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Translation of the Parental Inventory "Language Use Inventory" into Brazilian Portuguese

Tradução do Inventário Parental "Language Use Inventory" para o Português Brasileiro

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Keywords

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ABSTRACT

Purpose: To translate and adapt the assessment tool Language Use Inventory from English to Brazilian Portuguese. **Methods:** The study was carried out in two stages. Once the publisher's authorization was given, the process of translation and back-translation of the protocol was initiated, adapting it to sociocultural aspects, such as expressions, names, and adequate examples in Brazilian Portuguese. In order to investigate the internal reliability of the translation process, the Cronbach's alpha coefficient was used. The second stage was a pilot study, in which the questionnaire was applied to 43 parents of children from 24 to 47 months old from a city in the State of São Paulo, Brazil. The results were analyzed according to the total score and to the subscales of the questionnaire. The variables age range and parental level of education were also analyzed. **Results:** The analysis using the Cronbach's alpha coefficient showed high internal consistency (α>0,98) in almost all the subscales which means that the instrument adapted to Brazilian Portuguese can be used. In the pilot study, an age effect was found in the total score and in the LUI subscale scores, i.e., the older the children, the fewer gestures they used, with more words and syntactic constructions. **Conclusion:** The Brazilian-Portuguese version of the LUI questionnaire seems to be a reliable translation of the original and a reliable instrument to evaluate preschoolers' language pragmatics. After future detailed analyses, it will allow early diagnosis and intervention in children with language disorders.

Descritores

Linguagem Infantil
Tradução
Protocolo
Entrevista
Comunicação

RESUMO

Objetivo: Traduzir e adaptar a ferramenta de avaliação "Language Use Inventory" do inglês para o português brasileiro. **Método:** O estudo foi realizado em duas etapas. Após a autorização da editora, foi iniciado o processo de tradução e retrotradução do protocolo, adaptando-o aos aspectos socioculturais, como expressões, nomes e exemplos adequados em português brasileiro. Para investigar a confiabilidade interna do processo de tradução, foi utilizado o coeficiente alfa de Cronbach. A segunda etapa foi um estudo piloto, no qual o questionário foi aplicado a 43 pais de crianças de 24 a 47 meses de uma cidade do interior do Estado de São Paulo, Brasil. Os resultados foram analisados segundo o escore total e as subescalas do questionário. As variáveis faixa etária e nível de escolaridade dos pais também foram analisadas. **Resultados:** A análise pelo coeficiente alfa de Cronbach mostrou alta consistência interna (α> 0,98) em quase todas as subescalas, o que significa que o instrumento adaptado para o português brasileiro pode ser utilizado de forma confiável. No estudo piloto, um efeito de idade foi encontrado no escore total e nos escores da subescala LUI, ou seja, quanto mais velhas as crianças, menos gestos foram utilizados e mais palavras, construções sintáticas foram produzidas. **Conclusão:** A versão brasileira do questionário LUI pareceu ser uma tradução fiel do instrumento original e confiável para avaliar a pragmática da linguagem de pré-escolares. Após futuras análises pormenorizadas, permitirá o diagnóstico precoce e a intervenção em crianças com distúrbios de linguagem.

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INTRODUCTION

Human communication as well as mental development are directly influenced by interaction and language, with direct implications on sociability, cognitive ability to objectify, understand, interpret, represent and construct reality in a socially organized world[1].

From birth, babies have all sensory and perceiving equipment to interact with the outside world, provoking, through the eyes, gestures, attitudes and behaviors that enable their needs to be satisfied. Cooing and babbling come up, as well as smiles and eye contact, requesting social games with adults. Babies follow faces with their eyes, select images from their field of vision, turn their heads to noises or voices, imitate facial expressions, accompany with movements the adult's speech. Around twelve months, first words occur as well as the understanding of songs, words, small instructions or prohibitions[2]. The comprehension of the adult's intentional action results from a gradual process of organizing the infants' sensory motor actions (by imitating adults' behavior)[3].

With the increase of lexical repertoire and syntactic complexity, around two years of age, there is the development of pragmatic competence, using linguistic and extralinguistic communication within the context. From this age, the individual masters turn-taking and learns to initiate conversation topics, to adapt its utterances according to the participants of the conversation, to produce longer utterances and to develop narrative skills[4]. They use language to request, inform, ask and interact; start and sustain dialogues for a few turns, and talks to people in concrete and familiar contexts[5].

In the literature, there is reference to several types of instruments, such as tests, scales and inventories, that have been used in applied and clinical research for follow-up programs of child development, early stimulation programs, and to plan the actions taken with children and caregivers.

