Research Article https://doi.org/10.12973/eu-jer.10.3.1589

European Journal of Educational Research
Volume 10, Issue 3, 1589 - 1597.
ISSN: 2165-8714
http://www.eu-jer.com/

# Adaptation and Evaluation of Psychometric Properties of Students' Approaches to Learning in a Sample of Mexican High School Students

**Luz Marina Méndez Hinojosa***
Universidad Autonoma de Nuevo Leon,
MEXICO

*Received: October 4, 2020 ▪ Revised: February 8, 2021 ▪ Accepted: July 9, 2021*

**Abstract:** The reason of to be of any educational model is to ensure that its students are self-regulated, which implies the setting of objectives, the monitoring of their actions in order to reach them, the control of their cognitive processes, the use of diverse learning and motivation skills. One way to collaborate in this is to evaluate the student's current situation in order to intervene. Due to the above, the purpose of the study is to determine validity and reliability of the scale Students' Approaches to Learning (SAL) in Mexican students. The SAL was applied to 894 high school students. Considering the results, the SAL presents good functioning and acceptable psychometric properties. In relation to the internal structure, the results support the composition of the 14 sub-factors of SAL, which is consistent with the original study. The results obtained have enough empirical support to interpret the construct of learning approaches from a multidimensional point of view.

**Keywords:** *Approaches to learning, high school students, learning, scale.*

**To cite this article:** Méndez Hinojosa, L. M. (2021). Adaptation and evaluation of psychometric properties of students' approaches to learning in a sample of Mexican high school students. *European Journal of Educational Research*, *10*(3), 1589-1597. https://doi.org/10.12973/eu-jer.10.3.1589

## Introduction

It is a fact that education has been changing greatly during the last two decades. In current educational models, especially in the competency-based model, the focus of the learning-teaching process has stopped being only the teacher and has given the place to the students, who are now responsible for their own learning. Demanding to the students of all educational levels, but especially the ones from high school and college, the need for cognitive and metacognitive skills, that allow them to evaluate and to take charge of their learning process and build their own knowledge (Salinas et al., 2018).

Specifically, the goal is for the students to become self-regulated, which implies the setting of objectives, the monitoring of their actions in order to reach them, the control of their cognitive processes, the use of diverse learning and motivation skills. By doing so the student becomes an active agent of his own learning and his academic performance (Hernández & Camargo, 2017; Nuñez et al., 2017).

For the student to become self-regulated, some learning strategies need to be known. The learning strategies are procedures that the student does in a conscious and intentional manner with the objective of acquiring concepts. Multiple types of strategies exist, Mayer and Westein (1986) presented a categorization that has been retaken by most of the experts in the subject, which is categorized in:

*Repetition strategies*: These type of strategies are used when the learning objective is the mechanical repetition of information. Including activities such as coping, underlining or highlighting the material presented in class; as well as repeating the material out loud and taking notes.

*Elaboration strategies:* These type of strategies help students to make connections between the new material and what they already know, or at least, help them to transfer it into other contexts. The strategies in this classification can

* **Correspondence:**
Luz Marina Méndez Hinojosa, Universidad Autonoma de Nuevo Leon, Facultad de Psicologia, Mexico. ✉ lucymendezhinojosa@hotmail.com

include, paraphrasing, resuming, creating analogies, establishing relationships between topics, taking generative notes, and answering questions.

*Organizational strategies:* These strategies include a hierarchy of information. The activities related to these types of strategies involve the identification of main ideas, relating concepts to each other and organizing them in a manner that facilitates encoding and memory. Including the creation of different diagrams and hierarchy figures with the inclusion of subordinate and superordinate concepts.

The current teaching-learning processes, require the student to not only be able to utilize the different learning strategies, but also to develop control strategies, which means that it is precise for the student to execute behaviors related to planning and execute the study, as well as to evaluate themselves during the process and the results obtained (Winne, 2001).

Nonetheless, the knowledge of these learning strategies is not enough for the student to generate their own learnings; promoted actions aimed to achieve academic goals is needed. Many authors are according with The Self-Determination Theory (Deci & Ryan, 2000), which considers The Self-Determination Theory considers motivation as a "Continuum in which different types of behavior regulation develop according to the perceived locus of causality" (Turban et al., as cited in Vergara-Morales et al., p. 464, 2019).

