QUESTIONNAIRE ABEL - AUDITORY BEHAVIOR IN EVERYDAY LIFE: A STUDY OF RELIABILITY - INTERNAL CONSISTENCY OF THE BRAZILIAN VERSION AND REPRODUCIBILITY FOR TEST-RETEST

Questionário ABEL – Auditory Behavior in Everyday Life: estudo da confiabilidade – consistência interna da versão brasileira e reprodutibilidade no teste-reteste

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ABSTRACT

Purpose: checks the reliability (reproducibility and internal consistency) of the Portuguese version of the questionnaire Auditory Behavior in Everyday Life and the score associations with anamnesis and with interviewed´s schooling. **Methods:** we interviewed 18 parents of children between four and 13 years and 11 months, hearing aids users. The Portuguese version of the questionnaire was administered on two occasions. We verified the reproducibility of the test-retest and internal consistency and we investigated whether the values of the questionnaire could be associated with variables of anamnesis and with interviewed´s schooling. **Results:** the questionnaire proved to be reproducible and had high internal consistency (Cronbach's Alpha>0.7). There was an association between the degree of hearing loss and scores in item "Answers telephone appropriately" (p=0.004*) and "Says the names of siblings, family members, classmates" (p=0.032*) and scores on Auditory Awareness Factor (p=0.039*). There was an association between interviewee's schooling and the scores in item "Asks for help in situations where it is needed" (p=0.027*). **Conclusions:** the Portuguese version of ABEL showed reliability – reproducibility and internal consistency. There is an association between the degree of hearing loss and scores on specific items and in Auditory Awareness Factor. There is an association between interviewee's schooling and the score in item "Asks for help in situations where it is needed".

KEYWORDS: Hearing Loss; Child; Hearing Aids; Questionnaires; Rehabilitation of Hearing Impaired

◼ INTRODUCTION

Early diagnosis of hearing loss has provided the adaptation of electronic sound amplification devices in very young children.

The adaptation of such devices in the pediatric population is quite a difficult task. In order to succeed it is not only necessary to have sufficient knowledge of hearing loss of each patient, but also of the auditory development and expected behavior in the selection and adaptation of these electronic devices. One should also know which signs may indicate improvement in response to sound with consequent improvement of the overall behavior.

To have access to this information, the speech therapist who works with the prosthesis of hearing aids or with activation and mapping of cochlear implants has to frequently deal with limited information, in most cases subjective, obtained in the speech of parents, teachers, therapists and family members who live with the patients. For precise adjustments to be made and for guidance on the

use of prostheses and implants optimally and in different acoustic environments, more specific, concrete and measurable data is required. This can be achieved through the application of scales or formulated questionnaire for this purpose. Besides these, it is essential to emphasize the importance of objective measures, such as in situ measurements, which allow confronting if a good adaptation determined by these data is reflected in the data collected through questionnaires.

There are already validated instruments for the pediatric population, developed for this evaluation, mostly available only in English, in the form of questionnaires or scales. Some examples of such questionnaires, already translated into Brazilian Portuguese, is the MAIS – Meaningful Auditory Integration Scale [1] and the IT-MAIS – Infant-Toddler Meaningful Auditory Integration Scale [2], both translated and adapted to Portuguese [3,4] and which define landmarks of the oral and auditory development of children (MAIS) and toddlers (IT-MAIS), but limited application to those who present hearing loss of profound degree. There is also the scale PEACH – Parents' Evaluation of Aural/Oral Performance of Children [5], translated and adapted to Portuguese [6] that was developed to be used both in infants and in children of school age who have hearing loss degree ranging from mild to profound. The questionnaire ABEL – Auditory Behavior in Everyday Life [7] was also translated and culturally adapted to Brazilian Portuguese [8], being called *CAAD – Comportamento Auditivo nas Atividades Diárias* (Figure 1). This is an appropriate tool for use with parents of children with hearing loss from mild to profound, from four to 14 years old, consisting of 24 questions, divided into three factors: Oral-Aural, Hearing Awareness and Social Skills and Speakin, plus the total score. This questionnaire aims to assess the auditory behavior in daily activities.

