¿Hablas Español? Language Assessment in Medical Students

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Abstract

Background: For patients with limited English proficiency, reports show improved health care outcomes when physicians are proficient in the language spoken by the patient. Formal language assessment has been explored as an effort to ensure language concordance, and it may be a valuable tool for helping medical students become bilingual health care providers.

Objective: We assess current student interest in improving second language skills, self-reported language proficiency, and the effects of formal language assessment on the level of comfort with using this second language in a variety of clinical scenarios.

Design: Mixed design including 1) cross-sectional baseline survey and 2) a randomized subgroup selected for intervention with formal language assessment and follow-up, using within-subjects analysis. 132 medical student volunteers completed an initial survey, 50 of which were randomly selected to complete a formal language assessment and a follow-up survey.

Interventions: Spanish formal language assessment was utilized by telephone survey provided and assessed by Versant™.

Main Outcomes and Measures: Self-reported interest in becoming a bilingual health care provider, self-reported language proficiency, formally-assessed language proficiency, preferred modalities for learning a second language, and comfort level with using a second language in a variety of clinical scenarios.

Results: Self-reported proficiency rating was correlated with overall scores on formal assessment. Formal assessment did not alter reported comfort level with using a second language except in proficient/fluent students. These students reported a decrease in comfort with providing care in scenarios that are complex (3.72 to 3.41, p=0.005) and those that have medical-legal implications (3.72 to 3.44, p=0.05). Students reported being most interested in learning a second language
via an immersion experience (72%), international rotation (70%), or online course (54%).

Conclusions: Self-reported Spanish proficiency is correlated with formally assessed language ability. However, the decrease in comfort level among proficient/fluent medical students following formal assessment may reflect an initial overestimation of language ability or “false fluency.” This could potentially contribute to suboptimal healthcare outcomes in patients with limited English proficiency. Institutions wishing to focus on second language capabilities of their students should consider language assessment. They may also consider providing opportunities for interested students with language learning modalities that do not displace the mainstream medical curriculum.

Reflections on the Research Process by the Authors
As student researchers, we found the process of conducting research to be both educational and frustrating. There was no project like this in existence at our medical school, so it was our responsibility to conduct the process from the beginning. Every step, from recruiting mentors, seeking funding, data collection, and manuscript preparation was fraught with its unique set of unforeseen obstacles. Because of the struggles, however, we gained an appreciation for the importance of rigorous methodology, careful calculation, and asking the right kinds of questions. Overall, it is very satisfying to see a research project go from an idea to a manuscript. This collaborative experience between students, teachers, researchers, and mentors—all with diverse backgrounds—has boosted our respect for the research process and our passion for culturally competent and linguistically appropriate patient care.

Introduction
Currently, over 60 million people in the United States speak a language other than English at home, and approximately 41% report at least some difficulty speaking English. As the United States becomes increasingly diverse, language barriers can exacerbate existing health disparities. Patients with limited English proficiency (LEP) experience suboptimal health care outcomes, have limited access to primary and preventive care, and report lower care satisfaction as well as lower comprehension of medical problems and treatments.

Language concordance between patients and providers reduces health disparities by facilitating effective communication. However, language proficiency is not consistently evaluated in physicians. Only 18% of hospitals in the U.S. offer formal fluency assessment for their physicians. Most facilities instead rely on the physician’s own judgment. Although some studies suggest that self-reported proficiency in physicians and medical students may be an accurate measure of language skills, an overestimation of ability or “false fluency” in those with limited language skills may contribute to medical errors and lower patient satisfaction ratings.

In the absence of consistent language evaluation among physicians, questions remain regarding the effective preparation of future physicians to meet the health care needs of linguistically diverse communities. Little research has been conducted on formal language assessment for medical students. Moreover, its implementation remains challenging because medical curricula across the nation are not capable of accommodating every extracurricular interest, such as second language education. Nevertheless, assessing language ability during medical school may provide students valuable insight regarding their abilities to utilize language skills in clinical settings. It may also encourage students to pursue extracurricular activities aimed at improving their language abilities. In addition, by making students more aware of their second language skills, language proficiency testing may improve student use of professional interpreters.

