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## TRADUÇÃO E ADAPTAÇÃO DO LEARNING AND STUDY STRATEGIES INVENTORY - LASSI 3ª EDIÇÃO PARA USO NO BRASIL: CONSIDERAÇÕES METODOLÓGICAS

*Evely Boruchovitch<sup>1</sup>*

*Natália Moraes Góes<sup>2</sup>*

*Carolina Moreira Felicori<sup>3</sup>*

*Taylor W. Acee<sup>4</sup>*

**Resumo:** A autorregulação envolve controle dos processos cognitivos e metacognitivos da motivação, das emoções e do comportamento. Embora o tema da aprendizagem autorregulada tenha atraído o interesse de pesquisadores brasileiros, a produção do conhecimento e sua necessária aplicação no contexto educativo ainda é incipiente. É mais recente também a preocupação com o desenvolvimento e o emprego de instrumentos mais válidos e confiáveis para medida integrada das variáveis associadas à aprendizagem autorregulada. Assim, o presente estudo é parte de uma pesquisa maior, em intercâmbio interinstitucional, financiada pelo Conselho Nacional de Pesquisa e Tecnologia (CNPq), que visa compreender os fatores cognitivos, metacognitivos, afetivos, motivacionais associados ao sucesso acadêmico no Ensino Superior. Seu objetivo é relatar os procedimentos metodológicos relacionados à tradução e adaptação do *Learning and Study Strategies Inventory* – LASSI (Inventário de Estratégias de Estudo e Aprendizagem), versões para o Ensino Superior (3ª edição) desenvolvido por Weinstein, Palmer e Acee (2016), como passo inicial para os estudos futuros de validação para o seu uso no contexto brasileiro. Tem-se em vista contribuir para o avanço do conhecimento acerca da mensuração de variáveis psicológicas associadas à aprendizagem e ao sucesso acadêmico de forma mais integrada, válida e confiável.

**Palavras-chave:** Aprendizagem autorregulada. Estudante universitário. Avaliação psicoeducacional. Estratégias de aprendizagem.



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<sup>1</sup> Psicóloga, Ph.D. em Educação pela University of Southern Califórnia, professora titular do Departamento de Psicologia Educacional e do Programa de Pós-graduação em Educação da Faculdade de Educação da Universidade Estadual de Campinas (UNICAMP). Bolsista de produtividade do CNPq. Email: evely@unicamp.br

<sup>2</sup> Pedagoga, Mestra pelo Programa de Pós-graduação em Educação da Universidade Estadual de Londrina (UEL) e Doutoranda do Programa de Pós-graduação em Educação da Faculdade de Educação da Universidade Estadual de Campinas (UNICAMP).

<sup>3</sup> Licenciatura e Bacharelado em Letras – Português/ Inglês, Mestra e Doutoranda do Programa de Pós-graduação em Educação da Faculdade de Educação da Universidade Estadual de Campinas (UNICAMP).

<sup>4</sup> Psicólogo, Ph.D. em Psicologia Educacional pela Universidade do Texas. Professor associado do Programa de Pós-Graduação em Educação para o Desenvolvimento. Departamento de Currículo e Instrução da Texas State University.

## TRANSLATION AND ADAPTATION OF THE LEARNING AND STUDY STRATEGIES INVENTORY - LASSI 3rd EDITION FOR USE IN BRAZIL: METHODOLOGICAL CONSIDERATIONS

**Abstract:** Self-regulation involves students' awareness and control of their cognitive and metacognitive processes, as well as of their motivation, emotions, and behavior. Although the theme of self-regulated learning has attracted the interest of Brazilian researchers, the production of knowledge and its necessary application in the educational context is still incipient. The concern with developing and using more valid and reliable instruments for measurement of the variables associated to self-regulated learning in a more integrated way has also been a recent issue in Brazil. Thus, the present study is part of a larger interinstitutional cooperation research, funded by the National Council for Scientific and Technological Development (CNPq), which seeks to understand the cognitive, metacognitive, affective and motivational factors associated with academic success in university. Its objective is to report the methodological procedures related to the translation of the *Learning and Study Strategies Inventory* (LASSI), the version for college students (3rd edition) developed by Weinstein, Palmer and Acee (2016), as a first step for future validation studies for its use in the Brazilian context. The aim is to contribute to the advancement of knowledge on the measurement of psychological variables associated with learning and academic success in a more integrated, valid and reliable manner.