Any instrument of this kind must be evaluated with respect to two parameters or psychometric properties: reliability and validity. Although it is already possible to access the translated questionnaires, none of the instruments cited above is validated for the Brazilian population, nor had their reliability been tested for hearing impaired population. Validity is determined based on the ability that the instrument has to measure what it proposes to [9]. Reliability is related to the reproducibility of a measurement, or to the degree of agreement between multiple measurements and the same object, and its consistency, which allows calculating the correlation between each test item and the remaining items or total of them [10].

Thus, this study aimed to: check the reproducibility of the Portuguese version of the questionnaire ABEL - Auditory Behavior in Everyday Life; verify internal consistency of the Portuguese version of the questionnaire ABEL - Auditory Behavior in Everyday Life; investigate possible associations of values obtained in the application of the instrument with the difference between the children's age at time of diagnosis and age at prosthesis, the daily use of hearing aids and degree of hearing loss of children, and possible combinations of the values obtained in the application of the instrument with the educational level of the interviewees.

■ METHODS

This study was approved by the Ethics Committee in Research of the home institution, through the protocol number 1097/08, as part of the initial project of the questionnaire ABEL translation - Auditory Behavior in Everyday Life. Only parents and/or caregivers that received information on the goals and methods of the study participated, and who authorized the use of the collected data, signing the Informed Consent Form.

This research consisted of a cross-sectional observational study.

The study was conducted between May and December 2010.

The sample was selected from a list of children of four years to 13 years and 11 months, who presented bilateral sensorineural hearing loss, which had been adapted or readapted with hearing aids in 2008 or 2009. We chose to recruit only children in this age group building on the study published in the making of the original questionnaire [7].

Consultation with the medical record of each patient was performed in order to detail the type and degree of hearing loss and its location (whether unilateral or bilateral).

Children should meet the following eligibility criteria:
- Present bilateral sensorineural hearing loss and mild to profound degree, according to the arithmetic average of thresholds obtained at 500, 1000 and 2000 Hz;
- Make use of hearing aids bilaterally.

The evident health problems that prevented observation of the activities listed in the questionnaire (such as mental retardation and/or other serious neurological damage) were considered exclusion criteria.

Eighteen children who met the criteria described were evaluated, of these, ten (55.6%) were female and eight (44.4%) were male. Table 1 shows the distribution of participants by age group.

Table 1 - Distribution of cases according to patients age

Age (in months)	N	%
61 ├ 91	04	22.2
91 ├ 121	09	50.0
121 ┤├ 151	02	11.1
Above 151	03	16.7
Total	18	100.0

Note: N = number, % = percentage

Initially, an interview with the guardians of the children was done, formulated by the author herself, based on anamnesis employed in the Clinic of Children's Audiological Evaluation of the institution where the study was performed. In this interview, personal data, data related to hearing loss (onset, duration), time of intervention, daily use of hearing aids, school data, and general health were investigated.

Of the 18 parents or caregivers interviewed, 17 (94.4%) were female and one (5.6%) was male. They had a mean age of 36.67 years. Regarding education, seven (38.9%) had finished high school, six (33.3%) had not finished elementary education, three (16.7%) had finished elementary education, one (5.6%) had not finished high school and one (5.6%) had not finished higher education. None of the respondents completed higher education.

After the interview, the questionnaire ABEL – Auditory Behavior in Everyday Life translated and adapted into Portuguese [8] was orally applied. The instrument aims to investigate the auditory behavior of children from four to 14 years old, hearing impaired, in their routine.

The questionnaire consists of 24 items, whose combined score results in the total score. The questions are further divided into three factors: 11 regarding the Oral-Aural aspect, which verifies the auditory reception and verbal response to tones (items 1, 2, 3, 4, 10, 12, 13, 14, 18, 21 and 22), ten related to Hearing Awareness of environmental sounds (items 7, 8, 15, 16, 18, 19, 20, 22, 23 and 24) and five referring to Social Skills, Speaking and Functional Independence (items 5, 6 , 9, 11 and 17). Two questions are present on two factors simultaneously. The average time for applying this questionnaire is about twenty minutes.

For each item, parents had to choose one of the following responses, with respect to the frequency of the conduct alleged, made by the child: never (0 points), almost never (1 point), occasionally (2 points), about half of time (3 points), often (4 points), almost always (5 points) and always (6 points). The questions 11 and 20 are reversed. So they

did not forget response options they had, a board was offered to the parents, made of paper card, containing the six response options. The questions were made orally, but access to possible responses could thus be remembered during the entire application of the instrument.

