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ORIGINAL ARTICLE

Cross-cultural adaptation of the child development surveillance instrument "Survey of Wellbeing of Young Children (SWYC)" in the Brazilian context

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Abstract

Introducion: Faced with the scarcity of culturally adapted, validated and feasible instruments for assessing child development for use in clinical practice in Brazil, more investment is needed to provide resources with good psychometric properties for clinical and scientific use.

Objective: To analyze the cross-cultural adaptation process of the Child Development Surveillance Instrument "Survey of Wellbeing of Young Children (SWYC)" in the Brazilian context.

Methods: SWYC is an instrument for monitoring development, behavior and risk factors for children younger than 65 months, consisting of questionnaires - Developmental Milestones, Parent's Observations of Social Interactions (POSI), Baby Pediatric Symptom Checklist (BPSC), Preschool Pediatric Symptom Checklist (PPSC) e Family Questions. The cross-cultural adaptation followed the steps recommended in the literature and 45 parents from the first pre-test and 27 from the second pre-test participated. For the analysis of the properties of measurement was used factor analysis (Kaiser-Meyer-Olkin–KMO), calculation of convergent validity (Average Variance Extracted - AVE) and reliability (Internal consistency - Cronbach's Alpha - CA).

Results: In the first pre-test, parents comprised only 31% of the items. The panel of experts reviewed and modified the questionnaires. In the second pre-test, the comprehension index was 77%, giving rise to the final version. The questionnaires Developmental Milestones, BPSC and PPSC were considered unidimensional (KMO = 0.62 to 0.95) and had AVE of 0.52 to 0.73 and CA = 0.55 to 0.97.

Conclusion: Analysis of the quality of the items, the convergent validity and the Internal consistency of the Brazilian version of the SWYC revealed satisfactory measurement properties, showing a promising instrument for clinical use and in research with children in Brazil.

Keywords: Psychometry, translation, child development.

1) Why was this study done?
The cross-cultural adaptation of the "Survey of Wellbeing of Young Children (SWYC)" to Brazil was made due to the scarcity of culturally adapted, validated and feasible instruments to identify signs of developmental delay in clinical practice in Brazil. As the SWYC is free of charge, it could be a valuable tool to be used for developmental surveillance in public health care.
2) What did the researchers do and find?
We conducted the translation and cross-cultural adaptation of the SWYC to Brazilian Portuguese and analyzed its measurement properties. The cross-cultural adaptation followed the steps recommended internationally, with 45 parents participating in the first pre-test and 27 on the second pre-test. The comprehension index of the final version of the SWYC was 77%. The results indicated the SWYC questionnaires - Developmental Milestones, Baby Pediatric Symptom Checklist (BPSC) and Preschool Pediatric Symptom Checklist (PPSC) - were considered unidimensional (KMO = 0.62 to 0.95), had an Average Variance Extracted (AVE) of 0.52 to 0.73 and a reliability of CA = 0.55 to 0.97.
3) What do these findings mean?
The analysis of item quality, convergent validity, and internal consistency of the Brazilian version of the SWYC revealed satisfactory measurement properties, showing it is a promising instrument to be used clinically and in research with Brazilian children.

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INTRODUCTION

Child health indicators reflect the living conditions of contemporary societies. Despite enormous regional disparities, challenges such as high infant mortality rates, child malnutrition and morbimortality due to immunopreventable diseases are being overcome worldwide, ensuring the survival of an increasing number of children. For low- and middle-income countries, however, offering living and health conditions to these children requires a radical paradigm shift, placing early childhood development as an absolute priority.

Achieving full development has positive repercussions throughout the life of the individual and for all society[1]. It is mainly in the first years of life that the development of sensory-motor, social-emotional and cognitive skills essential for success in the next stages of life occurs[1,2].

Ensuring full child development is a pressing need in countries where children are exposed to risk factors such as malnutrition, poverty, violence, and poorly stimulating environments[1]. Considering that less than a third of children with developmental disorders are diagnosed before school age and that less than 30% of developmental disorders are detected by clinical impression[3], it is necessary to use reliable scales that allow timely intervention. The American Academy of Pediatrics recommends the routine use of standardized instruments for monitoring infant development in routine consultations aimed at promoting integral health[2,4].

