−.37	−1.07
SASH language abilities	1.00	4.00	1.47	.07	0.69	1.73	2.36
SASH media use	1.00	4.33	1.89	.09	0.92	.76	−.51
SASH ethnic social relations	1.00	3.00	1.84	.06	0.56	.36	−.64

Note. FLAMOS = Foreign Language Anxiety in a Medical Office Scale. SASH = Short Acculturation Scale for Hispanics.

Factor Analysis

The 12 FLAMOS items were subjected to a principal components analysis with varimax rotation to explore the dimensionality of the scale (see Table 2). The first exploratory analysis revealed three factors with eigenvalues above 1, explaining 50%, 11%, and 9% of the variance. An examination of the scree plot indicated that the second and third factors may be false factors. The majority of the items loaded strongly on the first factor. Two items strongly loaded on the second factor and three other items crossloaded between the first and second factors. The third factor was composed solely of the two items that were negatively worded. Because these two

Table 2. Summary of exploratory factor analyses

	Factor		
	1	2	3
Item 1: I start to panic when I have to speak without preparation in the doctor's office.[2]		*.779*	
Item 2: When speaking to a doctor in English, I can get so nervous I forget things I know.	.692		
Item 3: I am not nervous speaking English to native English speaking doctors.[1]			*.785*
Item 4: I worry about the doctor's appointment even if I'm well prepared for it.[2]		*.830*	
Item 5: I feel confident when I speak in English at the doctor's office.[1]			*.818*
Item 6: I can feel my heart pounding when I have to talk to the doctor in English.	.688		
Item 7: I feel very self-conscious when I speak English in front of other patients (e.g., in the waiting room).	.803		
Item 8: I get nervous and confused when I speak in the doctor's office.	.773		
Item 9: I get nervous when I do not understand every word the doctor says.	.881		
Item 10: I am overwhelmed by the number of rules you have to learn to speak a foreign language.	.852		
Item 11: I fear that the doctors or nurses will laugh at me when I speak the foreign language.	.818		
Item 12: I get nervous when the doctor asks me questions that I have not prepared in advance.	.886		
Eigenvalue	5.15	1.38	1.10

Note. Factor loadings reported from the rotated components matrix.

[1]Loadings reported from 12-item exploratory factor analysis, after which the items were dropped.

[2]Loadings reported from 10-item exploratory factor analysis, after which the items were dropped.

All other loadings reported from final 8-item exploratory factor analysis. Italicized items were dropped from the final scale.

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items did not seem to represent a logical separate factor, they were dropped from further analyses. As suggested by Brown (2006), the exploratory factor analysis was then rerun in order to ensure replication of the factors. The second exploratory factor analysis revealed two factors with eigenvalues above 1; explaining 58% and 11% of the variance. Again, the scree plot indicated that only one factor may be present. All items loaded above .45 on the first factor (item loadings greater than or equal to .3 are typically considered salient, although criteria vary; Brown, 2006), with the exception of the two items that loaded strongly on the second. These two items may represent an underlying concept that is related to but distinct from FLAMOS, or this second factor may represent a second dimension to FLAMOS. However, because these two items did not seem to form a strong second dimension logically or statistically, the two items were dropped from further analyses. A third exploratory factor analysis was run, and resulted in a unidimensional construct. The single factor displayed an eigenvalue above 1 and explained 64% of the variance. In addition, all eight remaining items loaded above .65 on the first factor. The eight retained items showed excellent internal reliability (Cronbach's $\alpha = .92$).

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Convergent and Divergent Validity

Scales should have construct validity, in that the scale should correlate with other measures of related dimensions (e.g., communication anxiety), but should also measure aspects of a construct beyond those assessed by the related measures (DeVellis, 2003; see Table 3 for correlations). To assess the convergent validity of FLAMOS, we examined correlations between FLAMOS and the communication anxiety scales. FLAMOS was significantly correlated with communication apprehension ($r = .40$, $p < .001$), communication anxiety ($r = .36$, $p < .001$), and receiver apprehension ($r = .30$, $p = .002$). In addition, FLAMOS was correlated with self-reports of participants' comfort speaking and reading in English and Spanish. FLAMOS and comfort speaking/reading English were strongly negatively correlated ($r = -.46$, $p < .001$), while the negative correlation between FLAMOS and comfort speaking/reading Spanish only approached significance ($r = -.18$, $p = .07$).

