

# TRANSLATION AND TRANSCULTURAL ADAPTATION OF THE SELF-EFFICACY SCALE FOR TEACHERS OF STUDENTS WITH AUTISM: AUTISM SELF-EFFICACY SCALE FOR TEACHERS (ASSET)<sup>1</sup>

## TRADUÇÃO E ADAPTAÇÃO TRANSCULTURAL DA ESCALA DE AVALIAÇÃO DE AUTOEFICÁCIA DE PROFESSORES DE ALUNOS COM AUTISMO: AUTISM SELF-EFFICACY SCALE FOR TEACHERS (ASSET)<sup>2</sup>

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**ABSTRACT:** The teaching self-efficacy perception in relation to the professional practice may interfere in the schooling process of students with autism and may influence the motivation and performance of the teacher's response to the challenging situations of these students' inclusion process. The Autism Self-Efficacy Scale for Teachers (ASSET) evaluates the self-efficacy beliefs of teachers in their ability to perform teaching tasks with students with autism. In this context, this study verified indicators of semantic equivalence resulting from the process of translation and transcultural adaptation of the ASSET scale into the Portuguese language of Brazil and verified indicators of clarity and comprehension of this version in Portuguese through a pilot study. The methodological procedures involved the translation of the scale into the Brazilian Portuguese language and back-translation into English; analysis of semantic equivalence; evaluation of experts of the previous steps and adaptation of the scoring scale; verification of clarity and comprehension of the scale through the pilot study for consolidation of the final version. The ASSET Portuguese version of the scale showed adequate indicators of denotative and connotative equivalence after the stages of translation, back-translation and analysis of semantic equivalence. This made the systematization of the synthesis version of the instrument with few modifications possible in order to meet both the semantic adequacy in relation to the original version and the cultural adjustments, in the stage of expert evaluation and score adaptation. In the pilot study the synthesis version was evaluated as adequate by most teachers. In the final version of the scale, participants' suggestions were included from the pilot study, considering the adequacy of both colloquial vocabulary and the maintenance of the effect of each item in Brazilian culture. We suggest new studies that evaluate other psychometric properties of the ASSET.

**KEYWORDS:** Special Education. Teaching self-efficacy. Autism. Transcultural adaptation.

**RESUMO:** A percepção de autoeficácia docente em relação à prática profissional pode interferir na escolarização de alunos com autismo e afetar a motivação e a atuação do professor frente às situações desafiantes do processo de inclusão desse alunado. A *Autism Self-Efficacy Scale for Teachers* (ASSET) avalia as crenças de autoeficácia dos professores em sua capacidade para desempenhar tarefas docentes no ensino de alunos com autismo. Nesse contexto, este estudo verificou indicadores de equivalência semântica resultantes do processo de tradução e adaptação transcultural da escala ASSET para a língua portuguesa do Brasil e verificou indicadores de clareza e compreensão dessa versão em português mediante estudo piloto. Os procedimentos metodológicos envolveram a tradução da escala para a língua portuguesa e retrotradução para a língua inglesa; análise de equivalência semântica, avaliação de especialistas

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das etapas anteriores e adaptação da escala de pontuação; verificação de clareza e compreensão da escala mediante estudo piloto para consolidação de versão final. A versão da escala ASSET em português mostrou indicadores adequados de equivalência denotativa e conotativa após as etapas de tradução, retrotradução e análise da equivalência semântica. Isso possibilitou a sistematização da versão síntese do instrumento com poucas modificações para atender tanto às adequações semânticas em relação à versão original quanto aos ajustes culturais, na etapa de avaliação dos especialistas e adaptação da pontuação. No estudo piloto, a versão síntese foi avaliada como adequada pela maioria dos professores. Na versão final da escala, foram incluídas sugestões dos participantes a partir do estudo piloto, considerando as adequações tanto de vocabulário coloquial quanto de manutenção do efeito de cada item na cultura brasileira. Sugerem-se novos estudos que avaliem outras propriedades psicométricas da ASSET.

**PALAVRAS-CHAVE:** Educação Especial. Autoeficácia docente. Autismo. Adaptação transcultural.

## 1 INTRODUCTION

The concept of self-efficacy was developed by the Canadian psychologist Albert Bandura, defined as ‘[...] belief in one’s capabilities to organize and execute the courses of action required to attain goals’ (Bandura, 1997, p. 3). Thus, when establishing itself as people’s perceptions of their abilities to perform a given action, self-efficacy can affect how they feel, think, motivate themselves and behave (Barros & Santos, 2010). The person will exhaust his/her potential if he/she believes in his/her own ability to achieve a certain outcome (Deaton, 2015).

When transposing this concept to the educational context, teacher self-efficacy is understood as the teacher’s belief in his/her capacity to develop pedagogical actions that lead to the desired results. To Skaalvik and Skaalvik (2007, p. 612), self-efficacy is associated with ‘[...] beliefs in their own abilities to plan, organize, and carry out activities required to attain given educational goals’. In this context, teacher self-efficacy can be a potential predictor of teacher attitudes in the inclusive context: a) teachers with a high sense of self-efficacy may face difficult situations with the confidence that they will overcome them, demonstrating interest and dedication in carrying out the activities demanded by the challenging educational context, that is, they will tend to increase and sustain their efforts against eventual failures, recovering quickly their sense of effectiveness (Bandura, 1994); b) teachers with a low sense of self-efficacy, when faced with challenging situations that they perceive as personal/professional threats, may tend to feel intimidated, unmotivated, focusing more on possible adverse outcomes than on how they can develop their pedagogical activities in a successful way (Bandura, 1994).