The interest of researchers and clinicians regarding the pragmatics of language has grown in the recent years. However, there are few standardized and validated instruments to verify its development in children under the age of four[4]. Besides, there is no standardized protocol in Brazilian literature designed to evaluate the development of pragmatics in preschoolers from the parents' perspective.

According to different authors[6], there is scarcity of commercially available formal instruments in Brazil. Evaluation and diagnosis in the area of Speech-Language Pathology are very important and can only be achieved when appropriate tools and procedures are used. The lack of formal and objective instruments reflects in diagnosis, in the definition of therapeutic conducts and in the design of intervention plans. Thus, it jeopardizes the effectiveness and efficiency of the offered treatments[7,8].

One way that some researchers have found to solve this problem is to translate instruments available in other languages rather than to create new instruments[7,8].

The procedures adopted in this process should be judicious and careful, since translation and adaptation are as important as the construction of a new instrument. The steps must be rigorously followed including the application and interpretation of the criterion test, so that a given instrument can be used in a new cultural context. In addition to the impact that these instruments will have on clinical practice and research, they will constitute a fundamental step to identify the most frequent problems in our environment and its risk factors, allowing better planning of childhood health practices and evaluation of intervention and treatments offered[6].

Given this methodological approach to translation and back-translation, it is necessary to identify discrepancies between the language of the original and the language of interest to the translation, seeking a more reliable version as well as making it possible to verify whether the original language instrument really measures what it is proposed to measure in the language of interest[9] Thus, the translation seeks the various types of equivalence in relation to the original preferably with a bilingual translator, with experience in both cultures[6].

There are several methodologies for transcultural adaptation of measurement and evaluation instruments applicable in any field and two studies are highlighted[9,10].

One argues that the process of cross-cultural adaptation is interactive and encompasses types of equivalence: conceptual equivalence; equivalence of items; semantic equivalence; measurement equivalence; functional equivalence[9].

Another proposal followed stages in cross-cultural adaptation processes: translation; synthesis of translations; retranslation; expert Committee; pre-test; sending the material produced to the developers of the original instrument; evaluation of the psychometric properties of the adapted instrument[10].

A series of steps must be rigorously followed so that a certain instrument can be used in a new cultural context, citing the translation as a first step, so it must seek different types of equivalence in relation to original, such as cultural, semantic, technical, content related, criterion based and conceptual[6]. It also recommends back-translation, which consists on translating the instrument back into the original language, preferably by a bilingual with experience in both cultures, comparing the two versions and maintaining equivalence at the different levels previously referred to. It is also important that the examiners be trained, before using the test. If these conditions are met, it is assumed that the adapted instrument is likely to properly measure the concept in both cultures, to the same extent as the original instrument, guaranteeing the comparability of the results[6].

There are examples of studies in the scientific literature using these and other research methodologies, such as the translation and cultural adaptation of the Detailed Assessment of Speed of Handwriting (DASH) for the Brazilian Population[11]. The authors performed an evaluation of the concepts, equivalence, semantics and items; translation, back-translation, review by a committee of judges and pre-test. The study proved that the instrument can be applied in the Brazilian population, due to the validity of the translation process and high reliability, observed through the Cronbach's test.

Another example was the translation of the McGill Illness Narrative Interview[12]. It presents an interview research model to obtain narratives of experiences with illness and symptoms, tested in the Brazilian context for psychiatric and cancer related problems. It also presented two translations and their respective

back-translations, semantic equivalence, elaborated synthesis and final versions, and two pre-tests in the target populations (people with auditory hallucinations or breast cancer), in which a high degree of semantic equivalence between the original instrument and the translated-retranslated pairs, and in the perspective of the referential and general meanings. The semantic and operational equivalence of the proposed modifications were confirmed in the pre-tests.

The equivalent process used in the translation and back-translation was the Semantic Equivalence of the Brazilian version of Social Avoidance and Distress Scale (SADS)[13]. In this process, two translations and feedbacks were carried out by independent evaluators, evaluation of the versions with elaboration of a synthesis version and pre-test commented. For each item of the instrument, the results of the four steps are presented. For the authors, the use of two versions of translation and back-translation provided greater security to the process of semantic equivalence. Descriptors such as cross-cultural adaptation, social anxiety scales, semantic equivalence and social phobia were used.

Within this scope, the authors of the present study searched for a questionnaire with this purpose, and were interested on the Language Use Inventory (LUI), a Canadian instrument developed by O'Neill[4].

