

# Posttraumatic growth measures: translation and adaptation of three self-report instruments to Brazilian Portuguese

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## Abstract

**Background:** Posttraumatic growth is one of the most commonly used concepts to evaluate positive changes after trauma. The principal scales used internationally to evaluate this phenomenon have not yet a Brazilian Portuguese version. **Objectives:** This study aimed to translate and adapt to the Brazilian context the Posttraumatic Growth Inventory (PTGI), the Core Beliefs Inventory (CBI), and the Event Related Rumination Inventory (ERRI). **Methods:** The procedures included translation, back translation, expert committee's evaluation, and pilot testing in the target population. **Results:** All items of all three instruments had a good content validity index after evaluation by four experts and three reformulations. The back translation of the final version also demonstrated that all Brazilian Portuguese versions convey the same meaning as the original English version. The final version was pilot tested with 30 undergraduate students, and all the items were above the cut-off point. **Discussion:** This study was able to produce Brazilian versions of the PTGI, CBI, and ERRI. Further studies are underway to determine the reliability, factorial validity, and convergent validity of the subscales of the instruments.

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**Keywords:** Transcultural adaptation, posttraumatic growth, trauma, PTSD, psychometrics.

## Introduction

Although it is estimated that 40 to 90% of people will be exposed to at least one traumatic event in the course of life, only 10% of those will develop psychiatric disorders, such as posttraumatic stress disorder (PTSD)<sup>1,2</sup>. These figures suggest that negative outcomes are not the only type of experience in the aftermath of trauma. Several studies have shown that an individual's struggle with a traumatic event can produce negative, positive, and, perhaps even more typically, a mixture of negative and positive experiences<sup>3,4</sup>.

Posttraumatic growth (PTG) is one of the most commonly used concepts to evaluate the positive outcomes of trauma. PTG is defined as a positive change experienced as a result of the struggle with a major life crisis or traumatic event, a change beyond mere adjustment and recovery<sup>5,6</sup>. The underlying idea is that it is not the event itself that defines the outcome, but how this experience challenges people's beliefs about the world and self<sup>3,4</sup>. PTG can be achieved as a consequence of the process of attempting to understand the event (*e.g.*, deliberate rumination) and the cognitive effort to redefine those beliefs and the assumptive world<sup>7,8</sup>.

Previous studies have shown an association of PTG with greater life satisfaction, well-being and quality of life in the long term after not only traumatic events but also extremely adverse situations, such as cancer<sup>9</sup> and coronary heart disease<sup>10</sup>. Even though PTG has received empirical support, the theoretical model should be further developed many hypotheses have yet to be tested<sup>3</sup>.

A widely used inventory for investigating PTG is the Posttraumatic Growth Inventory (PTGI)<sup>5</sup>, which consists of 21 self-report items scored on a six-point Likert scale. A total score can be used, but the scale also has a five-factor model that reflects different domains of growth: Relating to others (RO); Personal strength (PS); New possibilities (NP); Appreciation of life (AL); and Spiritual change (SP)<sup>5,11</sup>. The internal consistency for the total score and subscales of the PTGI has been reported as satisfactory ( $\alpha$  coefficient for the total score = .90, RO = .85, NP = .84, PS = .72, SP = .85, and AL = .67), just as the test-retest reliability ( $r = .71$ )<sup>5</sup>. The PTGI has already been translated and adapted to different languages, such as Chinese<sup>12</sup>, Spanish<sup>13</sup>, Dutch<sup>14</sup>, Japanese<sup>15</sup>, and European Portuguese<sup>16</sup>.

