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ADAPTAÇÃO CULTURAL DO GROWING DISCIPLES INVENTORY (GDI) PARA A LÍNGUA PORTUGUESA DO BRASIL: PERSPECTIVA PARA A EDUCAÇÃO INTEGRAL

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CULTURAL ADAPTATION OF GROWING DISCIPLES INVENTORY (GDI) IN BRAZILIAN PORTUGUESE LANGUAGE: A PERSPECTIVE FOR AN INTEGRAL EDUCATION

ADAPTAÇÃO CULTURAL DO GROWING DISCIPLES INVENTORY (GDI) PARA A LÍNGUA PORTUGUESA DO BRASIL: PERSPECTIVA PARA A EDUCAÇÃO INTEGRAL

ADAPTACIÓN CULTURAL DEL GROWING DISCIPLES INVENTORY (GDI) PARA USAR EN PORTUGUÉS EN BRASIL: PERSPECTIVA PARA LA EDUCACIÓN INTEGRAL



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ABSTRACT: The purpose of this study was to perform the cultural adaptation and present evidence of validity for the Growing Disciples Inventory (GDI) in the Brazilian Portuguese language and Brazilian culture, utilizing a quantitative approach. The COSMIN Taxonomy was used for the cultural adaptation, followed by evaluation by a committee of experts and a pre-test involving the administration of the inventory to 42 adults, including university students and community members. The pre-test assessed respondents' understanding of the inventory and its reproducibility. After making necessary adjustments, the instrument was administered to 845 individuals. The reliability of the Brazilian version of the instrument was assessed using Cronbach's alpha (0.971) and McDonald's omega (0.972). Confirmatory factor analysis revealed satisfactory adjustment, suggesting the construct validity of the GDI, with CFI = 0.986, TLI = 0.985, GFI = 0.975, RMSEA = 0.033 (90% CI = 0.032-0.034). The results presented were satisfactory and proved that the Brazilian version of the GDI is valid.

KEYWORDS: Validation Study. Factor Analysis. Spirituality. Education.

RESUMO: O objetivo desta pesquisa foi realizar a adaptação cultural e apresentar as evidências de validade do Growing Disciples Inventory (GDI) para a língua portuguesa no Brasil e para a cultura brasileira. Para esse trabalho, de abordagem quantitativa foi utilizada a Taxonomia de COSMIN para a adaptação cultural, seguida da avaliação de um comitê de especialistas e o pré-teste com aplicação do inventário com 42 adultos, universitários e pessoas da comunidade. O estudo prévio revelou a compreensão do inventário pelos respondentes e sua reprodutibilidade. Após a adequação do instrumento, este foi aplicado a 845 indivíduos. A confiabilidade da versão brasileira do instrumento foi obtida pelo alfa de Cronbach (0.971) e pelo ômega de McDonald (0.972). A análise fatorial confirmatória apresentou um ajustamento satisfatório, o que sugere a validade de construto do GDI, sendo o CFI = 0.986, TLI = 0.985, GFI = 0.975, RMSEA = 0.033 (90% IC = 0.032-0.034). Os resultados apresentados foram satisfatórios e servem como provas de que a versão brasileira do GDI é válida.

PALAVRAS-CHAVE: Estudos de Validação. Análise Fatorial. Espiritualidade. Educação.

RESUMEN: El objetivo de este estudio fue realizar una adaptación cultural y presentar evidencias de validez. presenta la adaptación cultural y la evidencia de validez del Growing Disciples Inventory (GDI) para el idioma portugués en Brasil y para la cultura brasileña. La taxonomía COSMIN se utilizó para este trabajo que tiene un enfoque cuantitativo y el inventario fue traducido del inglés original al portugués por dos traductores, luego fue traducido nuevamente al inglés por otros dos traductores, seguido de la evaluación de un comité de expertos y la preprueba de aplicación de inventario con 42 adultos, estudiantes universitarios y personas de la comunidad. La prueba preliminar reveló la comprensión de los encuestados sobre el inventario y su reproducibilidad. Después de ajustar el instrumento, se aplicó a 845 individuos. La confiabilidad de la versión brasileña del instrumento se obtuvo mediante el alfa de Cronbach (0,971) y el omega de McDonald (0,972). El análisis factorial confirmatorio reveló un ajuste satisfactorio, sugiriendo la validez de constructo del GDI, con CFI = 0.986, TLI = 0.985, GFI = 0.975, RMSEA = 0.033 (90% IC = 0.032-0.034). Estos resultados presentados fueron satisfactorios y sirven como evidencia de validez de la versión brasileña del GDI.

