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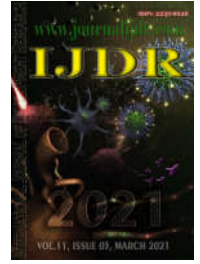
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## PRESENTING SLAT-THINKING SECOND VERSION AND ITS CONTENT VALIDITY

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### ABSTRACT

Students' Approaches to Learning is an important theory in Educational Psychology that investigates the interaction of students with objects of knowledge and how this interaction affects learning outcomes. Recently, the Students' Learning Approach Test (SLAT-Thinking) was proposed as a pioneer methodology to investigate approaches to learning through performance in a given task. Nevertheless, this test has presented some issues regarding the high probability of answering correctly by chance. This paper presents a new version of this performance test, SLAT-Thinking 2. This new version solves the aforementioned issues, adds a theoretical framework to explain the incorrect answers given by respondents, and presents two test forms. This study presents the content validity of SLAT-Thinking 2, which is the first step to investigate the test validity. The analysis was performed by nine judges, four of which with an Educational Psychology background. It led to changes in the wording of the test instructions, wording of the two texts given in the test task, wording of three items, wording of the response options of four items, and to the change of one answer key. This analysis certified the content validity of the new version of the test, which it is expected to become a useful tool for researchers and practitioners.

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## INTRODUCTION

The Students' Approaches to Learning theory studies how students interact with objects of knowledge (Biggs & Tang, 2011). This theory assumes that there is a deep approach and a surface approach to learning which characterize the way students interact with the objects of knowledge. In short, a deep approach occurs when students interact actively with the objects of knowledge, both in terms of strategy and motivation and in turn, a surface approach characterizes the passive interaction of students with the objects of knowledge. Therefore, the Students' Approaches to Learning theory assumes that the deep approach is positively correlated with student achievement, whereas the surface approach is negatively correlated with this outcome (Contreras *et al.*, 2017). Despite the promising constructs of this theory, two meta-analyses (Richardson, Abraham & Bond, 2012; Watkins, 2001) showed that the deep and surface approaches have weak correlations with student achievement. Important predictors, such as intelligence (Alves, Gomes, Martins, & Almeida, 2016, 2017, 2018; Golino & Gomes, 2019; Gomes, 2010b, 2011b, 2012b; Gomes & Borges, 2007, 2008c, 2009b, 2009c; Gomes, de Araújo, Ferreira & Golino, 2014; Gomes & Golino, 2012b, 2015; Muniz, Gomes, & Pasian, 2016; Valentini *et al.*, 2015), meta-cognition (Golino & Gomes, 2014a; Golino, Gomes, & Andrade, 2014; Gomes & Golino, 2014; Gomes, Golino, & Menezes, 2014; Pires & Gomes, 2018), self-regulation (Cardoso, Seabra, Gomes, & Fonseca, 2019; Dias *et al.*, 2015; Golino, Gomes, Commons &

Miller, 2014; Gomes, 2007, 2010a; Gomes & Borges, 2009a; Gomes, Golino, Santos, & Ferreira, 2014; Pereira, Golino, M. T. S., & Gomes, 2019; Reppold *et al.*, 2015), and socioeconomic variables (Gomes & Almeida, 2017; Gomes, Amantes & Jelihovschi, 2020; Gomes, Fleith, Marinho-Araujo, & Rabelo, 2020; Gomes & Jelihovschi, 2019; Gomes, Lemos, & Jelihovschi, 2020; Pazeto, Dias, Gomes & Seabra, 2019) are much more important than students' approaches to predict academic achievement.

However, the deep and surface approaches seem to have incremental validity (Gomes, 2011a), which sustains their importance. In short, students' approaches to learning are a secondary predictor (Gomes, 2010c, 2011a, 2013; Gomes, Araujo, & Jelihovschi, 2020; Gomes & Golino, 2012c; Gomes, Golino, Pinheiro, Miranda, & Soares, 2011), similar to motivational and self-reference variables such as personality (Gomes, 2012a; Gomes & Gjikuria, 2017; Gomes & Golino, 2012a), students' beliefs on teaching-learning processes (Alves, Flores, Gomes & Golino, 2012; Gomes & Borges, 2008a), learning styles (Gomes, Marques, & Golino, 2014; Gomes & Marques, 2016), motivation for learning (Gomes & Gjikuria, 2018), and academic self-reference (Costa, Gomes, & Fleith, 2017).

