Development of Spanish version of the LittlEARS parental questionnaire for use in the United States and Latin America

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Abstract

The LittlEARS Auditory Questionnaire is a parent questionnaire created to assess development of age-dependent auditory behaviors of children in the pre-verbal stage. The original questionnaire was developed in Austria (in German), and is now being introduced in the United States in English. This study was designed to obtain normative data on a Spanish translation. Fifty parents or caregivers participated. Responses were obtained at their child's visit to a hospital clinic or an external ambulatory site. Children ranged in age from .5 to 21.4 months (mean = 9.5 months). Parents were either Spanish monolingual or bilingual representing 5 national origins. Analyses included correlation of age with total score, and with individual questions, index of difficulty, discrimination and selectivity indices, scale analysis, split-half reliability and internal consistency. Specifically, correlation between age and number of observed behaviors was 0.927. A measure of internal consistency was high, 0.95.

Results indicated that the translated LittlEARS for use with Spanish speakers is a potentially useful tool for clinicians assessing pre-verbal auditory behavior. High correlations of total score with age suggested that the questionnaire reflects a progression of auditory skills in the 0 to 24 months age group.

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Introduction

Use of questionnaires as a diagnostic assessment of an infant's behavior has precedent in audiology as well as other fields.[1] Parental observation is particularly important when children are not willing to cooperate in unfamiliar surroundings and/or are too young to take standardized tests. Parents are typically able to describe their child's responses and behavior in various domestic situations and stimuli. Parental questionnaires on preverbal auditory behavior are potentially useful because: i) they assess an area of high importance to parents (*e.g.* hearing development); ii) differentiated questions cover the area based on the results of developmental research; iii) the assessed behavior is described concisely and easily observed; and iv) the types of behavior assessed are reflexive, or orienting, or attentive, all of which are in the repertoire of very young children.

Two widely used parental questionnaires are the Meaningful Auditory Integration Scale (MAIS)[2] and the Infant-Toddler Meaningful Auditory Integration Scale (IT-MAIS).[3] The MAIS is a questionnaire which probes the utilization of hearing by a child using a cochlear implant. It assesses auditory behavior in everyday situations in an effort to account for discrepancies when comparing structured test outcomes to behavior in familiar environments. The IT-MAIS is a modification of the MAIS concept aimed at assessing the infant or toddler's spontaneous responses. It assesses vocalization, meaningful responses and alerting to sound in the environment.

A battery of tests called the Evaluation of Auditory Responses to Speech[4] is based on the assumption that a child with hearing loss, after receiving a cochlear implant (CI) and habilitation, improves in auditory-verbal development to become comparable to that of a child with normal hearing. Examination of results on the EARS tests and questionnaires allows the clinician to assess the effectiveness of cochlear implantation as well as to document changes in auditory abilities and follow-up over time.[5] The EARS was designed to monitor speech perception and spoken language progress to help validate hearing aid fittings and to aid in the monitoring of rehabilitation in cochlear implant (CI) recipients aged 36 months old and above. Other tests in the EARS battery include auditory perceptual measures, such as the Monosyllabic-Trochee-Polysyllabic Word Test[6] and the Glendonald Auditory Screening Procedure (GASP),[7] which is used in evaluation of very young children.

A questionnaire called LittlEARS is a continuation of the EARS concept. It was specifically developed for children under 24 months of age. The questionnaire can be used to elicit a description of preverbal auditory behavior development. They reflect important milestones in normal development. The LittlEARS questionnaire is used as a screening tool for general practitioners, pediatricians, and otolaryngologists to detect failure to meet these milestones.[8] This test was originally developed in German, and has subsequently been translated into a variety of languages, including Greek[9] and American English.[10]

LittlEARS consists of 35 questions. The items are arranged from early to later developing, with behaviors becoming progressively more sophisticated, based on the work of Northern and Downs.[11] Questions in the early developmental stage reflect attending behavior, such as *Does your child respond to a familiar voice* (in Spanish, *Reponde su hijo a una voz familiar*). Other examples of this stage are orienting behaviors such as *Does your child look for sound sources above or below* (in Spanish, *Busca su hijo la fuente de un sonido de origen por arriba o abajo*) Later developing, semantically-related behaviors are represented in such questions as *Does your child know that a certain sound is related to a certain object or event* (in Spanish, *Sabe su hijo que un sonido se relaciona con un objeto or suceso determinado*) or *Does your child obey complex commands?* (in Spanish, *Obedece su hijo órdenes complejas*).[12] Examples of the questions are displayed in Appendix.

