

Original Article

Artigo Original

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Cross-cultural adaptation of Preschool Language Assessment Instrument: Second Edition

Adaptação transcultural do Preschool Language Assessment Instrument: Segunda Edição

ABSTRACT

Purpose: In Brazil, formal tools for the evaluation of spoken language are scarce. Therefore, this study aimed to translate and adapt to Brazilian Portuguese the Preschool Language Assessment Instrument: Second Edition (*PLAI-2*). **Methods:** The process of translation and adaptation of this instrument was conducted in two stages — Stage 1: (1a) translation of the original version to Brazilian Portuguese, (1b) comparison of the translated versions and synthesis into a single Portuguese version, (1c) back-translation, (1d) revision of the translated version; and Step 2: (2a) application of the Portuguese version in a pilot project with 30 subjects, and (2b) statistical comparison of three age groups. **Results:** In the Brazilian version, all items of the original version were kept. However, it was necessary to modify the application order of one item, and the change of one picture was suggested in another. The results obtained after application indicated that the Brazilian version of the *PLAI-2* allows us to distinguish the performance of participants belonging to different age groups, and that the raw score tends to increase with age. **Conclusion:** Semantic and syntactic adjustments were required and made to ensure that *PLAI-2* would be used with the same methodological rigor of the original instrument. The adaptation process observed the theoretical, semantic, and cultural equivalences.

RESUMO

Objetivo: No Brasil, instrumentos formais para avaliação da linguagem falada são escassos. Portanto, o objetivo deste estudo foi realizar a tradução e a adaptação para o Português Brasileiro do instrumento *Preschool Language Assessment Instrument (PLAI-2)*. **Métodos:** O processo de tradução e adaptação desse instrumento foi realizado em duas etapas — Etapa 1: (1a) tradução da versão original para o Português Brasileiro, (1b) comparação das versões traduzidas e síntese para uma única versão em Português, (1c) retrotradução, (1d) revisão da versão traduzida; e Etapa 2: (2a) aplicação da versão em Português em um projeto piloto de 30 sujeitos e (2b) comparação estatística dos três grupos etários. **Resultados:** Na versão brasileira, foram mantidos todos os itens da versão original, porém foi necessária a modificação da ordem de aplicação de um item e sugerida mudança de gravura em outro. Os resultados obtidos na aplicação indicaram que a versão brasileira do *PLAI-2* permitiu discriminar o desempenho dos participantes de diferentes grupos etários e que o escore bruto tende a ser crescente em função do aumento da idade. **Conclusão:** Foram necessários e realizados ajustes de ordem semântica e sintática, para que o *PLAI-2* fosse utilizado com o mesmo rigor metodológico do instrumento original. O processo de adaptação atendeu às equivalências teórica, semântica e cultural.

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INTRODUCTION

For an early identification of and intervention in problems related to spoken language, it is necessary that the professional first chooses the assessment procedures that will be part of the diagnostic process, in order to investigate specific language abilities and also allow the accomplishment of ongoing assessments, seeking to verify and establish the necessary modifications to the intervention^(1,2).

The use of standardized procedures, to directly assess the performance of a child, offers some advantages over inventories and scales to be completed by parents or teachers, which, although important as part of the evaluation process, do not allow expert analysis⁽³⁾. In clinical practice, and especially in research on language, standardized instruments have been increasingly used as aids in the evaluation of different components of language⁽⁴⁻⁸⁾.

It is known that there are not always built and/or adapted and standardized instruments available in a country's mother tongue, especially in Brazil. In some situations, it is not possible, or even advisable, to build a proprietary instrument due to considerable spending involved, of both money and time, as well as requirement of a specific knowledge of psychometrics^(4,9). Therefore, a possible and viable alternative is to translate and adapt a tool developed in another language, a process usually called "cultural adaptation"^(10,11).

Thus, initiatives for the adaptation and validation of instruments for the evaluation of spoken language are a current need in the area of Speech-Language Pathology and Audiology in Brazil, to fill the gap in the availability of objective methods for assessing language^(4,12). This would not only provide support for clinical Speech-Language Pathologists, but also contribute to the national scientific scenario, enabling the conduction of comparative and cross-cultural studies⁽⁴⁾.

The national context is still lacking as to the availability of formal instruments for evaluation of spoken language in children at preschool age, built in, or adapted to, our linguistic culture, particularly with the permission for use by a speech-language pathologist in a clinical or scientific context⁽¹²⁾.