According to Bandura’s assumptions (1994), there are four sources of influence for the development of self-efficacy: a) social persuasion, related to encouraging people, communicating that they can do something better; b) vicarious experience, related to watching someone performing a certain task, which may increase the positive belief in one’s own capability, derived from the observation of correctness and errors of the person; c) direct experience related to the learning curve, which implies the progressive improvement of learning a certain skill as a task is performed; d) physical and emotional state resulting from one’s own performance in the execution of tasks.

Self-efficacy beliefs are associated with a multiplicity of positive outcomes for teachers and students. These beliefs may influence different factors of the educational process such as motivation and quality of teaching, which has been proven in studies with teachers from different areas and levels from Basic Education to Higher Education (Dybowski, Sehner, & Harendza, 2017; Pfitzner-Eden, 2016; Scherer, Jansen, Nilsen, Areepattamannil, & Marsh, 2016).

In order to evaluate the teacher self-efficacy, the Teacher Efficacy Scale (TES), by Gibson and Dembro (1984), and Teacher Interpersonal Self-Efficacy Scale (TISES), by Brouwers and Tomic (2001), are recognized. However, the study of Klassen, Tze, Betts and Gordon (2011) points out that these general self-efficacy measures do not cover the evaluation of teachers' beliefs in relation to their effectiveness in performing specific teaching-related skills with students with special educational needs (SEN). Students with certain types of disabilities are classified as learners with SEN to indicate that they have individual needs in the educational and social environment (Política Nacional de Educação Especial na Perspectiva da Educação Inclusiva, 2007). SEN originated from deficiencies or learning difficulties (Declaração de Salamanca, 1997). Thus, the target population of Special Education in Brazil is formed of students who have sensory deficiencies, mental/intellectual disability, global developmental disorders/Autistic Spectrum Disorder (ASD), multiple deficiencies (association of two or more primary deficiencies) and high (gifted) abilities, as well as other conditions that can lead to learning difficulties characterized by attention problems and/or hyperactivity, dyslexia, among others (Política Nacional de Educação Especial na Perspectiva da Educação Inclusiva, 2007, 2008). Generally, the teacher's belief about self-efficacy, in the case of Special Education teachers, can be singularly influenced by some factors. Previous studies cite some of these factors, namely: teacher stress or failures in student acquisition of learning skills; quality of education; and experience in teaching in Special Education, among others (Ruble, Usher, & McGrew, 2011; Ruble, Toland, Birdwhistell, McGrew, & Usher, 2013; Taliaferro, Hammond, & Wyant, 2015).

One of the neurodevelopmental conditions from which a student is considered as having SEN is ASD. ASD is one of the most serious disorders of child development due to its impact on adaptive functioning and should be diagnosed within the first two to three years of development. It is a clinically complex disorder characterized by impairments, at varying levels, in social cognition, communication, social interaction, behavior and sensory aspects (American Psychiatric Association [APA], 2014). ASD demands from the teacher specific knowledge for accommodation development and curricular flexibilizations that may or may not contribute to adequate self-efficacy beliefs (Schmidt, 2014). Scales that allow detecting the sense of self-efficacy of teachers in the professional performance along with students with ASD can be important tools to assist in the recognition and self-assessment of the teaching and learning process. Among the scales developed for evaluation of self-efficacy, only the Autism Self-Efficacy Scale for Teachers (ASSET) (Ruble et al., 2013) evaluates this domain which is specific to the performance of teachers of students with autism.

The ASSET scale was developed in the United States of America (USA) and evaluated with positive results regarding its psychometric properties (dimensionality, internal consistency and validity) in a sample group composed of schools from two states in the center-south of the USA, comprising 44 teachers in Special Education that had at least one student with autism in their classroom (Ruble et al., 2013). The results revealed adequate indicators of internal consistency (above 0.85) with evidence of concurrent external validity whose correlation coefficients ranged from 0.27 to 0.49. The dimensionality and internal consistency of the 30 items of the scale showed that all reflected a dominant factor, with 28 of the 30 items factorial load between 0.35 and 0.89, considered adequate (Ruble et al., 2013).

The scale consists of 30 items on the beliefs of Special Education teachers and their ability to perform teaching tasks in teaching students with autism. The items were composed of questions about how confident teachers feel in relation to the main knowledge and skills needed to assist the student with autism, identified from a best practice guide to educate students with autism (Ruble et al., 2013).

Considering that translation and back-translation processes are not sufficient to capture linguistic and sociocultural factors of an evaluation tool developed in a culture different from the one in which the test was constructed (Losapio et al., 2011), we opted for the transcultural adaptation of ASSET in order to use it in Brazil. Transcultural adaptation '[...] involves translation, cultural adjustments of words into the language and context to which it is being translated, enabling a better capture of the intended meaning' (Losapio et al., 2011, p. 911).

Thus, this study aimed to verify semantic equivalence indicators, resulting from the translation and transcultural adaptation process of the ASSET scale for the Brazilian Portuguese language, and the indicators of clarity and comprehension of this version in Portuguese through a pilot study.

## 2 METHOD

This research is part of the study *Consultoria colaborativa: influências na autoeficácia docente e no processo de inclusão de alunos com transtorno do espectro autista* (Collaborative consulting: influences on teacher self-efficacy and the inclusion process of students with autism spectrum disorder), which was evaluated and approved (CAEE 68620017.1.0000.5346) by the Research Ethics Committee of the Federal University of Santa Maria (UFSM), Santa Maria, Rio Grande do Sul, Brazil.

Initially, contact was established with the ASSET main author, Lisa Ruble, from the University of Kentucky, Lexington, USA, who authorized the translation and adaptation of the scale into the Brazilian Portuguese language. The research was a methodological study of transcultural adaptation of the Autism Self-Efficacy Scale for Teachers (Ruble et al., 2013).