**Keywords:** Self-regulated learning. University student. Psycho-educational assessment. Learning strategies

## TRADUCCIÓN Y ADAPTACIÓN DEL LEARNING AND STUDY STRATEGIES INVENTORY - LASSI 3ª EDICIÓN PARA USO EN BRASIL: CONSIDERACIONES METODOLÓGICAS

**Resumen:** La autorregulación implica el control de los procesos cognitivos y metacognitivos de la motivación, las emociones y el comportamiento. Aunque el tema del aprendizaje autorregulado ha atraído el interés de investigadores brasileños, la producción del conocimiento y su necesaria aplicación en el contexto educativo todavía es incipiente. Es más reciente también la preocupación por el desarrollo y el empleo de instrumentos más válidos y confiables para medida integrada de las variables asociadas al aprendizaje autorregulado. El presente estudio es parte de una investigación mayor, en intercambio interinstitucional, financiada por el Consejo Nacional de Investigación y Tecnología (CNPq), que busca comprender los factores cognitivos, metacognitivos, afectivos, motivacionales asociados al éxito académico en la Enseñanza Superior. Su objetivo es relatar los procedimientos metodológicos relacionados con la traducción y adaptación del Learning and Study Strategies Inventory - LASSI (Inventario de Estrategias de Estudio y Aprendizaje), versión para la Enseñanza Superior (3ª edición) desarrollado por Weinstein, Palmer y Acee (2016), como paso inicial para los estudios futuros de validación para su uso en el contexto brasileño. Se tiene en cuenta contribuir al avance del conocimiento acerca de la medición de variables psicológicas asociadas al aprendizaje y al éxito académico de forma más integrada, válida y confiable.

**Palabras clave:** Aprendizaje autorregulado. Estudiante universitario. Evaluación psicoeducativa. Estrategias de aprendizaje.

## Introduction

Academic and school success has been understood as resulting from complex interactions between cognitive, metacognitive, affective, and motivational factors, among others (MEGA; RONCONI; BENI, 2013; PRESSLEY; BORKOWSKI; SCHNEIDER, 1989; WEINSTEIN; ACEE, 2018; ZIMMERMAN; SCHUNK, 2011). Hence, the perspective of self-regulated learning has gained prominence in contemporary Educational Psychology, because it encompasses executive processes essential to proactive learning. It places great emphasis on the active role of the student, and deserves attention of educators, researchers, and policy-makers in Education (BEMBENUTTY, 2011; BORUCHOVITCH, 2014). Self-regulation involves students' awareness and control of their cognitive and metacognitive processes, as well as of their motivation, emotions and behavior (ZIMMERMAN, 1994; ZIMMERMAN; SCHUNK, 2011). It is considered an essential component of strategic learning (WEINSTEIN; PALMER; ACEE, 2016). The characteristics that are essential to academic learning and success are sometimes inactive or suppressed in students. However, such characteristics can be fostered and stimulated in an educational context (BEMBENUTTY, 2011; BORUCHOVITCH, 2007; BORUCHOVITCH; GANDA, 2013; DEMBO, 1994; ZIMMERMAN; SCHUNK, 2011).

