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Adaptation of the Behavioral Characteristic Progression into Arabic

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Abstract

The adaptation of measurement tools is one of the most common procedures carried out by international researchers who have the hope of serving students globally. Because of the lack of tools that assess students with special needs in the Arab world, specifically, this paper aims to report on the process of translation, validation, and cultural adaptation of the Behavioral Characteristic Progression (BCP) scale into Arabic. Aligned with international translation and adaptation guidelines by the International Test Commission, the researchers executed a series of detailed steps, from including double forward translations and reconciliation to piloting the prefinal version of the instrument. Most participants found the Behavioral Characteristic Progression - Arabic (BCP-AR) useful in identifying students' strengths and weaknesses and were satisfied with its online version. This paper serves researchers globally, as it represents a road map for researchers working on adapting assessment tools and different instruments to their own language and culture.

Keywords: adaptation, measurement, children with disabilities, Behavioral Characteristic Progression.

التكيف الثقافي لمقياس خصائص التطور السلوكي إلى اللغة العربية

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مستخلص الدراسة

يعد تكييف أدوات القياس واحدة من أكثر الإجراءات شيوعًا التي ينفذها الباحثون الدوليون الذين يأملون في خدمة الطلاب على مستوى العالم. ونظراً لندرة أدوات تقيم الطلاب ذوي الاحتياجات الخاصة على العموم، وفي العالم العربي بشكل خاص، يهدف هذا البحث إلى توثيق عملية الترجمة، التكيف الثقافي لمقياس خصائص التطور السلوكي إلى اللغة العربية، بما يتماشى مع إرشادات الترجمة والتكيف الدولية التي وضعتها اللجنة الدولية للاختبارات. نفذ الباحثون سلسلة من الخطوات التفصيلية، بدءًا بتوثيق عملية الترجمة بمراحلها، وصولاً إلى اختبار النسخة شبه النهائية من الأداة. وجد معظم المشاركين أن مقياس التقدم في السمات السلوكية – النسخة العربية (BCP-AR) مفيد في تحديد نقاط القوة والضعف لدى الطلاب، وكانوا راضين عن نسخته الإلكترونية. يمثل هذا البحث مرجعًا للباحثين في جميع أنحاء العالم، حيث يقدم خارطة طريق للباحثين الذين يعملون على تكييف أدوات التقييم والأدوات المختلفة بما يتناسب مع لغتهم وثقافتهم.

الكلمات المفتاحية: ترجمة وتكيف المقاييس، الأطفال ذوي الإعاقة، مقياس خصائص التطور السلوكي.

Introduction

The body of literature is growing in the area of documenting the adaptation and validation processes of measures and tools in the field of education, which reflects a global commitment to providing high-quality services to students and improving their outcomes. Efforts for making Arabic adaptations available have been growing as well (Ansari & Bella, 1998; Charafeddine et al., 2013; Malki et al., 2010; Sharma et al., 2013). Ansari and Bella (1998) and Charafeddine et al. (2013) documented their adaptations of developmental questionnaires. Malki et al. (2010) documented the adaptation of the voice handicap index, and Sharma et al. (2013) documented the adaptation of the global mental health assessment tool.

However, the ways in which researchers document their adaptation processes vary, from listing detailed information to none at all (International Test Commission [ITC], 2017). In order to contribute to the documentation processes, Sousa and Rojjanasrirat (2011) published user-friendly adaptation guidelines for use in health care education after reviewing highly recommended methodological approaches to translation and adaptation. They listed seven steps, each followed by a summary section that included key points and examples. Still, the need for evidence-based guidelines has grown over the years.

Responding to the international interest in the topic of translating and adapting tests, the ITC Council released the ITC (2017) guidelines for translating and adapting tests, with a total number of 18 guidelines organized into six categories: pre-condition, test development, confirmation, administration, scoring and interpretation, and documentation. These guidelines encourage and assist researchers in documenting their adaptation processes in a rigorous and systematic manner.