For a broader understanding of PTG, it is necessary to consider not only the subjectively perceived gains but also the cognitive,

emotional and social factors that facilitate the growth process<sup>17</sup>. One critical factor that has been theorized to facilitate the PTG process is the confrontation with core beliefs. In this sense, a traumatic event is considered a psychologically shattering experience or an experience that challenges a person's core beliefs, forcing individuals to reexamine them<sup>7</sup>. Core beliefs are defined as a general set of beliefs that a person has about the world and their individual place within it. These beliefs also include assumptions about how one believes people will behave, how events should unfold, and one's personal ability to influence events<sup>18</sup>. After trauma, the psychological struggle triggered by the disruption of core beliefs could facilitate identification of positive changes in their worldview and a connection with others that would not have existed otherwise, resulting in the experience of PTG<sup>4</sup>. Empirical studies have supported that the reexamination of core beliefs is more closely related to growth than the perceived stressfulness of the event<sup>19,20</sup>.

To measure the degree of disruption of core beliefs after a traumatic event, the Core Beliefs Inventory (CBI) was developed. The CBI consists of nine self-report items, and responses are made on a six-point scale. Psychometric studies of the scale indicate a single-factor model and the internal reliability was good in a two-stage study ( $\alpha$  time 1 = .82;  $\alpha$  time 2 = .87) and the test-retest reliability was acceptable ( $r = .69$ )<sup>20</sup>.

Another cognitive process that facilitates PTG is the effort to review and understand the traumatic event in order to reintegrate the shattered beliefs. Empirical and theoretical studies suggest that intrusive rumination is associated with negative reactions to trauma, whereas deliberate rumination is associated with meaning and growth<sup>21</sup>. Aiming to investigate the role of both styles of rumination in the growth process, the Event Related Rumination Inventory (ERRI) was designed<sup>7</sup>. The ERRI consists of 20 self-report items that are scored on a four-point scale. The original psychometric ERRI study confirmed the two-factor model, with a good internal reliability in both subscales (intrusive,  $\alpha = .94$ ; deliberate,  $\alpha = .88$ ).

Despite the increasing interest in PTG worldwide, to the best of our knowledge, there are no studies addressing this issue in the Brazilian population. The purpose of this study was to describe the steps of the process of translation and cultural adaptation to Brazilian Portuguese of the three main scales used internationally to evaluate

the PTG phenomenon: PTGI, CBI, and ERRI. In the process of adaptation of a psychological measure to a different language and culture, content validity must be considered. The content validity is the degree to which the items of an instrument are representative of the construct being measured<sup>22</sup>. In this sense, careful translation and adaptation methods are important to ensure that the construct remains the same as that of the original instrument<sup>23</sup>. We hope that with this adaptation the scales can be psychometrically validated and used as clinical and research tools in the Brazilian context.

## Methods

The translation and adaptation of the three instruments were based on the guidelines of the International Test Commission and previous studies<sup>24,25</sup> and followed six steps: (1) translation, (2) expert committee's evaluation, (3) review by linguistic experts, (4) pretest in the target population, (5) back translation, and (6) original authors' evaluation. The study was approved by the Research Ethics Committee of the institution where it was conducted (protocol no. 247.127).

## Results

### Translation

Two native Portuguese-speaking authors, fluent in English, independently translated the original versions of the ERRI and CBI into Brazilian Portuguese. These versions were then merged into one initial translated version of each scale. The Brazilian version of the PTGI was based on the existing European Portuguese version<sup>16</sup>, and only minor semantic changes were made.

### Expert committee's evaluation

The translated versions of the ERRI, CBI and PTGI were evaluated by an expert committee composed of four judges: two psychologists (MSc) with expertise in PTSD and two psychologists (PhD) with expertise in psychological assessment. The content validity index (CVI)<sup>26</sup> was used to objectively measure the experts' evaluation. This index is based on a five-point Likert-type scale on which experts rate the items according to (1) clarity of language, which measures how understandable the items are to the target population; (2) practical relevance, which measures how adequate each item is to evaluate the target population; and (3) theoretical relevance, which measures how much the items are in agreement with the construct theory<sup>27</sup>. For each item, values  $> 0.7$  were considered satisfactory<sup>28</sup>. Items with lower scores were rephrased and resubmitted to the four judges for evaluation until the CVI reached a value of  $> 0.70$ . Table 1 summarizes the items that were modified at this stage.