The process of transcultural adaptation has been used in several studies that involve the translation of instruments developed in differentiated cultural and linguistic contexts, showing effective results (Lemos, Conti, & Sougey, 2015; Losapio et al., 2011; Moraes, Hasselmann, & Reichenheim, 2002; Reis, Laguardia, & Martins, 2012; Silveira et al., 2013).

The research was conducted in six stages: (1) translation of the scale into the Brazilian Portuguese language; (2) back-translation into English; (3) semantic equivalence analysis; (4) evaluation of experts from previous stages and adaptation of the scoring scale; (5) verification of clarity and understanding of scale through a pilot study; (6) consolidation of final version.

### STAGE 1 - TRANSLATION OF THE SCALE INTO THE BRAZILIAN PORTUGUESE LANGUAGE

Two translations of the original ASSET scale (in English) were carried out into Portuguese (forward) independently. A translation was done by a Brazilian bilingual translator, with fluency in English and with knowledge in the area of autism, and the other was conducted by a translator graduated in Language and with a Master's in Language Teaching.

## **STAGE 2 - BACK-TRANSLATION INTO THE ENGLISH LANGUAGE**

The translations were back-translated into English by two independent translators, both bilingual, one with mother tongue and American culture, the other with mother tongue and English culture, both fluent in Portuguese.

## **STAGE 3 - ANALYSIS OF SEMANTIC EQUIVALENCE**

The evaluation of the semantic equivalence for the appreciation of the linguistic meanings of the terms and expressions between the back-translations and the original instrument was carried out by a bilingual translator, proficient in English, with no knowledge of the original questionnaire, the translation or back-translation processes.

The equivalence of the denotative/referential meaning was evaluated, that is, the literal correspondence between words/terms that constitute the original ASSET scale and back-translations were evaluated. 'This concerns the ideas or objects of the world to which one or several words refer to' (Moraes et al., 2002, p. 166). For the analysis of the translator, three questionnaires were elaborated with the objective of disguising the original version of ASSET and its back-translations: the first contained the two back-translations; the second contained the original version and one of the back-translations; and the third contained the original version and the other back-translation. The evaluation was organized from a visual analogical scale that allowed the judgment of the percentage between 0 and 100% of the equivalence between the assertive pairs, that is, the percentage of literal similarity between the original and the back-translations. 'The greater the literal correspondence between the terms in the version and the original, the greater the equivalence of the referential meaning' (Silveira et al., 2013, p. 237). For the analysis of equivalence between the back-translations, the criterion of decision was used on the Pasquali's (2016) pertinence item.

In order to evaluate the equivalence of the connotative/general meaning, each item of the original ASSET scale was also contrasted with the Portuguese translations in order to analyze whether the concepts involved in them had the same effect in the two different cultures. The result of this evaluation was systematized in a form, contemplating a qualitative classification established from four levels: unaltered (U); slightly altered (SA); very altered (VA); or completely altered (CA).

## **STAGE 4 - EVALUATION OF EXPERTS FROM THE PREVIOUS STAGES AND ADAPTATION OF THE SCORING SCALE**

Three experts in the field of autism have jointly analyzed the previous stages to generate the synthesis version of the instrument. For this, it was agreed that those items of the two translations that were evaluated as unaltered and slightly altered would be incorporated preferentially in this version, and the necessary modifications would be made to meet the conditions of the semantic equivalence analysis.

The synthesis version was analyzed critically and comparatively with the original version, considering the maintenance of the concepts, the adequacy of terms and colloquial expressions of the language, as well as whether the description of the items had the same

cultural reference in the different cultures (Silveira et al., 2013). In relation to the adjustment of the scoring scale, a change was made in the scoring form of the scale. In the preliminary study of the ASSET scale, the reliability of the data was analyzed using a Likert scale of 6 points, from the re-coded responses according to the respective intervals: 0 (0-50); 1 (51-60); 2 (61-70); 3 (71-80); 4 (81-90); and 5 (91-100). This produced a categorical variable of 6 points for each item. Based on the results identified in the study, the authors concluded that a 6-point response scale was considered more adequate (Ruble et al., 2013). Thus, from the proposed indication, the 30-item questionnaire of the ASSET, which originally consisted of a Likert scale, ranging from 0 (I cannot do anything) to 100 (I'm completely certain I can do it), was adapted, being then punctuated by a scale of 6 points ranging from 0 (I cannot do anything) to 5 (I can certainly do it).

### **STAGE 5 - PILOT STUDY TO VERIFY THE CLARITY AND COMPREHENSION OF THE SCALE**

In this phase, a cross-sectional study was conducted to evaluate indicators of clarity and comprehension of the items of the scale version in the Brazilian Portuguese language. The sample selected under criteria of convenience was composed of 20 Special Education teachers from the Municipal Public School of Santa Maria, Rio Grande do Sul, Brazil, with experience in teaching students with autism. Prior consultation was established with the Municipality of Education Secretariat (known as SMEd) to request authorization for the pilot study of the scale version in Portuguese. The data were collected during the monthly continuous education meeting held by SMEd. Participants read the scale items and answered on a Likert scale to the question: 'Did you understand what was requested?'. The possible answers were: 0 ('I did not understand anything'); 1 ('I understood a little'); 2 ('I reasonably understood'); 3 ('I understood almost everything, but I have doubts'); 4 ('I understood almost everything'); 5 ('I understood completely and I have no doubts'). Participants were asked to highlight words or phrases with vocabulary they did not know, to describe comprehension difficulties, and to suggest adequacies in a justified way.