The mainstream argumentation of researchers about the low prediction of students' approaches to learning, concerning academic achievement, is that this is caused by the educational assessment system, which does not promote the deep approach and, in certain aspects, reinforces the surface approach (Contreras *et al.*, 2017).

An alternative interpretation for this is the exclusive existence of self-report questionnaires to measure the students' approaches. It is possible that the exclusive use of self-report instruments to measure these approaches produces considerable bias, generating scores with high noise, diminishing the correlation between the approaches and students' achievement. Interested readers can find a detailed argumentative exposition about this in the article of Gomes, Linhares, Jelihovschi, and Rodrigues (2020).

Taking all that into account, Gomes and Linhares created the Students' Learning Approach Test - Identification of Thinking Contained in Texts (SLAT-Thinking). This test is the first measurement of students' approaches to learning based on the performance of respondents. The test measures the approaches of a person in identifying the thinking of an author in a given text (Linhares & Gomes, 2018). While measuring approaches through performance, SLAT-Thinking is guided by the assumption that the measurement of the approaches based on performance in a test should focus on a specific ability or domain, since the students' approaches occur in many contexts. For example, deep and surface approaches can be measured through the ability to transfer knowledge learned in a context to another context or the ability to seek information and select what is important and what is noise. SLAT-Thinking measures students' approaches through their ability to identify the author's thinking in a specific text. This ability was chosen since it is a strategic tool for the critical reasoning in the age of internet, that is, it is an appropriate context to measure the approaches to learning in the 21st century.

SLAT-Thinking has two similar texts and 12 items related to each of them. Each item is composed of a statement which can represent the author's thinking in a given text. Thus, the respondent must read the text and answer each item related to it, marking one out of three options. Option one affirms that the item's statement represents the author's thinking, option two states that the item does not represent the author's thinking, and option three informs that it is not possible to answer whether or not the item represents the author's thinking in that text because it did not provide enough information. An example of item which follows this structure is shown in Figure 1. This item is part of the instructions of the test. A detailed description of the assumptions which guide SLAT-Thinking as its structure can be found in Gomes *et al.* (2020).

STATEMENT	E	N	Z
1) Real Madrid is the best soccer team in the world.			

E = this statement represents the author's thinking; N = this statement does not represent the author's thinking; Z = it is not possible to answer whether or not this statement represents the author's thinking.

**Figure 1. Example of item which follows the SLAT-Thinking structure**

Despite the advances of SLAT-Thinking in the measurement of students' approaches to learning, the test showed some relevant issues. It presents a high probability of respondents answering an item correctly by chance. In practical effect, SLAT-Thinking tends to allow a probability of nearly 50% for this occurrence. Although SLAT-Thinking has three answer options, the third option is not plausible, since it is against the test instructions, that is, the respondents must read the text and infer whether each statement represents or not the author's thinking only considering the text they have read. Therefore, the statement of each item should represent or not the author's thinking in the specific text read by the respondent. As a consequence of this high probability to answer each item correctly by chance, the test tends to produce many false-positive responses, which support the erroneous inference that some respondents have a strong deep approach when, in fact, they have a weak or a moderate deep approach.

To solve this issue, Gomes, Nascimento and Araujo created the SLAT-Thinking Second Version (SLAT-Thinking 2). In short, this new test is very similar to the first version, but some modifications