### Review by linguistic experts

This phase consisted of a meeting between two linguistic experts and the authors of the study. The translated versions were compared with the original English versions not only to verify whether all items expressed the same ideas but also to ensure semantic, idiomatic and conceptual equivalence between the source-language and adapted versions. As a result of this evaluation, some expressions in the adapted versions were modified.

In the instructions for use of the CBI, the term "event" was considered problematic. In Portuguese, the most similar word to "event" is "evento", a term that generally means "party"; thus, this word was changed to a semantically similar word: "situação", which means "situation". Also, in some items of the CBI, the expression "examined" used in "I seriously examined the degree to which I believe things..." was modified considering that, in Portuguese, the most similar word to "examined" is "examinei", a verb that means to test or evaluate something. Aiming to preserve the original meaning, the word was changed to "repensei", which means thinking again.

In the ERRI, some items needed to be completely modified. Item 7 "Reminders of the event brought back thoughts about my experience" was rewritten considering that there is no similar word or expression in Portuguese to "reminders" in the context of "reminding by association". In this case, it was decided to explain the entire sentence in more detail: "*Coisas do meu cotidiano relacionadas à situação me fizeram ter pensamentos sobre o que vivi*", which may be literally translated as "Things that happen in my daily life related to the situation made me think about what I have experienced". In the original ERRI, item 13 aims to investigate a deliberate effort to cope with the event: "I forced myself to think about my feelings about my experience". The experts considered that the literal translation of "I forced myself" (i.e., "*eu me forcei*") may have a negative connotation. The item was then changed to "*Eu me esforcei para refletir sobre os meus sentimentos acerca da situação*", which may be literally translated as "I made an effort to think about my feelings about the situation".

### Pretest in the target population

The adapted versions of all three instruments were administered to a sample of the target population in a pilot study. The understanding of each item in the three questionnaires was evaluated using a five-point verbal numeric rating scale, ranging from "1- Incomprehensible" to "5- I completely understood". The sample consisted of 30 university students (10 men and 20 women), with a mean (SD) age of 24 (5.4) years. Most students were psychology undergraduates (86%).

Satisfactory understanding was defined as a mean score  $\geq 3$ , a cut-off point based on previous studies<sup>29,30</sup>. None of the items of any of the three scales needed to be modified at this stage because participants rated all the items as completely understandable. All items had a mean score of four or higher.

### Back translation

After all items were considered appropriate by the evaluators and understandable by the students, the adapted version of each scale was back translated by two independent, bilingual native English speakers, who were blinded to the original instrument. These two back-translated versions were merged by the authors of this study into a single back-translated version of each scale.

### Original authors' evaluation

The Brazilian Portuguese adapted versions, the back-translated versions and the results of all stages were submitted to the authors of the original versions for evaluation and subsequent approval.

## Discussion

This study aimed to adapt three self-report measures used to investigate PTG. In the adaptation process, the scales were evaluated and expressions were modified to preserve the content validity of the instrument in the Brazilian Portuguese version.

In the psychometric literature, the content validity of translated scales should be investigated with methodological rigor and include cross-cultural adaptation addressing both linguistic and cultural issues. Although several methods have been proposed for adaptation of existing instruments, how to conduct this process in a reliable and objective manner is still debatable. Moreover, these methodological guidelines do not cover linguistic specificities, requiring a case-by-case examination. This precaution was taken in the present study by using the CVI. This index provided quantitative data to evaluate the adequacy of the scales regarding clarity of language, practical and theoretical relevance.