Among the internationally recognized instruments for evaluation of spoken language in preschool-aged children, the second version of the Preschool Language Assessment Instrument (*PLAI-2*) is a test that investigates important aspects of the early communicative exchanges, that is, it shows how a child integrates cognitive, linguistic, and pragmatic components to meet the demand of discursive exchange with an adult at two response levels: receptive language (nonverbal response) and expressive language (verbal response)⁽¹³⁾.

Therefore, the aim of this study was to translate and adapt *PLAI-2* instrument to Brazilian Portuguese.

METHODS

This study was approved by the research ethics committee (protocol no. 0595/2012). All participants obtained parental consent by handing in a signed free and informed consent form

designed for specific purposes of this research, in accordance with the resolution of the National Health Council (CNS/196) on Guidelines and Standards Regulating Research Involving Human Subjects.

Description of the instrument

PLAI-2 is an assessment tool that is administered individually. The test consists of 70 stimuli, and the application should be initiated with the first item and finished with the last item, because they are not arranged in order of complexity.

Standardized assessment

Six subtests developed to assess the communication skills of children involved four levels of communicative ability and two response modes. The four levels of ability are:

1. choice: refers to characteristics that are closely linked to objects; in this phase, the child must name selected objects, entities or actions, or perform imitation;
2. selective analysis: evaluates the ability of a child to answer questions about specific attributes of objects and integrate diverse elements into a unified idea;
3. perceptual analysis: is the child's ability to avoid perceptual impulses and conform to the order, that is, name or perceptually select subtle but significant aspects of objects, entities, and actions based on linguistic constraints;
4. reasoning: the child must name or select objects, characteristics, functions, and classifications to predict outcomes and justify responses.

The two response modes belonging to the standardized assessment include receptive language, which refers to the child's ability to perform tasks that require nonverbal responses, and expressive language, which refers to the child's ability to respond to tasks that require verbal response. It is noteworthy that the levels of ability (subtests) are distributed proportionally among the receptive and expressive language items.

Standardized score of the responses

For each correct answer, the assign score is 1, and 0 for each incorrect answer next. The score is noted next to the item in the record book.

On completion of the test and marking of all items, the raw scores of the items must be computed so that the standardized scores of the subtests can be determined, which will be used to form a scale score, percentage ranks, and equivalent age using the tables included in the assessor manual.

For the descriptive performance rating — very poor, poor, below average, average, above average, superior, and above superior — the score of the communicative ability is converted into descriptive classifications, also by tables included in the assessor manual.

The individual performance of a child's test is carried out and entered in the record book of the *PLAI-2*. It is noteworthy that *PLAI-2* features two record books, whose use is determined

by the age of the child, that is, one brochure is for use with children aged 3, and the other one is for use with children aged between 4 and 5. Although each record book contains the same items in the same order, specifically in the record book for children aged 3, the two highest levels of communicative ability — Perceptual Analysis and Reasoning — are combined, since such skills are still being acquired, therefore, are more limited in children aged 3. The same items that compose the Receptive and Expressive subtests in children aged 3 are also used for other age groups.

For methodological reasons, this study was divided into two stages, as described below.

Stage 1 – translation and adaptation procedures

The translation and adaptation process of *PLAI-2* was conducted in the following stages⁽¹⁴⁻¹⁹⁾:

- 1a. Translation of the original version (English) to Brazilian Portuguese by two independent, bilingual sworn translators who were informed of the study objectives.
- 1b. Comparison of the translated versions and drafting of a synthesized version, which were analyzed for disparities, solved through discussion between experts in the field of Speech-Language Pathology and Audiology based on the evaluation of conceptual equivalence, considering the population involved.
- 1c. Back-translation of the synthesized version was carried out by two other sworn translators who have not had access to the original version of the procedure.
- 1d. Comparison between the back-translated and the original versions, revision and adaptation of the Portuguese version, performed by professionals (Speech-Language Pathologists) with experience in the use of early language tests, to ensure semantic, idiomatic, and conceptual equivalence, resulting in the adapted, pre-final version of *PLAI-2*.

Stage 2 – application of the pre-final version

- 2a. This stage consisted of the application of the pre-final version of the instrument on a pilot group with 30 participants, to verify the technical (collection form) and criterion (normative interpretation) equivalence, in addition to finding possible inconsistencies between the original and targeted versions;
- 2b. For comparison between the three age groups (3-, 4-, and 5-year-olds) of the variables — raw receptive and expressive scores and scale score of the communicative ability —, we used the nonparametric Kruskal–Wallis test.