### **STAGE 6 - CONSOLIDATION OF FINAL VERSION**

The authors of the study evaluated the acceptability of the considerations arising from the evidence found in the pilot study. Scale items that received responses from 0 to 3 were considered insufficiently understood. The items that received response indication 4 for more than 15% of the sample were also re-evaluated. The analysis of these items was done considering the suggestions of the participants in the pilot study, as well as the adjustments of semantic adjustments necessary to the final version of the scale.

## **3 RESULTS**

The comparative results in frequency and percentage between the back-translations of the items of the ASSET scale are presented in Table 1. The results indicate, for the indicators of denotative meaning as well as those of connotative meaning, the equivalence percentages in relation to the original version of the items. For the definition of the adequacy of the analysis, we used the criterion of correspondence decision of the item according to Pasquali

(2016). The data indicates that the items that were very altered in the back-translation belong predominantly to the back-translator 1 (4 items). Differently, the items did not undergo significant modifications in the back-translation performed by professional 2. In general, regarding the items of the original scale, there was an adequate equivalence of the denotative/referential meaning with the items of the back-translations (Pasquali, 2016), since, with the exception of 4 items back-translated by professional 1, the remaining percentages are close to 100% correspondence (Table 1).

It was verified that the evaluation of the denotative/referential and connotative/general meanings referring to items 15 (40% and VA) and 17 (70% and SA) of the back-translation made by professional 1 and translation 1 were influenced by the translation stage. The contents of the description, both of item 15 and item 17, are related to the items that precede it, that is, to the items 14 and 16, respectively. In the original scale, item 14 is 'Design positive behavioral supports for this student', however, item 15 is 'Implement positive behavioral supports for this student', contemplating its translation 1 '*implementar esses apoios*' (implement these supports). The same relation was identified when analyzing items 16 and 17, which in the original scale are, 'Collect data to monitor this student's progress toward objectives' and 'Make use of data to re-evaluate this student's goals or objectives'. However, translation 1 of item 17 was established as '*Utilizar esses dados para avaliação dos objetivos*' (Use this data to assess goals). The translation 1 of items 15 and 17 was not established literally, but it considered the context of interrelations with the predecessor items. However, as the evaluation of the denotative/referential and connotative/general meanings was established in the matching between the items of the original/back-translation 1 scale and the original/translation 1 scale, respectively, the discrepancy between the semantic equivalence evaluation of items 15 and 17 was verified.

Original	Back-translator 1	DRM (%)	CRM	Back-translator 2	DRM (%)	CRM
1. Conduct an assessment of this student's developmental skills/learning skills	Carry out an assessment of developmental and learning skills	90	U	Conduct an assessment of the student's developmental/ learning skills	100	U
2. Describe this student's characteristics that relate to autism	Describe the characteristics of the student that relate to autism	100	U	Describe the characteristics of this student related to autism	100	U
3. Describe the implications for intervention based on this student's characteristics of autism	Describe the implications for intervention based on the characteristics of the student with autism	100	U	Describe the implications for intervention based on the autism characteristics of the student	90	SA
4. Translate assessment information into teaching goals and objectives for this student	Translate assessment information into teaching goals and objectives for this student	100	U	Translate assessment information into goals and learning objectives for this student	90	U
5. Write a measurable objective for this student	Write measurable goals for the student	90	U	Write a measurable objective for this student	100	U
6. Write a teaching plan for this student based on goals and objectives	Build a teaching plan for this student based on their goals	90	SA	Write a teaching plan for this student based on goals and objectives	100	U

7. Generate teaching activities for this student	Generate teaching activities for this student	100	U	Create teaching activities for this student	100	U
8. Organize the classroom to increase opportunities for learning for this student	Organize the classroom to increase teaching opportunities for this student	90	SA	Organize the classroom to enhance learning opportunities for this student	100	U
9. Use visual structure to increase this student's independence	Utilize visual elements and aids to increase the student's independence	80	U	Use visual structure to increase the independence of this student	100	U
10. Help this student understand others	Help the student to understand others	100	U	Help this student to understand others	100	U
11. Help this student be understood by others	Help the student be understood by others	100	U	Help this student to be understood by others	100	U
12. Provide opportunities for communication in the classroom throughout the day for this student	Provide opportunities for interaction for this student in the classroom throughout the day	90	SA	Provide communication opportunities in the classroom throughout the day for this student	100	U
13. Assess the causes of problematic behaviors of this student	Assess the causes of this student's behavioral problems	90	U	Assess the causes of problematic behavior of this student	100	U
14. Design positive behavioral supports for this student	Plan strategies to achieve and ensure positive behavior from the student	70	U	Outline positive behavior support for this student	90	SA
15. Implement positive behavioral supports for this student	Implement these strategies	40	VA	Put in place positive behavior support for this student	90	SA
16. Collect data to monitor this student's progress toward objectives	Collect data regarding the progress of this student in relation to proposed goals	90	U	Collect data to monitor the progress of this student against goals	40	U
17. Make use of data to re-evaluate this student's goals or objectives	Use this data to assess goals	70	SA	Make use of the data to re-evaluate the goals and objectives of this student	100	U
18. Assess this student's social interaction skills	Evaluate this student's social interaction skills	90	U	Assess the social interaction skills of this student	100	U
19. Assess this student's play skills	Evaluate this student's play skills	90	U	Assess this student's ability to play	90	U
20. Teach this student social interaction	Teach this student social interactions	100	U	Teach social interaction to this student	100	U
21. Teach this student play skills	Teach this student play skills	100	U	Teach this student to play	90	U
22. Train peer models to improve the social skills of this student	Teach the student's peers to teach him/her social skills	60	VA	Practice group models to improve the social skills of this student	70	SA
23. Describe parental concerns regarding this student	Describe the concerns of this student's parents	100	VA	Describe parental concerns in respect of this student	100	U