LANGUAGE USE INVENTORY

The Language Use Inventory (LUI) is a standardized and validated parent-report questionnaire for assessing pragmatic development of children from 18 to 47 months of age. The questionnaire was developed by the researcher Daniela O'Neill, from the University of Waterloo (Canada), and published in 2009. It has been formulated from the understanding that language is inherent to social life and related to social cognition[4].

This evaluation observes the child's language use in daily life situations, with several interlocutors and propositions: to achieve certain objectives, to interact socially with others, to comment on the immediate environment, to communicate about people and absent events, and to express emotions, thoughts and beliefs about themselves or others. It observes the development of the comprehension of mind; the understanding of the very subject and other people regarding behavior, mental states and different perspectives[4].

LUI focuses on the child's use of language in daily life and the parents' reports of child's use of language. This evaluation process identifies the "natural" participation of the subject in the environment. This close look of the LUI questionnaire into pragmatics has appealed to the authors of this study, since there is no parental questionnaire in Brazilian Portuguese that assesses pragmatic aspects. Thus, the translation and adaptation of the LUI would contribute to the follow-up of children's development and the detection of possible delay or disorders in pragmatic or spoken language in children between 18 and 47 months of age.

A study of the LUI's predictive validity was published in 2012. Participants were 348 parents who had filled in the questionnaire when their children were 18 to 47 months old. The children were re-assessed at the age of 5 to 6 years with several measures of language development[13]. The authors of the study reported that the questionnaire showed high sensitivity and specificity for the age group from 24 to 47 months. For children between 18 and 23 months of age, the questionnaire was sensitive but showed positive predictive values below the expected. One of the authors' hypotheses was that children were still in a stage of acquisition and development. They also added that, based on its validation and correlation with other language measures, the LUI may be used as an indicator of language delays.

The assessment comprises 180 items divided into 14 subscales. The items from Ten of these subscales comprise the 161 items that make up the LUI Total Score and evaluate the development of the child's communication through a variety of functions, including: help request, shared attention, questions and comments about objects and people, interaction with other people, sharing humorous situations, talking about language and words, adaptation of communication under the perspective of other people, and building long sentences and stories.

The instrument allows the identification of children with delays or disorders in the development of language pragmatics in several contexts and social interactions[14]. There are both YES/NO questions and items that use a Likert scale (never, rarely, sometimes, always and not anymore). One point is attributed when parents answer yes, sometimes or always. The other options (no, never, rarely or not anymore) are scored zero. The questionnaire also has 2 subscales with open questions and 2 subscales with questions about gestural communication, but these are excluded from the LUI total score.

There is a version of the LUI translated and validated for European Portuguese, the LUI-Portuguese (Portugal)[15]. The authors translated, adapted and validated the questionnaire through a pilot study with a sample of 120 questionnaires answered by parents or caregivers of Portuguese children with ages between 18 and 47 months. They observed high internal consistency coefficients (Cronbach's alpha), which suggested internal validity of the scale for the studied population. A version of the LUI for French-Canadian children has also recently been developed (the LUI-French - Canada)[16]. For this study, 242 questionnaires were applied regarding individuals between 18 and 47 months of age.

As in the Portuguese study, the authors found high Cronbach's alpha coefficients, indicating good reliability of the translated version. There is also a version adapted to Italian[17]. In this LUI-Italian (Italy) adaptation, 190 questionnaires were applied. As in the other adaptations, there was no differences between gender and age groups.

Given the importance of child language follow-up and the lack of Brazilian protocols that evaluate the pragmatic aspects of language from the perspective of parents, the aim of the present study was to translate and adapt the Language Use Inventory to Brazilian Portuguese, since the questionnaire has previously shown high reliability and broad application.

METHODS

This study was approved by the Research Ethics Committee of the São Paulo Federal University, under protocol number 0917/2016. It had two stages: translation/adaptation and pre-test.

Translation/adaptation

Material

The LUI (Language Use Inventory) questionnaire is a validated parent-report protocol devised to evaluate the development of pragmatics in children from 18 to 47 months of age[4]. It has a front page with the child's identification (name, date of birth), name of the person who answered the questions (name and degree of kinship with the child), and date when the test was taken. There is also detailed instruction on how to answer the questionnaire. The inventory comprises 14 subscales organized into three parts.

The first part, entitled "How your child communicates through gestures", has two subscales: A – "How your child uses gestures to ask for something" (with 11 items) and B – "How your child uses gestures so you notice something" (with 2 items). These items are closed and dichotomous questions (yes or no), and the parents or the interviewer should mark with an X the items corresponding to the correct answer.