PALAPRAS CLAVE: Estudio de Validación. Análisis Factorial. Espiritualidad. Educación.

Introduction

The study of religion and spirituality has gained increasing scientific attention in the field of psychology, as evidenced by several studies cited in the literature (ALLEN; WANG, 2015; BENEFIEL *et al.*, 2014; DAVIS *et al.*, 2016; EXLINE *et al.*, 2014; MILLIMAN; GATLING; BRADLEY-GEIST, 2017; MOORE, 2016; MORTON; LEE; MARTIN, 2017). There are now many scientific journals dedicated to spirituality and religiosity, and the discussion about the differences between these two is growing (ZINNBAUER *et al.*, 1997).

However, it is essential to note that studying spirituality requires a separate examination from the issue of religion. This is because there has been an increase in the number of individuals who identify as "spiritual but not religious" in recent years, and a comprehensive understanding of how non-religious individuals experience and describe their spirituality has not been widely studied (DAVIS *et al.*, 2015; SAROGLU; MUÑOZ-GARCÍA, 2008). Spirituality is emerging as a new psychological reality, concept, and research subject partially distinct from religiosity (HILL; PARGAMENT, 2003). Therefore, investigating the differences and similarities between spirituality and religiosity, and examining how they relate to other psychological realities, is crucial to advancing our understanding of these constructs. Although spirituality is a distinct reality, its importance is still related to the importance of religion or religiosity (SAROGLU; MUÑOZ-GARCÍA, 2008). Furthermore, the concept of spirituality extends beyond the religious sphere (BEHRENS; MACHADO, 2017; MARTINS TORQUATO, 2017; TESCAROLO; DARÓS, 2007).

It is important to note that in the literature, the terms spirituality and religiosity are often confused or treated ambiguously, with one term being used at the expense of the other (ZINNBAUER *et al.*, 1997). Moreover, there are differences among scholars in the field about the definition of these terms. Spirituality is variously defined by theorists as "the human response to God's call to a relationship with Him" (BENNER, 1989, p. 20 apud ZINNBAUER *et al.*, 2016) or "a subjective experience of the sacred" (VAUGHAN, 1991, p. 105 apud ZINNBAUER *et al.*, 2016). Conversely, religiosity appears to be associated with traditional religious practice, affiliation with organizations or denominations, and adherence to doctrines (GALL; MALETTE; GUIRGUIS-YOUNGER, 2011).

The concepts of spirituality and religion are closely linked, yet they differ in certain respects. Spirituality can be understood as a person's capacity to comprehend their world more profoundly and comprehensively and connect with the transcendent and transpersonal aspects

of human existence. While religion may be an aspect of spirituality, it is not an essential component. Religion involves outward expressions of beliefs manifested through behaviors, practices, and rituals that revolve around a central system of doctrines, morals, and norms (VANCE *et al.*, 2011).

These concepts are explored in numerous studies that investigate spirituality and its various dimensions. For example, researchers have investigated the importance of spirituality in the workplace, the impact of spirituality on well-being and recovery from serious illnesses, the incidence of depression and other neurological disorders in individuals who identify as spiritual or religious, the role of spirituality in providing care to patients who are unlikely to recover through curative therapy, promote improved well-being through the relief of pain and other symptoms and other related topics (MORTON; LEE; MARTIN, 2017; LEMA-BLANCO, 2015; PIEDMONT; LEACH, 2002; ALLE; WANG, 2015; BENEFIEL *et al.*, 2014; EVANGELISTA *et al.*, 2016; MILLIMAN; GATLING; BRADLEY-GEIST, 2017).

The educational field is one of the many fields that have sought to explore and comprehend spirituality. It emphasizes integral education, which aims to promote multidimensional human formation leading to the complete development of the individual. Since ancient Greece, educators have played a crucial role in implementing the Greek Paideia⁴ which aimed to provide comprehensive human development, making an individual virtuous, ethical, and free. According to Aristotle, Plato's disciple, Paideia's proposal for the complete and comprehensive education of man involved social, ethical, and political aspects (BORTOLINI; NUNES, 2018). The integral education provided by Greek Paideia considers an individual's actions as part of a community, whether physically or spiritually (XAVIER, 2016; PESTANA, 2009). Consequently, education must be a lifelong process that caters to the development of both the body and the soul, aiming to shape responsible citizens and leaders that embody such characteristics through this educational process (LORENZON; JORGE, 2011).