24. Communicate and work effectively with this student's parent(s) or caregiver	Communicate and work cooperatively with the parents or caregivers of this student	90	VA	Communicate and effectively work with the parents or caregivers of this student	100	SA
25. Describe parental priorities for learning with regard to this student	Describe the parents' priorities for the student's learning	100	U	Describe parental priorities for learning in respect of this student	100	U
26. Help this student remain engaged	Help the student stay engaged	90	U	Help this student to stay engaged	100	U
27. Sustain this student's attention	Keep the student's attention	90	U	Sustain the attention of this student	100	U
28. Motivate this student	Motivate the student	100	U	Motivate this student	100	U
29. Help this student feel successful	Help this student feel competente	90	U	Help this student to feel successful	100	SA
30. Teach this student academic skill	Teach academic skills to this student	100	U	Teach academic skills to this student	100	U

**Table 1.** Comparative results in frequency and percentage between the back-translations of the items of the ASSET scale

Source: Elaborated by the authors.

Legend: DRM: denotative/referential meaning; CRM: connotative/referential meaning; U: unchanged; SA: slightly altered; VA: very altered.

Table 2 shows that only two items of the back-translation performed by professional 2 and five items of the back-translation made by the professional 1 presented a percentage of equivalence of the denotative/referential meaning lower than 90% (visual analog scale) in relation to the original ASSET scale items. The equivalence of the connotative/general meaning remained unchanged in more than 70% of the items in translation 1 and in 80% of the items in translation 2 in relation to the original scale.

Degree of equivalence between the back-translation items and the original ASSET scale	Denotative referential meaning		Evaluator's judgment between the translation items and the original ASSET scale	Connotative/general meaning	
	Back-translator 1 Number and percentage of items that present equivalence	Back-translator 2 Number and percentage of items that present equivalence		Number and percentage of items that present equivalence	Back-translator 2 Number and percentage of items that present equivalence
90 – 100%	25 (83,3)	28 (93,3)	Unchanged	22 (73,3)	24 (80,0)
70 > 90%	3 (10,0)	1 (3,3)	Slightly altered	4 (13,3)	6 (20,0)
50 > 70%	1 (3,3)	-	Very altered	4 (13,3)	-
> 50%	1 (3,3)	1 (3,3)	Completely altered	-	-
Total	30 (100)	30 (100)	Total	30 (100)	30 (100)

**Table 2.** Comparative global results of the analysis of semantic equivalence between the back-translations of items on the ASSET scale

Source: Elaborated by the authors.

From the analysis carried out in stage 4 by the specialists, the synthesis version of the scale was comprised of 30% of the translation items 1 (2, 3, 5, 10, 11, 13, 14, 26 and 29), 23.3% of the translation items 2 (6, 8, 12, 15, 17, 19, 24), 20% of the composition between items of the two translations (1, 16, 21, 22, 23 and 25) and 26.6% of the items that basically presented the same description in the translations of professionals 1 and 2, varying only in relation to the pronouns, prepositions and noun ‘*aluno/estudante*’ (pupil/student) (4, 7, 9, 18, 20, 27, 28 and 30).

Some specific changes were made, as shown in Table 3, as well as modifications involving general aspects in different items for the transcultural adaptation of the synthesis version. In this context, it is important to point out that, although the term ‘student’ in the original scale appears in the translation of professional 1 as ‘*estudante*’ and in 2 as ‘*aluno*’, the term ‘*aluno*’ was defined to contemplate all items of the synthesis version, since this is the terminology that appears in the main normative Brazilian documents about the educational rights of people with autism (Política Nacional de Educação Especial na Perspectiva da Educação Inclusiva, 2008; Lei N° 12.764, 2012). Another modification adopted refers to the substitution of the demonstrative pronouns ‘*este*’ and ‘*esse*’, that preceded the noun ‘*aluno*’, by the article ‘*o*’, as well as of the contractions of the pronouns with the preposition ‘*de*’, that is ‘*deste*’ and ‘*desse*’, by the preposition ‘*do*’, approaching the description of the items to the colloquial language.

Item	Description in the translation(s)	Description proposed in the synthesis version
1	<i>Realizar uma avaliação das habilidades de desenvolvimento e aprendizagem</i> (T1) (Carry out an assessment of developmental and learning skills)  <i>Conduzir uma avaliação das habilidades de desenvolvimento/ aprendizagem do aluno</i> (T2) (Conduct an assessment of the student’s developmental/ learning skills)	<i>Realizar uma avaliação das habilidades de desenvolvimento/ aprendizagem do aluno</i> (Carry out an assessment of the student’s developmental/learning skills)
7	<i>Gerar atividades de ensino para este estudante</i> (T1) (Generate teaching activities for this student)  <i>Criar atividades de ensino para este aluno</i> (T2) (Create teaching activities for this student)	<i>Elaborar atividades de ensino para o aluno</i> (Elaborate teaching activities for the student)
15	<i>Implementar apoio de comportamento positivo para este aluno</i> (T2) (Put in place positive behavior support for this student)	<i>Implementar apoio para os comportamentos positivos do aluno</i> (Implement support for the positive behavior of the student)
16	<i>Coletar dados a respeito do progresso desse aluno em relação aos objetivos propostos</i> (T1) (Collect data regarding the progress of this student in relation to proposed goals)  <i>Coletar dados para monitorar o progresso deste aluno frente a objetivos</i> (T2) (Collect data to monitor the progress of this student against goals)	<i>Coletar dados para monitorar o progresso do aluno em relação aos objetivos propostos</i> (Collect data to monitor the progress of the student in relation to the proposed goals)
17	<i>Fazer uso dos dados para reavaliar as metas e objetivos deste aluno</i> (T2) (Make use of the data to re-evaluate the goals and objectives of this student)	<i>Fazer uso dos dados coletados para reavaliar as metas e os objetivos do aluno</i> (Make use of the data collected to re-evaluate the goals and objectives of the student)