The second part is entitled "Your child's communication with words" and has three subscales: C – "Type of words your child uses", with 21 items; D – "Your child's requests for help" and E – "Your child's interests". In this part, there are three types of questions and answers: open and closed out of two types – dichotomous and Likert scale (never, rarely, sometimes, always and not anymore). The closed questions are regarding the child's communicative aspects (e.g. Does he/she point to what he/she thinks is interesting?) and the parents are asked to mark an X on the corresponding answer: yes, no, or one among five alternatives (never, rarely, sometimes, always and not anymore). Part 2 can only be answered if the child uses at least one word regularly.

Part 3, "Your child's longer sentences", has the following subscales: F – "How your child uses the words to get you to notice something" (6 items); G – "Your child's questions and comments about things" (9 items); H – "Your child's questions and comments about self/other" (36 items); I – "Your child's use of words in activities with others" (14 items); J – "Teasing and your child's sense of humor" (5 closed items and 1 open); K – "Your child's interests in words and language" (12 items); L – "Your child's interests when he/she speaks (5 open and closed items); M – "How your child adapts conversation to other people (15 items); N – "How your child is building longer sentences and stories" (36 items). This part uses only dichotomous and open questions. The last part is a child's identification page with data regarding birth conditions, overall health, and exposure to other languages.

The scores for the analysis of the child's performance can be entered the LUI Score Sheet. The LUI total score is obtained by the sum of the subscale scores corresponding to parts 2 and 3 (except the subscales E and L, which are not scored). Part 1 assessing gesture use is also not included in the LUI Total Score.

Procedure

After obtaining the publisher's formal license, the process of translation and back-translation of the protocol was initiated, according to the requirement of standardization of the test and to international standards[6,9,10]. The translation and back-translation were carried out by a Brazilian with fluency in English and reviewed by two other native Brazilians fluent in English, both speech-language pathologists and Public University teachers. These professionals carried out not only the translation, but also sociocultural adaptations such as expressions, names, and adequate examples in Brazilian Portuguese.

To check the reliability of the translated questions and their format, a bilingual speech-language pathologist (fluent both in Portuguese and English) performed the back-translation of the questionnaire (English to Portuguese). Both versions were compared to ensure their equivalence. In the back-translated version, the translator carried out further adaptations regarding vocabulary, syntactic issues, and expressions. The back-translation was sent to the author of the original questionnaire in order to verify the similarity of language and context with the original and to confirm the possibility of using it.

After this stage, three mothers answered the questionnaire and provided feedback on the clarity and ease to answer the questions. All mothers had completed higher education and reported that the questionnaire was easy to fulfill, clear and detailed.

The Cronbach's alpha coefficient was used to verify the internal reliability of the questions (items) of the subscales. Values close to 1 indicate a good internal consistency. For an exploratory research, values above 0.6 were accepted. The corrected item-total coefficients (CITC) examined the items within a subscale and how the alpha value of the subscale would change if an item was excluded.

Pilot study

The next stage was a pilot study, conducted with 42 parents of 24 to 47-month-old children. More than half of the children were female (64.3%) and 35.7% male. Regarding the age group, 33.3% (14 participants) had ages between 30 and 35 months, 28.5% between 24 and 29, and between 36 and 41 months (12 children for each age group) and 4 (9.5%) between 42 and 47 months.

Girls were the majority of 30-35 month-old (78.6%), of 36-41 month-olds (66.7%) and of 42-47 month-olds (75%), while boys were slightly more than half (58.3%) of the 24-29 month old group.

After the school agreed to participate in the research (signed the Institutional Consent Form), the Free and Informed Consent form (approved by the Research Ethics Committee) was sent to the parents. The parents who agreed to participate in the research received an envelope with the protocol to be fulfilled. The mean maternal age was 35.0 (SD = 4.1) and paternal 37 (SD = 5.4). Most parents (87.8% of fathers and 85.7% of mothers) had been to High School and the family income was approximately R$ 12.224.24 per month.

Although the protocol is designed for children older than 18 months, this study selected 24 to 47-month-old children. At this age there is significant growth of the vocabulary and other aspects of language, including developing narrative skills[2,4,18,19]. Besides, it is also possible to fill almost the entire questionnaire and identify risks, and possible language delays[13].

Data analysis

To obtain the total score of the test, each subscale must be scored. For the dichotomous questions, only the YES answers are accounted for (1 point each). For the questions with five possible answers, the rule was: YES, SOMETIMES and ALWAYS scored 1 point and the others (NO, NEVER, RARELY and NOT ANYMORE) scored zero. The subscale scores from parts 2 and 3 are then summed up to obtain a total raw score. They will show if the child is above or below the average for its age group, according to the manual of the test (which provides standard scores by age group and gender).