Predictive Validity

To determine the predictive validity of FLAMOS, three hierarchical regressions were conducted to examine each dimension of Marín and colleagues' (1987) acculturation scale. In all three regressions, demographics (age, gender, education, citizenship) were entered in Step 1, comfort speaking/reading English and Spanish in Step 2, communication anxiety measures (communication apprehension, communication anxiety, and receiver apprehension) in Step 3, and FLAMOS in Step 4 (see results in Table 4). The first regression assessed the predictive value of the previously mentioned variables on the language use factor of SASH. After controlling for all other variables, FLAMOS was a statistically significant indicator of the level of acculturation in terms of language preference ($\beta = -.29$, $p = .02$) and thus demonstrated predictive validity. Consistent with the logic of the construct, FLAMOS was not a statistically significant predictor of the media dimension ($\beta = -.20$, $p = .14$) nor of the ethnic social relations dimension ($\beta = .06$, $p = .66$) of SASH. These findings demonstrate that FLCA in a medical setting is distinct from FLCA in other settings and

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Table 3. Correlations

	1	2	3	4	5	6	7	8	9
1. FLAMOS	—								
2. Recipient apprehension	.30**	—							
3. Communication apprehension	.40**	.61**	—						
4. Communication anxiety—trait	.36**	.56**	.59**	—					
5. Comfort speaking/reading Spanish	−.18	.14	.09	.03	—				
6. Comfort speaking/reading English	−.46**	−.30**	−.34**	−.31**	−.10	—			
7. SASH language abilities	−.47**	−.30**	−.29**	−.24*	.07	.59**	—		
8. SASH media use	−.39**	−.13	−.20	−.21*	.04	.52**	.68**	—	
9. SASH ethnic social relations	−.35**	−.24*	−.29**	−.42**	−.03	.39**	.44**	.51**	—

Note. FLAMOS = Foreign Language Anxiety in a Medical Office Scale. SASH = Short Acculturation Scale for Hispanics.
*$p < .05$. **$p < .01$.

Table 4. Summary of hierarchical regression (beta) results for SASH

Independent variables	Dependent variables		
	Language abilities	Media use	Ethnic social relations
Step 1			
Age	−.11	−.22*	.09
Gender	.01	−.02	.05
Education	.12	.40	.38**
Citizenship	−.24*	−.04	−.06
Step 2			
Comfort speaking/reading Spanish	.00	−.09	−.05
Comfort speaking/reading English	.31**	.36**	.35**
Step 3			
Recipient apprehension	−.20	.10	.02
Communication apprehension	−.02	.06	.13
Communication anxiety	.17	.08	−.24
Step 4			
FLAMOS	−.29*	−.20	.06
R^2	.57	.49	.45
ΔR^2	.04	.02	.00
ΔF	5.98*	2.26	0.19

Note. All statistics reported from the fourth step. βs = betas (standardized regression weights) at entry; R^2 = amount of variance explained by all four blocks. SASH = Short Acculturation Scale for Hispanics. FLAMOS = Foreign Language Anxiety in a Medical Office Scale.

*$p < .05$. **$p < .01$.

support that situation-specific scales compared with more general measures may be more appropriate for FLCA operationalization (MacIntyre & Gardner, 1991).