No such materials currently exist in Spanish; and this study, therefore, represents a contribution to the clinical evaluation of children with hearing loss in USA cities and in Latin America. The development of a Spanish language test for parents is of particular interest in urban areas of states with concentrations of Spanish speaking families, such as in New York, Texas, Florida and California. In such locations, the countries of origin of the parents may be diverse; this is particularly true in New York City. Thus, it is important to recognize national variations in word usage and attempt to minimize the potential influence on responses by constructing questions, which eliminate regionalisms.

The purpose of this study was to assess the adequacy of a Spanish translation of the LittlEARS questionnaire. This report is descriptive of parental observations of their child's auditory behavior in response to the translated questions. The relationship between the child's age at time of completion of the questionnaire and overall percentage of parent's positive observations was examined. Some of the basic data from this study were previously published by Coninx *et al.*[10] The data were used in order to make a comparison of our findings to those of many other translations and subsequent studies. That report did not present the full manner in which our data were obtained and analyzed demonstrating validity and reliability.

Materials and Methods

Participants

Fifty parents, 47 female, participated as they waited for appointments with the pediatrician. They were parents or caregivers of children younger than 24 months of age at time of a well-baby visit. The respondents were Spanish monolingual (28), or Spanish fluency bilingual (22). Thirty-one (62%) were from the Dominican Republic, 11 (22%) from Mexico, 3 (6%) from Ecuador, 1 (2%) from Honduras, and 4 (8%) from the United States. The caregivers' mean age was 28.7 years (S.D. = 6.73;range = 17-51 years).

The average age of the children described in this report is 9.5 months (S.D. = 0.52; range = 0.5-21.4 months). The age distribution of the children is illustrated in Figure 1. The infants were 28 females and 22 males. They passed the universal newborn hearing screening using otoacoustic emissions at our hospital. Children were excluded if there was a reported history or indication in the medical record of: hearing loss, aural disease, neurologic disorder, or perinatal or postnatal abnormality.

Procedures

This protocol was approved by the Institutional Review Board of Columbia University.

Test translation

The American English version of the LittlEARS auditory questionnaire and manual were provided by the MED-EL Corporation.[10] Translation into Spanish was accomplished by the authors, one of whom is a native speaker and both of whom are engaged in active research in Spanish language test development and in daily clinical activity in a multi-national environment. Dynamic equivalence translation was used in order to maintain the essential meaning of the original text while maintaining as much of a literal translation as syntactic and cultural differences would allow. The translation conveyed culturally relevant phrasing and examples of auditory stimuli representing the developmental stage being assessed. A back translation was performed by a different bilingual speaker (Spanish language dominant from Mexico) during the editing phase. This was done to ensure the accuracy of the newly translated questionnaire. All translated items maintained their intended target question. Sample items from the resulting questionnaire and instructions appear in Appendix.

Test administration

The questionnaire was completed at the time of a well-baby visit at either the internal hospital clinics or an external site, part of an ambulatory care network of New York Presbyterian Hospital, located in Washington Heights in New York City. All questions listed in the questionnaire were answered independently in writing by parents or caregivers. Face to face interviews were infrequent. Usually, parents completed the form independently, but may have asked for information about an individual item. No items were found to be problematic consistently. According to the manual, the questionnaire was scored by giving a point for each yes response indicating that a behavior had been observed and giving 0 points for a no response.[12] The total score is the sum of the yes responses.