After completing the questionnaire, it was possible to obtain a total score, the sum of the points of the 24 items, and three other scores/specific factors: Oral-Aural, Hearing Awareness and Social Skills and Speaking. The higher the score, the better the child's performance at each of the measured aspects.

The questionnaire ABEL/CAAD was reapplied by the same examiner, on a second occasion, following the same protocol described above, fifteen days after the first application. The second application was performed on the same day of the week, same time and place of the first application, in order to prevent the occurrence of external effects which might have interfered with the accuracy of the results.

Statistical analysis of collected data was performed. Initially, the variables investigated on anamnesis and questionnaire to survey the social, economic and cultural profile of the interviewees were described, being the categorical variables detailed using absolute (n) and relative (%) frequencies, and quantitative variables described by the mean, median, standard deviation, minimum and maximum values and percentiles 25, 50 and 75. After this step, we verified the reliability of the questionnaire ABEL/CAAD: the test-retest reproducibility through the test of Wilcoxon Signed Posts, as well as its internal consistency, using the Statistics Cronbach's Alpha Test. At the end, it was investigated if the results of the first implementation of this instrument could be associated with quantitative variables investigated in the anamnesis and the educational level of the interviewees, which was performed using the Spearman correlation analysis. The level of significance for statistical tests was 0.05 (5%) and statistically significant values were marked with an asterisk in the tables.

RESULTS

The sample was detailed as to the current age, age at suspicion of hearing loss, age at confirmation of hearing loss, age at prosthesis and daily use of hearing aids (Table 2).

Regarding the realization of current or previous speech therapy, seven (38.9%) reported that they are going or have already gone through this process and 11 (61.1%) claimed to have never done speech therapy.

As for the daily use of hearing aids, four (22.2%) reported staying with prostheses up to ten hours per day and 14 (77.8%) stated that they use them for ten hours a day or more.

Regarding the degree of hearing loss in the better ear, five patients (27.8%) had hearing loss of mild or moderate degree, eight patients (44.4%) had hearing loss of severe or moderately severe degree and five patients (27.8%) had hearing loss of profound degree.

From the scores obtained by the patients evaluated in the application and reapplication of the questionnaire, we sought to identify possible differences between the results obtained in the test-retest, which are presented in Table 3.

Since the values of calculated significance (p) are, in all cases, greater than 5% (0.050), it can be stated that the differences between the values of the test and retest are not statistically significant, indicating that the instrument studied can be reapplied and the results are similar.

The degree of reliability of the instrument studied in terms of internal consistency of the observed values was verified. Since the values of the coefficients are all above 0.700, it can be stated that the reliability of the observed values is 'high' (Table 4).

We investigated whether the results of the first application of this instrument could be associated with the variables investigated in the anamnesis, namely the difference between the age at diagnosis of hearing loss and the time of hearing aid fitting, the daily use of hearing aids and the degree of hearing loss. The same analysis was performed with regard to education of the interviewees. The results are shown in Table 5.

AUDITORY BEHAVIOR IN EVERYDAY LIFE (ABEL)

COMPORTAMENTO AUDITIVO NAS ATIVIDADES DIÁRIAS (CAAD)

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Nome da criança:_____Preenchido por:_____Data:_____

Instruções: Gostaríamos de saber como você observa o desenvolvimento auditivo de sua criança. Por favor, circule o número ao lado de cada item que melhor descreve o comportamento da criança durante a última semana.