According to these authors, people's behavior can be divided in internal casualty and external casualty. The first one can be defined as the quality and intensity of one's energy that drives the person in to a specific action. As for the external casualty, it is divided in two: introjected regulation, which means, the efforts directed towards the realization of conducts to avoid guilt, shame, etc. or to increase self-esteem; and external regulation, which is based on getting stimuli or pleasant situations or avoiding stimuli non pleasant situations (Vergara-Morales et al., 2019). Translated to the classroom and to learning situations, the internal causality motivation, or in simple, words, internal motivation is when the student studies driven by his own desire to discover new things and learn. On the other side the external motivation (motivation by external causality) is to earn something external, such as a prize, grade or social recognition or to avoid a punishment or reprimand.

Nevertheless, in high school and college it is common to observe instrumental motivation as the predominant type of motivation, because it implies that the student carry out the action only if this will bring him a future benefit. Which leads to categorize instrumental motivation as intrinsic motivation. That is because learning is not an objective by itself, but an instrumental activity. The students do not prepare themselves and do learning activities due to pleasure, but because they will have positive consequences in the future (Lens et al., 2009).

According to Panadero and Alonso-Tapia (2014) beliefs, values, interests and goals are the personal variables that generate and maintain the motivation to finish a task. It could be assured that these variables are highly involved in the perceived self-confidence that students feel to finish specific tasks. The self-efficiency expectations are beliefs over one's capacity to learn and do something in an effective way (Vázquez, 2009). Taking as a reference point the theorized concept by Bandura (1982) self-efficiency can be defined as a psychological mechanism which influences performance, effort, attention, and persistence of a person against the efforts required by the environment.

Another variable that impacts the motivation to learn is the academic self-concept, as affirmed by Iniesta and Mañas (2014) the better the students' academic self-perception the better the results they get. According to González et al., (1997) the self-concept is understood as the image each person has of oneself, which has been formed by integrated accumulation of internal and external information, previously judged and evaluated according to one's processing information way and values. The academic self-concept therefore is conceptualized as the image someone has about their academic performance.

Lastly, it is precise to take into consideration the learning styles or preferences that the student has and which regulate the way they learn. According to Alonso et al. (1999) the learning styles or preferences are the physiological, cognitive, and affective traits, which can be used as relative stable indicators of how individuals perceive and interact with the environment to produce learnings. There are two common learning preferences in the high school level: competitive learning and cooperative learning. Competitive learning elevates academic performance, but it does so by supporting rivalry between classmates. The student tries to outstand, but the motivation that they have does not come from the desire to learn or discover, but they seek to assert itself in front of others.

Different from competitive learning, cooperative learning help the students to improve internal motivation and the desire to learn or discover. Too, cooperative learning have effects in self-esteem and the functioning of intellectual abilities (Ovejero, 1993).

Once revised the different variables or constructs and their relationship with the form of the students learning in the current educational models, it requires a valid and reliable evaluation in Mexico. An evaluation of those variables could lead to a prompt intervention.

The main limitation for the measure of any variable is to have a valid and reliable instrument adapted to the population that is planned to be applied to. That is why the present study has as an objective: adapt and evaluate the psychometric

properties of an instrument that examines the self-regulated learning strategies, motivation, self-confidence and preferences in learning at high school level.

## Methodology

*Research Goal*

The main limitation for the measure of any variable, mentioned in the introduction, is to have a valid and reliable instrument adapted to the population that is planned to be applied to. That is why the present study has as an objective: adapt and evaluate the psychometric properties of an instrument that examines the self-regulated learning strategies, motivation, self-confidence and preferences in learning at high school level.

*Sample and Data Collection*

The incidental sample was composed of 894 students of high school enrolled in four public educational institutions in northern Mexico. In relation to sex, 50.6% were male and 49.4% female. The ages of the participants ranged from 12 to 20 years of age (M = 15.89, SD = .76). The men had a mean age of 15.90 years and the women of 15.87 years. The mean age was statistically equivalent between both sexes, [t (890) = 671, p = .502]. The 894 students were distributed in four semesters (school cycles), the distribution by semesters was as follows: 20.5% in the first semester, 52.2 in the second semester, 16% in the third semester and 11.2% in the fourth semester.