Discussion

Valid and reliable measurement tools are essential to conducting grounded quantitative research (Chaffee, 1991; Jensen, Bernat, Davis, & Yale, 2010) and are especially needed to facilitate many areas of communication studies (Rubin et al., 2004). The present study aimed to develop and validate a measure that addresses communication anxiety produced by having to speak in a foreign language in a medical setting. Although quantitative measures are only one approach to construct explication, FLAMOS starts to address an important barrier for LEP populations. FLAMOS can help to bridge a gap between previous research on Latino language barriers, communication apprehension, and FLCA in an educational setting. The purpose of FLAMOS is to help advance patient-based FLCA research and aid in the improvement of patient outcomes. Results of the present study provide evidence that FLAMOS is a valid and reliable measurement tool for measuring foreign language anxiety in medical settings. The final eight-item scale (see Appendix E) demonstrates predictive, convergent, and divergent validity and has high internal reliability as a unidimensional construct.

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While concern about health care for minority populations is growing (U.S. Department of Health and Human Services, 2001), researchers are still far from fully understanding and addressing the barriers to health care encountered by limited English-speaking populations. Although LEP individuals have been identified as particularly at risk, research is still needed to explain why LEP populations may be hesitant to learn English or why some LEP individuals may fare better than others. The literature previously lacked a health care-based Spanish-language anxiety scale to examine the contribution, interaction, and mediation of FLCA in a medical setting with other salient barriers.

Although McCroskey, Beatty, and colleagues' (1985) PRCA-24 has been used to measure communication apprehension in another language, the findings of this study indicate that their measure may not be reliable in Spanish and may not be appropriate for medical contexts. The acculturation findings in the present study indicate that anxiety that manifests itself in medical contexts may not have similar manifestations in media consumption or social settings. Thus, a general measure of FLCA may not be as appropriate for examining situation-specific FLCA. In addition, the dyadic subscale of the PRCA-24 that was used in this study did not prove to be a reliable instrument in Spanish. McCroskey, Richmond, and Fayer (1985) have examined the PRCA-24 in Puerto Rican populations (McCroskey, Fayer et al., 1985; Richmond, McCroskey, McCroskey, & Fayer, 2008); however, they administered the scale in English and instructed participants to think about when they were either speaking in English or Spanish (J. McCroskey, personal communication, February 7, 2010). Administering a scale in English that intends to measure anxiety communicating in English is clearly problematic. The unreliability of the Spanish version of the dyadic subscale in this study indicates potential problems with the scale reliability in Spanish. The present study only examined the dyadic subscale of the PRCA-24, so it is possible that the rest of the PRCA-24 is reliable when translated into Spanish. However, the validity of the PRCA-24 in Spanish should be tested before further use in Spanish-speaking populations. Overall, FLAMOS appears to be an appropriate measure for Spanish-speaking populations in a medical setting.

The present study specifically focuses on Latino populations, but the scale is developed with the intent that it could be used for any populations receiving medical care in a language other than their primary language. The scale could be validated for other populations that do not speak English as a first language or by replacing English with a different language. The effects of FLCA are not likely to be unique to one population, but are prone to impact any population seeking health care in a non-primary language.

Examining the effects of FLCA in a health care setting could help to identify certain characteristics that exacerbate language barriers. The link between English-proficiency and FLAMOS could be explored; potentially individuals high in LEP and FLAMOS may be the most at risk for adverse health outcomes. FLAMOS could also be used to help predict physician–patient communication difficulties, better understand information seeking in LEP populations, and explore health behavior outcomes, specifically those linked to communication anxiety issues such as diet-related behaviors.

FLAMOS may help to explain interpretation difficulties and could potentially serve to identify patients that would particularly benefit from interpretation services. If patients high in FLCA are less likely to receive quality information from a medical

interaction, these populations could be targeted as particularly in need of professional interpreters. Medical providers could decrease the costs and detrimental health effects caused by a lack of professional interpretation services by identifying populations that benefit greatly from these services compared with populations that only marginally benefit (Hsieh, 2006).