The field of education has engaged in discussions and studies on integral education, which have led to new meanings and diverse interpretations of this theme. Integral education is understood as the consideration of the various facets of human development (CARVALHO,

⁴Paideia is a general education that will give man the human form and build him as a citizen. Paideia brings, therefore, the following concept: "It is by the natural and universal character that the Greeks attribute to education a moral and practical sense, concerned with the integral formation of man, present humanism as a principle" (BORTOLINI; NUNES, 2018, p. 28, our translation)

2015). Although there are political-philosophical positions with divergent assumptions, integral education has been presented in the literature as a goal of its multidimensional vision (PATTARO; MACHADO, 2014). In Brazil, the integralist movement emerged between 1930 and 1960 of the 20th century, which defended the foundations of integral education in spirituality, civic nationalism, and discipline (BRASIL, 2009). Integral education has been incorporated into national educational legislation, and it is noteworthy to highlight the initiative of the "More Education Program" under the Education Development Plan (PDE). This program aimed to establish intersectoral and intergovernmental partnerships through the creation of the Forum More Education by the Federal Government. The commitment of states and municipalities to improve the quality of public education, with a view to the diversity of experiences that make Integral Education an innovative and sustainable experience over time, is also noteworthy (BRASIL, 2009).

In the field of education, spirituality refers to the recognition of the significance of social and affective domains, in addition to cognitive development. Spiritual sensitivity comprises dimensions of awareness and individual and social values, and many educators concur on the importance of fostering the spiritual sensitivity of their students. Consequently, studies on spirituality and its impact on students' holistic development have gained increased attention from researchers in the educational domain (ROWLAND, 2019; SOUSA *et al.*, 2019; STYLIANOU; ZEMBYLAS, 2019; TIRRI, 2009; VOAS, 2014).

Therefore, evaluating spiritual growth and spirituality, regardless of an individual's religious affiliation, is of great importance. Assessments of spirituality have proven to be quite comprehensive in the scientific field, revealing various connections between spirituality and behavior, well-being, attitudes, and other studied variables (COHEN *et al.*, 2012; HILL; PARGAMENT, 2003; RICKHI *et al.*, 2015; ALLEN; WANG, 2015; MILLIMAN; GATLING; BRADLEY-GEIST, 2017; MOORE, 2016).

Research should focus on comprehending the correlation between high levels of intrinsic religiosity and spirituality to gain better insight into these two constructs for educational and research purposes. Intrinsic spirituality, characterized by empathic behavior that transcends religious boundaries, must be distinguished from intrinsic religiosity (RAMAKRISHNAN *et al.*, 2018, p. 1346). Spirituality encompasses a sense of completeness, connection to the surrounding environment, and profound values (RAJAPPAN *et al.*, 2017).

Various validated scales are available for evaluating spirituality (DAVIS *et al.*, 2015, DAVISTISDALE, 2016, DELANEY, 2005, GREENFIELD *et al.*, 2015, HODGE, 2003,

HODGE *et al.*, 2015) the "Growing Disciples Inventory (GDI)" was developed and validated to address the gap in the literature regarding the assessment of spiritual growth in the Protestant context. While other scales are available in Brazilian Portuguese for assessing spirituality (CORREIA *et al.*, 2015, MARTINS *et al.*, 2015), none are intended for use in the Protestant context or for the specific purpose of assessing spiritual growth.

The primary aim of this study is to adapt Bradfield's (2011) *Growing Disciples Inventory* (GDI) for use with the Brazilian population. To achieve this, we have defined specific objectives, including presenting the content validity of the instrument through an expert committee analysis, assessing the instrument's internal consistency using composite reliability values derived from Cronbach's alpha and McDonald's omega, and conducting both Exploratory and Confirmatory Factor Analyses to evaluate the model fit of the Brazilian version. This study is significant for providing a foundation for future research while also highlighting the importance of considering spirituality as an essential component of human development, as it is fundamental to understanding one's existence.

In the following sections, we will detail the procedures used to culturally adapt the *Growing Disciples Inventory* GDI instrument to the Brazilian Portuguese language and culture and the outcomes of the instrument's psychometric evaluation.