In many countries, including Brazil, there is a gap with regard to culturally adapted, validated, accessible and feasible child development assessment tools for use in primary care[5]. Considering these aspects, tests such as the Bayley Scales of Infant and Toddler Development-III (Bayley-III), Denver Developmental Screening Test-II (Denver-II) and the Age and Stages Questionnaire (ASQ-3 and ASQ-SE) have important limitations.

Bayley-III, despite having been adapted for Brazil[6], requires high financial investment, specific training, and its application is time-consuming. Denver-II is shorter and less expensive, but the kit of materials also needs to be imported[7], and there are no standards for Brazilian children. Although ASQ-3 has been adapted for the Brazilian population[8] and widely used in research in the country[9,10], its use in primary care is still restricted, due to the costs for the acquisition of the forms and kits. It is emphasized that cross-cultural adaptation and instrument validation is a necessity in Brazil, aiming to overcome the scientific, clinical and epidemiological gaps reported[11,12].

The Survey of Wellbeing of Young Children (SWYC) was developed in 2011 and validated for the US population in 2013[13]. It is a screening questionnaire that aims to screen/surveillance of child development for children under 65 months. The items were based on instruments recognized in the literature, such as ASQ-3 and ASQ-SE, Patient Health Questionnaire-2 and Pediatric Symptom Checklist[13,14]. It is a simple instrument, easy to apply and interpret. Its application requires, in average, 10 minutes and does not need a kit with specific materials, because it is based on the information provided by the caregivers[13].

SWYC has the advantages of presenting good psychrometric properties in the original version, being free access, being able to be used by education and health professionals[13,15], and having the application and interpretation manuals available online[16]. The validity and reliability of the original SWYC version are similar to those of other screening instruments recognized in the literature. The psychometric properties of original SWYC were considered adequate (sensitivity from 0.7 to 0.89, specificity from 0.54 to 0.9, test-retest from 0.70 to 0.81)[13,14,17-19].

The SWYC is a structured interview with about 40 questions that address the domains development, emotions/behavior, and family risk factors[13,14]. There is a questionnaire with 10 questions for each age group to evaluate cognitive, motor, social and language skills (Developmental Milestones) and another for specific screening of autism spectrum disorders (Parent's Observations of Social Interactions - POSI)[13]. POSI is indicated for children between 18 and 36 months and contains seven questions[17].

The emotions/behavior domain is analyzed in the Baby Pediatric Symptom Checklist (BPSC) and Preschool Pediatric Symptom Checklist (PPSC), which contains 12 and 18 items, respectively. BPSC was developed for children under 18 months and PPSC for children aged 18 to 65 months[18,19]. There are also two questions about parents' concerns about child behavior and learning/development. The Family Questions domain contains nine items, addressing risk factors such as maternal depression, alcohol and drug abuse, and parental conflicts[13].

Considering the characteristics described and the scarcity of validated, culturally adapted, accessible and feasible instruments for evaluating child development in Brazil, it becomes important to cross-culturally adapt instruments that can be used in a large scale in our country. Thus, the objective is to analyze the cross-cultural adaptation process of the child development surveillance tool Survey of Wellbeing of Young Children (SWYC) in the Brazilian context.

METHODS

The Portuguese version of the SWYC was developed according to the recommendations of Beaton *et al.*[20] and Reichenheim & Moraes[21]. The steps in this process are described in Flowchart