Students 'Approaches to Learning. The Students' Approaches to Learning (SAL) by Marsh et al., (2006) was used. The SAL, in original version, is composed of 52 positive items grouped in four dimensions, which in turn examine 14 constructs or variables. The items have 5 response options. The first 28 items had frequency response options (Almost never, Sometimes, Often, and Almost always). The response options for items 29-52 were graded according to disagreement. All response options were ranging with a score of 4 to 1. The distribution of the items in the 14 constructs can be seen in Table 1.

*Table 1. Distribution of SAL in scales*

| Dimension | Scalas | Item |
|---|---|---|
| Motivation | Instrumental Motivation | 6, 14, 22 |
| | Interest in Reading | 34, 41, 45 |
| | Interest in Mathematics | 29, 38, 49 |
| Learning Strategies | Control Strategies | 3, 13, 19, 23, 27 |
| | Memorization | 1, 5, 10, 15 |
| | Elaboration | 9, 17, 21, 25 |
| | Effort and Perseverance | 7, 12, 20, 28 |
| Self-Belief | Perceived Self-Efficacy | 2, 8, 18, 26 |
| | Control Expectation | 4, 11, 16, 24 |
| | Self-Concept in Reading | 33, 37, 51 |
| | Self-Concept in Mathematics | 40, 43, 46 |
| | Academic Self-Concept | 31, 35, 48 |
| Learning Preference | Cooperative Learning | 30, 36, 42, 47, 50 |
| | Competitive Learning | 32, 39, 44, 52 |

*Procedure*

1) Back translation

To translate the instrument, it was presented to two translators who speak the languages involved. The first translator translated the SAL from the English language into the Spanish language. A second translator translated it from the Spanish language into the English language, without having seen the instrument in its original version (English). This is done in order to determine if the communicated meaning is equivalent to the meaning and style of the source language (Said, 2002, as cited in Rosyidah et al., 2017).

2) Content validity

Researchers who are experts in the constructs that SAL examines analyzed the items to determine if they actually measured the construct they intended to measure.

2) Cultural adjustment

A cultural adjustment and verification of the understanding of the items was carried out by applying the instrument to 20 students with characteristics similar to the sample described above, making the pertinent adjustments based on the responses.

3) Application

Before applying the instrument, consent was requested from the directors of the faculty, professors, the parents of the students and the students. In the informed consent, the characteristics and objectives of the study were mentioned. During the application, they were informed that the data obtained would be treated with strict confidentiality, ensuring the anonymity of the participants. The students responded to the instrument in a self-administered way.

*Analyzing of Data*

The confirmatory factor analysis (CFA) was carried out using the AMOS v24 statistical package in order to explore the goodness of fit of the 14-dimensional model. CFA was performed based on Pearson's r correlation matrix and maximum likelihood estimation (Hair et al., 2014). The goodness of fit values determined were: chi-square ($\chi^2$), however, considering that $\chi^2$ is sensitive to sample size (Fujikoshi, 2000), the relative chi-square was reported ($\chi^2/df$), which expresses an adequate model fit by presenting values between two and three, or more flexibly, with values ≤ 5 (Carmines & McIver, 1981). The goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the comparative fit index (CFI), the normative fit index (NFI), the mean square error of approximation (RMSEA) were calculated and the standardized mean square residual (SRMR). Values indicative of good fit were used, which are for the case of GFI, CFI and NFI ≥ .90, AGFI its value must be ≥ .80 (Hu & Bentler, 1999; Kline, 2011) and RMSEA and SRMR ≤. 08 (Hu & Bentler, 1999). In relation to the factorial loads (λ´s), values ≥ .40 were considered as adequate (MacCallum et al., 1999).