Methodological procedures

The present study followed the methodological procedure of translation and cultural adaptation following the steps established by the COSMIN⁵, methodology. These steps are as follows: A) two translations of the inventory were performed from the original language to Portuguese; B) a synthesis of the two translations was created; C) back-translations of the inventory were performed from Portuguese to the original language; D) an expert committee evaluated the translated version; and E) a pre-test was conducted (BEATON *et al.*, 2000; VIANA; BRITO GUIRARDELLO; MADRUGA, 2010). It is important to note that the author obtained formal authorization for the translation and cultural adaptation procedure before the study. It's about a quantitative research study.

The first step of the translation and cultural adaptation process involved translating the original version of the GDI into Portuguese by two independent bilingual translators, both of

⁵ More information about the COSMIN methodology, can be found at: <https://www.cosmin.nl/tools/cosmin-taxonomy-measurement-properties/>. Access: 04 Apr. 2023.

whom were native speakers of Brazilian Portuguese. While one of the translators was knowledgeable about the subject matter of the inventory, the other translator was not informed about its objectives. Following the translations, a third bilingual person with expertise in Brazilian culture and language and English language proficiency analyzed the two versions and prepared a synthesis. At this point, the translations were compared, and the translators discussed any differences.

Following this step, the synthesis of the two versions was then translated into English by two independent translators who are native speakers of English and possess linguistic and cultural proficiency in both the original language and Brazilian Portuguese. Finally, the researcher compared the back translations to the original instrument to ensure that the meaning of all questions in the original instrument was maintained.

The third step of the methodological procedure involved the evaluation of the inventory by a committee of experts, which consisted of six members, including one of the translators who participated in the initial translation process, two linguists, two professionals experienced in validating measurement instruments, and a specialist in spirituality.

The evaluators received material containing all of the translated versions of the GDI, the version of the original instrument, and the synthesis version in Portuguese. They were instructed to evaluate the GDI for semantic, idiomatic, conceptual, and cultural equivalence. During the meeting, the committee produced a version of the inventory for the pre-test.

The pre-test assesses the extent to which the target audience comprehends the adapted inventory. The literature recommends that the pre-test sample consists of 30 to 40 individuals (BEATON *et al.*, 2000; VIANA *et al.*, 2012; VIZZOTTO; MACKEDANZ, 2018).

This study received approval from the Research Ethics Committee of UNASP-SP (Opinion No. 2.012.419), and all participants were asked to sign the Informed Consent Form prior to their involvement in the study.

Participants

A total of 42 adult individuals participated in the pre-test, comprising 22 women and 20 men. Of these, 20 were university students enrolled in a graduate course in Strategic Business Management, and 22 individuals were from the community. Among the community members, 10 held a college degree, 8 had a high school degree, and 4 had an incomplete college degree.

The final sample followed the recommended procedure in the literature, which suggests the application of the scale to 10 participants per item during the cultural adaptation process (KERMARREC *et al.*, 2006). Thus, the instrument was administered to 845 individuals for this stage, given that the inventory consists of 84 questions. The participants' ages ranged from 30 to 47 years, with a standard deviation of 10 to 32 years. The youngest participant was 17 years old, and the oldest was 81 years old. Among the interviewees, 688 were women, and 152 were men, with two individuals preferring not to answer and three leaving the question blank. The sample included 13 participants with completed primary education and three with incomplete primary education, 27 with completed secondary education and two with vocational education, 554 with completed higher education and 68 with incomplete higher education, 17 with a master's degree, two with a doctorate, and 157 with a specialization degree. Two participants did not answer this question.

Original Instrument

The original instrument, the GDI, comprised 84 questions administered to teachers and students in educational institutions across the United States, South Africa, and Australia. The Cronbach's Alpha values of the scores obtained ranged from 0.85 to 0.94 (BRADFIELD, 2011). The original instrument's exploratory and confirmatory factor analysis revealed the presence of four factors in the scale, which the author named 1. *Connecting*, 2. *Understanding*, 3. *Ministering* e 4. *Equipping*.

Results

The initial stages of the cultural adaptation process, which involved translations, syntheses, and back-translations, were executed without complications, as significant modifications were unnecessary. Two meetings were required to assess the synthesized version of the inventory due to the substantial number of items in the document. The duration of each meeting was approximately three hours.

Expert Committee Review

The committee members received an explanatory document, which pointed out that semantic, idiomatic, and cultural issues should be evaluated for each question on the inventory. The first change discussed was the inventory title, which is *Growing Disciples Inventory* GDI in the original. The acronym GDI was kept before the title of the Portuguese version and became GDI - Growing Disciples Inventory. Another change made to the instrument, in general, was the valorization of the gender issue, always using both genders, for example, in question three, the committee's post-analysis version was: "I feel closer to God when I am in contact with nature or studying His creation". The most relevant modifications suggested by the expert committee will be presented in four 1. The questions will always be presented in this order: original question, synthesis version of the two T12 translations.