Limitations

The present study is not without limitations. The sample size used to validate the presented measure was relatively small. Although FLAMOS was written at a sixth-grade reading level, participants with lower literacy may have struggled with the items. The survey administrators offered their assistance for reading and comprehension issues, but participants may not have asked for help. The majority of participants were of Mexican descent, indicating that caution should be used when generalizing the validity of the scale to other Spanish-speaking subpopulations in the United States. The frequency and quantity of participants' interaction experiences with English-speaking health care providers was also not examined. Some participants might only interact with English-speaking medical personal in situations where a local Spanish-speaking health care provider is inadequate (e.g., medical emergencies) and others may only receive health care from English-speaking staff. The influence of participants' experiences of different medical settings on their responses to the scale was not explored. In addition, the extent to which participants were also anxious because of high-stress situations was not controlled.

Conclusion

FLAMOS provides a psychometrically sound measure that may be used to further explore and overcome barriers for LEP populations. At present, no validated quantitative tools exist in literature pertaining to communication anxiety in a foreign language. FLAMOS may help to explain communication barriers for Latinos that health literacy measures and communication anxiety measures do not address. FLAMOS may be used in future research to assist in filling research gaps pertaining to Latino health barriers.

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Appendix A. Receiver Apprehension Test

Receiver Apprehension Test—English Version

Response set:
5–Strongly agree
4–Agree
3–Neither agree nor disagree
2–Disagree
1–Strongly disagree

1. I feel comfortable when listening to others on the phone.[R]
2. It is often difficult for me to concentrate on what others are saying.
3. When listening to members of the opposite sex I find it easy to concentrate on what is being said.[R]
4. I have no fear of being a listener as a member of an audience.[R]

5. I feel relaxed when listening to new ideas.[R]
6. I would rather not have to listen to other people at all.
7. I am generally overexcited and rattled when others are speaking to me.
8. I often feel uncomfortable when listening to others.
9. My thoughts become confused and jumbled when reading important information.
10. I often have difficulty concentrating on what others are saying.
11. Receiving new information makes me feel restless.
12. Watching television makes me nervous.
13. When on a date I find myself tense and self-conscious when listening to my date.
14. I enjoy being a good listener.[R]
15. I generally find it easy to concentrate on what is being said.[R]
16. I seek out the opportunity to listen to new ideas.[R]
17. I have difficulty concentrating on instructions others give me.
18. It is hard to listen or concentrate on what other people are saying unless I know them well.
19. I feel tense when listening as a member of a social gathering.
20. Television programs that attempt to change my mind about something make me nervous.

Receiver Apprehension Test—Spanish Version

Response set:
5–Estoy muy de acuerdo
4–Estoy de acuerdo
3–No estoy de acuerdo ni en desacuerdo
2–Estoy en desacuerdo
1–Estoy muy en desacuerdo

1. Me siento cómodo al escuchar a otras personas cuando hablo por teléfono.[R]
2. Es difícil concentrarme en lo que los demás dicen cuando me hablan.
3. Cuando escucho a las personas del sexo opuesto, me puedo concentrar fácilmente en lo que dicen.[R]
4. No siento ningún temor de asistir a un evento, como miembro de la audiencia.[R]
5. Me siento relajado al escuchar ideas nuevas.[R]
6. Preferiría no tener que escuchar a otras personas, en absoluto.
7. En general, me siento demasiado alterado y nervioso cuando otras personas me hablan.
8. Con frecuencia, me siento incómodo al escuchar a otras personas hablar.
9. Mis pensamientos se tornan confusos y desordenados cuando leo información importante.
10. Con frecuencia, tengo dificultad para concentrarme en lo que las demás personas dicen al hablar.
11. Recibir información nueva me hace sentir intranquilo.
12. Ver televisión me hace sentir nervioso.
13. Cuando salgo con otra persona, me siento tenso y nervioso al escuchar a la persona con quien estoy.
14. Me agrada ser una persona capaz de escuchar a los demás con atención.[R]
15. En general, no tengo dificultad para concentrarme en lo que se está diciendo.[R]

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16. Busco oportunidades de escuchar ideas nuevas.[R]
17. Es difícil concentrarme en las instrucciones que me dan otras personas.
18. Es difícil escuchar o concentrarme en lo que otras personas dicen, a menos que las conozca bien.
19. Me siento tenso al escuchar a otras personas cuando participo en una reunión social.
20. Los programas de televisión que intentan hacerme cambiar de opinión acerca de algo, me ponen nervioso.