0 Nunca   1 Quase nunca   2 Ocasionalmente   3 Cerca de metade do tempo

4 Freqüentemente   5 Quase sempre   6 Sempre

1. Inicia conversas com pessoas familiares.	0 1 2 3 4 5 6
2. Chama uma pessoa pelo nome para chamar sua atenção.	0 1 2 3 4 5 6
3. Diz "por favor" e "obrigado" sem ser lembrado.	0 1 2 3 4 5 6
4. Responde verbalmente ao cumprimentar familiares.	0 1 2 3 4 5 6
5. Inicia conversas com pessoas não familiares.	0 1 2 3 4 5 6
6. Respeita troca de turnos na conversação.	0 1 2 3 4 5 6
7. Atende ao telefone adequadamente.	0 1 2 3 4 5 6
8. Atende ao chamado de seu nome estando no mesmo ambiente.	0 1 2 3 4 5 6
9. Conversa utilizando uma intensidade normal de voz.	0 1 2 3 4 5 6
10. Solicita ajuda em situações necessárias.	0 1 2 3 4 5 6
11. Produz sons vocais inapropriados.	0 1 2 3 4 5 6
12. Demonstra interesse nas conversas que ocorrem em torno dele / dela.	0 1 2 3 4 5 6
13. Responde verbalmente ao cumprimento de pessoas não familiares.	0 1 2 3 4 5 6
14. Diz os nomes dos irmãos, membros da família e colegas de classe.	0 1 2 3 4 5 6
15. Atende a uma batida na porta ou campainha.	0 1 2 3 4 5 6
16. Sussurra uma mensagem pessoal.	0 1 2 3 4 5 6
17. Fica em silêncio quando solicitado.	0 1 2 3 4 5 6
18. Pergunta sobre sons que escuta a sua volta (ex: aviões, caminhões e animais).	0 1 2 3 4 5 6
19. Reconhece quando produz sons intensos (por exemplo, batidas de porta, batidas de pé).	0 1 2 3 4 5 6
20. Ignora o toque do telefone.	0 1 2 3 4 5 6
21. Brinca cooperativamente em um pequeno grupo sem supervisão de adultos.	0 1 2 3 4 5 6
22. Canta.	0 1 2 3 4 5 6
23. Sabe quando as próteses auditivas não estão funcionando.	0 1 2 3 4 5 6
24. Faz experiências com sons recém descobertos.	0 1 2 3 4 5 6

INSTRUÇÕES PARA A PONTUAÇÃO (para uso na clínica):

Escores reversos para as questões 11 e 20.

Some as respostas e divida por 24 para obter o escore total.

Oral-aural Fator 1 = (1 + 2 + 3 + 4 + 10 + 12 + 13 + 14 + 18 + 21 + 22)/11

Consciência auditiva Fator 2 = (7 + 8+ 15 + 16 + 18 + 19 + 20 + 22 + 23 + 24)/10

Habilidades Sociais/de Conversação Fator 3 = (5 + 6 + 9 + 11 + 17)/5

Figure 1 - Portuguese version of the questionnaire ABEL – *Auditory Behavior in Everyday Life*

Table 2 – Descriptive measures in ages of current, suspicion and hearing loss confirmation, of prosthesis and daily use of the hearing prosthesis (n=18)

Variable	Min.	Max.	Average	SD	Percentile 25	Percentile 50 (Average)	Percentile 75
Current age (in months)	61.00	161.00	110.17	28.88	90.75	100.50	141.00
Age on suspicion of HI (in months)	0.00	60.00	31.44	18.85	18.00	30.00	49.50
Age at confirmation of HI (in months)	1.00	84.00	50.89	26.25	33.75	54.00	75.00
Age at prosthesis (in months)	24.00	132.00	70.00	29.69	46.75	72.00	86.50
Daily use of hearing aids (in hours)	3.00	15.00	10.33	3.50	9.00	12.00	12.00

Note: N = number; Min. = minimum; Max. = maximum; SD = standard deviation; HI = hearing impairment

Table 3 – Descriptive measures of scores obtained in the application of questionnaire abel per question, by factor and total score and reproducibility in test-retest