In Brazil, the perspective of self-regulated learning seems to be promising, given the educational problems facing the country in all segments of schooling (INEP, 2018). Although the theme of self-regulated learning has attracted the interest of Brazilian researchers at different cycles of formal education, the production of knowledge and its necessary application in the educational context is still incipient, especially in secondary and higher education. The concern with developing and using more valid and reliable instruments for measurement of the variables associated with self-regulated learning in a more integrated way in larger and more representative samples has also been a recent issue in Brazil (BARTOLO, 2006; BORUCHOVITCH, 2006; BORUCHOVITCH; SANTOS, 2015). Thus, this study is part of a larger inter-institutional cooperation

research, funded by the National Council for Scientific and Technological Development (CNPq), which seeks to understand the cognitive, metacognitive, affective and

motivational factors associated with academic success in higher education. Its objective is to report the methodological procedures related to the translation and adaptation of the *Learning and Study Strategies Inventory* (LASSI, 3rd edition) developed by Weinstein, Palmer and Acee (2016) for college students, as a first step for future validation studies for its use in the Brazilian context. The aim is to contribute to the advancement of knowledge on the measurement of psychological variables associated with learning and academic success in a more integrated, valid and reliable manner.

### **The LASSI (3rd ed.) College Version : A Brief Description**

The LASSI version for college students was created by Weinstein, Schulte, and Palmer (1987), and their initial studies have taken place since 1982. The inventory is intended to assess students' awareness about and use of study and learning strategies related to the skill, will, and self-regulation components of strategic learning according to the Model of Strategic Learning (WEINSTEIN; PALMER; ACEE, 2016). The LASSI (3<sup>rd</sup> ed.) is a *Likert-type* scale of 60 items, with 5 choices for answers: *not at all typical of me, not very typical of me, somewhat typical of me, fairly typical of me, and very much typical of me*. Of its 60 items, 34 have reverse scores, due to the directionality in which they were written. The LASSI items are subdivided into 10 scales: *Anxiety, Attitude, Concentration, Information Processing, Motivation, Selecting Main Ideas, Self Testing, Test Strategies, Time Management and Using Academic Resources*. Each scale consists of 6 items. Weinstein, Palmer, and Acee (2016) mentioned that LASSI scores can be analyzed considering each scale separately. Thus, scores can range from 6 (minimum score) to 30 (maximum score) on each scale.

The *Anxiety* scale assesses the degree to which students worry about college and their academic performance. The item "When I am taking a test, worrying about doing poorly interferes with my concentration" is an example of an item from this scale. The *Attitude* scale examines students' attitudes and interests regarding college and



reaching academic success. An example of an item of this scale is: "I have a positive attitude about attending my classes". The *Concentration* scale assesses students' ability to direct and maintain their attention on academic tasks. "I find it difficult to maintain my concentration while doing my coursework" is an example of an item of this scale. The *Information Processing* scale examines the extent to which students use visual and verbal elaboration, organizational, and other active-thinking strategies to help them learn and remember new things. An example of an item of this scale is: "To help me remember new principles we are learning in class, I practice applying them". The *Motivation* scale assesses the students' diligence, self-discipline, and effort to accomplish their academic tasks. "When work is difficult, I either give up or study only the easy parts" is an example of an item of this scale.

The scale *Selecting Main Ideas* evaluates students' skills at identifying important information to study in various learning situations in college. An example of an item of this scale is "I have difficulty identifying the important points in my reading". The scale *Self-Testing* measures students use of strategies for monitoring their comprehension of course material and checking their ability to demonstrate their learning. An example of an item of this scale is "I stop periodically while reading and mentally go over or review what was said". The scale *Test Strategies* verifies the strategies used by students both at the time of preparation for a test and at the time the test is taken. An example of an item of this scale is "I have difficulty adapting my studying to different types of courses". The scale *Time Management* measures the use of time management principles and practices by students when performing academic tasks. "When I decide to study, I set aside a specific length of time and stick to it" is an example of an item of this scale. Lastly, the scale *Using Academic Resources* assesses the willingness of students to use different academic resources. "When I am struggling in one or more courses, I am too embarrassed to admit it to anyone" is an example of an item of this scale. All 10 scales have high internal consistencies, measured by Cronbach's Alpha, in studies carried out in large samples of American students. The values ranged from 0.76 to 0.87.