In the field of special education (SPED), it is common to translate and adapt tests that are to be used in Arab countries, as professionals are perpetually in need of quality educational curricula as well as assessments to use in classrooms (Ansari & Bella, 1998; Hamdan, 2014). Teachers and education staff working with students who have or are at risk of having disabilities find the use of criterion-referenced tests informative in identifying students' strengths and weaknesses, in providing data on students' and schools' levels of performance and achievement, in understanding how students learn, and in understanding the level of support and resources needed (Engelhard & Domaleski, 2011; Foreman-Murray & Fuchs, 2019; Heilmann et al., 2018; Özokcu et al. 2017; Rathnakumar, 2019; Salvia, et al., 2010).

Unlike norm-referenced tests that compare student performance against results of a statistically selected group, criterion-referenced tests precisely inform on students' individual skills in terms of levels of mastery, with respect to specific learning objectives (Al-Habashneh & Najjar, 2017; Salvia et al., 2010; Schulz et al., 2020). In Georgia, in the United States, a statewide study with the purpose of examining effects of two test administration accommodations on students' performance in mathematics on the Georgia Criterion-Referenced Competency Tests, Engelhard & Domaleski (2011) recruited a sample of 1944 students (1055 without disability and 889 with disability) from grades 3 and 6. Students' disabilities varied: specific learning disabilities (LD), mild intellectual disabilities, speech-language impairments, emotional and behavioral disabilities, and other health impairments.

Another study was conducted on a group of 71 grade 4 students at risk for mathematics LD diagnosis. The researchers (Foreman-Murray & Fuchs, 2019) used explanation quality as an indicator of student understanding and

investigated the correlation between the accuracy of the explanation quality and students' scores on the criterion test: National Assessment of Educational Progress.

Rathnakumar (2019) used the Achievement Test in Science, a criterion-referenced test, to investigate the enhancement of learning science among 8–11-year-old students with mild intellectual disability. In their study, they aimed to report on the feasibility of employing accessible technology in learning science.

The purpose of this paper is to describe the steps executed in translation, validation, and cultural adaptation of the Behavioral Characteristics Progression-Arabic (BCP-AR). The BCP was developed by the special education staff of Santa Cruz County's Office of Education and Values, Objectives, Resources, and Time (VORT) Corporation (n.d.). The BCP is nonstandardized and includes a continuum of behaviors. It contains 2,300 observable traits referred to as *behavioral characteristics*. Ages and labels have been omitted, and behavioral characteristics have been grouped into categories of behavior called *strands*. Strands generally begin at age 1 year (skill #.01 within a strand) and progress toward more complex characteristics. Strands generally end (e.g., skill #.50) with characteristics that approximate what society considers "appropriate" or "acceptable" adult behavior. The BCP was chosen because it covers a broad range of skills, yet little research has been done on the use of the BCP. The tool was also chosen for its validation for use in different languages, including Arabic.

Steps Of Translation, Validation, and Cultural Adaptation of The BCP:

In this section, the authors explicitly report on the steps executed in the process of adapting the BCP for use in Arabic, in accordance with the

ITC (2017) guidelines for test adaptation. The five steps included precondition guidelines, forward translation, expert panel review, reliability check, and test of the prefinal version (see Figure 1 for a flow diagram of the adaptation process).

Step 1. Precondition Guidelines

The researchers achieved the precondition step in accordance with the ITC (2017) guidelines. The researchers first obtained clearance from the intellectual property holder of the BCP to translate and adapt the test. Second, researchers evaluated the legitimacy of the test in the target culture. Third, researchers minimized the irrelevant differences in the population of interest.

Prior to translating the BCP, the researchers signed a license agreement with VORT Corporation, the BCP's publisher and holder of the intellectual property. The authors obtained approvals for the translation and validation of the BCP, as well as making it accessible for use on an online platform. After that, a SPED professor from Saudi Arabia, not the translator, confirmed the legitimacy of the constructs measured in the test. This professor was familiar with the original and target languages and the cultures of both. Finally, the researchers agreed on eliminating the music strand because of its irrelevance in the target population. Such a change would have no effect on the use of the test, as it is criterion-referenced.

Step 2. Forward Translation

The translation included double translations done collaboratively by two educators with previous experience in translating assessment tools in the education/SPED field. Both translators were native Arabic speakers. The translators were also familiar with the original English-speaking culture, as

well as the target Arabic-speaking culture. One of the translators was a SPED professor in a Saudi university, whereas the other was an Arabic instructor in an American university. After the two translated versions were complete, a third independent translator reconciled the two versions into one. This third translator was an expert in measurement and evaluation and was fluent in both the original and target languages and cultures.