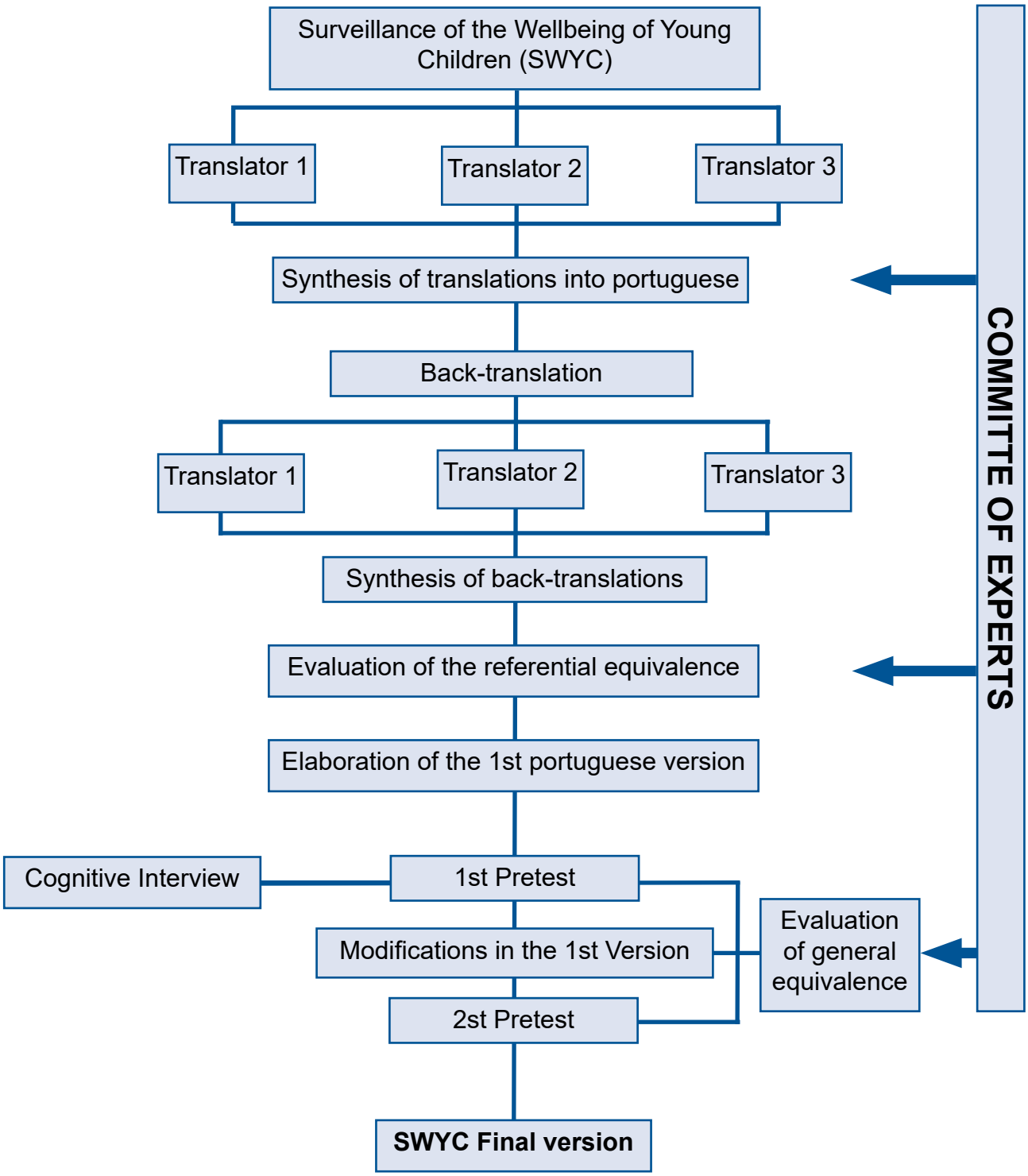

Figure 1: Flowchart of the cross-cultural adaptation stages of the Survey of Wellbeing of Young Children (SWYC) in the Brazilian context

(Figure 1).

The first step was to obtain authorization for cross-cultural adaptation of the SWYC, given by Perrin *et al.*[14]. The translation into Portuguese of Brazil was carried out by three independent translators from different health areas with a teaching role and clinical experience in child development. These professionals had Portuguese as their native language and were fluent in the English language.

These translations were discussed by a committee of experts, originating a consensual version of the translations[21,22]. The expert committee consisted of six professionals (Physiotherapists, Occupational Therapists, Pediatrician and Pediatric Neurologist), with four professors of public higher education institutions and two postgraduate students with clinical experience.

The consensual version was discussed by the expert committee and sent to back-translation, in order to verify the semantic similarity between the translation and the original document. The back-translation was carried out by three translators, two natives of the English language and a Brazilian psychologist graduated in the United States. Native translators had no relation to the knowledge

area of the questionnaire. These back-translations were also discussed by the committee of experts, originating a consensual version[23].

The evaluation of referential equivalence stage[22] was carried out by the committee of experts, which evaluated the correspondence between the original version and the back-translated version, verifying if the expressions were identical, similar or different and making the necessary adjustments.