have been made: the two texts and all their items were revised, new items were created, and the answer options were increased from 3 to 7, diminishing the probability of respondents answering correctly by chance. The creation of the answer options was guided by theoretical processes related to motivational and strategic aspects of the surface approach in the ability of identifying the author's thinking in a given text. The new items enabled the creation of two forms of the test. Form A is composed of one of the revised texts and a set of items and form B comprises the other revised text and another set of items. This structure enables SLAT-Thinking 2 to be used in interventions which intend to promote students' approaches to learning by applying a pre and post-test design. Therefore, SLAT-Thinking 2 has achieved three improvements in relation to the original version. First, it diminishes the probability of respondents answering correctly by chance. Second, it enables clinicians and educators to assess qualitative processes that inform the errors produced by respondents. Thus, SLAT-Thinking 2 is a promising tool for educational diagnostics. This is very important because, despite the advances in studies addressing the internal and external validity of evaluation (Golino & Gomes, 2014c, 2016; Gomes & Almeida, 2017; Gomes & Borges, 2008b; Gomes, Golino, & Peres, 2016, 2018, 2020; Gomes & Jelihovschi, 2019; Gomes, Lemos, & Jelihovschi, 2020; Pires & Gomes, 2017), there are very few tests that enable proper analysis of the processes related to the learning and development of students in the educational field. This scarcity is a huge issue, since the creation of relevant sets of instruments that measure processes tend to promote scientific advances, such as in music therapy (André, Gomes, & Loureiro, 2017, 2018, 2020a, 2020b, 2020c; Rosário, Gomes, & Loureiro, 2019). Third, SLAT-Thinking 2 allows the assessment of interventions on students' approaches to learning and on the development of cognitive abilities (Gomes, 2007; Gomes, Golino, Santos, & Ferreira, 2014), in addition to making the evaluation of student more feasible (Ferreira & Gomes, 2017; Gomes, Araujo, Nascimento, & Jelihovschi, 2018; Gomes, de Araujo, Ferreira, & Golino, 2014; Gomes & Golino, 2015; Jelihovschi & Gomes, 2019). In summary, the objective of this study is to present SLAT-Thinking 2 to the scientific community and show evidence of its content validity. This paper is the first part of a series of necessary studies on the internal and external validity of SLAT-Thinking 2 that aims to make this test available to psychologists and educators.

**Presenting the Rationality of SLAT-Thinking 2**

As previously mentioned, SLAT-Thinking 2 differs from its first version in five mains aspects: (1) the number of options for answering each item has been largely increased; (2) presence of new items; (3) existence of form A and form B; (4) the response options are theoretically based on processes that are attributed to the surface approach in the ability of identifying the author's thinking in a given text; (5) the two texts have been revised and slightly changed.

In addition to these modifications, there is a sixth change in relation to the first version of the test. In SLAT-Thinking, respondents only had to choose between the options "represent", "does not represent", or "it is not possible to know whether the statement represents or not the authors' thinking".

In SLAT-Thinking 2, the seven options are composed of three options that affirm that the statement of the item represents the author's thinking in a given text, as the other three options affirm that the statement does not represent the author's thinking. Beyond the terms "represents" or "does not represent", these six options have an argumentation that sustain why the statement represents or not the author's thinking in a given text. These argumentations were created through a theoretical postulate that assumes the existence of different processes related to the surface approach in identifying the author's thinking. These argumentations allow a suitable assessment of processes that drive the respondent to make errors, enabling further understanding about the causes of these errors. Besides the six aforementioned answer options, there is a seventh option which claims that none of the six previous options are correct.

This test aims at investigating your ability to identify whether the given statements represent or not the author's thinking contained in a given text. Below the text there is a sequence of items that shows an assertion and a set of statements that support that the item assertion represents or not the author's thinking contained in a given text. Read the text and answer the items that refer to it. Each statement is followed by an argument that may or may not be able to support why the assertion represents or not the author's thinking. If you think the answer option is correct and that the argument that follows is able to support this stand, then you should place an X in the parentheses associated with such option. Here is an example:  
Text X.  
Maria is a young adult (**Phrase 1**). She does not like chocolate because her father forced her to eat chocolate when she was a child. (**Phrase 2**).  
**Assertion 1.** Maria likes chocolate  
( ) **REPRESENTS:** Maria used to eat chocolate when she was a child, therefore, she likes chocolate.  
( ) **REPRESENTS:** If Maria did not like chocolate she would not received chocolate from her father.  
(X) **DOES NOT REPRESENT:** The excerpt from phrase 2 "She does not like chocolate" denies Statement 1.  
( ) **DOES NOT REPRESENT:** Both phrases 1 and phrase 2 are necessary to reach the conclusion shown in Statement 1.  
Suppose you are answering Assertion 1 and agrees that it does not represent the author's thinking because the excerpt from phrase 2 "She does not like chocolate" denies Assertion 1,so you place an "X" in the parenthesis of the statement that represents this answer option. **There is only one correct answer per assertion.**

Figure 2. Instructions of SLAT-Thinking 2

Table 1. Error processes used as the basis for creating the incorrect answer options