21	<i>Ensinar a este aluno habilidades de brincadeira</i> (T1) (Teach this student play skills)  <i>Ensinar este aluno a brincar</i> (T2) (Teach this student to play)	<i>Ensinar ao aluno habilidades de brincar</i> (Teach the student play skills)
22	<i>Ensinar os pares do aluno a ensinar-lhe habilidades sociais</i> (T1) (Teach the student's peers to teach him/her social skills)  <i>Treinar modelos de grupos para aprimorar as habilidades sociais deste aluno</i> (T2) (Practice group models to improve the social skills of this student)	<i>Ensinar os pares para aprimorar as habilidades sociais do aluno</i> (Teach the peers to improve the social skills of the student)
23	<i>Descrver as preocupações dos pais deste aluno</i> (T1) (Describe the concerns of this student's parents)  <i>Descrver preocupações parentais em relação a este aluno</i> (T2) (Describe parental concerns in respect of this student)	<i>Descrver preocupações dos pais em relação ao aluno</i> (Describe parents' concerns regarding the student)
24	<i>Comunicar e efetivamente trabalhar com os pais ou cuidadores deste aluno</i> (T2) (Communicate and effectively work with the parents or caregivers of this student)	<i>Comunicar e trabalhar efetivamente com os pais ou cuidadores do aluno</i> (Communicate and effectively work with the parents or caregivers of the student)
25	<i>Descrver as prioridades dos pais para a aprendizagem do aluno</i> (T1) (Describe the parents' priorities for the student's learning)  <i>Descrver prioridades parentais para aprendizagem em relação a este aluno</i> (T2) (Describe parental priorities for learning in respect of this student)	<i>Descrver prioridades dos pais em relação à aprendizagem do aluno</i> (Describe parents' priorities in relation to the student's learning)

**Table 3.** - Changes and adaptations made between the translation stage and the semantic evaluation stage for the synthesis version

Source: Elaborated by the authors.

Legend: T1: Translation 1; T2: Translation 2.

Note: As the purpose of this research is the construction of an Asset questionnaire in Portuguese language derived from an English version, Tables 3 and 4 present the items of the ASSET scale in both languages – the original items (English) and their respective translations (Portuguese).

The specific changes of some items were based on different objectives. In items 1, 7, 16, 17, 21, 22, 23 and 25, it was sought to approximate the Portuguese version of the Brazilian cultural context, making it more acceptable to the target population. Item 1 obtained a good semantic evaluation, since both versions of the translations presented an evaluation of the connotative/general meaning as unaltered (I). However, the basis for the description of translation 2 was chosen, since the qualification of the denotative/referential meaning (100%) of its back-translation presented a more reliable description in relation to the original scale. However, in this item, the word ‘*Conduzir*’ (Conduct) has been replaced by the word ‘*Realizar*’ (Carry out) in translation 1. A similar situation was observed in item 21, which presented the same quantitative-qualitative references established in relation to the semantic evaluation of the item previously described. However, in this case, the basis of translation 1 description to compose the synthesis version was chosen, which presented better evaluation of the denotative/referential meaning (100%) in its back-translation. In the description of item 21, it was also

necessary to replace the term ‘*brincadeira*’ with ‘*brincar*’<sup>6</sup>, which appears in translation 2, since it is understood that the teaching focused in this item involves the skills of playing, being ‘*brincadeira*’ understood as the action of playing.

In Table 3, a counterpoint is observed in item 23, which obtained a good evaluation of the denotative/referential meaning (100%), but the description of translation 2 was maintained, considering its good evaluation of the connotative/general meaning (U) in relation to the original scale. However, in this item, it was decided to replace the word ‘*parentais*’ (parental) with the term ‘*pais*’ (parents), which appears in translation 1. A similar process was established in item 25, which presented good semantic evaluation (100% and U) in both versions, but the option for the term ‘*pais*’ (parents) (translation 1) was maintained in relation to ‘*parentais*’ (parental) (translation 2). In this item, the description of translation 2 was maintained, and the need to change the terms of the sentence was evaluated to promote understanding of its meaning, thus the translation went from ‘*Descrever prioridades parentais para aprendizagem em relação a este aluno*’ (Describe parental priorities for learning in respect of this student) to ‘*Descrever prioridades para os pais em relação à aprendizagem do aluno*’ (Describe parents’ priorities in relation to the student’s learning). Item 7 also obtained good semantic evaluation (100% and U) in both versions, although the words ‘*Gerar*’ (Generate) (translation 1) or ‘*Criar*’ (Create) (translation 2), have proper meaning, they are not commonly used terms in the educational context, so it was decided to replace them with ‘*Elaborar*’ (Elaborate). Item 16 presented a change in the evaluation of the denotative/referential meaning (90% in the back-translation of professional 1 and 40% in the back-translation of professional 2), despite the fact that both translations present an unchanged connotative/general meaning (I); therefore, the composition between the items for semantic adaptation in the synthesis version was carried out: ‘*Coletar dados para monitorar o progresso do aluno (translation 2) em relação aos objetivos propostos (translation 1)*’ (Collect data to monitor the progress of the student (translation 2) in relation to the proposed goals (translation 1)).