Variable	Average	SD	Min.	Max.	Percentile 25	Percentile 50 (Average)	Percentile 75	Significance (p)
Q1	4,44	1,85	1,00	6,00	2,75	5,00	6,00	0,566
r Q1	4,83	1,79	0,00	6,00	4,75	5,50	6,00	
Q2	4,67	1,88	0,00	6,00	4,00	5,50	6,00	0,573
r Q2	4,44	2,09	0,00	6,00	2,75	5,50	6,00	
Q3	4,39	2,36	0,00	6,00	3,25	5,50	6,00	0,271
r Q3	4,17	2,41	0,00	6,00	1,75	5,50	6,00	
Q4	4,33	2,45	0,00	6,00	1,75	6,00	6,00	0,564
r Q4	4,44	2,28	0,00	6,00	3,50	5,50	6,00	
Q5	1,72	2,22	0,00	6,00	0,00	1,00	4,00	0,719
r Q5	1,61	2,09	0,00	6,00	0,00	1,00	3,25	
Q6	2,89	2,47	0,00	6,00	0,00	3,00	6,00	0,096
r Q6	2,11	2,27	0,00	6,00	0,00	1,00	5,00	
Q7	3,06	2,73	0,00	6,00	0,00	3,00	6,00	0,892
r Q7	3,11	2,83	0,00	6,00	0,00	3,50	6,00	
Q8	4,83	1,86	0,00	6,00	3,75	6,00	6,00	0,518
r Q8	5,00	1,53	2,00	6,00	4,00	6,00	6,00	
Q9	3,00	2,54	0,00	6,00	0,00	3,50	5,25	0,221
r Q9	3,72	2,30	0,00	6,00	1,75	5,00	6,00	
Q10	5,33	1,09	2,00	6,00	5,00	6,00	6,00	0,668
r Q10	5,22	1,22	1,00	6,00	5,00	5,50	6,00	
Q11	3,33	2,72	0,00	6,00	0,00	4,00	6,00	0,932
r Q11	3,33	2,30	0,00	6,00	1,00	3,50	6,00	
Q12	5,17	1,62	1,00	6,00	5,00	6,00	6,00	0,680
r Q12	5,33	1,09	2,00	6,00	5,00	6,00	6,00	
Q13	3,00	2,47	0,00	6,00	0,00	2,50	5,25	0,324
r Q13	2,28	2,49	0,00	6,00	0,00	1,00	5,00	
Q14	5,06	1,92	0,00	6,00	5,00	6,00	6,00	0,416
r Q14	4,67	2,30	0,00	6,00	3,75	6,00	6,00	

Variable	Average	SD	Min.	Max.	Percentile 25	Percentile 50 (Average)	Percentile 75	Significance (p)
Q15	4,67	2,06	0,00	6,00	3,00	6,00	6,00	0,112
r Q15	4,11	2,14	0,00	6,00	2,00	5,00	6,00	
Q16	1,39	2,15	0,00	6,00	0,00	0,00	2,25	0,798
r Q16	1,28	1,71	0,00	5,00	0,00	0,50	2,25	
Q17	4,33	2,00	0,00	6,00	2,75	5,00	6,00	0,674
r Q17	4,61	2,15	0,00	6,00	2,75	6,00	6,00	
Q18	3,44	2,75	0,00	6,00	0,00	4,50	6,00	0,725
r Q18	3,72	2,59	0,00	6,00	1,00	5,00	6,00	
Q19	4,17	2,41	0,00	6,00	1,75	5,50	6,00	0,591
r Q19	4,61	1,82	0,00	6,00	4,00	5,00	6,00	
Q20	4,06	2,34	0,00	6,00	2,50	5,00	6,00	0,720
r Q20	3,83	2,15	0,00	6,00	1,75	4,50	6,00	
Q21	5,72	0,58	4,00	6,00	5,75	6,00	6,00	0,655
r Q21	5,56	1,20	1,00	6,00	5,75	6,00	6,00	
Q22	3,94	2,44	0,00	6,00	1,75	5,00	6,00	0,197
r Q22	4,50	2,31	0,00	6,00	2,00	6,00	6,00	
Q23	5,06	1,98	0,00	6,00	5,00	6,00	6,00	0,564
r Q23	5,00	1,97	0,00	6,00	5,00	6,00	6,00	
Q24	1,67	2,40	0,00	6,00	0,00	0,00	3,50	0,187
r Q24	2,06	2,46	0,00	6,00	0,00	1,00	3,75	
Oral-Aural Factor	4,50	1,15	1,73	6,00	3,57	4,73	5,55	0,917
r Oral-Aural Factor	4,47	1,20	1,73	5,73	3,91	4,77	5,55	
Hearing awareness Factor	3,63	1,10	1,40	5,40	2,88	3,55	4,55	0,686
r Hearing awareness Factor	3,72	0,87	2,50	5,40	2,88	3,65	4,48	
Social Skills Factor	3,06	1,28	0,20	5,00	2,25	3,10	3,80	0,979
r Social Skills Factor	3,08	1,16	1,20	5,60	2,15	3,10	3,70	
Total Score	3,90	0,91	2,46	5,17	2,94	3,94	4,69	0,831
r Total Score	3,90	0,81	2,42	5,04	3,19	4,19	4,55	

Note: N = number; Min. = minimum; Max. = maximum; SD = Standard deviation; r = retest; Q = question
Test of Wilcoxon Signed Posts, p<0.05