Stage 2a – Selection of participants

Participants were selected from daycare centers that also work as EMEIs (Municipal Primary Schools), which best met the needs relative to a sample with varying socioeconomic statuses in a municipality in the interior of São Paulo, considering the following inclusion criteria: parental consent by signing the free and informed consent form; negative history

of sensory alterations, visual and auditory, neuropsychomotor alterations; absence of language disorders, confirmed by performance in a clinical evaluation; and investigation of the minimum levels of auditory responses verified by screening with a Pediatric Audiometer.

Data collection was preceded by application of the Brazil Economic Classification Criterion, by the Brazilian Association of Research Companies,⁽²⁰⁾ for assessing the socioeconomic status of participants and sample characterization.

Subjects

The group for the administration of the pre-final version consisted of 30 participants divided into three groups of 10, according to their age group, as proposed in the original version (Table 1).

Table 1. Distribution of participants in the pilot group by age and gender

Groups	Number of participants	Males	Females
		n	n
GI (3 years to 3 years, 11 months)	10	6	4
GII (4 years to 4 years, 11 months)	10	7	3
GIII (5 years to 5 years, 11 months)	10	4	6

The socioeconomic status of the participants ranged from level A2 to level D.

RESULTS

Stage 1 – translation and adaptation procedures

The process of adapting *PLAI-2* was carried out following the stages considered essential for studies of adaptation and validation of instruments⁽¹⁴⁻¹⁹⁾. It is noteworthy that the translated items, especially those that proved more difficult to transpose to the target language, were also analyzed with the help of a linguist (Figure 1).

The adjustments made in the process are listed and explained in Chart 1.

It is noteworthy that all the items tested, as well as application instructions (orders, scoring, and interpretation), were included. Therefore, this process met the needs of theoretical, semantic, and cultural equivalence.

Stage 2 – test of the pre-final version of the *PLAI-2*

No biases were observed in the application, scoring, and analysis of the results. Data from the obtained raw score on the “receptive ability” and “expressive ability” items, as well as the performance calculated by the scale score in the “communicative competence” item of the three age groups are presented in Table 2. A statistically significant difference was found when comparing the raw score and climb the three age groups.

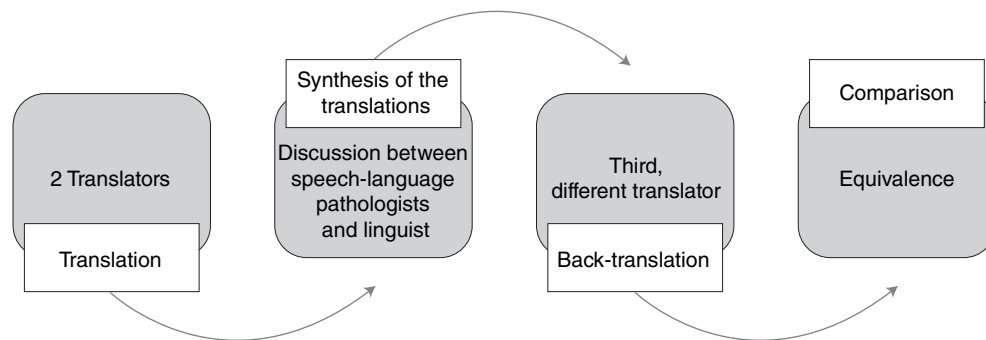


Figure 1. Schematic illustration of the translation and adaptation stages (1a to 1d) of the instrument