Note. [R]Items reverse coded.

Appendix B. Personal Report of Communication Apprehension Scale–Dyadic Subscale

Personal Report of Communication Apprehension Scale–Dyadic Subscale—English Version

Response set:
5–Strongly agree
4–Agree
3–Neither agree nor disagree
2–Disagree
1–Strongly disagree

1. While participating in a conversation with a new acquaintance, I feel very nervous.
2. I have no fear of speaking up in conversations.[R]
3. Ordinarily I am very tense and nervous in conversations.
4. Ordinarily I am very calm and relaxed in conversations.[R]
5. While conversing with a new acquaintance, I feel very relaxed.
6. I'm afraid to speak up in conversations.[R]

Note. [R]Items reverse coded. These negatively worded items did not load with the three positive items and were not used for this study's analysis.

Personal Report of Communication Apprehension Scale–Dyadic Subscale—Spanish Version

Response set:
5–Estoy muy de acuerdo
4–Estoy de acuerdo
3–No estoy de acuerdo ni en desacuerdo
2–Estoy en desacuerdo
1–Estoy muy en desacuerdo

1. Cuando converso con alguien a quien acabo de conocer, me siento muy nervioso.
2. No siento ningún temor de participar en las conversaciones.[R]
3. Habitualmente, me siento muy tenso y nervioso durante las conversaciones.
4. Habitualmente, me siento calmado y relajado durante las conversaciones.[R]

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5. Cuando converso con alguien a quien acabo de conocer, me siento relajado.
6. Temo expresar mi opinión durante las conversaciones en general.[R]

Note. [R]Items reverse coded. These negatively worded items did not load with the three positive items and were not used for this study's analysis.

Appendix C. Communication Anxiety–Trait Form

Communication Anxiety–Trait Form—English Version

Response set:
1–Almost never
2–Sometimes
3–Often
4–Almost always

1. I think I communicate effectively in one-to-one situations.[R]
2. My heart beats faster than usual when I speak out in a small group meeting.
3. I enjoy speaking in public.
4. I avoid talking with individuals I don't know very well.[R]
5. I think I make a poor impression when I speak at a small group meeting.
6. I feel disappointed in myself after speaking in public.
7. I enjoy talking with someone I've just met.[R]
8. My body feels relaxed when I speak during a small group meeting.[R]
9. I avoid speaking in public if possible.
10. My body feels tense when I talk with someone I don't know very well.
11. I speak out during small group meetings.[R]
12. I am terrified at the thought of speaking in public.
13. My heart beats faster than usual when I talk with someone I've just met.
14. I enjoy talking at a small group meeting.[R]
15. I make a good impression when I speak in public.[R]
16. I would like to have a job that requires me to talk often on a one-to-one basis.[R]
17. I feel disappointed in my efforts to communicate at a small group meeting.
18. My body feels tense and stiff when I speak in public.
19. When conversing with someone on a one-to-one basis, I prefer to listen rather than to talk.
20. I avoid talking during small group meetings.
21. I look forward to speaking in public.[R]

Communication Anxiety–Trait Form—Spanish Version

Response set:
1–Casi nunca
2–Algunas veces
3–Con frecuencia
4–Casi siempre

1. Creo que me comunico de manera efectiva cuando tengo contacto uno a uno con otras personas.[R]
2. Mi corazón late apresuradamente, cuando hablo en público, aún en pequeños grupos.