Table 4 - Verification of internal consistency for different factors and the total score of questionnaire abel

Aspect	Coefficient Alpha	Significance (p)
Oral-aural Factor	0.888	< 0.001*
Hearing Awareness Factor	0.860	< 0.001*
Social Skills Factor	0.794	0.001*
Total Score	0.934	< 0.001*

Note: N = number
Statistics Cronbach's Alpha Test, p<0.05

Table 5 - Degree of correlation between the score obtained in questionnaire abel and difference between the age at diagnosis of hearing loss and at time of adaptation of hearing aids, the daily time use of hearing aids, the degree of hearing loss and the educational level of interviewees

Variable	Statistics	diff	timeuse	degree	Educational level
Q1	Correlation Coefficient (r)	-0.082	-0.373	-0.053	0.035
	Significance (p)	0.747	0.128	0.835	0.889
Q2	Correlation Coefficient (r)	-0.153	0.024	-0.386	-0.336
	Significance (p)	0.546	0.925	0.114	0.173
Q3	Correlation Coefficient (r)	-0.046	0.012	-0.356	-0.145
	Significance (p)	0.856	0.963	0.147	0.566
Q4	Correlation Coefficient (r)	0.207	-0.110	-0.254	-0.050
	Significance (p)	0.409	0.664	0.310	0.845
Q5	Correlation Coefficient (r)	-0.240	0.046	0.076	0.262
	Significance (p)	0.338	0.856	0.765	0.294
Q6	Correlation Coefficient (r)	-0.039	0.014	0.272	-0.019
	Significance (p)	0.878	0.955	0.275	0.939
Q7	Correlation Coefficient (r)	0.113	-0.260	-0.643	0.368
	Significance (p)	0.654	0.298	0.004*	0.133
Q8	Correlation Coefficient (r)	-0.305	0.250	-0.180	-0.272
	Significance (p)	0.218	0.317	0.475	0.274
Q9	Correlation Coefficient (r)	0.233	-0.195	0.074	-0.062
	Significance (p)	0.353	0.438	0.772	0.806
Q10	Correlation Coefficient (r)	-0.376	0.133	-0.370	-0.519
	Significance (p)	0.124	0.598	0.130	0.027*
Q11	Correlation Coefficient (r)	0.026	-0.215	-0.099	0.151
	Significance (p)	0.918	0.391	0.696	0.550
Q12	Correlation Coefficient (r)	-0.015	-0.119	-0.103	-0.312
	Significance (p)	0.953	0.638	0.684	0.207
Q13	Correlation Coefficient (r)	-0.093	-0.202	0.309	-0.049
	Significance (p)	0.715	0.421	0.212	0.847
Q14	Correlation Coefficient (r)	-0.131	-0.318	-0.507	-0.051
	Significance (p)	0.605	0.199	0.032*	0.842
Q15	Correlation Coefficient (r)	-0.054	0.248	-0.066	-0.133
	Significance (p)	0.831	0.320	0.796	0.600
Q16	Correlation Coefficient (r)	-0.013	-0.343	0.055	-0.151
	Significance (p)	0.958	0.163	0.827	0.549
Q17	Correlation Coefficient (r)	-0.087	-0.199	0.008	-0.261
	Significance (p)	0.730	0.429	0.976	0.296
Q18	Correlation Coefficient (r)	-0.124	-0.168	-0.295	-0.072
	Significance (p)	0.624	0.506	0.234	0.776
Q19	Correlation Coefficient (r)	-0.039	0.006	-0.069	-0.121
	Significance (p)	0.878	0.981	0.785	0.634
Q20	Correlation Coefficient (r)	0.059	0.047	-0.249	0.341
	Significance (p)	0.817	0.855	0.319	0.166
Q21	Correlation Coefficient (r)	-0.371	-0.244	-0.376	-0.333
	Significance (p)	0.130	0.329	0.124	0.178
Q22	Correlation Coefficient (r)	-0.033	-0.128	-0.325	0.044
	Significance (p)	0.898	0.613	0.188	0.862