Error process	Description	Example
1. The reader does not capture the meaning of the terms	The reader does not decode the meanings of the terms, which prevents a logical analysis. In many cases in which the meaning of terms is not captured, the reader scans the text for the explicit presence of a certain term and does not recognize the presence of another term that has the same meaning.	Example 1: "Everyone likes strawberries. John is a friend of Charles." The lack of understanding that John and Charles are people prevents the reader from concluding that they both like strawberries. Example 2: "It is very warm today" and "It is very hot today" express the same meaning. However, the reader can not understand that these sentences are different only because the words "hot" and "warm" are different.
2. The reader does not differentiate the meaning of the terms	It occurs when the reader assumes that terms with different semantics express the same meaning. While in error process 1 the reader does not understand what the terms mean, in this process they confuse the meaning of the terms.	"John likes cold things". When reading this sentence, the reader assumes that John likes "ice cream", indicating that he does not differentiate the meaning of "ice cream" from that of "cold things".
3. Projection of thought	It occurs when the reader projects their thought in the author's thought.	"Maria likes chocolate and popsicles". Since the reader believes that those who like chocolate and popsicles are addicted to sweets, they conclude that "Maria is addicted to sweets" and that this is the author's thought.
4. Refinement of argument	The reader adds new arguments, unconsciously, seeking to support or improve some logical relation supposedly presented by the author. This addition is understood by the reader as an argument of the author. Although every refinement of argument includes a projection of thought, the refinement process differs from the previous one, because in this process the reader correctly recognizes the relations presented by the author and enhances their argument.	The reader reads the phrase "Men are sexist" and interprets that the author means that most men are sexist, but not all. After all, the reader understands that stating that all men are sexist is a very strong and perhaps inappropriate statement.
5. False causality	It occurs when the reader assigns a relation of causality when only one association is established. This error process also encompasses the non-differentiation of the meaning of the terms, since the reader confuses the terms that establish the causality relation with those that define the relation of association in order to commit this error.	"People who frequently eat chocolate are happier". The reader concludes that eating chocolate frequently causes happiness.
6. The reader does not identify some relations	It occurs when some relation (other than causality) presented by the author is not identified by the reader, resulting in inadequate logical conclusions.	"Maria does not like ice cream; Maria thinks ice cream tastes bad" The reader believes that without the first sentence it is not possible to conclude whether Maria likes ice cream or not.
7. Wrong logical conclusion	The reader correctly identifies the terms, but establishes an illogical conclusion.	"All men are mortal. Socrates is a man". The reader articulates the assumptions wrongly and concludes that Socrates is immortal, which would not be logically possible.

Figure 2 shows the instructions of SLAT- Thinking 2 and an example of item. This item is different from the items of the test that will be answered by the respondent, since it has only four answer options. The smaller number of options in this item was considered adequate and sufficient by the authors to explain to the respondents the structure of the test and how it should be performed.

SLAT-Thinking 2 postulates the presence of seven error processes related to the surface approach in identifying the author's thinking in a given text. Each answer option was created to be a marker of one of these seven error processes. The list of these error processes, their descriptions and examples are shown in Table 1. It is important to highlight that the items do not have a balanced number of answer options in terms of error processes. Certain items have more answer options related to the error process of "The reader does not capture

the meaning of the terms in the text", while other items have more answer options related to the error process of "False causality" or "Projection of thought", and so on. It is worth highlighting that, even though SLAT-Thinking 2 assumes that each answer option was created to be a marker of a certain error process, it is possible that the respondent marks certain answer option guided by another error process or by guess.

As previously mentioned, SLAT-Thinking 2 comprises form A and form B. The selection of error processes that would be used to create incorrect answer options for each item varied according to the test form. This variation was due to specific characteristics of the text of each form and the items related to it. The "False causality" error process was used only to answer options in form B. Table 2 shows the frequency of error processes in the whole test, as well as in form

A and form B. Only the target error processes have been counted and categorized in each answer option.

**Table 2. Frequency of error processes**

Error process	Form A	Form B	Total
The reader does not capture the meaning of the terms	8	6	14
The reader does not differentiate the meaning of the terms	10	2	12
Projection of thought	42	29	71
Refinement of argument	1	8	9
False causality	0	10	10
The reader does not identify some relations	8	9	17
Wrong logical conclusion	11	22	33

## METHODS

**Participants:** Nine judges (56% male) aged 21 to 69 years evaluated the content validity of SLAT-Thinking 2. Four of them were psychologists while the others were an economist, an educator, a statistician, an engineer, and an undergraduate student. Seven of these judges already had or were coursing master's or doctorate degrees.