Chart 1 - Suggestions for changes given by the expert committee when analyzing the synthesis version (T12)

Original Question
6. The Holy Spirit prompts me to confess my sins and to make things right.
Synthesis version of the first two translations – T12
6. O Espírito Santo me estimula a confessar meus pecados e a fazer coisas corretas.
Suggestions
6. The Holy Spirit inspires me to confess my sins and rectify my mistakes. In this sentence, there was disagreement among the members of the committee concerning the intended meaning of the phrase used by the author " <i>and to make things right</i> ". Some individuals believed that the author intended to convey the message of progressing towards executing tasks correctly, discontinuing the practice of erroneous actions, or rectifying past mistakes. Subsequently, we contacted the author, who provided us with the following response: ' <i>to make things right</i> ' was an effort to use a short phrase instead of much more complicated wording. So, it might need to be a longer phrase in Portuguese that includes at least these ideas: 1. admit wrong doing; 2. ask for forgiveness where appropriate; 3. accepts consequences of sin; 4. take action to restore wherever possible. From the author's observations, then decided to use the above sentence.
7. By God's grace, I am able to forgive others who hurt me.
7. Pela graça de Deus, sou capaz de perdoar as pessoas que me feriram.
7. Pela graça de Deus, consigo perdoar as pessoas que me magoaram.
8. I enjoy hearing reports about God's work or mission projects around the world.
8. Gosto de ouvir notícias sobre o trabalho de Deus ou missões pelo mundo.
8. Gosto de ouvir relatos sobre a obra de Deus ou projetos missionários ao redor do mundo.
9. I am sure that whatever God asks me to do can be accomplished through His strength.
9. Estou certo de que qualquer coisa que Deus me pedir para fazer pode ser realizado com Seu poder.

9. Tenho certeza de que consigo realizar tudo que Deus me pede com o Seu poder.
12. Spending time with Jesus helps me understand who I am and why I'm here. 12. Estar na companhia de Jesus me ajuda a entender quem eu sou e o porquê estou aqui. 12. Passar tempo com Jesus me ajuda a entender quem sou e por que estou aqui.
18. When I discover how God is working somewhere, I enjoy telling my friends about it. 18. Quando fico sabendo sobre como Deus está agindo em algum lugar, gosto de contar aos amigos sobre isso. 18. Quando ouço sobre como Deus está agindo em algum lugar, gosto de contar aos amigos sobre isso.
43. God has provided everything needed to restore people to God's image when Jesus comes again. 43. Deus tem fornecido tudo quanto é necessário para restaurar pessoas à Sua imagem para a volta de Jesus. 43. Deus tem dado tudo quanto é necessário para restaurar a Sua imagem nas pessoas, quando Jesus voltar.
46. Even if I don't choose to follow Jesus, God still loves me and does everything possible to save me. 46. Mesmo se eu não escolher seguir Jesus, Deus ainda me ama e faz tudo para me salvar. 46. Deus me ama e faz tudo para me salvar, mesmo se eu não escolher seguir a Jesus.
70. How often have you experienced answers to prayer? 70. Com que frequência você tem vivenciado respostas às orações? 70. Com que frequência você tem tido suas orações atendidas?

Source: Elaborated by the authors

At the specialist's meeting, another suggestion put forth by the linguists in attendance was to avoid the use of gerunds, as it was frequently employed in the original English instrument. Consequently, modifications were made to the verb conjugation in questions 79, 80, 82, 83, and 84 of the instruments, wherein the gerund was replaced with the present tense.

Results of the Pre-Test

The participants provided the following feedback: In response to question 10, where the committee version proposed the statement "My best friend's love God as much as or more than I do," four respondents indicated that they could not ascertain whether their friends loved God more than they did. Additionally, one respondent suggested they could observe their friends' love for God but could not categorically state it. Subsequently, the committee reviewed the item, and the final version was modified to read as follows: "I observe that my best friends love God as much as or more than I do."

Regarding question 43, the committee initially worded the item as "God has given all that is needed to restore His image in people when Jesus returns." However, some respondents expressed confusion over the sentence's true meaning, while others questioned the verb "give"

at the beginning of the question. Following deliberation with the committee, the final version of the question was revised to state: "God has provided everything necessary to restore His image in people until Jesus returns."