Variable	Statistics	diff	timeuse	degree	Educational level
Q23	Correlation Coefficient (r)	0.274	-0.070	0.000	0.136
	Significance (p)	0.271	0.782	1.000	0.589
Q24	Correlation Coefficient (r)	0.087	-0.291	-0.316	0.049
	Significance (p)	0.732	0.241	0.201	0.847
Oral-Aural Factor	Correlation Coefficient (r)	-0.113	-0.233	-0.237	-0.145
	Significance (p)	0.656	0.351	0.343	0.565
Hearing awareness Factor	Correlation Coefficient (r)	-0.049	-0.217	-0.489	0.090
	Significance (p)	0.848	0.387	0.039*	0.721
Social Skills Factor	Correlation Coefficient (r)	-0.039	-0.175	0.101	0.063
	Significance (p)	0.878	0.486	0.690	0.803
Total Score	Correlation Coefficient (r)	-0.101	-0.196	-0.316	-0.025
	Significance (p)	0.691	0.436	0.201	0.922

Note: n = number, Q = question; diff = difference between age at diagnosis and age at prosthesis; timeuse = daily time use of hearing aids; degree = degree of hearing loss
Spearman correlation analysis, p<0.05

■ DISCUSSION

It was observed reproducibility of the instrument in all questions, in the total score and Oral-Aural, Hearing Awareness and Social Skills and Speaking scores (Table 3). Application of Statistics Cronbach's Alpha Test showed high internal consistency (Table 4). Other researchers sought to conduct similar investigations for this instrument in its English version and other instruments used in the evaluation of clinical interventions, finding reproducibility and/ or internal consistency similar to those observed in the present study [5,7,11-13].

When checking if results of the first application of the questionnaire could be associated with quantitative variables studied in anamnesis, namely, the difference between age at diagnosis and age at fitting, daily use of hearing aids and degree of hearing loss, no statistically significant associations were found between the questionnaire score and the difference between the age at diagnosis of hearing loss and the time of the hearing aid fitting. Even though the questionnaire ABEL has not evidenced a higher score in those who spent less time in auditory deprivation, there is a consensus that the fitting of hearing aids in children occurs early, soon after the diagnosis of deafness, to avoid the effects of sensorial deprivation on the overall development and, in particular, the language. Early identification of hearing loss does not result in a better child development, but the age at which the child has access to language and communication through the intervention performed does, the latter being the real cause of a good result [14]. The variable "time of hearing aids adaptation" was not analyzed, considering it is a very heterogeneous group with respect to age, which could complicate the interpretation of this data (younger children would inevitably have less time of use than part of the older children). We chose to evaluate the time of auditory deprivation, prior to the prosthesis adaptation, and its possible impact on the outcome of the questionnaire, for it is a more homogeneous data, whereas all patients were already fitted in the time of data collection.

No statistically significant associations between the questionnaire score and the daily use of electronic amplification device were found. This finding is explained by the fact that most of the participants make use of the prosthesis by a considerable number of hours, which complicated the comparison between subjects of different profiles (see Table 1, which percentile 25 is of 9 hours of daily use, an which percentiles 50 and 75 are of 12 hours a day). However, significant differences have been found regarding the daily use of hearing aids in the oral-aural score, the total score and the score of hearing awareness in questionnaire ABEL: children who used hearing aids for longer showed better performance measured by the questionnaire for these aspects [8].

Regarding the degree of hearing loss and auditory behavior in daily activities, we found a negative correlation between the degree of hearing loss and the scores from the question 7 ("answers the phone properly") and 14 ("says the name of brothers, family members and classmates") as well as for Hearing Awareness Factor. For these, the greater the degree of hearing loss, the worse the performance measured by the questionnaire. These results are within the expected, given that, for the activities mentioned, one must have good hearing sensitivity. This is true, especially when

thinking about the activity of talking on the phone, in which there is no other sign than hearing to assist in understanding the message. The questionnaire was formulated to be applied to parents and caregivers of children with mild to profound hearing loss degree [7], and the lowest scores in children with severe or profound hearing loss degree are expected, but subject to change after speech therapy, through the adaptation of amplification devices, hence the importance of its application throughout the development, so as to monitor the evolution of the auditory behavior. The study that the original version of the instrument was published in, of six patients with profound hearing loss, assessed prior to activation of the cochlear implant, only one had more than two points in total score. After 36 months of activation, all patients achieved total score above three points in the questionnaire ABEL.

The findings of this study corroborate the results described in the literature, in which, on tools for subjective assessment of auditory behavior, smaller or poorer performance scores were found in children with greater hearing loss [7,8,15,16].