This first version of SWYC was tested by two physiotherapists and a neuropediatrician in two states of the country. The questionnaire was tested with 12 parents in a follow-up outpatient clinic and with 15 parents in a public hospital in Minas Gerais, and also with 18 parents in Basic Health Units and a public university in Santa Catarina. Subjects eligible for this stage should be responsible for children under 65 months of age and have Portuguese as their native language.

In the interview, the researcher read the questions and, when necessary, the content was explained. In questions where clarification was required, parents were asked to explain what they had understood and to give suggestions on how to rewrite this phrase, as recommended in the cognitive interview technique[24]. The items not understood were discussed in the committee of experts and made semantic adjustments. This second version of the questionnaires was again tested with 27 other parents in Minas Gerais and Santa Catarina using the same procedures of the first application. From the cognitive interviews, the final version of the questionnaires was elaborated. In both stages, we included children in all age groups of the SWYC.

The measurement properties of the Developmental Milestones, BPSC, and PPSC questionnaires were analyzed following the recommendations of the original instrument[18,19]. A factor analysis was performed with all items, and then a Scree Plot graph was constructed to verify the unidimensionality based on the Acceleration Factor (AF) criterion[25]. Factor loadings were measured to assess whether all items were contributing to the construct measurement (RV > 0.50). To determine if the use of the analysis factor would be adequate for these questionnaires, the Kaiser-Meyer-Olkin (KMO) sample adequacy measure (RV > 0.50) was used. In order to verify the convergent validity, the Average Variance Extracted (AVE) (RV> 50)[26] was used and to verify the reliability, the Cronbach's Alpha (CA) (RV> 0.70) was calculated[27].

In the Developmental Milestones, BPSC, and PPSC questionnaires, the parents answered items about the development of the child on an ordinal scale with three alternatives: not yet, little and a lot. In this way, the factor analysis was adjusted to ordinal scales.

For the evaluation of the quality and validity of the PPSC items, we used the Bifactor model adjusted for gradual responses. We decided to fit a new model for the Brazilian version of PPSC that could present a better structure within each domain since the proposed model had some negative loadings factor. The adjustment of the models was analyzed by the Root Mean Square Error of Approximation (RMSEA) (RV <0.10) and Comparative Fit Index (CFI) (RV> 0.90) indicators, the first being a general index and the second a normalized incremental index[28]. Data processing and analysis were made on software R (version 3.2.2).

This study received funding from the Grand Challenges Canada initiative and the Fundação de Apoio à Pesquisa e Inovação do Estado de Santa Catarina (FAPESC) and is part of a larger project called "Avaliação do desenvolvimento infantil e intervenção precoce em crianças de alto risco e suas famílias no Brasil", approved by the Research Ethics Committee (CAAE 29437514.1.0000.5149). The participants signed a free and informed consent form before the interviews began.

RESULTS

• Evaluation of referential equivalence

This step was based on the comparison of the original and backward versions. The questions were classified as identical when the translations were completely equal, similar when the versions were written differently but the content was similar, and different when there was no agreement between the versions[22]. Of the 123 questions analyzed, 32.5% were considered identical, 65.1% similar and 2.4% different. Items considered different were modified to achieve semantic, idiomatic, experimental, and conceptual cross-cultural equivalence[a]. These items were two questions from BPSC ("Does your child have a hard time being with new people?" and "Does your child have a hard time in new places?") and one from POSI ("Please check all that apply"). These items were modified by the committee of experts.

• Pretest 1

The sample of parents who participated in Pretest 1 was from different states of Brazil and had different socioeconomic levels. In Pretest 1, the parents' understanding was considered unsatisfactory, since only 31% of the 45 respondents comprised 100% of the questions.

• Evaluation of general equivalence

Based on the results of the Pretest 1, all SWYC questions were re-analyzed. The committee of experts made adjustments in all questionnaires, using terms more commonly used by the Brazilian population[b].

The cognitive interviews showed that parents did not understand the meaning of the items "Is it hard to comfort your child?" And "Is it hard to put your child to sleep?" from BPSC. These items involve very different behaviors in Brazilian and North American cultures, which may have made it difficult to understand the semantic meaning of the translation. This situation was discussed with the authors, who suggested testing alternative questions for these items. Thus, a new version of the instrument containing the two alternative questions and those translated literally from the original English version of the BPSC.

• Pretest 2

A new version of the instrument was tested again. Of the 27 parents interviewed, 77% comprised 100% of SWYC items, which was considered satisfactory.