Results

Several analyses were performed to evaluate the relationship of responses on the total LittlEARS score to the age of the child being described. An item analysis[13] was performed to evaluate the questionnaire's internal consistency and the contribution of the individual items to the total score. For all statistical analyses, SPSS for Windows 12.0 - 16.0 software (Chicago, IL, *http//www.spss.com*) and Microsoft Office Excel 2003 were used.

Correlation of age and total score

A Pearson Correlation coefficient was calculated to examine the relationship of age of the child being described to the total score (Figure 2). There was a high correlation between age and total score ($r = 0.927$, $P<0.01$), indicating that the overall responses to the questionnaire give a consistent relationship of auditory development to the child's chronological age.

Correlation of age and individual questions

Table 1 displays the Pearson Correlation coefficients for individual

questions to the child's age for our data and the original German data. The correlations between age and individual questions for the Spanish USA data were generally moderate to high (mean r=0.54), ranging from -0.03 to 0.87. Low correlations (r<0.40) were obtained for Questions 1, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14 and 33. For questions 2 and 3, the correlation coefficient could not be calculated, because all participants gave the same answer. These questions have not been eliminated so that very young children do not receive scores of zero. While in this normative study, these questions are non-contributory, the authors believe it is necessary to retain them against the future possibility that they will be useful when describing the behavior of children with hearing loss that may not possess these skills.

Table 1. Correlation of age and individual items.

Question	Correlation age/score Spanish US	Correlation age/score German
F1	0.16	0.21
F2	-*	0.10
F3	-*	0.30
F4	0.24	0.28
F5	0.17	0.37
F6	-0.03	0.48
F7	0.36	0.43
F8	0.15	0.12
F9	0.39	0.54
F10	0.21	0.43
F11	0.25	0.46
F12	0.42	0.70
F13	0.35	0.60
F14	0.07	0.11
F15	0.51	0.67
F16	0.52	0.66
F17	0.61	0.65
F18	0.68	0.76
F19	0.61	0.64
F20	0.70	0.79
F21	0.78	0.65
F22	0.85	0.80
F23	0.83	0.79
F24	0.87	0.80
F25	0.78	0.73
F26	0.86	0.79
F27	0.61	0.74
F28	0.71	0.72
F29	0.75	0.61
F30	0.68	0.77
F31	0.84	0.69
F32	0.86	0.70
F33	0.38	0.56
F34	0.81	0.69
F35	0.78	0.51
Average	0.54	0.57
SD	0.27	0.21
Minimum	-0.03	0.10
Maximum	0.87	0.80

*Correlation coefficient could not be calculated because all participants gave the same answer.

Item analysis: index of difficulty, discrimination and selectivity indices

Table 2 summarizes the item analysis. Column 2 shows the index of difficulty, indicating the percentage of children whose parents answered a question with yes. The values from the Spanish and the German version[8] are very similar. The first questions are extremely easy to answer. They have been retained in all versions of the questionnaire to give parents some less stressful questions to answer.

Column 3 of Table 2 shows the discriminatory power coefficient, the correlation of an item with the total score. Questions 2 and 3 have the lowest discriminatory power coefficient. That is, these questions contribute very little to distinguish between children with basic versus more complex auditory capabilities (on these two questions, the answer was yes for all participants). These lower discriminatory power coefficients were not due to a problematic translation and are in correlation to the German version's results. The German authors also retained these earlier items in order to maintain a natural progression of easy to difficult. The other questions have higher discriminatory power coefficients.

Table 2, column 4, contains the part-to-whole discriminatory power coefficient. This calculation is the same as the discriminatory power coefficient with the exception that the total score is calculated without the score of the question being evaluated. All questions show high values except for questions 1, 2, 3, 4, 5, 6, 8, 9, 10, 11 and 14 (discriminatory power <0.40).