Before the pre-test, question 56 was as follows: "God sent prophetic messages to Ellen White to help the Seventh-day Adventist Church share the truth about God." However, following the pre-test, where participants hailed from various religious groups, the statement was modified to: "God gave prophetic messages to share the truth about Him." Omitted the questions referencing the Seventh-day Adventist Church and Ellen Golden White from the statement to enable the inventory's use across diverse religious communities, including individuals who do not subscribe to any religion.

Only questions 10, 43, and 56 were altered after the pre-test. The analysis of the psychometric properties confirmed the instrument's reliability to be robust, as the Brazilian version of the GDI demonstrated a Cronbach's alpha coefficient of 0.87. Hence, it is evident that Cronbach's alpha values of the adapted version were quite similar to the values of the original version, which averaged 0.92.

Reliability and Confirmatory Factor Analysis

The adjusted version was administered to 845 individuals, and their responses were recorded in the JASP 14.1 software, obtaining the result in the reliability test presented in Table 1. The reliability of the instrument was assessed by analyzing internal consistency using McDonald's omega (ω), which is considered a more sensitive index than Cronbach's alpha (α) for evaluating the accuracy of results among factors (GARCIA-CADENA *et al.* 2021; ŞİMŞEK; NOYAN 2013; ZINBARG *et al.* 2006). A good internal consistency of the instrument was indicated by values close to 1 (GADERMANN *et al.*, 2012). For the alpha coefficients, Nunally and Bernstein's tolerance criteria were used $\alpha \geq .70$ (NUNNALLY; BERNSTEIN, 1994), and for McDonald's omega coefficient, Raykov and Hancock's criterion was adopted $\omega \geq .80$ (RAYKOV; HANCOCK, 2005). Table 1 presents the reliability test results (MCDONALD, 1999).

Table 1 – Scale reliability statistics

Estimation	McDonald's ω	Cronbach's α
Estimated point	0.972	0.971
95% IC lower bound	0.969	0.968
95% IC upper bound	0.974	0.973

Source: Research data, extracted from JASP 14.1 software

In the present study, the Brazilian version was subjected to exploratory factor analysis (EFA) using the JASP 14.1 software and was placed as a prerogative. There are four factors: *CONNECTING*, *UNDERSTANDING*, *MINISTERING*, and *EQUIPPING*.

Based on the results obtained, it can be stated that the KMO value was deemed satisfactory (0.97), and Bartlett's test of sphericity was found to be statistically significant ($p=.001$), these findings provide evidence that the scale items possessed adequate common variance for the purpose of conducting factor analysis (TABACHNICK; FIDELL, 2006). Upon analyzing the *screeplots* and factor loadings, it was found that the optimal factor structure consisted of three factors. Furthermore, the Root Mean Square Error of the Approximation RMSEA value was calculated to be 0.056, which suggests a good fit for the model.

The exploratory factor analysis (EFA) utilized an oblique rotation, specifically the *oblimin* rotation. According to Field, Miles and Field (2012), this rotation method is deemed appropriate for research in the Humanities and Social Sciences. After performed the rotation, factor loadings were obtained. Based on the literature, it was determined that only the items with a factor loading equal to or greater than 0.40 would be maintained (HINKIN, 1995; MATOS; RODRIGUES 2019). During this stage of the analysis, it was necessary to exclude question 11 (I am kind to neighbors, no matter their age, culture, or religion) due to its inadequate saturation loading (< 0.40) (Hand's 1994). To conduct the Confirmatory Factor Analysis (CFA), items that displayed cross-loading on multiple factors were assigned to the element for which they had the highest factor loading value.

Confirmatory Factor Analysis

The present study conducted an exploratory factor analysis (EFA) using JASP 14.1 software. Additional measures of model fit were selected, and the RDWLS (Robust Diagonally Weighted Least Squares) methodology was used, which is more suitable for Likert-type scales with smaller samples (below 1000) (DISTEFANO *et al.*, 2019; SHI; MAYDEU-OLIVARES, 2020; XIA; YANG, 2019).

The fit indices obtained were Comparative Fit Index (CFI) = 0.986, Tucker-Lewis Index (TLI) = 0.985, and Goodness of Fit Index (GFI) = 0.975. The RMSEA value was 0.033, with a 90% confidence interval ranging from 0.032 to 0.034. These values indicate that the factorial model fits the data well (GOUVEIA *et al.*, 2009; REZENDE *et al.*, 2021; SILVA; FARO, 2021).