[a]attachments Chart 1 [b]attachments Chart 2

• Elaboration of the final version

After the second pretest, in the Family Questions questionnaire, the word spouse was replaced by husband/partner, which are most commonly used in Brazil. In the Developmental Milestones questionnaire, we included "without help" after the item "Run".

Based on preliminary data from 114 mothers from the larger study, it was found that the degree of agreement between first version responses and alternative questions added to BPSC was very low. After discussion with the SWYC authors, we decided to keep only the alternative questions in the final version.

• Quality and validity analysis of SWYC items

Table 1 presents the factor loadings of the 54 items of the Developmental Milestones questionnaire. Items 2, 3, 4, 7 and 54 presented factor loadings below 0.50, indicating that only these items did not contribute in a relevant way to the composition of the latent variable level of development of the child. We chose not to exclude these items because their convergent validity was considered adequate. The factor analysis was appropriate for this set of items (KMO = 0.97), confirming the unidimensionality of the items (first autovalor = 39,65; second autovalor = 8.95), satisfying the AF criterion. The set of items of the Brazilian version presented AVE = 0.73 and CA = 0.97 (Table 1).

Table 1: Factor loadings of items from the Developmental Milestones questionnaire, Brazil, 2016

Questionnaire items Developmental Milestones	Factor Loadings	Questionnaire items Developmental Milestones	Factor Loadings
1. Makes sounds that let you know he or she is happy or upset	0.54	28. Names at least 5 familiar objects - like ball or milk	0.99
2. Seems happy to see you	0.28	29. Names at least 5 body parts - like nose, hand, or tummy	0.97
3. Follows a moving toy with his or her eyes	0.16	30. Climbs up a ladder at a playground	0.98
4. Turns head to find the person who is talking	0.44	31. Uses words like "me" or "mine"	0.97
5. Holds head steady when being pulled up to a sitting position	0.63	32. Jumps off the ground with two feet	0.97
6. Brings hands together	0.60	33. Puts 2 or more words together - like "more water" or "go outside"	0.98
7. Laughs	0.41	34. Uses words to ask for help	0.98
8. Keeps head steady when held in a sitting position	0.65	35. Names at least one color	0.94
9. Makes sounds like "ga", "ma" ou "ba"	0.81	36. Tries to get you to watch by saying "Look at me"	0.97
10. Looks when you call his or her name	0.79	37. Says his or her first name when asked	0.96
11. Rolls over	0.88	38. Draws lines	0.96
12. Passes a toy from one hand to the other	0.86	39. Talks so other people can understand him or her most of the time	0.95
13. Looks for you or another caregiver when upset	0.82	40. Washes and dries hands without help (even if you turn on the water)	0.95
14. Holds two objects and bangs them together	0.90	41. Asks questions beginning with "why" or "how" - like "Why no cookie?"	0.93
15. Holds up arms to be picked up	0.91	42. Explains the reasons for things, like needing a sweater when it's cold	0.94
16. Gets into a sitting position by him or herself	0.95	43. Compares things - using words like "bigger" or "shorter"	0.88
17. Picks up food and eats it	0.92	44. Answers questions like "What do you do when you are cold?" or "…when you are sleepy?"	0.93
18. Pulls up to standing	0.94	45. Tells you a story from a book or tv	0.92
19. Plays games like "peek-a-boo" or "pat-a-cake"	0.93	46. Draws simple shapes - like a circle or a square	0.89
20. Calls you "mama" or "dada" or similar name	0.95	47. Says words in the plural, for example, feet, children, fruit	0.81

Continuation - Table 1: Factor loadings of items from the Developmental Milestones questionnaire, Brazil, 2016.

Questionnaire items Developmental Milestones	Factor Loadings	Questionnaire items Developmental Milestones	Factor Loadings
21. Looks around when you say things like "Where's your bottle?" or "Where's your blanket?"	0.95	48. Uses words like "yesterday" and "tomorrow" correctly	0.74
22. Copies sounds that you make	0.95	49. Stays dry all night	0.86
23. Walks across a room without help	0.98	50. Follows simple rules when playing a board game or card game	0.80
24. Follows directions - like "Come here" or "Give me the ball"	0.96	51. Prints his or her name	0.70
25. Runs	0.99	52. Draws pictures you recognize	0.77
26. Walks up stairs with help	0.98	53. Stays in the lines when coloring	0.78
27. Kicks a ball	0.99	54. Names the days of the week in the correct order	0.44

Table 2 shows the factor loadings of BPSC items by domain. All items had a high load factor, except for item 8 of the inflexibility construct (Does your child have a hard time with change?). Since the convergent validity of the inflexibility construct proved to be satisfactory, we chose not to exclude this item. The KMO values of each domain were higher than 0.62. According to the Kaiser criterion, all the BPSC constructs were unidimensional and presented AVE between 0.52 and 0.57; CA between 0.55 and 0.63 and CC between 0.68 and 0.71.