Some of the items were adapted to culturally fit the target Arabic-speaking culture. Those items are best categorized into three main categories: (a) items that were considered hard to translate, (b) items that have no equivalent in the Arabic language, and (c) items that are culturally unfamiliar. Examples from category A (i.e., items that were considered hard to translate) include "makes judgments in size," "uses trailing, direction taking," and "squaring off to find a given destination." One translator understood the idea that the original BCP sought to convey, but it was hard for them to translate, so the version from the second translator was confirmed.

Examples from category B (i.e., items that have no equivalent in the Arabic language) include "writes cramped, uneven, large letters'" and "uses consonant sounds in the initial position in 2-syllable words." Category B examples include untranslatable words with no equivalent phrase or grammar in Arabic. For those examples, the translator adjusted the usage and grammar to fit into Arabic, for example "spelling section," and left some items in English once no equivalent Arabic term could be determined. Examples from category C (i.e., items that are culturally unfamiliar) include "uses protective techniques while trailing" and "plugs drain when necessary." For category C, the translators made adaptations to convey the meaning culturally. (see Appendix A for a full list of items adapted in the forward translation step).

Step 3. Expert Panel Review

For a focused, close examination of the translation, ITC (2017) highly recommends the use of an expert panel. The main goal of the experts is to review items for content-related validity and equivalence (ITC, 2017; Sousa & Rojjanasrirat, 2011). A committee of experts from multidisciplinary backgrounds in education, including SPED, autism, and speech-language pathology, convened to discuss the needed adaptations. The panel members discussed points that needed a collective decision to determine how to best fit the target culture. However, specific experts needed to consult on some topics. For example, the assistance of a speech-language pathology professor was crucial for the whole strand on language, as the language strand consists of 474 items and 8 substrands. Examples of items adapted in this phase are the following: "says what sound the written letters *t, d, c, k, g, f, v* make" and "uses auxiliary verbs *am, is, are* with present participle" (see Appendix B for a list of items adapted in the expert panel review step).

Step 4. Textual Reliability

Because of time constraints, researchers performed neither test-retest reliability nor a backward translation (Erdvik et al., 2015; Moamary et al., 2011; Ntourantonis et al., 2017). However, the researchers obtained textual reliability. Textual reliability was achieved to ensure that the finalized translation was localized and accessible as well as relatable to Arabic-speaking teachers and service providers (Robinson, 1997). Translators checked each others' work on translation, and the interrater agreement was 90%, which was more than sufficient since interrater agreement should be no less than 80% (Sousa & Rojjanasrirat, 2011). The translators made only

a few modifications until they reached consensus. Items edited in this phase included “Present one out of five days on the average per week”. This item was reworded and was made shorter several times. In “hangs from bar using overhand grip for 5 seconds,” the translation team considered the word *bar* problematic. They found that two Arabic words could be used as the equivalent to the English word. With discussion, they chose the best fit. In “fills spoon/fork with one mouthful of food at a time,” *one mouthful* took several phases of translation to find the nearest word in Arabic that holds the same meaning and effect as in English. With “swallows biteful of food after chewing,” to get the most accurate translation, two phases of discussion were needed to find the the appropriate term in the Arabic language for the word *bite-full* to be understood by all Arabic speakers.

Step 5. Test of the Prefinal Version

This step was accomplished by conducting a pilot study to determine whether the translated version of the BCP is a good fit for the target users of the tests, SPED teachers, and service providers. Participants were asked to use the BCP-AR, fill out a feedback form, and participate in a focus group discussion.

Participants

The teachers participating in the pilot study were chosen from schools that will benefit from the BCP-AR and will be using it with their students after its publication. The inclusion criteria for the practicing teachers were the following: (a) male or female SPED teachers or service provider, (b) participants working with children with autism or intellectual disabilities, multiple disabilities, and (c) participants who are familiar with completing

tests using an online platform. Thirty participants were recruited from six schools and SPED centers to test the BCP-AR.