The third edition of LASSI (WEINSTEIN; PALMER; TAYLOR, 2016) was developed with 3 main purposes: (a) to refine the wording of some items from the previous

editions of 1988 and 2002), (b) to include a new scale – *Using Academic Resources* - replacing the *Study Aids scale*, in order to better reflect the advances of Contemporary Educational Psychology, and (c) to decrease its application time by reducing from 80 items to 60.

### **LASSI Translation Procedures - Higher Education Version**

In Brazil, the second edition of LASSI was translated and validated by Bartalo (2006) for use with university students from São Paulo and Paraná. Of the 10 scales of the original instrument, the author found support only for eight. Moreover, it was necessary to exclude the Self-Testing scale and to include a new scale: Concern with Studying. The study also pointed out the need to reconfigure the original dimensions, as well as to exclude some of them. Bartalo (2006) and Bartalo and Guimarães (2008) concluded that it would be necessary to conduct new studies with the instrument, aiming at its refinement so that it can be used in Brazilian context.

In 2016, the first author of the current article received an invitation from the LASSI authors to conduct joint research. At this time, the translation and adaptation of the LASSI (3<sup>rd</sup> edition) to Portuguese came out as an important goal, not only for the advancement of knowledge about how Brazilian students study and learn, but also to start an inter-institutional research cooperation among prominent researchers working in the area of strategic and self-regulated learning at American and Brazilian universities.

The translation of the LASSI (3<sup>rd</sup> ed.) for college students into Portuguese was carried out by three researchers from a public university located in the interior of the State of São Paulo, all of them were proficient in the English language and well-versed in the theoretical framework which supported the development of the original instrument (i.e., see the Model of Strategic Learning. WEINSTEIN; ACEE, 2018). One of them holds a Ph.D. in Education from an American university and two are doctoral students in Education. The LASSI translation procedures began with the individual translation of the items by each of the researchers. Subsequently, there was meeting to evaluate and check the translations made for each of the items. In case of doubts

and/or divergence of words, the items were analyzed, using either resources such as: Portuguese and English dictionaries (both printed and online), an online thesaurus, or asking for external assistance of professionals proficient in English. Moreover, they decided to standardize recurring words and expressions that appeared in many items in order to ensure consistency in translation and a better adaptation of the scale to Portuguese. The standardizations of words can be seen in Chart 1.

**Chart 1** – Standardization of words and expressions used as translation and adaptation procedures for the LASSI 3rd Edition into Portuguese.

Word/expression in English	Word/expression in Portuguese
My classes	Minhas aulas
Notes	Anotações
Information	Conteúdo
Test	Prova
Textbook	Livro didático
Material	Conteúdo
Working	Estudando
Trouble	Dificuldade
Class	Aula/cursos
Subjects	Assuntos
Understand/misunderstood	Compreender/compreendi mal
Review Sessions	Plantões de dúvida
Work	Tarefa
I have a hard time	Tenho dificuldade
To find	Encontrar
Cramming	De última hora
Figuring	Identificar
Essay tests	Provas discursivas
Tutor	Professor particular
Lectures	Aulas expositivas
School	Faculdade
Course	Disciplina
Private teacher	Professor particular
Class lecture	Aula expositiva

**Source:** The authors (2018)

After analyzing the three initial translations in depth, a single Brazilian version emerged which was sent for *back-translation* (BORSA; DAMASIO; BANDEIRA, 2012; VIJVER; HAMBLETON, 1996).