The results were also analyzed regarding age group and parental level of education variables. Descriptive percentages and statistical tests, such as Pearson's and Spearman's Correlation were used (for continuous variables) or Chi-squared tests of contingency (for two categorical variables). A 0.05% significance level was adopted.

RESULTS

Translation and adaptation of the Language Use Inventory

The tables below show linguistic and idiomatic modifications made in the translation and back-translation of the LUI[16]. The protocol suiting was adapted from the original in English[4] directly to Brazilian Portuguese.

Two questions were added to the original version: level of education and address of mother and father. No items of the Parts 1 to 3 were excluded or added, only modified according to the Brazilian Portuguese language. That is, adaptations were made regarding vocabulary, morphosyntactic structures (verb tenses, pronouns), idiomatic expressions, and examples used in Portuguese. All the modifications are described in detail in Chart 1. The total items are still 180 and 161 are used to the Total Score, identical to the original LUI.

Chart 1. Translation from English to Brazilian Portuguese

SUMMARY OF MODIFICATIONS	MODIFICATIONS IN EACH PART
Adaptation to Brazilian Portuguese	Instructions 4. Altering the last sentence to "*seu filho faz isso apenas em outra língua*" ("your child only does this in another language") and changing the term "non-English" to "non-Portuguese language". Final questionnaire (Exposure to other languages) Substitution of the word "English" for "Portuguese" in the questions (e.g. Was your child exposed to Portuguese since birth?)
Adaptation of the vocabulary for Brazilian Portuguese	Part 1: A3: Substitution of "*pedir para ser carregado*" for "*pedir seu colo*" B1: Use of the verb without complement (points/handles, shows, gives) Part 2: C3. Using the examples in diminutive form and animal sounds (as used with young children). E.g.: "miau" instead of "*gato*" (cat); "au-au" instead of "*cachorro*" (dog); "*peixinho*" (fishy – diminutive for fish) D3. Substitution of "*pedir que você repita o que você fez*" ("asking you to repeat what you did") to "*fazer novamente*" ("do it again") D4. "Play a game" translated as "brincar" ("play") (this verb can be used for both toys and games)
Adaptations of idiomatic expressions and syntactic propositions	Part 1: Instruction for the first part: "*a sentença*" (the sentence) Part 2: C13 and C16: Altered the verb tense (past to past participle) D1 to D6: Use the initial verb in the infinitive form (e.g. "*usar*" – to use instead of "*usando*" – using) D6: Substituted the noun "" (toy) for the pronoun "*o*" (it) Part 3: F4. A verb was added to the expression that you know what happened "*Sabe o que **aconteceu**?"* G7 and G8: Substituted "*gosto*", "*sensação*", "*cheiros*" and "*aparência*" for "*sabor*", "*cheiro*", "*tato*". H36: "*idioma do meu filho*" (my child's language) instead of "*meu filho usa o idioma*" (my child uses the language) J1 and J3: Substitute "*de forma provocadora*" (in a provocative way) for "*apenas provocar você*" (to tease you) M15 and N27: Substitute the verb "*pensar*" (to think) for "*achar*" (to find) N7, N8, N9, N11 and N12: The auxiliary verb was altered to a verb in Portuguese and the morphemes "-ei" (1st person singular), (3rd person singular "-ou"), "-emos" (1st person plural), "-ão" (3rd person plural) were added to the infinitive to indicate a mode of future in Portuguese (*futuro do presente*) that is the equivalent to the use of the auxiliary before the infinitive verb in English (conditional tense). Similarly, the morphemes "-ia" (1st and 3rd person singular), "-íamos" (1st person plural), "-iam" (3rd person plural) were added to form the equivalent to the auxiliary "would" bedore the infinitive verb (conditional tense) N32: Substitute the word "pessoas" (persons) for "personagem/personagens" (character/characters)
Adaptation of examples for Brazilian Portuguese	Part 1: A8: Added an example: "*olhe para a televisão para que você ligue*". Part 2: C6: Altered the example "*bloco*" to "*carro pequeno*" C16: Altered the example "au-au" (dogs barking) E4 and E5: Adding of one or more examples Part 3: G9: "*parece um cachorro*" (instead of "*parece um cão*") H8, H16: Adaptation of Brazilian names João and Daniel Part 2: Explanation of Part 2: removed the example I9: Altered the exemplo to a question ("é a minha vez agora?" – is it my turn now?) J1 and J3: The expression "teasing way" was translated as "just to tease you" ("*só para te provocar*") K10: Added examples (store signs, car symbols) L4: Altered the example "paku" to "avó" (grandma)
	End of the questionnaire: Added: level of education, mother's and father's address
	Variation in the LUI total – items in Portuguese = 2 (183 Vs 180 original LUI); Items altered in the BPt-LUI Total score = 0 (161 original LUI)

The back-translation was as reliable as possible to the original version (Chart 2), adapting morphosyntactic and semantic aspects of English.