The factor loadings ranged from 0.381 to 0.864, with 88% of the items having loadings above 0.501 and only nine items having loadings below 0.50. Therefore, 83 items were retained in the Brazilian version of the GDI (see Table 2). Question 11 was excluded from the final version because it did not load onto any factor, while question 84, an open-ended question, was retained but not analyzed.

Table 2 - Factors and the respective factor loadings

Factor	Questions	Factorial Loads	Factor	Questions	Factorial Loads	Factor	Questions	Factorial Loads
1	Q2	0.754	2	Q1	0.799	3	Q76	0.554
	Q3	0.603		Q43	0.864		Q77	0.582
	Q4	0.482		Q46	0.398		Q78	0.703
	Q5	0.722		Q48	0.731		Q79	0.728
	Q6	0.722		Q49	0.621		Q80	0.747
	Q7	0.571		Q50	0.643		Q81	0.750
	Q8	0.67		Q51	0.644		Q82	0.785
	Q9	0.609		Q52	0.697		Q83	0.704
	Q10	0.433		Q53	0.651			
	Q12	0.735		Q54	0.626			
	Q13	0.703	Q55	0.635				
	Q14	0.488	Q56	0.769				
	Q15	0.801	Q57	0.691				
	Q16	0.739	Q58	0.752				
	Q17	0.749	Q59	0.662				
	Q18	0.776	Q60	0.796				
	Q19	0.677	Q61	0.653				
	Q20	0.621	Q62	0.653				

Q21	0.66	Q63	0.586
Q22	0.493	Q64	0.624
Q23	0.655	Q65	0.667
Q24	0.79	Q66	0.774
Q25	0.755	Q67	0.676
Q26	0.792		
Q27	0.743		
Q28	0.751		
Q29	0.649		
Q30	0.43		
Q31	0.653		
Q32	0.793		
Q33	0.764		
Q34	0.646		
Q35	0.402		
Q36	0.678		
Q37	0.381		
Q38	0.506		
Q39	0.652		
Q40	0.814		
Q41	0.785		
Q42	0.776		
Q44	0.576		
Q45	0.657		
Q47	0.714		
Q68	0.671		
Q69	0.673		
Q70	0.595		
Q71	0.425		
Q72	0.722		
Q73	0.719		
Q74	0.597		
Q75	0.502		

Source: Elaborated by the authors

Regarding the Brazilian version of the GDI, factor 1 consisted of 51 items, factor 2 included 23 items, and factor 3 comprised 8 items. Upon examining the three-factor model of the Brazilian version, it was found that the questions of factor 1 encompassed most of the questions of factors 1 and 3 in the original version. Consequently, factor 1 of the Brazilian version was labeled as "Connection and Ministry," factor 2 as "Understanding," and factor 3 as "Strengthening".

Discussion

The present study aimed to adapt the *Growing Disciples Inventory* (GDI) of Bradfield (2011) for the Brazilian population and present evidence of the validity of this instrument. The purpose of the instrument is to assess the subject's perception of his spiritual development.

Cultural adaptation requires a well-established methodology for the instrument to be recognized in any country other than the one in which it was created. Adapting a scale, therefore, is quite complex since the mother tongue's barrier must be translated without any loss to the language of the country interested in using the scale. Therefore, this care must be well developed and observed to maintain the content validity of the original scale (ALEXANDRE; GHIRARDELLI, 2002; STELKO-PEREIRAI *et al.*, 2019; VALADAS *et al.*, 2018).

The first stage of the cultural adaptation was composed of translations, syntheses of the translations, and back-translations and occurred without problems. The back-translations showed the quality of the synthesized version of the initial translations. All the material, with all versions, was sent to the expert committee, which proposed some semantic and cultural changes (VIANA *et al.*, 2012; VIANA; BRITO GUIRARDELLO; MADRUGA, 2010; VIANA; GUIMARÃES, 2022).

The meeting with the experts provided an in-depth discussion about the instrument itself, including its objectives, completion forms, and obtaining a clear and accessible language. Standardizing the gender questions was an important decision since the instruments generally leave the statements and questions in the masculine, even for application to different genders. The 23 questions were adapted to semantic, cultural, or conceptual equivalences by the committee, generating a more adequate and clear protocol to be applied in the pre-test stage. In addition, the exchange of data with the inventory author allowed changes to be incorporated without losing the original purpose of the inventory.