Composition between the items of translations 1 and 2 was also the strategy used to extend the semantic evaluation of item 22 of the synthesis version in relation to the original scale, since there was a sharp discrepancy in the evaluation of the back-translation/translation 1 (60% and VA) and back-translation/translation 2 (70% and SA). In this item, the base of the description of translation 2 was chosen, replacing the fragment ‘*Treinar modelos de grupos*’ (Practice group models) by ‘*Ensinar os pares*’ (Teach the peers) that appears in translation 1. In item 17, the option was for the description of translation 2 due to the qualifier of the semantic evaluation (100% and U), the adjective inserted being ‘*coletados*’ (collected) next to the term ‘*dados*’ (data) to specify them, that is, ‘*dados coletados*’ (data collected). According to Table 3, the specific changes of items 15 and 24 involved the adequacy/restructuring in the description of the items, aiming at their agreement to the meaning expressed in the original scale and, therefore, seeking to broaden the equivalence of the general meaning. In item 15, the description ‘*Implementar apoio de comportamento positivo para este aluno*’ (Put in place positive behavior support for this student) was changed to ‘*Implementar apoio para os comportamentos*

<sup>6</sup> Note of translation: in Portuguese, ‘*brincadeira*’ is a noun, which may have, in relation to the act of playing, the following meanings: toy, game, entertainment, etc.; whereas ‘*brincar*’ is a verb, which may have the following meanings: have fun in a childish way; entertain oneself in children’s games; entertain oneself, etc. In English, both terms are used as ‘play/playing’.

*positivos do aluno*' (Implement support for the positive behavior of the student). In item 24, the description '*Comunicar e efetivamente trabalhar com os pais ou cuidadores deste aluno*' was changed to '*Comunicar e trabalhar efetivamente com os pais ou cuidadores do aluno*' (Communicate and effectively work with the parents or caregivers of the student). Another change made in the ASSET 30-item questionnaire was on the scoring scale. In this case, it started to be scored on a Likert scale of 6 points ranging from 0 (*não posso fazer nada* - I cannot do anything) to 5 (*certamente posso fazer* - I can certainly do it).

In the pilot phase, it was verified that there were adequate indicators of comprehension of the items by the Special Education teachers in relation to the scale (for 90% of the items teachers understood almost everything). Clarity and verbal understanding were assessed (they were asked: Did you understand what was requested?) - 89.82% of teachers said they understood almost everything. Items 3, 4, 5, 16, 20 and 22 were insufficiently understood and, due to that, adjustments were made. For example, item 16, the phrase '*coletar dados para monitorar*' (Collect data to monitor) was changed to '*reunir informações para avaliar*' (Gather information to assess); in item 22, the term '*pares*' (peers) was replaced by '*colegas*' (colleagues). Adjustments were made to resolve doubts about the terms and make the description of the items closer to the colloquial vocabulary that permeates the educational context (Table 4).

In item 20, doubts involved the expression '*ensinar interação social*' (teach social interaction), the cultural adequacy of the item being necessary through the insertion of the terms '*habilidades/estratégias de*' (skills/strategies of), because the understanding is that teaching is not social interaction, but skills and strategies for social interaction. Concerning item 3, the questions concerned what the concrete meaning of '*Descrever as implicações para intervenção*' (Describe the implications for intervention) meant, so instead it was necessary and adequate to use "*Planejar a intervenção*" (Plan the intervention) to make comprehension more accessible. In item 4, the term '*traduzir*' (translate) was replaced by '*interpretar*' (interpret) and the fragment '*para definição*' (for setting) was inserted to clarify the understanding of the item, that is, the assessment information will be interpreted for setting goals and objectives. In item 5, the expression '*objetivos mensuráveis*' (measurable objectives) was considered strange because it involves a positivist terminology that demonstrates quantifiable objectives, in a cultural context in which education essentially focuses on qualitative objectives. In this sense, cultural adequacy involved replacing '*objetivos mensuráveis*' (measurable objectives) with '*objetivos que possam ser verificados claramente quando atingidos*' (objectives that can be clearly verified when reached by the student). These adaptations (Table 4), although representing differences in relation to the denotative/referential meaning, do not compromise the connotative/general meaning, since they retain the same meaning as the original items, but they are necessary for the effect of each item to be preserved in the two different cultures.

Synthesis version for the pilot study	Final version
3. <i>Descrever as implicações para intervenção baseadas nas características do aluno com autismo.</i> (Describe the implications for intervention based on the characteristics of the student with autism)	<i>Planejar a intervenção com base nas características do aluno com autismo.</i> (Plan the intervention based on the characteristics of the student with autism)
4. <i>Traduzir informações da avaliação em metas e objetivos de ensino para o aluno.</i> (Translate assessment information into teaching goals and objectives for the student)	<i>Interpretar informações da avaliação para definição das metas e objetivos de ensino para o aluno.</i> (Interpret assessment information for setting learning goals and objectives for the student)
5. <i>Escrever objetivos mensuráveis para o aluno.</i> (Write measurable objectives for the student)	<i>Escrever objetivos que possam ser verificados claramente quando atingidos pelo aluno.</i> (Write objectives that can be clearly verified when reached by the student)
16. <i>Coletar dados para monitorar o progresso do aluno em relação aos objetivos propostos.</i> (Collect data to monitor the progress of the student in relation to the proposed objectives)	<i>Reunir informações para avaliar o progresso do aluno em relação aos objetivos propostos.</i> (Gather information to assess the student's progress in relation to the proposed objectives)
20. <i>Ensinar interação social ao aluno.</i> (Teach social interaction to the student)	<i>Ensinar habilidades/estratégias de interação social ao aluno.</i> (Teach skills/strategies of social interaction to the student)
22. <i>Ensinar os pares para aprimorar as habilidades sociais do aluno.</i> (Teach peers to improve the student's social skills)	<i>Ensinar os colegas para aprimorar as habilidades sociais do aluno.</i> (Teach colleagues to improve the student's social skills)

**Table 4.** Adaptations carried out after the pilot study stage and description of the final version items  
Source: Elaborated by the authors.