The *back-translation* was carried out by a translator, with a Ph.D. in English, residing in Brazil for many years, with fluent Portuguese. After receiving the *back-*



*translation* scale back, the researchers first analyzed it individually. Then they met again to evaluate each item together. During that meeting, the following procedures were adopted: initially, the item originated by *back-translation* was read and compared with the Portuguese translation and then with the original item. These procedures were performed with all items. This analysis revealed that of a total of 60 items, 52 (86.7%) were adequate with regard to the preservation of content and original meaning. Among the eight items considered to be inadequate with regard comparing the original item to

the back-translation (i.e., items 2, 6, 13, 17, 26, 31, 39 and 44), four of them were determined to require a revision in the Portuguese version (i.e., items 2, 6, 13 and 17). Whereas the other four items (i.e., items 26, 31, 39, and 44) were determined not to require a revision to the Portuguese version because the source of the problem was found to be in the back-translation as opposed to the translated item. These 8 items (four of which were revised and four of which were not) were sent again to the same translator for a second *back-translation*.

The results of the second *back-translation* revealed that, of the 8 items, the translations of four of them (i.e., items 6, 13, 17, and 44) were acceptable. However, problems were still found in the *back-translation* of four items (i.e., items 2, 26, 31 and 39). Thus, the researchers chose to send two versions of the *back-translation* (the first and the second) to judges who were American. Judges were asked to evaluate what would be the best translation for each of those items, as well as to make suggestions. This procedure was positive for three items. However, item 26 had to go through a new back-translation, performed by a second translator, also a bilingual specialist. After the evaluation of the American judges and the new translation of item 26 by the second translator, all the translated items were considered appropriate. Then the whole scale was sent to two Brazilian judges with Ph.D. degrees, experts in the area of Education and with a solid theoretical background in self-regulated learning and in scale development. They did not find any problems in the meaning, wording or in the content of the items.

The final stage of the translation and adaptation of the LASSI for use in Brazilian context involved the revision of the translation and the *back-translation* made by one of

the authors of the original scale. This author received all the 60 items displayed in a chart with three distinct columns. The first column contained each of the original items in English. The second column had the respective translations of the items into Portuguese and the third one presented the *back-translation* of the items, as follows:

**Chart 2** – Example of original items, translation and back-translation

Original Item	Translation	Back-translation
33. I set goals for the grades I want to get in my classes. that I will fail my classes.	33. Estabeleço metas em relação às notas que quero tirar em minhas disciplinas.	33. I set goals in relation to the grades I want to get in my subjects.

**Source:** The authos (2018)

The comparison of the back-translation of the items with the original items carried out by one of the authors of the original scale confirmed the adequacy of the translation and the equivalence of the items. No recommendation to change the wording of any item was made.

**Translation of the Website for the LASSI Online Application**

It is worth mentioning that the researchers also translated to Portuguese the entire website for the LASSI online application (H&H Publishing Company, 2016). All terms, operating commands of the platform, descriptions of what each scale measures, as well as the feedback information that students receives about their performance on the scales were then translated to Portuguese. Due to the English proficiency of the three researchers and the objectivity of the website information, the H&H Publishing Company did not consider necessary to do a *back-translation* of the website.

Online data collection has the advantage of generating a spreadsheet in Excel format with the data collected. It also provides the students with detailed feedback by e-mail about their performance on each of the scales, with specific guidelines on how to interpret their scores and determine which areas to target for improvement. After the translation and adaptation procedures of the LASSI (3rd ed.) for paper and pencil

data and for online data collection in Brazilian Portuguese, pilot studies were conducted and are briefly described next.

### **LASSI Pilot Studies Version for College Students**

Pilot studies were carried out in two classes of undergraduate courses, from a public university in the State of São Paulo, during the second half of 2017 and the first half of 2018. The sample consisted of a total of 44 students.

Four administrations of The Learning and Study Strategies Inventory Third Edition translated and adapted for use with College Students in Brazil- LASSI Brasileiro (3<sup>a</sup> ed) were conducted, three of them were done using the LASSI Brasileiro 3ed in a paper and pencil version and one was done with the *online version*. In one of the classes, data were collected at two moments (beginning and end of the semester) to check if the students would have additional comments at the second moment.