During the interviews, the interviewees identified some questions, which were modified after they were returned to the expert committee. The participants contributed to improving the clarity of the inventory, and the average application time ranged from 45 minutes to one hour. The inventory was easy to understand but quite long and could be tiring to be applied in a single session. This was also the perception detected in the original study (BRADFIELD, 2014). The name adopted in the Portuguese version was "GDI - Inventory of growing disciples."

The reliability of the instrument was proven by values close to 1, Mac Donald's Omega and Cronbach's Alpha (CANET-JURIC; GARCÍA-CONI; INTROZZI 2021; ŞİMŞEK;

NOYAN 2013; ZINBARG *et al.* 2006). In the factor analyses, the data were designed to compose the four factors proposed by the original version, but the items fitted better to 3 factors, one of them uniting most of the two-factor questions of the original version. The first factor of the Brazilian version (Connection and ministry), which dealt with questions about the connection between spirituality and ministry, shows the connection between these two constructs, also discussed by other studies (FLEISCHER, 2006; HILGEMAN, 2010; KENNETH, 2007; PARRETI, 1999).

Studies on spirituality and education have been conducted at different levels of formal education, in other countries, and with different religious perspectives, but they all usually emphasize the importance of spiritual development for the individual (BUCK *et al.*, 2021; CHANIFAH *et al.*, 2021; FRASER-PEARCE, 2022; MEMARYAN *et al.*, 2015; NAHARDANI *et al.*, 2019; ZHANG, 2014).

The issue of religion in non-denominational public and private schools is a sensitive one. The actors who act in the school, such as principals, teachers, and other staff, profess different religions or even assume to be atheists. But working on important values brought by beliefs, whether Christian or not, requires cultural knowledge and sensitivity so that students can receive valuable training for developing their character without being influenced towards one or another religious belief and being respected within the family beliefs (WILLIAMS; KATES, 2022).

Working with spirituality in schools can benefit students greatly because it is the strength of character most associated with happiness, decreasing bullying among peers. As spirituality increases, bullying among peers decreases. The literature points out that an individual who is weak spiritually causes harm to his existence and the environment in which he is inserted (GÜLBAHAR; SARI, 2022). Moreover, spirituality in the workplace, whether a company or an educational institution, can bring several benefits, increasing trust and improving interpersonal relationships and interconnections between people, and driving organizational performance as a whole (AĞALDAY, 2022).

Characteristics such as ethics, belief in a higher power, integrity, trust, kindness, respect, sense of community and peace in organizations, and inspired, humanized, and compassionate employees create a paradigm that is called spirituality in the workplace (AĞALDAY, 2022; ASLAM *et al.*, 2022). Thus, it is important to note the relevance of working on spirituality in the school environment, which is where the individual remains for many years before entering the labor market. The school can provide complete development for this student, including

dealing with the values brought by spirituality. It is important to know the student and their thoughts about these issues to plan how to work on spirituality and its unfolding.

Final considerations

The process of translation and cultural adaptation of the Growing Disciples Inventory (GDI) for the Brazilian culture followed the internationally recommended steps and were successful. The internationally recommended methodology for this type of study was strictly followed in all its stages: translation into the target language, translation back into the source language, evaluation by a group of judges, and pre-test. The present study demonstrates that the GDI is a reliable and valid instrument to evaluate the subjective aspects of spiritual growth since it is an inventory where the subject evaluates their perception of spirituality. We suggest that the Brazilian version of the GDI be used with high school and college students, where it is essential to research the correlations of students' spirituality with other variables, as well as in communities that wish to improve the spirituality levels of their participants.

Therefore, the inventory presented in this study will be of great use for all investigations that focus on assessing the influence of spirituality on the development of pro-social and antisocial behaviors in young adults and middle-aged people. From the results, future research in the educational and theological fields will be able to replicate the same findings in different sample participants in other regions of Brazil.

Although there are already other scales on spirituality validated for use in Brazil (LUCCHETTI; GRANERO LUCCHETTI; VALLADA, 2013; SILVA *et al.*, 2019; MARQUES; SARRIERA; DELL'AGLIO, 2009; PANZINI; BANDEIRA, 2005; SILVA; MARTINS, 2022, TAUNAY, 2012), the focus of most of them are on health, and two of those that have been applied in the educational field, still need further psychometric studies. Thus, this study of cultural adaptation of the GDI will enable further research on the themes of spirituality.

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