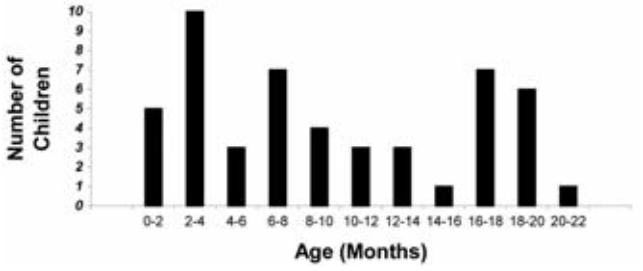

Figure 1. Age distribution for children in sample (N=50).

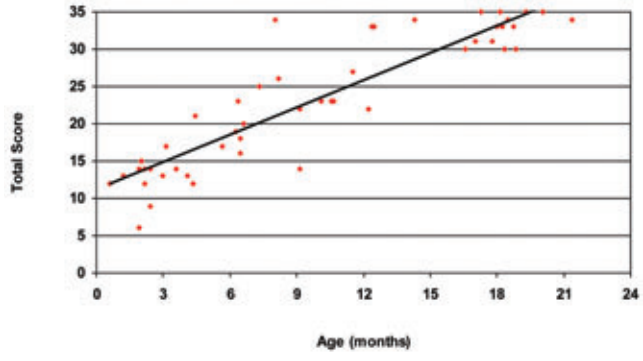

Figure 2. Correlation between age and total score (N=50).

The sensitivity index, in column 5 of Table 2, includes both index of difficulty and discriminatory power coefficient. A high sensitivity index implies high adequacy of the item. The values for the sensitivity index are between 0.14 and 0.96 for the Spanish data; therefore, the questions are very suitable to get the desired information, except for question 6, 8 and 14 (<0.40). For questions 2 and 3, the sensitivity index could not be calculated, because all subjects gave the same answer.

Table 2. Item analysis of LittlEARS questionnaire in Spanish (USA) (N = 50).

Question number	Index of difficulty coefficient	Discriminatory power power coefficient	Part-to-whole discriminatory	Sensitivity index
1	0.98	0.14	0.12	0.49
2	1.00	0.00	0.00	-*
3	1.00	0.00	0.00	-*
4	0.96	0.27	0.25	0.68
5	0.98	0.28	0.26	0.96
6	0.96	0.06	0.03	0.14
7	0.85	0.43	0.40	0.61
8	0.94	0.16	0.13	0.33
9	0.75	0.39	0.35	0.45
10	0.90	0.29	0.26	0.47
11	0.96	0.31	0.29	0.77
12	0.88	0.50	0.47	0.75
13	0.83	0.43	0.40	0.58
14	0.85	0.15	0.11	0.22
15	0.71	0.59	0.56	0.65
16	0.75	0.62	0.59	0.72
17	0.52	0.66	0.62	0.66
18	0.54	0.78	0.65	0.78
19	0.54	0.68	0.78	0.68
20	0.65	0.77	0.73	0.81
21	0.52	0.79	0.83	0.79
22	0.48	0.85	0.85	0.85
23	0.29	0.79	0.78	0.87
24	0.40	0.86	0.79	0.88
25	0.48	0.83	0.89	0.83
26	0.35	0.86	0.69	0.90
27	0.23	0.62	0.67	0.74
28	0.27	0.74	0.70	0.83
29	0.42	0.80	0.76	0.81
30	0.25	0.69	0.75	0.79
31	0.40	0.88	0.85	0.90
32	0.40	0.86	0.47	0.88
33	0.71	0.47	0.75	0.52
34	0.27	0.76	0.74	0.86
35	0.38	0.82	0.80	0.85
Average	0.64	0.55	0.52	0.70
Minimum	0.23	0.00	0.00	0.14
Maximum	1.00	0.88	0.89	0.96

*No analysis because all participants gave the same answer.

Scale analysis: reliability, homogeneity, calculation of a normative curve and standardized values

Guttman's Lambda[14] (Table 3) was calculated with age (months) as the independent variable and total score as the dependent variable. Lambda is the Guttman's coefficient of predictability, which reflects the proportion by which error is reduced by predicting the dependent variable scores, based on the scores of the independent variable. Lambda ranges from 0 to 1.0, whereas a value of 0.3 or higher is required to show strong predictability. With a value of 0.943, very high predictability is demonstrated for this questionnaire.