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3. Disfruto hablar en público.
4. Evito hablar con personas a quienes no conozco muy bien.[R]
5. Creo que doy una mala impresión cuando hablo aún ante grupos reducidos.
6. Me siento decepcionado de mí mismo después de hablar en público.
7. Me agrada hablar con alguien a quien acabo de conocer.[R]
8. Me siento relajado cuando hablo durante reuniones pequeñas.[R]
9. Evito en lo posible, hablar en público.
10. Me siento tenso cuando hablo con alguien a quien no conozco muy bien.
11. Expreso mi opinión durante las reuniones pequeñas.[R]
12. Me aterra pensar siquiera, que debo hablar en público.
13. Mi corazón se acelera cuando hablo con alguien a quien acabo de conocer.
14. Disfruto expresar mi opinión durante las reuniones pequeñas.[R]
15. Cuando hablo en público, doy una buena impresión.[R]
16. Me gustaría tener un empleo en el cual hablar personalmente con alguien fuera un requisito.[R]
17. Me siento insatisfecho con los resultados de mis esfuerzos por comunicarme durante reuniones pequeñas.
18. Me siento tenso e incómodo cuando hablo en público.
19. Durante una conversación cara a cara prefiero escuchar, en vez de hablar.
20. Evito expresar mi opinión durante las reuniones pequeñas.
21. Espero con gusto, la siguiente oportunidad de hablar en público.[R]

Note. [R]Items reverse coded.

Appendix D. Comfort Speaking/Reading English and Spanish

Comfort Speaking/Reading English and Spanish—English Version

Response set:
1–Totally disagree
2–Mostly disagree
3–Doubt/unsure
4–Mostly agree
5–Strongly agree

1. I feel comfortable speaking English.
2. I feel comfortable reading English.
3. I feel comfortable speaking Spanish.
4. I feel comfortable reading Spanish.

Comfort Speaking/Reading English and Spanish—Spanish Version

Response set:
1–Totalmente en desacuerdo
2–En desacuerdo en su mayor parte
3–En duda
4–De acuerdo en su mayor parte
5–Totalmente de acuerdo

1. Me siento cómodo cuando hablo en inglés.
2. Me siento cómodo leer en inglés.

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3. Me siento cómodo cuando hablo en español.
4. Me siento cómodo leer en español.

Appendix E. Foreign Language Anxiety in a Medical Office Scale (FLAMOS)

FLAMOS—English Version

Response set:
5–Strongly agree
4–Agree
3–Neither agree nor disagree
2–Disagree
1–Strongly disagree

1. When speaking to a doctor in English, I can get so nervous I forget things I know.
2. I can feel my heart pounding when I have to talk to the doctor in English.
3. I feel very self-conscious when I speak English in front of other patients (e.g., in the waiting room).
4. I get nervous and confused when I speak in the doctor's office.
5. I get nervous when I do not understand every word the doctor says.
6. I am overwhelmed by the number of rules you have to learn to speak a foreign language.
7. I fear that the doctors or nurses will laugh at me when I speak the foreign language.
8. I get nervous when the doctor asks me questions that I have not prepared in advance.

FLAMOS—Spanish Version

Response set:
5–Estoy muy de acuerdo
4–Estoy de acuerdo
3–No estoy de acuerdo ni en desacuerdo
2–Estoy en desacuerdo
1–Estoy muy en desacuerdo

1. Cuando hablo al médico en inglés, puedo ponerme tan nervioso que llegue a olvidar las cosas que sé.
2. Se me acelera el corazón cuando tengo que hablar al médico en inglés.
3. Me preocupo mucho de lo que los demás piensan de mí cuando hablo inglés enfrente de otros pacientes (por ejemplo en la sala de espera).
4. Me pongo nervioso y me confundo cuando hablo en la oficina del médico.
5. Me pongo nervioso cuando no entiendo cada una de las palabras que dice el médico.
6. Me siento agobiado por el número de reglas que tienes que aprender para poder hablar la lengua extranjera.
7. Temo que los médicos o los enfermeros se rían de mí cuando hablo la lengua extranjera.
8. Me pongo nervioso cuando el médico me hace preguntas que no he preparado de antemano.

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