Ethical Considerations

The ethics protocol for this study was approved by the Ministry of Social Affairs in the United Arab Emirates Institutional Review Board (a copy of the institutional review board approval is available upon request). Additionally, consents were maintained from participants as they agreed to submit feedback forms and to participate in the focus group discussion.

Procedure

The pilot study started with a 60-minute live training session on the use of the BCP-AR online. After that, participants had 2 weeks to complete the test with their students and fill out the feedback form before meeting in a focus group discussion to expand their opinions (see Appendix C for a copy of the translation feedback form).

Results

Almost all of the participants found the BCP-AR feasible. Ninety six percent expressed complete satisfaction with the BCP-AR online platform and were pleased with the technical support. Eighty eight percent reported an overall satisfaction with the BCP-AR, and 75% found it time and effort saving when compared to other tools. Some of the comments were that "the BCP was easier and clearer" and that it "takes no time to complete, saves time, and is inclusive of different domains." Others highlighted that the BCP-AR helped in "identifying students' strengths and weaknesses easily." A participant commented on the need to revise the translation for being

"unclear on what the item is assessing," and another stated that it "needs paraphrasing to ensure complete understanding of items." Feedback on translations called for a follow-up group discussion. A single focus group session was held to further address concerns that participants raised. A few items were flagged to edit such as "perseverates letters," "makes consonant and vowel sound with inflection," and "removes semi-liquid food from spoon with mouth, some rejection." The items noted in the previous sentence are from different domains and different substrands. Two translators revisited the translation. The final version of the BCP-AR was finalized after the authors incorporated feedback.

Discussion

The purpose of the study was to document the translation of the BCP from English to Arabic (i.e., the BCP-AR) and to document the adaptation process and validation process. The application of the translation and adaptation skills that the ITC and others (Engelhard & Domaleski, 2011; Foreman-Murray & Fuchs, 2019; Heilmann et al., 2018; ITC, 2017; Özokcu et al., 2017; Rathnakumar, 2019; Salvia et al., 2010) recommended was feasible, for the most part. Time for the entire process was limited, and we did not have enough room to run a backward translation. The communication with publishers and authors to secure intellectual property was of the essence. Working on adapting the BCP, a test of skills and behaviors in diverse domains, reflected a unique collaboration with a multidisciplinary team to cover areas like speech-language pathology, child development, autism, translation, and assessment and evaluation.

The BCP in its original version was designed to assess performance of students with special needs on multiple domains covering developmental skills

and behaviors. Results from the pilot test of the prefinal version were rewarding, as teachers and service providers showed high satisfaction with the BCP-AR. Such results are in line with the results of previous studies (Al-Habashneh & Najjar, 2017; Salvia et al., 2010; Schulz et al., 2020) that highlight the use of criterion-referenced tests with students with special needs.

Implications

Teachers may find this article beneficial, as it sheds light on the use of the BCP as a criterion-based assessment in elementary schools, a tool used to evaluate students' overall performance. It presents the BCP-AR as an example of online assessment and demonstrates the feasibility of providing feedback to students based on their individual level of performance. The article also may be beneficial to researchers, as it provides an example of the translation and adaptation of an assessment tool. Researchers may further explore the reliability of the BCP-AR by assessing test-retest reliability. Moreover, a scale-up validity study may be used to explore the use of BCP-AR with students from different Arab countries. In addition, future international researchers may find sufficient details needed to replicate the adaptation of other assessment tools.

Strengths and Limitations

Although the tool was piloted in a single Arabic-speaking country, the participants came from five Arab countries: Egypt, Algeria, Jordan, Iraq, and United Arab Emirates. The reason this was considered as a point of strength is that each of the countries has its own dialect and distinctive cultural norms. The overall agreement of the BCP-AR reflects a wide acceptance of the adaptation, which is reassuring. Although this paper did not include a measure of validity, social validity was maintained by an overall satisfaction of 88%.

The study does have a couple of limitations to take into consideration. First, the tool was piloted in a single Arabic-speaking country, and researchers were not able to provide score reliability for each of the Arab countries, which might be considered as a limitation (American Educational Research Association (AERA) et al., 2014). In spite of this limitation, the two translators come from different Arabic-speaking countries, and both countries are different from the country where the the tool was piloted. They both have previously worked on translating and adapting assessment tools that were later used with Arabic-speaking populations from 11 Arab countries. Second, the translation process lacked the step of back translation, which might be considered as a limitation. The back translation would provide a comparison between the original tool and the translation, showing the extent to which the current translation represents what the original tool intended to deliver (Sperber, 2004).