Reliability analysis: split-half-reliability

For the purposes of the split-half reliability analysis, the responses were divided into two groups, odd-numbered and even-numbered items; this was done to avoid bias related to item difficulty. The Spearman-Brown split-half coefficient (Table 4) was used to estimate full test reliability based on split-half reliability measures. This coefficient would be higher than the half-test reliability coefficient. The Spearman-Brown split-half-coefficient was 0.962, implying a high precision of measurement because the value is higher than 0.7.[15,16]

Reliability analysis: Cronbach's α

Cronbach's α,[17] the most common form of internal consistency reliability coefficient, was calculated (Table 4). Cronbach's α can be interpreted as the percent of variance the observed scale would explain in the hypothetical true scale composed of all possible items in the universe. Alternatively, it can be interpreted as the correlation of the observed scale with all possible other scales measuring the same thing and using the same number of items. It should be at least 0.7 or higher to have a *good* scale. A value of 1.0 reflects very high internal consistency of the scale.[15]

Table 3. Reliability analysis of the LittlEARS in Spanish (USA) questionnaire using Guttman's Lambda.

Reliability statistics		
Lambda	1	0.471
	2	0.943
	3	0.943
	4	0.943
	5	0.943
	6	0.926
N. of Items		2

Table 4. Split-half reliability of the LittlEARS in Spanish (USA).

Reliability statistics			
Cronbach's α	Part 1	Value	1.000
		N. of items	1*
	Part 2	Value	1.000
		N. of items	1°
	Total N of items		2
Correlation between forms			0.927
Spearman-Brown	Equal length		0.962
Coefficient	Unequal length		0.962
Guttman split-half coefficient			0.943

*The items are: age (months), age (months); °the items are: total, total.

The items of the measure can be split into two halves and the α for the alternative forms compared (the Spearman-Brown formula uses this correlation to estimate reliability after adjusting for the number of scale items). Comparable coefficients confirm the consistency of the responses.[18]

The interpretation of α is that, for example, if Cronbach's α is high (*e.g.* 0.80), then the implication is that the responses are consistent, and the sum of the item responses yields a score for the underlying dimensions that the item represents. A low coefficient α, on the other hand, indicates that the item does not come from the same conceptual domain.

Comparison German and Spanish (USA) normative curve

To establish a normative curve for the Spanish (USA) data, a regression analysis with age as independent variable and total score as dependent variable was carried out. Calculations were performed by applying the least squares method, choosing the solution (structural equation) attributing most of the variance of the dependent variable to the independent variable. The best model, explaining 82% of the total variance, was a second order polynomial regression with the regression equation: Total score = 9.084+1.779* hearing age – 0.026* (hearing age)^2. From this equation, expected values of age-dependent total scores were calculated for each age group. These scores were established as *standard scores* or *normative score*. The results of the regression analysis were also used to determine the confidence intervals in which the age-specific values are found with a 95% probability. The values with a downward deviation (*i.e.* the child reaches a total score below the value of the age group) are clinically relevant. Thus, the one-sided 95% confidence interval was determined as the critical lower limit (called minimum value). If the child reaches a value above this minimum value, it can be assumed that this child undergoes (with a probability of 95%) an auditory development according to age. These data appear in Table 5.

Figure 3 shows a scatter plot of the raw data, the standardized expected values generated from them (norm curve), and the standardized minimum values (lower 95% confidence interval) of age-specific auditory behavior for the Spanish sample compared to the German sample (see also Coninx *et al.*,[10] for relationship to other languages).