The translation and back-translation were observed by the author of the protocol, who made suggestions and comments about the progress of the process.

Adaptation

The internal reliability was assessed for all the subscales and the three parts that composed the protocol (Table 1).

The Cronbach's alpha analysis indicated values appropriate to an excellent reliability of all three parts of the LUI which each presented high internal consistency (α>0.98).

Chart 2. Back-translation from Brazilian Portuguese into English

MODIFICATIONS	MODIFICATIONS IN EACH PART
Adaptation to English	Instructions: 4. Altered "non-English language" to "non-Portuguese language" Final questionnaire: (Exposure to other languages) Substituted the word "English" in the questions for "Portuguese" (e.g. Was your child exposed to Portuguese since birth?)
Vocabulary adaptation to English	Part 1: B1 and B2: Substituted the complement for the verb (indicate what he/she considers interesting instead of point)
Adaptation of syntactic aspects to English rules	Part 1: A1 and A9: Added "s" to verbs to mark the third person of singular Part 2: C13, C16 C17 and C19: Altered the verb tense (past participle to infinitive) D1 to D6: Substituted the preposition "by" before the verb
Adaptation of examples to English	Part 2: C1. Kitty instead of cat C6: Substituted the example "little car" for "blocks" C16: Substituted the example "au-au" (sound made by dogs) for "doggie" D2: "Wafer" instead of "cookies" I9: Changed the example for a question (is it my turn now?) Part 3: G9: Added "looks like a dog" H8 and H16. Names altered: John and Daniel K10: Added examples (store and car symbols) L4: Substituted the example "paku" for grandmother
	End of the questionnaire: Added: level of education and mother's and father's address
	Total variation of BPt-LUI items = 2 (183 Vs 180 original LUI); Items changed in BPt-LUI Total Score = 0 (161 original LUI)

Table 1. Results for scales and subscales using the Cronbach's Alpha coefficient

	Subscale	Number of questions	Cronbach's Alpha
Part 1 Your child´s gestures	A How your child uses gestures to ask for something	11	0.807
	B How your child uses gestures to get you to notice something	**2**	0.549
	Total	13	0.823
Part 2 Your child´s communication with words	C Types of words your child uses	21	0.790
	D Your child´s requests for help	**7**	0.559
	E Your child´s interests	**--**	--------
	Total	28	0.790
Part 3 Your child´s longer sentences	F How your child uses words to get you to notice something	6	0.794
	G Your child´s questions and comments about things	9	0.893
	H Your child´s questions and comments about themselves/other people	36	0.961
	I Your child´s use of words in activities with others	14	0.932
	J Teasing and your child´s sense of humor	5	0.605
	K Your child´s interest in words and language	12	0.752
	L Your child´s interests when talking	—	———
	M How your child adapts conversation to other people	15	0.868
	N How your child is building longer sentences and stories	36	0.918
	Total	133	0.978
Part 2 + 3	Total	161	0.978

Subscales E and L are descriptive and were not analysed with Crombach´s but ithey are counted in the total number of items

Analyzing each subscale separately, it was noticed that subscales A, C, F, G, H, I, K, M, and N presented high internal consistency (α between 0.75 and 0.96), and subscale J presented appropriate internal consistency (α=0.605). Two constructs from Part 1 were below the expected: Subscale B (α=0.549) and Subscale D (α=0.559). These 2 subscales were analyzed with parsimony to figure out the low consistency.

The subscale B has only 2 items, which justified the low consistency. CITC was used to examine the Subscale D. Analyzing all seven items, it was observed that questions 1, 2 and 4 should be considered with caution because Cronbach's alpha increases relative to the domain index when they are retracted. It showed that those questions may not be understood by parents and should be modified or deleted.

Pilot study

The mean age of the children participating in the study was 33.3 months (SD=6.0) (Figure 1).

The mean score in Part 1 was 9.3 (SD=3.4P), part 2 was 25.2 (SD=5.1), with 73.6% (SD=30.8), and part 3 presented a mean score of 81.7 (SD=36.3) The mean total score was 106.9 (SD=40.9), and mean total percentage was 44.8% (SD=28.5).