In this study, we compared medical student self-reported language proficiency to their corresponding scores on a formal language assessment. We also examined how formal language assessment affects reported comfort using a second language in a variety of clinical scenarios. In addition, we explored students’ interests in improving their second language skills, as well as the modalities of learning that are of most interest to them. We hypothesized that self-rated proficiency would be similar to formally tested proficiency, and that formal testing would not significantly impact comfort level in using second languages in clinical scenarios.
Methods
Participants included all medical students at the University of New Mexico School of Medicine (UNM SOM) enrolled in 2014-2015. Approval from the Human Research Protections Office (HRPO) was obtained prior to data collection. Informed consent was obtained from all participants prior to beginning the study. Data analyses were completed through the SAS 9.3 software package.

Preliminary Survey
An online preliminary survey was used to assess self-reported interest in becoming a bilingual care provider, preferred modalities for learning a second language, and self-reported language proficiency in a variety of clinical scenarios. These scenarios ranged from nonclinical language skills (i.e. introducing oneself) to complex care and discussions with legal implications (i.e. consenting a patient for a surgical procedure). The questions were drawn from a similar study on pediatric residents by Lion, et al., with wording adapted for medical students. Reported comfort level in each scenario was measured on a 5-point Likert scale and averaged for all responses in the same clinical category. Question items were randomized and information about the types of scenarios addressed by each question was hidden from all participants. Both this preliminary survey and the follow-up survey were created using Opinio Esurvey software. Participants were given two weeks to complete the survey.

Formal Language Assessment and Follow-up Assessment
From the 132 students who completed the preliminary survey, a randomized list was generated and the first 50 students were offered the formal language assessment. When a student declined or did not respond to the request, the next student on the randomized list was offered the test until 50 tests were completed.

The formal language assessment, administered and scored by Versant™, consisted of a structured telephone

FIGURE 1. Formal Assessment Score by Self-Reported Proficiency Level.
Bars indicate ranges of scores. \( R^2 = 0.98 \).
interview with questions that assessed general spoken language fluency in Spanish. Participants were given two weeks to complete the assessment. Versant provided an online report to all participants and researchers composed of an overall numerical score and individual scores for sentence mastery, vocabulary, fluency, and pronunciation. All scores were graded on a scale from 20-80. Score reports were provided to participants and included written descriptions of the meaning of the scores as well as suggestions to the test-taker of ways to improve his/her language ability. Participants were asked to view this online report before taking the follow-up survey.

The 50 formally assessed students were instructed to complete a follow-up survey through an online link within two weeks. This survey contained questions identical in wording to the preliminary survey, and included several items addressing student reactions to the formal language assessment. Upon completion of this follow-up survey, students received a gift card as compensation.

### Results

132 medical students participated in the preliminary survey, 50 completed formal language testing and a

![Preferred Language Learning Modalities](image)

**FIGURE 2:** Preferred Language Learning Modalities. Responses to the question: “In which of the following activities for Spanish language maintenance or improvement would you be likely to participate?” Students were allowed to select more than one method.

<table>
<thead>
<tr>
<th>Speaking proficiency</th>
<th>Nonclinical</th>
<th>Straightforward clinical</th>
<th>Complex clinical</th>
<th>Legal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean change (SD)</td>
<td>p-value</td>
<td>Mean change (SD)</td>
</tr>
<tr>
<td>None</td>
<td>12</td>
<td>0.13 (0.09)</td>
<td>0.19</td>
<td>-0.12 (0.11)</td>
</tr>
<tr>
<td>Basic/Rudimentary</td>
<td>18</td>
<td>0.00 (0.10)</td>
<td>1</td>
<td>-0.11 (0.12)</td>
</tr>
<tr>
<td>Conversational</td>
<td>7</td>
<td>-0.43 (0.20)</td>
<td>0.08</td>
<td>-0.31 (0.24)</td>
</tr>
<tr>
<td>Fluent/Proficient</td>
<td>13</td>
<td>0.00 (0.06)</td>
<td>1</td>
<td>-0.03 (0.13)</td>
</tr>
</tbody>
</table>

**TABLE 1.** Change in Comfort Score following Formal Language Assessment. 118 participants (94%) responded as either “interested” or “very interested” in becoming bilingual health care providers and their specific interests in participating in various modalities for second language learning Spanish are summarized in Figure 2.