To compare the German and Spanish (USA) values of the normative curve, the Pearson's correlation coefficient was computed. This method of correlation was performed, as the data are quantitative and continuous and normally distributed, even though some kind of ranking exists, *i.e.* with increasing number the difficulty of the item increases too. There are differences between the individual age groups, but overall the

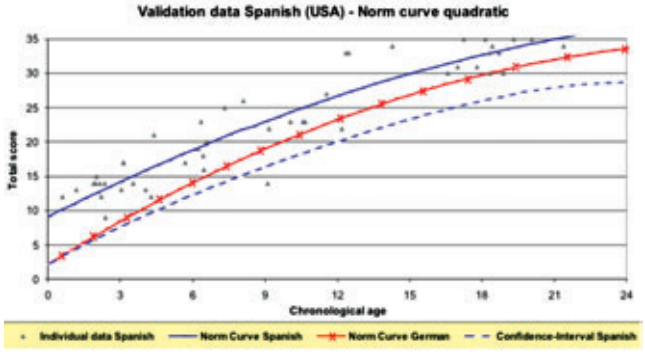

Figure 3. LittlEARS curves as a function of age: Spanish (USA) norm curve in comparison to the overall norm curve and the German norm curve

Table 5. LittlEARs Spanish (USA) norm curve in comparison to German norm curve.

Hearing age (months)	Norm curve Spanish	Norm curve German	Difference Spanish - German	Confidence-interval Spanish
0.0	9.1	2.1	7.0	2.10
0.5	10.0	3.2	6.8	3.09
1.0	10.8	4.3	6.5	4.04
1.5	11.7	5.3	6.4	4.96
2.0	12.5	6.4	6.1	5.86
2.5	13.4	7.4	6.0	6.73
3.0	14.2	8.4	5.8	7.57
3.5	15.0	9.4	5.6	8.40
4.0	15.8	10.3	5.5	9.20
4.5	16.6	11.3	5.3	9.99
5.0	17.3	12.2	5.1	10.75
5.5	18.1	13.1	5.0	11.50
6.0	18.8	14.0	4.8	12.23
6.5	19.5	14.9	4.6	12.95
7.0	20.3	15.7	4.6	13.65
7.5	21.0	16.6	4.4	14.34
8.0	21.7	17.4	4.3	15.01
8.5	22.3	18.2	4.1	15.68
9.0	23.0	19.0	4.0	16.33
9.5	23.6	19.7	3.9	16.97
10.0	24.3	20.5	3.8	17.60
10.5	24.9	21.2	3.7	18.22
11.0	25.5	21.9	3.6	18.83
11.5	26.1	22.6	3.5	19.42
12.0	26.7	23.2	3.5	20.01
12.5	27.3	23.9	3.4	20.58
13.0	27.8	24.5	3.3	21.15
13.5	28.4	25.1	3.3	21.70
14.0	28.9	25.7	3.2	22.23
14.5	29.4	26.3	3.1	22.76
15.0	29.9	26.8	3.1	23.27
15.5	30.4	27.4	3.0	23.77
16.0	30.9	27.9	3.0	24.25
16.5	31.4	28.4	3.0	24.71
17.0	31.8	28.9	2.9	25.15
17.5	32.3	29.3	3.0	25.58
18.0	32.7	29.8	2.9	25.98
18.5	33.1	30.2	2.9	26.37
19.0	33.5	30.6	2.9	26.73
19.5	33.9	31.0	2.9	27.06
20.0	34.3	31.3	3.0	27.37
20.5	34.6	31.7	2.9	27.65
21.0	35.0	32.0	3.0	27.90
21.5	35.3	32.3	3.0	28.12
22.0	35.6	32.6	3.0	28.30
22.5	35.9	32.9	3.0	28.46
23.0	36.2	33.1	3.1	28.58
23.5	36.5	33.4	3.1	28.67
24.0	36.8	33.6	3.2	28.72

Table 6. Standardized values (expected value and lower limit for the 95% confidence interval) of age-dependent auditory behaviors.