Chart 1. Representation of the adapted items

Original order	Adaptation	Justification
"...Show me..."	"...Mostre para mim..."	The translation options "Mostre-me", "Mostre para mim" or "Me mostre" are adequate. The second option was chosen due to the frequency of exposure, which represents the most informal use of the language.
"...man in the garage..."	"...mecânico..."	This adaptation was chosen due to the sociocultural context, in which sometimes there is a difference between being a receptionist/manager and being a mechanic.*
"...raincoat..."	"...guarda-chuva..."	The modification of the figures to "guarda-chuva" (umbrella), "cachorro-quente" (hot dog) and "pica-pau" (woodpecker) was suggested to maintain the number of words in the original version.**
"...cupcake..."	"...cachorro-quente..."	
"...starfish..."	"...pica-pau..."	
"...Now look at the bed and the chair. They are two pieces of furniture. Tell me the name of another piece of furniture."	"...Agora olhe para a maçã e o pão. Eles são dois alimentos. Me fale o nome de outro alimento."	The original translation, "móveis"/"imobiliário" (pieces of furniture/furniture), present expressions that are too formal for an infantile language.***
"Touch your hair, then stand up, and then clap your hands."	"Toque seu cabelo, levante e bata palmas."	The adapted version was chosen in spite of the original ("Toque seu cabelo, depois levante e depois bata palmas") due to the difficulty in comprehension by the participants.****

*The item was applied in its two forms, and a better comprehension was observed in the expression "mecânico", and consequently, a higher rate of correct responses; **The recognition of the image and the name "cupcake", which is a loanword from English used in Brazilian Portuguese, made its translation difficult; ***The item was applied in its two forms ("móveis" and "alimentos"), and a higher rate of correct responses was observed with the use of the word "food"; when using the word "movies" or "imobiliário", several participants failed to understand the order given, and, in most cases, the answer was given as "carro" (car) or "avião" (plane); ****The item was applied to five children in each age group in its two forms: "Toque seu cabelo, depois levante e depois bata palmas" (original) and "Toque seu cabelo, levante e bata palmas". It was observed that, when using the original expression, especially in the 3-year-old age group, there was difficulty in memorizing the sequence presented and in its comprehension (without the Brazilian Portuguese equivalent for "then")

The bar graph (Figure 2) is a "descriptive classification" of the performance of each age group in the items analyzed by the test.

DISCUSSION

The translation and adaptation process of international instruments has been a continuous practice, widespread among Brazilian psychologists and neuropsychologists. This practice is still relatively recent in Speech-Language Pathology and

Audiology, especially in the field of language. Although the process is long and complex, it was an alternative found by many researchers from different fields in the search for procedures that provide the professional with data guided by an objective assessment of language⁽⁵⁻⁸⁾. In Speech-Language Pathology and Audiology, there is still a gap, which prompted researchers that are concerned with filling it, such as in this study.

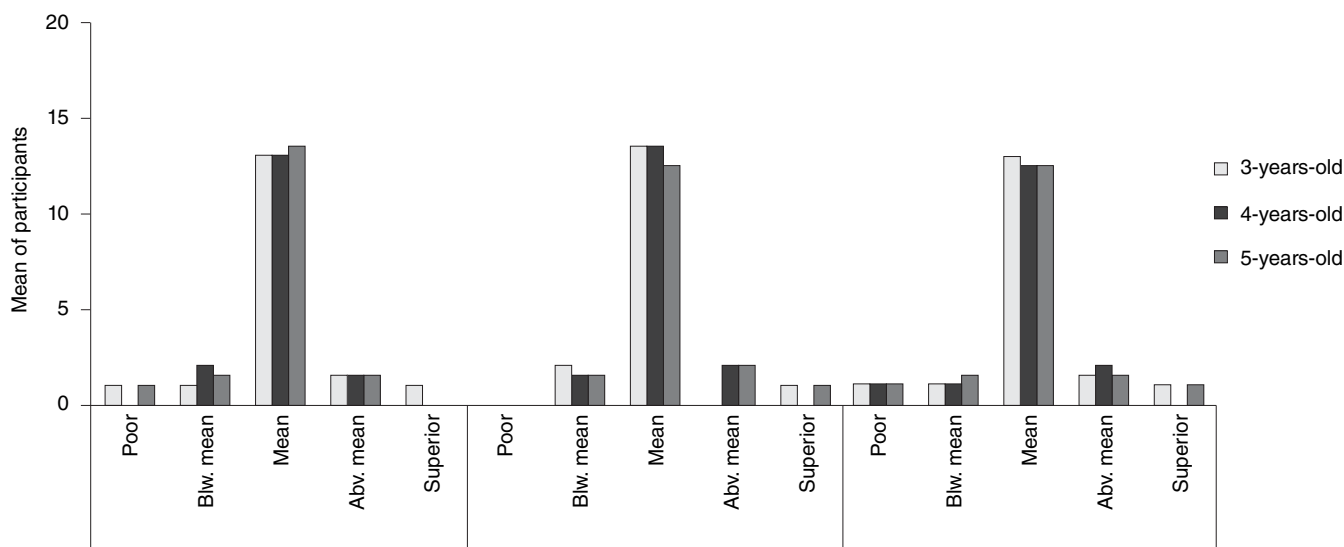
This adaptation presented a fairly satisfactory level of semantic equivalence. However, relevant adaptations were necessary during the process. Some orders demanded