#### 4 DISCUSSION AND CONCLUSION

The aim of the study was to verify indicators of semantic equivalence, resulting from the translation and transcultural adaptation process of the ASSET scale for the Brazilian Portuguese language, and to verify indicators of clarity and comprehension of this version in Portuguese through a pilot study. Considering that teacher self-efficacy constitutes a belief in the capacity to develop pedagogical actions that lead to the desired results (Bandura, 1997), a measure of self-efficacy can be a potential predictor of teacher attitudes in the inclusive educational context. When teachers believe that they may be able to respond to challenges, such as dealing with the teaching and learning of students in the process of inclusion, there will be a tendency to involve more efforts in order to persist and propose strategies that conduct to the process successfully.

Teachers who enact in inclusive education with students who have ASD report impotence, frustration and fear of intervening due to the specific behaviors associated with the students (Schmidt, Nunes, Pereira, Oliveira, Nuernberg, & Kubaski, 2016). Even though they have experienced some successful situations, teachers find it difficult to generalize their experiences because of the diversity of symptoms evidenced by the students due to the autistic spectrum (Ruble et al., 2011). These findings may contribute to discrediting teachers' own abilities to adopt effective educational practices. Considering that the beliefs of teacher self-efficacy can interfere in the performance of the educational practice in the process of inclusion of students with autism, it is important to develop studies in the area, and the Autism Self-

Efficacy Scale for Teachers (ASSET) is a significant contribution as it is currently the only instrument that specifically assesses the self-efficacy of teachers of students with autism.

ASSET was originally written in English and there are no published studies of its adaptation to other languages. For its use in Brazilian studies without prejudice to the original characteristics of the instrument and in a contextualized way to the linguistic demands of the Brazilian culture, the present study carried out its process of translation, back-translation and transcultural adaptation. A good equivalence of the denotative/referential meaning was found in relation to back-translation 2 and acceptable equivalence related to back-translation 1, since only 6.6% of the items of back-translation 2 and 16.6% of the items of back-translation 1 presented a degree of equivalence of the denotative/referential significance of less than 90% in relation to the original ASSET scale items. The equivalence of the connotative/general meaning remained unchanged in more than 70% of the items in translation 1 and in 80% of the items in translation 2 in relation to the original scale. It is important to note that the evaluation of the denotative/referential and connotative/general meanings referring to items 15 and 17 of back-translation 1 and translation 1 were influenced by the translation stage, which was not established in a literal way, but considered the context of interrelationships with the predecessor items, i.e. items 14 and 16, respectively. In this sense, the semantic equivalence evaluation data for back-translation 1 and translation 1 were influenced by the translation style adopted in items 15 and 17 by the translator responsible for that version, in stage 1, without compromising the equivalence of the denotative/referential and connotative/general meanings, since they involved synonymous terms.

The results of the stage that generated the synthesis version of the scale revealed that, in general, there were specific modifications related to terminological variation (e.g. *estudante/aluno* (student/pupil)) and other variations related to grammatical changes to approximate the description of the items of the synthesis version to the colloquial language. An adaptation was also performed in the scoring form of the scale, considering the results of the study of the ASSET (Ruble et al., 2013). Thus, the Likert scale that constitutes the 30-item questionnaire of the ASSET has been adapted, being scaled by a 6-point scale ranging from 0 (I cannot do anything) to 5 (I can certainly do it).

The indicators of comprehension and clarity of the Portuguese version of the scale indicated that there was a good understanding of Special Education teachers, since 90% of the items were indicated as answers that showed sufficient clarity and verbal comprehension. However, analyzes were conducted for 20% of the items that were classified by teachers as insufficiently understood (items 3, 4 and 5) and for 15% of items in which teachers understood almost everything (items 3, 4, 5, 16, 20 and 22). The analysis considered the suggestions of the participants in the pilot study, as well as the adjustments of semantic adjustments necessary to the final version of the scale. In items 16 and 22, adjustments were made to resolve doubts about the terms and make the item description closer to the colloquial vocabulary that permeates the educational context. In relation to items 3, 4, 5 and 20, the adjustments were necessary so that the effect of each item was preserved in the two different cultures.

Based on this study, it is concluded that the ASSET version to Brazilian Portuguese showed adequate indicators of denotative and connotative equivalence after the stages of

translation, back-translation and semantic equivalence analysis. This made the systematization of the synthesis version of the instrument possible with few modifications to meet both the semantic adequacy in relation to the original version and the cultural adjustments, in the stage of evaluation of the specialists and adaptation of the score. In the pilot study, the synthesis version was assessed as adequate by most teachers. For the final version of the scale (Table 5 and 6 – presented in Portuguese, then in English), the analysis of the suggestions of the participants in the pilot study was carried out, considering the adequacy of both the colloquial vocabulary and the maintenance of the effect of each item in the Brazilian culture. It is suggested to carry out future studies that verify other psychometric properties such as reliability index of the scale with test-retest measures, internal consistency and convergent validity, using instruments with similar measures.

There are few researches in Brazil that evaluate self-efficacy in the performance of teachers' work in specialized educational services. Thus, the scale may be used in other studies that seek to extend data on teacher self-efficacy focused on autism, or as an important self-assessment tool for teachers and other professionals in educational teams that assist students with autism.





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