At the first administration of LASSI Brasileiro (3<sup>a</sup> ed), one student suggested the need for changes in the explanations of the response choices to make them clearer to the respondents. This suggestion was fully accepted and the instructions were rewritten to better clarify what each response option meant. New synonyms were then used and punctuation marks were reviewed. In the second administration of LASSI-Brasileiro (3<sup>a</sup> ed), no changes were suggested. In the latest administration of LASSI Brasileiro (3<sup>a</sup> ed) the only one carried out online, a student found a mistake in one of the response choices. In the response option 2, it was written *Very typical of me* rather than *Not very typical of me*. Thus, this correction was made. The online administration of LASSI Brasileiro (3<sup>a</sup> ed) was aimed at testing whether the H&H Publishing website was functioning well in Brazil. It happened in the classroom and lasted approximately 20 minutes. The undergraduate students answered the LASSI Brasileiro (3<sup>a</sup> ed) through their cell phones, laptops and tablets. No problem emerged.

Overall, the pilot studies revealed that the students enjoyed responding to LASSI Brasileiro (3<sup>a</sup> ed). The students who participated in the online data collection mentioned that it was very positive and motivating to receive a report with graphs and feedback about their performance in the 10 scales of LASSI immediately, by e-mail.

They considered the feedback very instructive and mentioned that they have identified themselves much with the results received, despite the remark we made at the beginning of the reports received by them as follows: *“The chart below shows your LASSI scores. However, it is important to mention that these results may give you only a general idea of how you are as a student. In fact, they were based on US standards and may not necessarily reflect what really happens to you”*.

Students also received a final message after taking LASSI Brasileiro (3<sup>a</sup> ed) Both messages (in the report and the final one) included a note of caution to avoid misinterpretation of results, since the analyses made by the website are based on American norms.

### **Next Steps and Final Considerations**

The translation of the LASSI for college students was the first step to begin the investigation of its validity and reliability for use in the Brazilian higher education contexts. The systematic and rigorous translation process and small pilot studies provide initial evidence to support that the translation of the LASSI (3<sup>rd</sup> ed.) to Brazilian Portuguese was adequate and semantic equivalent to its original version.

After the approval of the larger project in the Ethics Committee (Process Number 81094017.0.0000.8142), a platform called *Autorregular* was created, which houses the consent form, socio-demographic questions, LASSI (web version) and 8 different scales related to the cognitive, metacognitive, motivational, and affective variables that will be used for the characterization of the sample, as well as for the validation of LASSI in samples of different university courses and regions of Brazil. The Autorregular platform was created to allow for the integration of all data necessary for the larger research and the LASSI system (H&H Publishing Company, 2016). This platform also has two tabs: one with general information about the research (*Sobre a Pesquisa*) and another one with the names of the professionals and students, team members, as well as with the list of participating universities and the addresses of their respective ethics committees (*Lista de Participantes*).

The platform *Autorregular* is at the final stage of testing and adjustment. The tests are being conducted by undergraduate and graduate students, team researchers from different universities, post-doctoral students, among other collaborators. They are examining whether the path from the receipt of an email invitation by the participants with a link that takes them to the consent form, demographic questions, the LASSI Brasileiro (3<sup>a</sup> ed), the corresponding LASSI report (another link) and a link with others measures to be examined in relation to LASSI is well integrated and running without interruption. As the integration of the whole system is working well, data collection will begin soon after a training to be offered to participating universities on how to use the platform *Autorregular*.

It is thus hoped that this research will contribute to the advancement of knowledge on the measurement of psychological variables associated with academic learning and college success in a more integrated, valid and reliable way. More precisely, it is also expected that the Brazilian version of LASSI will have good psychometric properties, acceptable reliability indexes in line with the established psychometric parameters (AERA; APA; NCME, 2013) so that it can be employed for diagnosis and for psychoeducational interventions in Brazil.

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