In the PPSC analysis, all items presented positive loadings factor in the Bifactor model. In General Factor, all loads were greater than 0.35 and factors related to Externalizing, Attaining and Attention Problems behaviors were greater than 0.20. The values of RMSEA = 0.02 and CFI = 0.98 indicate that the model is well adjusted for the Brazilian version. Considering that General Factor presented, in most cases, the largest Factor Loadings and the highest proportion of explained variance, we concluded that it is appropriate to interpret only the General Factor of the Bifactor model (Table 3).

Table 2: Factor loadings of BPSC by domain, Brazil, 2016

Baby Pediatric Symptom Checklist (BPSC) items	FL[1]	Com[2]
Irritability		
1. Does your child cry a lot?	0.85	0.58
2. Does your child have a hard time calming down?	0.72	0.44
3. Is your child fussy or irritable?	0.71	0.44
4. Is it hard to comfort your child?	0.68	0.35
Inflexibility		
5. Does your child have a hard time being with new people?	0.87	0.67
6. Does your child mind being held by other people?	0.79	0.53
7. Does your child have a hard time in new places?	0.77	0.47
8. Does your child have a hard time with change?	0.31	0.09
Difficulty with Routines		
9. Is it hard to get enough sleep because of your child?	0.79	0.55
10. Does your child have trouble staying asleep?	0.79	0.53
11. Is it hard to keep your child on a schedule or routine?	0.72	0.42
12. Is it hard to put your child to sleep?	0.70	0.41

[1]Factor Loadings; [2] Communality

Table 3: Factor loadings of PPSC, Brazil, 2016

Preschool Pediatric Symptom Checklist (PPSC) items	Factor Loadings[1]				Com[2]
	GF[3]	Ext[4]	Int[5]	AP[6]	
1. Does your child break things on purpose?	0.47	0.72	-	-	0.75
2. Does your child fight with other children?	0.47	0.27	-	-	0.30
3. Is your child aggressive?	0.64	0.37			0.55
4. Is your child angry?	0.66	0.27	-	-	0.51
5. Does your child have trouble playing with other children?	0.51	0.21	-	-	0.30
6. Does your child seem sad or unhappy?	0.55	-	0.77	-	0.89
7. Does your child seem nervous or afraid?	0.46	-	0.20	-	0.25
8. Does your child get upset if things are not done in a certain way?	0.63	-	0.40	-	0.56
9. Does your child have a hard time with change?	0.47	-	-	-	0.22
10. Does your child have trouble paying attention?	0.41	-	-	0.37	0.31
11. Is your child fidgety or unable to sit still?	0.35	-	-	0.45	0.32
12. Does your child have trouble staying with one activity?	0.35	-	-	0.90	0.93
13. Is it hard to take your child out in public?	0.47	0.55	-	-	0.53
14. Is it hard to get your child to obey you?	0.58	0.23	-	-	0.40
15. Is it hard to comfort your child?	0.67	-	-	-	0.45
16. Is it hard to know what your child needs?	0.63	-	-	-	0.39
17. Is it hard to keep your child on a schedule or routine?	0.41	-	-	0.23	0.22
18. Does your child have a hard time calming down?	0.46	-	-	-	0.21

[1]Factor Loadings; [2]Communality; [3]General Factor; [4]Externalizing; [5]Internalizing; [6]Attention Problems.

DISCUSSION

The cross-cultural adaptation of SWYC to Brazilian Portuguese was carried out in accordance with internationally recognized procedures. The properties of initial measures were analyzed and suggested that the Brazilian version of the SWYC, after adjustments, was well understood by the target public, maintained the internal consistency and the validity of the items similar to the original version.