Summary

A global need exists for the translation and adaptation of measuring tools that serve SPED students and their families. The authors of this paper aimed to report on the process of translating, adapting, and validating the BCP-AR. The researchers followed the recommendations of the ITC guidelines for translating and adapting tests. Double translation and reconciliation procedures were carried out to ensure the quality of the translation. The prefinal version was then tested by teachers working with Arabic-speaking elementary school students in the United Arab Emirates to inform on the BCP-AR's localization and social validity. Global researchers may use the reported road map when working on adapting assessment tools and different instruments to their own languages and cultures.

Appendices

Appendix A.

A list of items adapted in the forward translation step.

Original Version	Arabic Version
"Verbalizes which letter in a word makes a given sound (e.g., says 'p' in pat)"	(يلفظ أي حرف في الكلمة يعطي صـــوتاً معيناً مثل: يقول " به " في بطة
"Carves soap/ balsa wood"	(ينحت الصابون / الخشب)
"Reaches across midline of body with elbow and fingers extended"	(يمـد يـده عبر منتصـــف الجســـم بتمـديـد المرفق والأصابع)
"Shifts hand between rhythm and indoor cane techniques"	(يبدل يده بين التوازن ومهارات العصا الداخلية)
"Performs undesirable task when changed to be viewed as desirable"	(يقوم بمهمة غير مرغوبة عندما يتم تغييرها بحيث يُنظر إليها على أنها مرغوبة)

Note. The original version is derived from the BCP.

Appendix B.

A list of items adapted in the expert panel review step

Original Version	Arabic Version
"Uses vowels with *s*, *z*, *zh*, *sh*, *ch*, *th* to form consonant-vowel nonsense syllables"	(يستخدم كل حروف العلة الطويلة والقصيرة مع الأصوات: /س،ز،ج،ش،ذ،ث/ لتشكيل مقاطع غير ذات معنى تتكون من تسلسل صامت و صائت)
"Uses all vowels with *s*, *z*, *zh*, *sh*, *ch*, *th* in initial position"	(يستخدم كل حروف العلة الطويلة والقصيرة مع الأصوات: /س،ز،ج،ش،ذ،ث/ في بداية المقطع)
"Uses all consonant and vowel sounds in all positions within 2-syllable words"	(يستخدم كل الصوامت والصوائت في كل مواقع الكلمات ثنائية المقاطع)
"Uses all consonant and vowel sounds in all positions within 3-syllable words"	(يستخدم كل الصوامت والصوائت في كل مواقع الكلمات ثلاثية المقاطع)
"Accents 2- and 3-syllable words on correct syllable"	(ينطق الكلمات متعددة المقاطع تشديده على تقطيعها بشكل صحيح مستخدما حروف العلة)

Note. The original version is derived from the BCP.

Appendix C.

A Questionnaire to Evaluate the Use of the BCP

- Please choose one answer for each.

First: preliminary information:

Job title:

- Special education teacher
- Occupational therapist
- Physiotherapist
- Speech therapist
- other

Years of Experience:

- 1 year or less
- 2 years
- 3 years
- 4 years
- 5 years
- 6 years and more

Nationality

The disability of the students with whom the BCP was used (you can choose more than one answer)

- Intellectual disability
- Multiple disability
- Autism spectrum disorder
- other

Second: About the BCP scale services:

Assessment of the current performance level of beneficiaries (identifying strengths and weaknesses

- Much better with the BCP scale.
- Slightly better with the BCP scale.
- Slightly better on other metrics.
- Much better in other respects.

Designing individual plans and selecting objectives and skills

- Much better after using the BCP scale.
- Slightly better after using the BCP scale.
- Slightly better after using other metrics.
- Much better after using other scales.
- Does not apply.

The system of BCP as a record of the student throughout his enrollment in the school to display his level of progress and help transfer this information to all those concerned with the student's individual educational program

- Much better with the BCP scale.
- Slightly better with the BCP scale.
- Slightly better on other scale.
- Much better with other scale.
- Does not apply.