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follow-up survey, and 14 were offered but declined to take the formal language assessment. No significant differences were found in characteristics between those who completed language testing and those who only completed the preliminary survey.

Scores obtained by students on the formal assessment were compared with their self-reported proficiency category and demonstrated a positive correlation (Figure 1). Pairwise comparisons between self-reported proficiency groups revealed statistically significant differences in each group compared with all others (p<0.05) except with comparison of the “None” group to the “Basic/Rudimentary” group (p=0.18).

Versant™ reported that one participant gave responses that were too quiet to be scored.

Comparison of comfort scores before and after formal language testing revealed no significant differences in Nonclinical and Straightforward clinical scenarios across any levels of self-reported proficiency (Table 1). However, following formal testing, students who rated themselves as proficient or fluent were significantly less likely to report comfort providing care in a second language in both Complex scenarios (3.72 to 3.41, p=0.005) and Medical Legal scenarios (3.72 to 3.44, p=0.05)

Discussion
Effects of Formal Assessment
For the majority of participants, the level of comfort using Spanish did not change after formal language assessment for any type of clinical scenario.

This is similar to results found in previous research. However, the significant decrease in comfort levels among students who rated themselves as proficient/fluent in Complex and Medical Legal scenarios highlights an important exception. Medical students at these levels of proficiency may have overestimated their language ability before formal testing, an effect previously seen in physicians. Importantly, these relatively fluent students have been shown to be less likely to use an interpreter. Thus, their overestimation or “false fluency” may contribute to miscommunications with patients, resulting in suboptimal health outcomes. These results emphasize the importance of formal language testing as a tool for medical students to grasp an accurate understanding of their language abilities in clinical settings.

Comparison of Testing Methods
Our results suggest that self-reported proficiency is linearly correlated with scores on formal language testing, as reported in previous studies (Figure 2). For institutions considering language testing methods, our data imply that simple self-reporting may be an acceptable alternative to formal assessment for at least preliminary evaluation of language ability. However, students with high levels of self-reported proficiency may benefit from formal testing, as this group is at a higher risk for false fluency.

Learning Modalities
Participants expressed most interest in language learning modalities that included immersive experiences (including international rotations) and online courses. This may be encouraging to institutions considering how to include language learning opportunities for students, as these are modalities that students may choose as electives or complete on their own time with little need to displace other coursework. Questions such as which modality is most effective and what is the amount of training necessary to bring a student to proficient levels of understanding and speaking ability may be important topics for future research.

Limitations
There were limitations to our choice of formal language assessment, including its focus on general speaking and listening ability rather than specific medical language proficiency. We chose to measure general fluency because first and second year medical students are not yet expected to be proficient in medical terminology.

However, general fluency as measured by this Versant™ test may not be an indicator of proficiency in medical situations. Although Versant™ provides assessments in other languages, our study exclusively tested Spanish ability. This restricts our ability to make conclusions about other languages. To increase assessment flexibility, participants were allowed to choose their own environment for taking the formal
assessments, noise and other distractions may have disrupted testing performance. For instance, some participants reported difficulty with the phone connection while taking the verbal test. Our small sample size may also limit our ability to detect small differences in self-reported proficiency following language testing. Future research should focus on increasing sample size, assessing proficiency in other languages.

Conclusion
Our objectives were to compare self-reported proficiency with formal language assessment scores, to evaluate the effects that such formal testing may have on comfort level with using a second language in various clinical scenarios, and to quantify the amount of medical student interest in second language learning, including the most desired modalities for such learning. Our results show that while evaluations from self-report and formal assessment may be similar, formal assessments may have an important effect on reducing proficient/fluent students’ comfort level in Complex and Medical Legal scenarios.

Medical education already consists of a full and structured schedule, and a comprehensive language curriculum is unlikely to be allowed to displace required curricula. By the time clerkships begin, it is likely that students have already made judgments on how they will use their second language skills. We recommend that institutions consider language testing for medical students who would like to provide patient care in a second language.

Opportunities to improve language ability may be implemented using modalities of learning such as immersive rotations or online courses that do not displace the mainstream curriculum of medical school. By providing opportunities for assessment and learning in a second language, we can nurture medical students in their abilities to provide culturally sensitive and language concordant care to patients with LEP, with an end goal of reducing the health disparities in an increasingly large population of patients.

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