Expert opinion combined with cognitive interviews at the pretest stage proved to be critical, as respondents explicitly stated unexpected interpretations of SWYC items. Several changes were made in the SWYC aiming at a better understanding of the items and adaptation to the life context and cultural habits of Brazilians[22]. All modifications were analyzed together and accepted by the authors of the original instrument.

Epstein *et al.*[11] also demonstrated in their study the importance of the multidisciplinary committee of experts to ensure the accuracy of the content. These authors questioned the need to perform back-translation, as this step showed results of moderate impact. However, we highlight the relevance of the back-translation step, since the comparison with the original instrument allowed to identify important semantic differences and to make adjustments to preserve the construct.

When analyzing the referential equivalence, it was verified that only two items of the BPSC and one of the POSI were considered different from the original questionnaire. This may have occurred because behavioral issues are strongly influenced by cultural aspects. SWYC can be self-filled, and there will not always be a professional to assist the caregivers. Adaptation in the wording of the statement was necessary to facilitate parents' understanding.

As in the study by Losapio & Pondé[22], two pretests were performed, since in the first pretest, the parents' understanding was unsatisfactory. Based on this result, the committee of experts analyzed again and modified the questionnaires. In the second pretest, the comprehension index increased, giving rise to the final version. The first pretest was intended to verify the understanding of the items and the second was to ensure that the modifications made were sufficient. Only in the second pretest a satisfactory understanding was achieved, confirming the importance of double testing in the target population. To ensure greater consistency of the results, the sample selected for the pretests was diversified, the committee of experts was multidisciplinary, and the interviews were conducted in two regions of Brazil, including participants from the rural and lower socioeconomic classes.

The final version in Brazilian Portuguese was also tested with Brazilian immigrants residing in the United States of America and was considered adequate for the target population by the authors of the original instrument. The questionnaires produced in this research are available on the SWYC[16] website.

The Portuguese version sought to remain faithful to the original version of SWYC and reproduced the statistical analyses used in the creation of the instrument. The psychometric parameters found in all SWYC questionnaires in the Brazilian version were similar to the original version[13,14,18,19]. The analysis of the quality and validity of the items of the Developmental Milestones, BPSC, and PPSC questionnaires showed that most of the items contributed significantly to the assessment of the child development and presented convergence validity and reliability parameters considered adequate for the use of the instrument in Brazil.

Thus, the properties analyzed suggest that the "Survey of Wellbeing of Young Children (SWYC)" in the Brazilian context may prove to be a useful tool for screening for changes in neuropsychomotor development and behavior. It is a questionnaire that is easy and quick to apply, with free access and, therefore, a promising option to be used in the context of primary care in Brazil, especially for aggregating aspects related to development, behavior and risk factors in the same instrument relatives[29]. This holistic view of child development is innovative and quite appropriate for family and community approaches by multi-professional team, which guide the care of children in primary care.

The availability of a screening instrument with these characteristics will favor the inclusion of child development surveillance in the daily life of health and education professionals, enabling timely intervention in cases suspected of alterations. The use of a standardized instrument will also allow the generation of epidemiological information for the promotion of public policies and comparison with studies conducted in other countries.

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Resumo

Introdução: Diante da escassez de instrumentos de avaliação do desenvolvimento infantil adaptados culturalmente, validados e viáveis para uso na prática clínica no Brasil, é necessário maior investimento para disponibilização de recursos com boas propriedades psicométricas para uso clínico e cientifico.

Objetivo: Analisar o processo de adaptação transcultural do instrumento de vigilância do desenvolvimento infantil "Survey of Wellbeing of Young Children (SWYC)" no contexto brasileiro.

Método: O SWYC é um instrumento de vigilância do desenvolvimento infantil, comportamento e fatores de risco para crianças menores de 65 meses, constituído pelos questionários - Developmental Milestones, Parent's Observations of Social Interactions (POSI), Baby Pediatric Symptom Checklist (BPSC), Preschool Pediatric Symptom Checklist (PPSC) e Family Questions. A adaptação transcultural seguiu as etapas recomendadas pela literatura e participaram 45 pais do primeiro pré-teste e 27 do segundo pré-teste. Para análise das propriedades de medida foi utilizada análise fatorial (Kaiser-Meyer-Olkin–KMO), cálculo da validade convergente (Average Variance Extracted - AVE) e confiabilidade (consistência interna - Cronbach's Alpha - CA).