Age (months)	Expected values	Minimum value (lower limit of 95% confidence interval)
0 ≤ 1	10	3
1 ≤ 2	12	5
2 ≤ 3	13	7
3 ≤ 4	15	8
4 ≤ 5	17	10
5 ≤ 6	18	12
6 ≤ 7	20	13
7 ≤ 8	21	14
8 ≤ 9	22	16
9 ≤ 10	24	17
10 ≤ 11	25	18
11 ≤ 12	26	19
12 ≤ 13	27	21
13 ≤ 14	28	22
14 ≤ 15	29	23
15 ≤ 16	30	24
16 ≤ 17	31	25
17 ≤ 18	32	26
18 ≤ 19	33	26
19 ≤ 20	34	27
20 ≤ 21	35	28
21 ≤ 22	35	28
22 ≤ 23	35	28
23 ≤ 24	35	29

different countries reach comparable results. A very high correlation of German and Spanish data was obtained (r=0.999) and is statistically highly significant (P<0.001). That is, the age-order of acquisition of auditory behaviors is similar in the German data to that obtained in this study. Standardized values (expected value and lower limit for the 95% confidence interval) of age-dependent auditory behavior are displayed in Table 6. Figure 3 illustrates individual subject findings, the norm curve and 95% confidence interval for the present data and the norm curve for the data for German. IntraClass correlation (ICC) was also computed to account for any systematic differences between the two sets of data that the Pearson's correlation may not have accounted for. An ICC of 0.94 indicates that auditory behavior in young children taken from the German population or the Spanish population has a very high level of agreement, *i.e.* they are almost exactly the same.

Discussion

The present data should be examined in comparison to the previously published results in German. On average, the index of difficulty for the Spanish data is a little higher than the one for the German data. A high index implies questions that reflect less complex, early developed behaviors. In the LittlEARS questionnaire, the difficulty or complexity of the auditory behavior described increases with the question number. That is, the last questions are the most difficult ones. As mentioned in the results section, some questions with a high index of difficulty were retained in the questionnaire in order to avoid zero-points-scores. The high ICC indicates that the data obtained in this study are entirely comparable to those in the German language version. The questionnaire on the whole was applicable to differentiate between children with more or less developed hearing behavior. This finding is very similar between German[12] and Spanish data.

The results of the present study indicated that the translation of the LittlEARS for use with Spanish speakers in the USA is a valid and potentially useful tool. The high correlation of total score to age indicated that the test accomplished the goal of assessing a progression of auditory skills in the target age group. As reflected in Figure 2, and in accordance with expectation, the parents reported few auditory abilities at younger ages and an increasing number of abilities with maturation. The item analysis indicated several items that did not correlate significantly with age in this normal hearing infant to toddler sample. Questions 2 (*¿Escucha su hijo cuando alguien habla? Does your child listen to somebody speaking?*) and 3 (*¿Cuando alguien habla, gira su hijo la cabeza hacia él/ella? When somebody is speaking, does your child turn his/her head toward the speaker?*) were retained because they represented early behaviors that were considered a logical starting point for assessment of infants. These questions were not recommended for deletion, because the total test impact is consistent with the stated purpose of the measurement. A similar pattern of non-discriminating values for certain questions in the German version[12] was obtained, but the rationale for retaining these questions was to avoid children obtaining a score of zero. In addition, the possibility that children with hearing loss will show a different pattern of behavior and skill acquisition compared to the normative performance is anticipated.

The LittlEARS questionnaire has appeal as a tool for screening regarding auditory development, and has been applied in this manner in other locales.[5] Thus, pediatricians or family practitioners who wish to have a preliminary description of a child's auditory development may have the parent complete the LittlEARS. Responses that fall below age expectations would alert the physician to be vigilant regarding hearing and substantiate the need for referral for audiologic evaluation.

In addition, the analyses demonstrated that parental observations using this translation closely approximate the findings obtained in the German version, as displayed in Figure 3, despite the smaller sample size. This observation makes the questionnaire attractive in comparative studies of intervention that may take place. It would be valuable for future studies to investigate the use of this Spanish version of LittlEARS with children hearing impairment and their progress with amplification or cochlear implantation.

In the United States, there are locations that may be able to make use of the present translation. In view of the diversity of national backgrounds assessed in the present sample, clinicians in other cities may encounter bilingual or monolingual parents in the English dominant environment and may potentially find this translation useful.

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