### Instrument

**SLAT-Thinking 2:** The Students' Learning Approach Test 2 - Identification of Thinking Contained in Texts (SLAT-Thinking 2) is an assessment based on performance used to measure students' approaches to learning in identifying the author's thinking contained in a given text. It was developed by C. M. A. Gomes, D. Nascimento, and J. Araujo, at the Laboratory for Cognitive Architecture Mapping (Laboratório de Investigação da Arquitetura Cognitiva – LAICO) of the Federal University of Minas Gerais, Brazil, in 2020. The test comprises two forms: A and B. Each of these forms contains a specific reference text. Form A has 16 items while form B has 17 items. Each item has a statement that may represent the author's thinking in a given text, as well as seven answer options, three of them justifying that the statement presented by the item represents the author's thinking in a given text, three justifying that the statement presented by the item does not represent the author's thinking, and one option claiming that "none of the previous options" are correct. The respondent's task is to read the text presented by the test, as well as each item related to it and its answer options, and mark one answer option per item. If the respondent answers an item correctly, the item is scored as 1; otherwise, the item is scored as 0. It is expected that higher raw scores indicate greater deep approach.

**Data collection:** SLAT-Thinking 2 was sent to the judges by email together with a content validity protocol which contained both forms of the test and a description of the error processes that guided the creation of the incorrect answer options to the items. The protocol asked the judges to evaluate: (1) the description of each error process; (2) whether the instructions of SLAT-Thinking 2 were clear and easy to understand; (3) whether the texts contained some ambiguity; (4) whether they agreed with the answer key, as well as with the error process attributed to each incorrect answer option. The judges were instructed to take the test first and then complete the tasks of the content validity protocol. After that, two authors of the test scheduled a meeting with each judge. At these meetings, the judges should present suggestions to improve the test. Regarding the points of disagreement between the judge and the authors, the judge exposed the arguments that supported their point of view, as well listened to the authors' arguments of the test. If a disagreement pointed out by the judge remained unsolved after the individual meeting with the two authors of the test, the issue was discussed at a later meeting by the full team of test authors and, if necessary, modifications were made.

## RESULTS AND DISCUSSION

To summarize the issues raised by the judges, the authors created six categories. Four of these categories represent suggestions given by the judges to reformulate the wording of some part of the test or the description of the error processes. The other two categories represent the disagreements of the judges regarding the answer options of the items. Table 3 presents these categories and the quantification of suggestions and disagreements presented by each judge.

The category "Suggestions: wording of the instructions" shows whether the judge made suggestions to reformulate the test instructions. It has a binary score, in which "no suggestion was presented" is 0 and "suggestions were presented" is 1. Six judges gave some suggestions to reformulate the test instructions. Most of these suggestions referred to the example item pertaining to the instructions.

This example item had only 2 answer options: one that sought to justify that the statement that comprised the item represented the author's thought contained in the example text and one that sought to justify that the statement did not represent it. Since the actual test items had seven answer options, some judges believed that the example item was too simple and not able to clearly represent the task to be performed on the test. To solve this issue, two more answer options were added. The final version of the example item can be seen in the test instructions presented in Figure 2. Other suggestions referred to the phrasing preferences of certain judges and, therefore, did not represent relevant suggestions to the wording of the test instructions.

The category "Suggestions: wording of error processes" shows the number of text reformulation suggestions presented by each judge regarding the description or exemplification of the error processes. Each judge could make from 0 to 7 suggestions, one for each error process, and, considering the number of judges, the total of suggestions could vary from 0 to 63. In total, the judges made only four suggestions. The three test authors reviewed each of the proposed suggestions and, if there was a consensus among them that a given proposal would make the description or exemplification of an error process clearer, it was accepted. The final version of the error processes descriptions and exemplification has already been presented in Table 1.

The category "Suggestions: wording of the texts" shows the suggestions to reformulate the texts in form A and form B of the test. It represents an ordinal distribution, where 0 is equivalent to "there were no suggestions to reformulate any of the texts", 1 is equivalent to "there were suggestions to reformulate one of the two texts", and 2 is equivalent to "there were suggestions to reformulate both texts". There was one suggestion to reformulate the text in form A and two suggestions to reformulate the text in form B. Regarding the text in form A, one of the judges suggested adding an adjunct to a noun in the text in order to avoid ambiguity. Regarding the text in Form B, two judges suggested adding an adjunct to a noun in the text, since that noun could convey a feeling of incompleteness to the reader. Both suggestions were accepted and the texts were changed.