Third: the level of satisfaction

To what extent are you satisfied with the BCP scale in general?

- Very satisfied

- Satisfied
- Not satisfied
- Not very satisfied

To what extent are you satisfied with the translation of the paragraphs of the BCP scale?

- Very satisfied
- Satisfied
- Not satisfied
- Not very satisfied

How satisfied are you with the BCP measured in terms of saving time and effort when designing and managing individual educational programs?

- Very satisfied
- Satisfied
- Not satisfied
- Not very satisfied

How satisfied are you with the training that was provided before you started the BCP scale trial?

- Very satisfied
- Satisfied
- Not satisfied
- Not very satisfied

To what extent are you satisfied with the technical support provided for the BCP scale?

- Very satisfied
- Satisfied
- Not satisfied
- Not very satisfied

To what extent would you recommend using the BCP scale for other professionals?

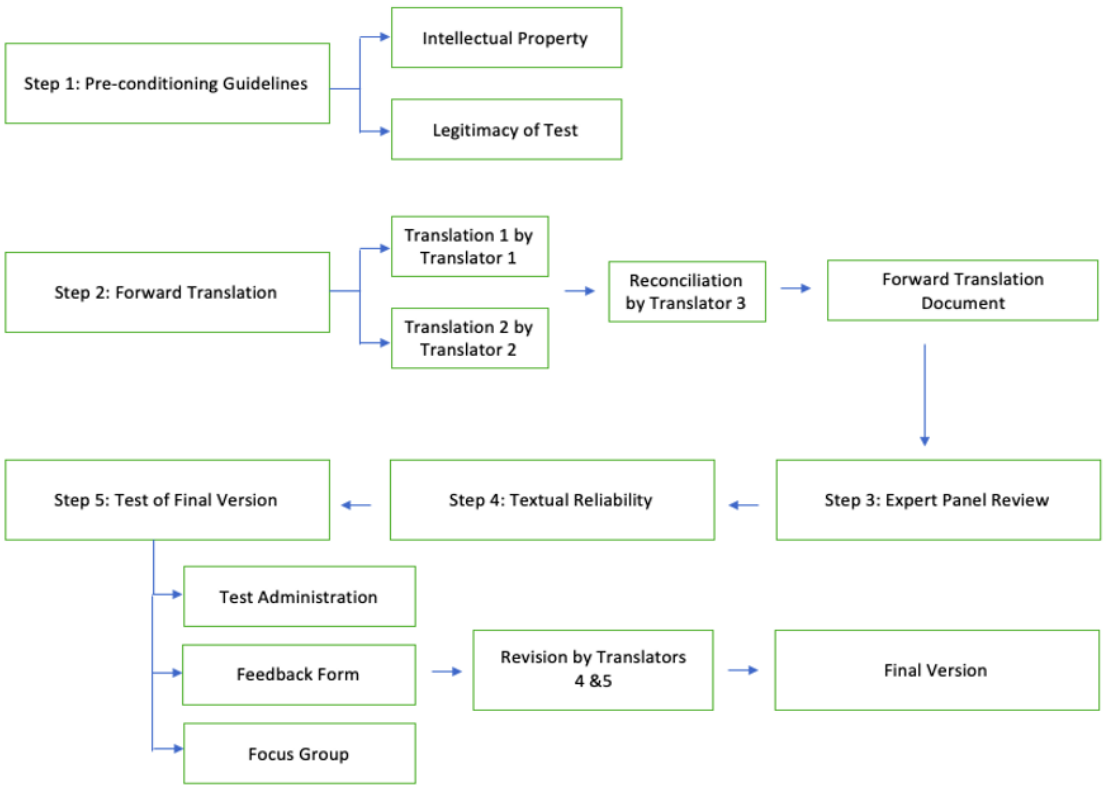
1 2 3 4 5 6 7 8 9 10

I don't recommend it highly recommend it

- **What are the pros and cons of using the BCP scale from your point of view?**
- **What are your suggestions to improve the BCP scale and make it more effective?**
- **Here yzu can add any last comment before submitting your answer.**

Figure 1

A Flow Diagram of the Adaptation Process



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