Table 2. Comparison between the three age groups regarding the variables: raw receptive and expressive scores, and score for the communicative ability

Variable	Age group	Mean±SD (Median)	Min–Max	p-value
Raw score - reception	GI	15.3±2.6 (15.5)	9.0–23.0	<0.001*
	GII	19.2±2.6 (19.0)	14.0–24.0	
	GIII	23.0±2.3 (23.0)	18.0–28.0	
Raw score - expression	GI	14.2±3.7 (14.0)	6.0–27.0	<0.001*
	GII	19.0±3.4 (19.0)	12.0–26.0	
	GIII	26.1±3.2 (26.0)	19.0–32.0	
Scale score – communicative ability	GI	103.3±9.7 (104.5)	76.0–133.0	0.044**
	GII	98.9±8.6 (97.0)	79.0–118.0	
	GIII	100.3±9.9 (100.0)	79.0–127.0	

*p<0.005; **p<0.05

Caption: SD = standard deviation; GI = 3 years to 3 years 11 months; GII = 4 years to 4 years 11 months; GIII = 5 years to 5 years 11 months; Min = minimum; Max = maximum



Caption: Blw. mean = below mean; Abv. mean = above mean
Figure 2. Descriptive performance of the groups in the analyzed items

adjustments in both the grammatical framework due to formal expressions that aren't used in the child's vocabulary. Others demanded adaptations in the idiomatic framework because it wasn't possible to translate words or expressions from one language to the other due to the low frequency of use of the expression. Adaptations had to respect the grammatical rules of Brazilian Portuguese and consider sociocultural factors and age group.

Adaptations of this nature are common in studies requiring cross-cultural adaptation of language evaluation tests, showing similar challenges when translating words or phrases from one language to another^(5,8,21).

The results obtained in the pretest indicated that the Brazilian version of *PLAI-2* allows the discrimination of the performance of participants from three age groups 3-, 4- and 5 year olds, and it was observed that the mean and median

raw scores (reception and expression) tend to increase with age (3-years-old >4-years-old >5-years-old). Regarding communication skills, the results showed that the mean and median scores of the three age groups were relatively similar. Considering that the score was obtained from the conversion of the original test tables, statistical adjustments may be needed for the conversion tables with data from Brazil.

Regarding the classification of subjects' performance according to the original North American version, it was found that most speakers of Brazilian Portuguese presented an average classification, expected for English speakers (Figure 2), and that a peak of normality could also be observed despite the fact that the sample group had fewer participants per age group.

International studies using *PLAI-2*, both to identify problems related to spoken language and for intervention and

monitoring of the development of language, showed that the instrument is sensitive and has a positive predictive value in identifying cases of alterations in spoken language^(22,23) as well as for pretesting and post-intervention situations⁽²⁴⁻²⁶⁾.

Other studies have discussed the psychometric characteristics of norm-referenced instruments and those with the potential to assess the receptive vocabulary abilities, including *PLAI-2*. As a result, *PLAI-2* was defined as suitable for use, considering its psychometric characteristics, and relevant for profiling the receptive vocabulary^(27,28).

Therefore, in the field of language, the test has been considered as an important tool for the characterization study of expressive and receptive performance of spoken language, and also for follow-up at ages 3, 4, and 5.

CONCLUSION

In the translation and adaptation process of *PLAI-2*, adjustments in semantics and word order were necessary and performed, so that *PLAI-2* could be used in its translated and adapted version for Brazilian Portuguese with the same methodological rigor of the original instrument. The statistical difference found during comparison of age groups for the “receptive language”, “expressive language”, and “communication skills” items indicated that the translated and adapted versions met the theoretical, semantic, and cultural equivalences of the original test, and showed that it was possible to distinguish the performance of participants in the skills assessed.

**TAL was responsible for the study design, data acquisition, data analysis, and drafting of the manuscript; NFR and CMG were responsible for the study conception and design, requesting authorization of the publisher to use the procedure, data analysis, co-supervision and guidance of the research, and drafting of the manuscript.*

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