When checking if results of the first implementation of this instrument could be associated with educational level of the interviewees, only one ratio presented a statistically significant result: to question 10 ("Requests assistance in necessary situations"), the higher the educational level of parents, the worse the child's performance in this item. The investigation of parents' education was performed assuming that this could positively influence, namely, that the greater the level of education of the relatives, the higher the score on the questionnaire ABEL, which would better reflect the child's performance in skills assessed by the questionnaire. The literature argues that the intellectual and educational level of parents who respond to instruments similar to ABEL, in this case, CDI - Communicative Development Inventories, may influence the responses offered by them [17]. However, a negative correlation was found, different from expected. The existence of high levels of parental neglect in the daily lives of children can be observed both with regard to students from public and private schools, which makes it clear that the lack of commitment of some parents is not a matter of lack of socio-economic conditions, or with low education, but a condition that affects all social strata among modern families [18]. The restriction in proximity to children due to limited time of modern parents is mediated by virtual technologies such as the internet, instant messaging or the cell phone, which ultimately facilitate the reduction of physical interaction. Added to this, there is the fact that children, from an early age, attend schools, enabling a range of possibilities of identifying characters besides the parental figures [19]. Thus, the habits arising from modernity often end up making interaction between parents and children more restricted, which may justify further search for help from children whose parents have lower school level and possibly less duties of modern life. Other families and children may come across other resources and/or the presence of other people from outside the family circle (nannies, caregivers, teachers), which they may call upon when needed.

CONCLUSION

There is test-retest reproducibility in the questionnaire ABEL - Auditory Behavior in Everyday Life/*CAAD - Comportamento Auditivo nas Atividades Diárias*, which proves that the instrument studied can be reapplied and the results remain similar.

The questionnaire ABEL - Auditory Behavior in Everyday Life/*CAAD - Comportamento Auditivo nas Atividades Diárias* presents internal consistency, which demonstrates that the items that it proposes to measure the same general construct produce similar results.

There is an association between the degree of hearing loss in items "Answers the phone properly", "Says the name of siblings, family members and classmates" and Hearing Awareness Factor in the questionnaire ABEL - Auditory Behavior in Everyday Life/*CAAD - Comportamento Auditivo nas Atividades Diárias*: the greater the degree of hearing loss in the better ear, the worse the children's performance.

There is an association between education of the interviewees and the item "Requests assistance in necessary situations" in the questionnaire ABEL - Auditory Behavior in Everyday Life/*CAAD – Comportamento Auditivo nas Atividades Diárias*: the lower the educational level of parents, the greater the child's performance.

ACKNOWLEDGEMENTS

RESUMO

Objetivo: verificar a confiabilidade (reprodutibilidade e consistência interna) da versão em português do questionário *Auditory Behavior in Everyday Life* e associações da pontuação com dados de anamnese e escolaridade dos entrevistados. **Métodos:** foram entrevistados 18 pais de crianças entre quatro e 13 anos e 11 meses, usuárias de próteses auditivas. A versão em português do questionário foi aplicada em duas ocasiões. Estatisticamente, verificou-se a reprodutibilidade no teste-reteste e a consistência interna do instrumento. Foi investigado se valores obtidos na aplicação do questionário poderiam estar associados às variáveis da anamnese e à escolaridade dos entrevistados. **Resultados:** o questionário mostrou-se reprodutível e com elevada consistência interna (Alfa de Cronbach>0,7). Houve associação entre o grau de perda auditiva e os itens "Atende ao telefone adequadamente" (p=0,004*), "Diz o nome de irmãos, membros da família e colegas de classe" (p=0,032*) e o Fator Consciência Auditiva (p=0,039*). Houve associação entre escolaridade dos entrevistados e o item "Solicita ajuda em situações necessárias" (p=0,027*). **Conclusões:** a versão em português do questionário ABEL tem confiabilidade: reprodutibilidade e consistência interna. Há associação entre o grau de perda auditiva e a pontuação em itens específicos e no Fator de Consciência Auditiva. Há associação entre a escolaridade dos entrevistados e o item "Solicita ajuda em situações necessárias".

DESCRITORES: Perda Auditiva; Criança; Auxiliares de Audição; Questionários; Reabilitação de Deficientes Auditivos

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