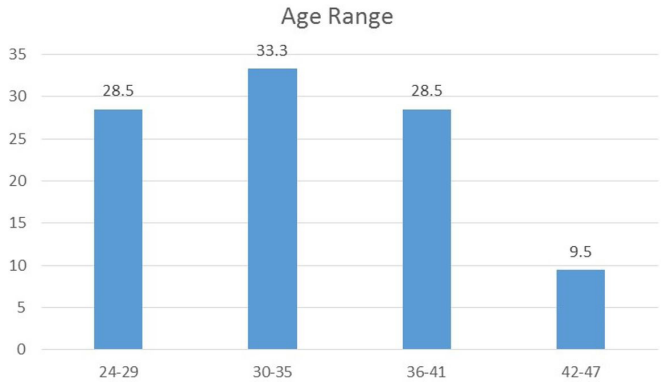

Figure 1. Age range of participants

Observing the scores by age group, it was verified that younger children (24 to 29 months) performed more gestures (mean of 10.3, SD = 3.5). The words were slightly more used by children aged 30 to 35 months (27.6; SD = 0.5) and over 42 months (27.5; SD = 1.0) and sentences were most frequently used by participants over 30 months (30-35 months: 100.1 (SD = 18.3), 36-41 months: 106.8 (SD = 12.4), 42-47 months: 112.8 SD = 8.5). Specific statistical tests could not be applied due to low incidence (Table 2).

Weak negative correlation was found between children's age and Part 1 of the questionnaire (regarding children's gestural communication), that is, the older the children, the lower the scores and percentages of children assessed (c=-0.312; p=0.045).

The score of part 2 had a weak correlation with this variable (c=0.372; p=0.015). Part 3 (communication through sentences) and total score had moderate positive correlation with age (c=0.512; p=0.001; c=0.477; p=0.001, respectively). These data show that the older the child, the greater the use of words and sentences and the less the use of gestures during communication.

There was weak correlation between maternal age (C=0.316; p=0.042) and moderate with paternal one (c=406; p=0.008) and part 2: the older the parents, the better the child's communication with words. There is no correlation between LUI scores and gender (Table 3).

With the results described above, it was noticed that the translated questionnaire proved to be as reliable as the original. The Cronbach's alpha showed that the protocol presents high reliability to be reproduced. Children were above the average in parts 1 and 2 of the LUI (regarding gestures and words), and below the expected for sentences (Part 3) and total score. The parts of the LUI could be correlated to the children's age, that is, the older the children, the less they used gestures and the more they used words and sentences. No correlation was found with the variables of the study (parental age and level of education), except regarding Part 2 and the parent's age.

Table 2. LUI score per age range

		Age range (months)			
		24-29	30-35	36-41	42-47
Parte1_score	Medium	10.3	7.8	8.1	8.3
	Standard Deviation	3.5	3.1	3.7	2.8
	N	12	14	12	4
Parte2_score	Medium	25.2	27.6	25.6	27.5
	Standard Deviation	2.8	0.5	7.5	1.0
	N	12	14	12	4
Parte3_score	Medium	64.5	100.1	106.8	112.8
	Standard Deviation	32.9	18.3	12.4	8.5
	N	12	14	12	4
Total	Medium	89.7	130.2	132.3	140.3
	Standard Deviation	35.2	20.9	13.7	9.0
	N	12	14	12	4

N: number of participants per age range

Table 3. Sex and age range of participants

		24-29		30-35		36-41		42-47		Total	
		N	%	N	%	N	%	N	%	N	%
gender	female	5	41.7	11	78.6	8	66.7	3	75.0	27	64.3
	male	7	58.3	3	21.4	4	33.3	1	25.0	15	35.7
Total		12	100.0	14	100.0	12	100.0	4	100.0	42	100.0

N: number of participants per age range

DISCUSSION

The Language Use Inventory questionnaire allows one to understand the child's use of language in a reasonable amount of time and with effective cost-benefit[20]. The protocol has been used internationally, translated and adapted to several languages, therefore the authors are interested in translating and adapting it to Brazilian Portuguese.

An application of an instrument, developed in different cultural contexts, needs an adaptation, emphasizing the semantic equivalence of the terms. The steps of translation require linguistic care, because many terms have different meanings and specificities[6,11].

