

Author's response to reviews

Title: Development of a Reliable and Construct Valid Measure of Nutritional Literacy in Adults

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Responses to Nutrition Journal Reviewers of Nutritional Literacy Scale (NLS)
development paper (MS 7445159731044658 Ver: 1)

Reviewer 1, Question 1:

This reviewer has concerns on issues such as content validity and whether some of the items might test knowledge. When I developed the NLS, I searched through several websites seeking declarative sentences that could be developed into test items. For the purposes of face validity, I wanted to cover several nutritional content areas even though in measures of literacy, as opposed to measures of knowledge, the need for content validity is less critical. In terms of knowledge versus comprehension, I went back to the statistics on each item and the reviewer's comments about selected questions such as the one on "carrots, beans and lettuce." The comments were very helpful and I ended up removing four of the items and shortening the scale to 28 items. These changes were positive in terms of the statistics of the scale. I then revised the paper to reflect these changes and added to the text a sentence about this reviewer's suggestions and contribution. See page 6.

Lastly, this reviewer thought two of the items on cholesterol were ambiguous. During the development of the scale, we looked at signs that items might be ambiguous, such as participants asking questions about them, or leaving them blank. Some items were revised, but there was no indication that participants had difficulty understanding either of these, so I made the decision to keep them as written.

Reviewer 1, Questions 2 and 3:

There are many issues being addressed by researchers in the field. In fact there are debates about the definition and measurement of health literacy. There are investigators using labels as measures of literacy and there are several instruments that are being used. The REALM and the TOFHLA are two. However, they are very different. The REALM is really a measure of decoding skills, while the TOFHLA is closer to a reading comprehension instrument. I have revised the paper, adding a citation, to let readers know that there are many aspects to literacy research and that it is unlikely that there will be only one instrument used by everybody. See page 4.

Since I first submitted this paper, I was able to collect data from a fourth group of patients, all of whom were either overweight or obese. I have included their data in this revision. It turned out that this group scored lowest on the NLS, which is what one might predict. The discussion now expands on these findings and tries to address the issue of "value added." As I indicate in the revised discussion, the pattern of scores for the S-TOFHLA is not the same as for the NLS. This adds to the notion that the scales are not exactly the same, even though the construct validity evidence suggests that they are both literacy measures. See pages 8 and 9.

I will have data next year as to whether the NLS correlates with dietary intake. We also want to submit a grant to investigate whether interventions can improve nutritional

literacy. There are active program announcements out now that deal with "Understanding and Promoting Health Literacy." I certainly agree with this reviewer that these are important questions. Lastly, there are two graduate students using the NLS as part of their dissertation research, so we will have more information when their projects are completed. (They are at other universities, but heard about my work and are using the scale in their research.)

I do not have data on SES; the NLS does correlate with education (0.41) which might be considered a proxy for SES, but not with gender or age.

Reviewer 1, Question 4:

Our research assistants used a verbal script that was approved by the IRB. Because participation was completely voluntary, it is possible some bias was present. While we did not specifically recruit low literacy participants, about 10% of the total group had less than a high school diploma. Their scores were the lowest on average on any group. I have no information on patients with poor vision.

Reviewer 1, Question 5:

The concepts of Adequate, Marginal and Inadequate literacy that have been applied to the S-TOFHLA are not available for the NLS.

Reviewer 1, Question 6:

It is correct that Group 2 did not complete the S-TOFHLA. This group of patients was included in the sample as they were more highly educated and interested in nutrition. See page 7. The providers in this practice did not want to burden their patients with too many forms to complete, so I asked them to complete only the NLS.

Reviewer 1, Question 7:

I never intended to have subscales, so no clustering analyses were done. The alpha coefficient for the total group of 0.84 does suggest a scale of high internal consistency.

Reviewer 1, Question 8:

Regarding the work of Barry Weiss and his colleagues, this is one of many different approaches to studying literacy. In fact, others have worked with labels, and still others are working with paper and pencil instruments and the Web. Page 4 includes the citation to the work of Dr. Weiss. Since the NLS is modeled after the S-TOFHLA, I did include more detail about that instrument, but chose not to review all the other measures being used.

By way of anecdote, one of my colleagues has been using the "newest vital sign" developed by Barry Weiss and her patients do not like it. They consider it too numerical and off-putting.

Reviewer 1, Other revisions:

The sentence on page 4 has been revised to read : " As but one example, among a great many, Schillinger and colleagues demonstrated that adequate health literacy was associated with achieving tight glycemic control (HbA1c below 7.3%)."

I have added footnotes to the table to make it easier to read.

Reviewer 2, Question 1:

There is no website for the NLS and to the best of my knowledge, there is none for the S-TOFHLA.

Reviewer 2, Question 2:

I made some revisions to pages 6 and 7 to better describe the groups. In addition, the Table contains some demographic data for each group and for the groups combined.

I believe it appropriate to keep Table 1 in the paper. It shows the variation in the demographics and in the literacy scores. My sense is that readers like to see this level of detail. I respectfully do not agree that the inclusion of a scatterplot would provide additional information. The only correlation reported is that between NLS and S-TOFHLA scores which is a standard measure used to support construct validity..