A major limitation of this study was the pilot phase, since all participants were university students, mostly psychology students. As most studies investigating PTG have obtained their initial data from university students, our pilot study provides sufficient reliability

**Table 1.** Results of expert committee's evaluations

Measure	Primeira versão	CL	PR	TR	Versão reformulada	CL	PR	TR
PTGI								
11	Sou capaz de fazer coisas melhores com a minha vida	0,64	0,89	0,89	Agora sou capaz de fazer coisas melhores com a minha vida	0,84	0,99	0,99
14	Apareceram oportunidades que não teriam aparecido de outra forma	0,69	0,74	0,79	Surgiram oportunidades que não teriam surgido de outra forma	0,84	0,99	0,99
17	É mais provável eu mudar as coisas que precisam ser mudadas	0,69	0,99	0,99	Agora é mais provável que eu mude coisas que precisam ser mudadas	0,94	0,99	0,99
ERRI								
Intro	Após uma experiência como a que você reportou, as pessoas – às vezes, mas não sempre – se dão conta de estar pensando sobre a experiência mesmo quando não estão voluntariamente tentando pensar sobre isso. Indique, para os itens abaixo, se você teve essas experiências descritas, e com qual frequência, durante as últimas semanas	0,69	0,99	0,99	Após uma experiência como a que você reportou, as pessoas às vezes se dão conta de estar pensando sobre a experiência mesmo quando não estão voluntariamente tentando pensar sobre isso. Indique para os itens a seguir se você teve essas experiências descritas e com qual frequência, durante as últimas semanas	0,94	0,99	0,99
7	Coisas que me lembravam do evento me fizeram pensar sobre a minha experiência.	0,64	0,94	0,99	Coisas do meu cotidiano relacionadas à situação me fizeram ter pensamentos sobre o que vivi	0,94	0,99	0,99
9	Outras coisas me mantêm pensando sobre a minha experiência	0,69	0,94	0,99	Outras coisas me levaram a ficar pensando sobre a minha experiência	0,89	0,99	0,99
12	Eu pensei se as mudanças na minha vida vieram de eu ter que lidar com a minha experiência	0,44	0,79	0,99	Eu pensei se as mudanças na minha vida vieram como consequência de eu ter lidado com esta experiência	0,84	0,99	0,99
13	Eu me forcei para pensar sobre os meus sentimentos acerca da minha experiência	0,64	0,94	0,99	Eu me esforcei para refletir sobre os meus sentimentos acerca da situação	0,94	0,99	0,99
20	Eu me forcei para enfrentar os meus sentimentos em relação ao que aconteceu	0,39	0,99	0,99	Eu me esforcei para enfrentar os sentimentos que tive em relação à situação	0,94	0,99	0,99
CBI								
Intro	Alguns eventos que as pessoas vivenciam são tão impactantes que “abalam seu mundo” e as levam a examinar seriamente suas principais convicções sobre si mesmas, o mundo, as outras pessoas e sobre o futuro. Por favor, reflita sobre a situação sobre a qual você está reportando e indique qual o grau que esta leva você a repensar cada uma das convicções abaixo:	0,69	0,99	0,99	Algumas situações que as pessoas vivenciam são tão impactantes que “abalam seu mundo” e as levam a reexaminar seriamente suas principais convicções sobre si mesmas, o mundo, as outras pessoas e o seu futuro. Por favor, reflita sobre a situação sobre a qual você está relatando e indique o quanto esta situação leva você a repensar cada uma das convicções abaixo:	0,84	0,99	0,99

CL: clarity of language; PR: practical relevance; TR: theoretical relevance.

for use in research and to replicate these studies in Brazil. However, one must proceed with caution when conducting further studies with individuals with lower education.

Previous studies have shown that the PTGI domains may vary across cultures<sup>15</sup>. One of the main reasons is that growth is a response that depends closely on cultural meanings of negative life events, personal strength, and thriving<sup>31</sup>. In this sense, the transcultural adaptation of the three PTG-related measures is particularly important. The content validity of these measures can provide a basis for future studies indicating, in the case of psychometric data, different factors of the original instrument in the factor analysis. In this case, for instance, different findings could be attributed to the Brazilian culture rather than to differences in the item's content. Further studies are underway to determine the reliability and psychometric validity of these scales.

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### Conflict of interest

There are no conflicts of interest concerning the publication of this article.

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