The category "Suggestions: wording of the items" shows the number of items for which a given judge presented reformulation suggestions. These suggestions were restricted to the items statement and did not cover the answer options. Each judge could present one suggestion per item and, considering the two forms of the test and the number of judges, the total number of suggestions could range from 0 to 297. In total, the judges presented only 18 reformulation suggestions. The suggestions that demonstrated the presence of terms in the item that could invalidate the correct answer option led to a change of the item. Based on them, items 4, 5 and 10 of form A of the test were changed. Suggestions related to the clarity of items that reflected particular preferences of certain judges or that would make the item considerably easier were not considered sufficiently relevant by the test authors to justify a change of items.

**Table 3. Suggestions and disagreements presented by the judges**

Judge	Suggestions: wording of the instructions	Suggestions: wording of the error processes	Suggestions: wording of the texts	Suggestions: wording of the items	Disagreements	Disagreements after discussion with authors
1	1	1	1	3	24	8
2	1	0	0	2	54	3
3	1	0	1	1	27	1
4	1	2	0	5	25	14
5	0	0	1	2	3	1
6	1	1	0	1	1	0
7	0	0	0	1	2	0
8	0	0	0	3	13	6
9	1	0	0	0	18	1
Total	6	4	3	18	167	34

The category “Disagreements” represents the number of disagreements of the judge in relation to the answer options before the judge discussed their responses with the test authors. The category “Disagreements after discussion with the authors” represents the number of disagreements of a given judge that remained even after the discussion with two test authors. Each judge could present one disagreement per answer option, so the total number of possible disagreements per judge could vary between 0 and 198. Only 167 disagreements were presented before the discussion between judges and test authors and only 34 disagreements remained after the discussion. Considering the two forms of the test after discussion, 18 items did not retain any disagreement, 10 items retained disagreements of one judge, one item retained disagreements of two judges, and four items retained disagreements of three judges. In other words, of the total of 33 items, 15 retained disagreements of at least one judge. The latter were individually reviewed by the three test authors after the meetings with the judges. The group of disagreements retained in each item was characterized by the test authors in one of the following categories: (1) “The term used in the wording of the item changes the correct answer option”; (2) “The correct answer proposed in the answer key is inadequate”; (3) “Lack of clarity” (4) “Judge’s own conception”; and (5) “Erroneous meaning attributed by the judges to one of the terms of the item or the text”. The first category occurred when a term used in the wording of an answer option could invalidate the correct answer originally proposed by the authors. It covered three of the items that retained disagreements and these items had their answer options reformulated. The second category occurred when the answer option proposed as correct in the answer key was inadequate because it was incorrect. It covered just one of the items that retained disagreements and the correct answer for this item was changed. The third category occurred when a demonstrative pronoun used in one of the answer options to the item was not easily interpretable according to the judge. It covered only one of the items that retained disagreements and, to make the answer option clearer, the wording that caused confusion was rewritten. The fourth category occurred when the judge presented a personal conception that biased their analysis, that is, the judge’s own analysis presented a projection of thought as described in this article. It covered seven of the items that retained disagreements. The fifth category occurred when the judge attributed an inappropriate meaning to one of the terms of the item or the text which corrupted their analysis. It covered four of the items that retained disagreements<sup>1</sup>. Items related to the fourth and fifth categories were not changed.

## CONCLUSION

This paper presented SLAT-Thinking 2 and evidence concerning its content validity. SLAT-Thinking 2 brings many improvements to the field of students’ approaches to learning.

<sup>1</sup> One item that retained disagreements was covered in the category “Judge’s own conception” and the category “Erroneous meaning attributed by the judges to one of the terms of the item or the text”, since it contained disagreements pertinent to both categories. Therefore, the total frequency of categories related to disagreements is 16, one point higher than the number of items that retained disagreements.

First, it makes available to the researchers a measurement of approaches to learning based on achievement whose items have low probability to be correctly answered by chance. Second, since the answer options are guided by theoretical error processes regarding the surface approach, SLAT-Thinking 2 enables clinicians and educators to assess qualitative processes that inform the errors produced by respondents, being a promising tool for Educational Psychology diagnosis. Third, SLAT-Thinking 2 allows the assessment of interventions on students’ approaches to learning and on the development of cognitive abilities, since this test is composed of two forms (A and B). This paper is the first part of a series of necessary studies regarding the construct validity of SLAT-Thinking. Further studies should investigate the structural validity of this test, as well its invariance and external validity. We hope this presentation encourages researchers to use tests of approaches to learning based on achievement in order to avoid the exclusive use of self-report assessment in this area.

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