The translation into Portuguese involved the adaptation of idiomatic expressions, substitution of names and expressions, adjustments of syntactic and semantic aspects, although the reliability of the original version, in English, was kept. The changes were minimal and aimed to ease the application of the questionnaire to Brazilian Portuguese speakers (e.g. providing examples of what the children might say, using Brazilian expressions, such as "au-au" for dogs and "brincar" for playing a game). The back-translation was developed in consultation with the author of the English LUI, who advised the authors of this study providing suggestions that would sustain the objective of the protocol.

No item was excluded, only two additional questions regarding the level of education and address of the parents were added to the final demographic information. According to several authors[21-23], parental level of education interferes directly in the child's language development. In a study that observed the dyadic interaction of 2-year-old children, parents with higher income and more years of education provide better stimulation to the children within different contexts, from the verbal repertoire of parents to vocabulary development[22,23].

A pre-test with participants is of extreme importance because it verifies the comprehension of the items and allows the discussion of the feasibility of the application of the instrument in the Brazilian population[11].

For the present study, 24 to 47-month-old children were recruited. Although it does not contemplate the entire age range of the protocol, as of 2 years there is speedy acquisition and development of the language aspects (phonology, syntax, semantics), which structure functional use in different communicative contexts[5,18,19]. From the age of two, the individuals learn to shift change, start conversational topics, adapt the utterance to conversation participants, produce longer utterances, and develop narrative[24]. They use language to request, inform, ask, and interact. They initiate and maintain dialogues, but not for many turns and they talk to people in concrete and well known contexts[5].

At 26 months, children can understand communicative intentions and, based on this recognition, they infer the social intention of the interlocutor. Between 3 and 4 years, communicative functions are perfected and intensified, there being questions about absent facts[24]. Shifts are intelligible and coherent[5,24].

The questionnaire, especially in children aged 24 to 47 months, may be an indicator of delays in the language development of the study population[13]. From the structure of linguistic components, it is possible to observe changes in the development that can be diagnosed and accompanied at an early stage[25].

Thus, the researchers aim at collecting data from 18 to 24-month-old children as well as detailed analysis, such as differences between age groups (which are included in the questionnaire) and gender.

The reliability of all parts of the questionnaire was evaluated for all the parts that compose the protocol. The Cronbach's alpha analysis showed an excellent reliability, except for subscales B and D. Regarding subscale B, this study corroborates the translations of the LUI into French (LUI-French (Canada)[16]; and European Portuguese (LUI-Portuguese (Portugal)[15], since this subscale is part of the shortest subscale about gestures (only 2 items), which are not accounted for in the total LUI score[16]. However, there was a difference between this study and the other mentioned studies regarding the subscale D. According to CITC, three items in this subscale influenced the low result of Cronbach's alpha. Some hypotheses were raised as lack of understanding of the parents about the question, which may have occurred due to cultural differences or the formulation of the question in Portuguese was not enlightening. These items will be reviewed for the next stage of the work.

This subscale presented low reliability with Brazilian children, contrasting with the internal reliability found for the LUI-French (Canada), that showed adequate reliability. Hence, there seems to be a small difference between Brazilian, French-Canadian and European populations, however, even with the low reliability of these two subscales, the protocol adapted to Brazilian Portuguese was found reliable and reproducible.

The subscales of the original LUI were developed based on the literature and statistical analysis to emphasize important developmental tasks for several ages between 18 and 47 months, integrating many pragmatic elements[16]. The parallelism of the original LUI and its Brazilian Portuguese version of the LUI suggests that the pragmatic development of English- and Portuguese-speaking populations follow a similar pattern.

In the pilot study, children's age on the scores may influence LUI subscales, as well as on the total score, that is, the older the children, the fewer gestures they used and more words and syntactic constructions they used. This result warrants a more detailed analysis but, at this stage, it agrees with the results for the French-Canadian translation[16] and indicates that, like the French-LUI, the BPt-LUI may be also suitable for 24-47 months of age.

This research had a sample of 42 individuals. The results reported in this study establish directions for further research which will aim at investigating the reliability of all the subscales, standardizing and validating the questionnaire with a greater number of families and describing language pragmatics in different populations of children.

CONCLUSION

The Brazilian-Portuguese version of the LUI questionnaire can be seen as a faithful translation of the original and a reliable instrument to evaluate preschoolers' language pragmatics. After future detailed analysis, it will allow early diagnosis and intervention in children with language disorders.

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Author contributions

BSB main researcher, elaboration of the study and the schedule, literature review, data collection and analysis, design of the study, translation and back-translation, submission; JP advisor, elaboration of the study and the schedule, data analysis, review of the manuscript, approval of final version; EO data analysis, review, translation and back-translation.