Resultados: No primeiro pré-teste, os pais compreenderam apenas 31% dos itens. O comitê de especialistas reanalisou e modificou os questionários. No segundo pré-teste, o índice de compreensão foi 77%, dando origem a versão final. Os questionários Developmental Milestones, BPSC e PPSC foram considerados unidimensionais (KMO = 0,62 a 0,95) e apresentaram AVE = 0,52 a 0,73 e CA = 0,55 a 0,97.

Conclusão: Análise da qualidade dos itens, da validade convergente e da consistência interna da versão brasileira do SWYC revelou propriedades de medida satisfatórias, mostrando-se um instrumento promissor para uso clinico e em pesquisas com crianças no Brasil.

Palavras-chave: Psicometria, tradução, desenvolvimento infantil.

Attachments

Chart 1: Evaluation of the referential equivalence of items considered different in SWYC, Brazil, 2016.

Original Scale	Translated version (Portuguese)	Back-translated version (English)	Evaluation of the referential equivalence	Corrected translated version
Baby Pediatric Symptom Checklist (BPSC)				
Does your child have a hard time being with new people?	É difícil para sua criança ficar com novas pessoas?	Is it difficult for your child to stay with new people?	Different	Sua criança fica incomodada com novas pessoas?
Does your child have a hard time in new places?	É difícil para sua criança ficar em lugares novos?	Is it difficult for your child to stay in new places?	Different	Sua criança fica incomodada em lugares novos?
Parent's Observations of Social Interactions (POSI)				
Please check all that apply	Marque todas as opções que sua criança gosta	Mark all the options that your child likes	Different	Marque todas as opções que desejar

Chart 2: Examples of evaluation of the general equivalence from the results of the translated version, 1st pre-test, expert opinion and respective modifications, Brazil, 2016

1st version of SWYC in the translated version or pre-test	Modification of the 1st Version	Reason
Developmental Milestones		
Segue com os olhos um brinquedo que se mexe	Segue com os olhos o movimento de um brinquedo	It did not send the sense of watching the movement of a toy.
Mantém a cabeça firme quando puxado para a posição sentada	Mantém a cabeça firme quando puxado para sentar	It would not appear that the child would have to remain seated independently after being moved
Mantém a cabeça firme quando você o coloca na posição sentada	Mantém a cabeça firme quando você o/a segura na posição sentada	Correct use of the Portuguese Language Grammar
Emite sons como "ga","ma", "ba"	Faz sons como "ga", "ma" ou "ba"	Facilitate parents' understanding
Estende os braços para ser carregado	Levanta os braços para ser carregado	Facilitate parents' understanding
Pega a comida e come	Pega alimento com a mão e come	Specify more the item to show that the task should be performed by the child and without the aid of cutlery
Combina duas ou mais palavras juntas- como "mais água" ou "vamos embora"	Combina duas ou mais palavras como "dá água" ou "vamos embora"	To adapt the Brazilian culture, facilitating understanding
Nomeia pelo menos uma cor	Fala o nome de pelo menos uma cor	Facilitate parents' understanding
Fala palavras como "pés" para mais de um pé e "homens" para mais de um homem	Fala palavras no plural, por exemplo, pés, meninos, frutas"	To adapt the Brazilian culture, facilitating understanding
Baby Pediatric Symptom Checklist (BPSC)		
Sua criança tem problemas para ficar dormindo?	Sua criança tem dificuldades para manter o sono?	The word problems referred to semantically different meanings
Preschool Pediatric Symptom Checklist (PPSC)		
Fica chateada se as coisas não são feitas de uma certa forma	Fica chateada quando as coisas não são feitas do jeito que ela está acostumada	Do not refer to the meaning that the tasks are carried out by the child according to his or her will
Tem dificuldades com mudanças?	Tem dificuldades para lidar com mudanças na rotina?	Facilitate parents' understanding
Parent's Observations of Social Interactions (POSI)		
Olhar coisas que ficam girando como ventiladores ou rodas	Ficar olhando coisas que giram como ventiladores ou rodas	Facilitate parents' understanding
Questions about family		
No último ano, alguma vez você consumiu álcool ou drogas mais do que pretendia?	No último ano, alguma vez você consumiu mais álcool ou drogas do que pretendia?	The word "more" was causing a different meaning to the desired one