Once the factorial structure was verified, the internal consistency indices were obtained with Cronbach's Alpha and with the composite reliability. DeVellis (2003) states that below .60 the liability is unacceptable, from .60 to .65 it is undesirable, between .70 to .80 it is substantial and from .80 to .90 it is very good. Furthermore, this author also highlights that there is no agreement among researchers regarding the minimum values of acceptance of the Cronbach's Alpha coefficient. However, on the other hand, there is a clear consensus with the fact that those values that are more close to 1 show a higher degree of reliability.

The typical scores were calculated to determine by means of the Z score, the existence of atypical cases that had a value ± 3 (Tabachnick & Fidell, 2001) and in the same way the Mahalanobis distance procedure ($D^2$) was performed to search for atypical cases multivariate that exceeded the significance limit p <.001 (Uriel & Aldas, 2005).

## Results

For the CFA, each of the 52 items of the SAL was loaded into 14 latent variables that represent the 14 dimensions of the scale (see figure 1). The goodness of fit indices revealed that the model of 14 correlated factors fits the data correctly ($\chi2$ = 2492.78, df = 1084, p = .000; $\chi2$ / df = 2.30; GFI = .90; AGFI = .89; CFI = .91; NFI = .85; RMSEA = .04 and SRMR = .04). The value of the normative fit index (NFI) was close to the desired value (≥ .90), however, this value is considered acceptable and does not affect subsequent estimates. The standardized factor loads (λ´s) for the 14 factor model were: Instrumental Motivation (F1; I6 = .62; I14 = .68; I22 = .73), Interest in Reading (F2; I34 = .79; I41 = .80; I45 = .74;), Interest in Mathematics (F3; I29 = .46; I38 = .81; I49 = .74), Control Strategies (I3 = .50; I13 = .55; I19 = .56; I23 = .57; I27 = .41), Memorization (F5; I1 = .71; I5 = .68; I10 = .51; I15 = .47), Elaboration (F6; I9 = .60; I17 = .53; I21 = .70; I25 = .71), Effort and Perseverance (F7; I7 = .65; I12 = .65; I20 = .69; I28 = .65), Perception of Self-efficacy (F8; I2 = .52; I8 = .55; I18 = .59; I26 = .63), Expectations Control (F9; I4 = .52; I11 = .54; I16 = .54; I24 = .62), Self-concept in Reading ( F10; I37 = .70; I51 = .96), Self-concept in Mathematics (F11; I40 = .54; I43 = .85; I46 = .81), Academic Self-concept (F12; I31 = .61; I35 = .65; I48 = .66), Cooperative Learning (F13; I30 = .55; I36 = .55; I42 = .66; I47 = .61; I50 = .46) and finally Competitive Learning (F14; I32 = .67; I39 = .80; I52 = .73). The scale had an average λ of .64, which is very close to the required value of .70 (Hair et al., 2014). It is important to note that in order to achieve the goodness of fit of the model, it was necessary to eliminate items I33 of the Self-concept in Reading dimension, since their factorial load was very low (<.10) and I44 corresponding to the Competitive Learning factor due to its low factorial load (<.30). By eliminating these reagents, a good goodness of fit could be achieved for the model.

The internal consistency indices obtained with Cronbach's alpha and the composite reliability are shown in Table 2. As can be seen in Table 2, the highest reliability index was in self-concept in mathematics and the lowest in control expectations.

*Table 2. Internal consistency indices of SAL*

| Dimension | Scales | Cronbach's Alpha | Composite reliability |
|---|---|---|---|
| Motivation | Instrumental Motivation | .71 | .71 |
| | Interest in Reading | .82 | .82 |
| | Interest in Mathematics | .71 | .72 |
| Learning Strategies | Control Strategies | .64 | .65 |
| | Memorization | .67 | .69 |
| | Elaboration | .72 | .73 |
| | Effort and Perseverance | .76 | .75 |

*Table 2. Continued*

| Dimension | Scales | Cronbach's Alpha | Composite reliability |
|---|---|---|---|
| Self-Belief | Perceived Self-Efficacy | .67 | .66 |
| | Control Expectation | .57 | .64 |
| | Self-Concept in Reading | .80 | .82 |
| | Self-Concept in Mathematics | .85 | .85 |
| | Academic Self-Concept | .67 | .70 |
| Learning Preference | Cooperative Learning | .70 | .70 |
| | Competitive Learning | .77 | .78 |

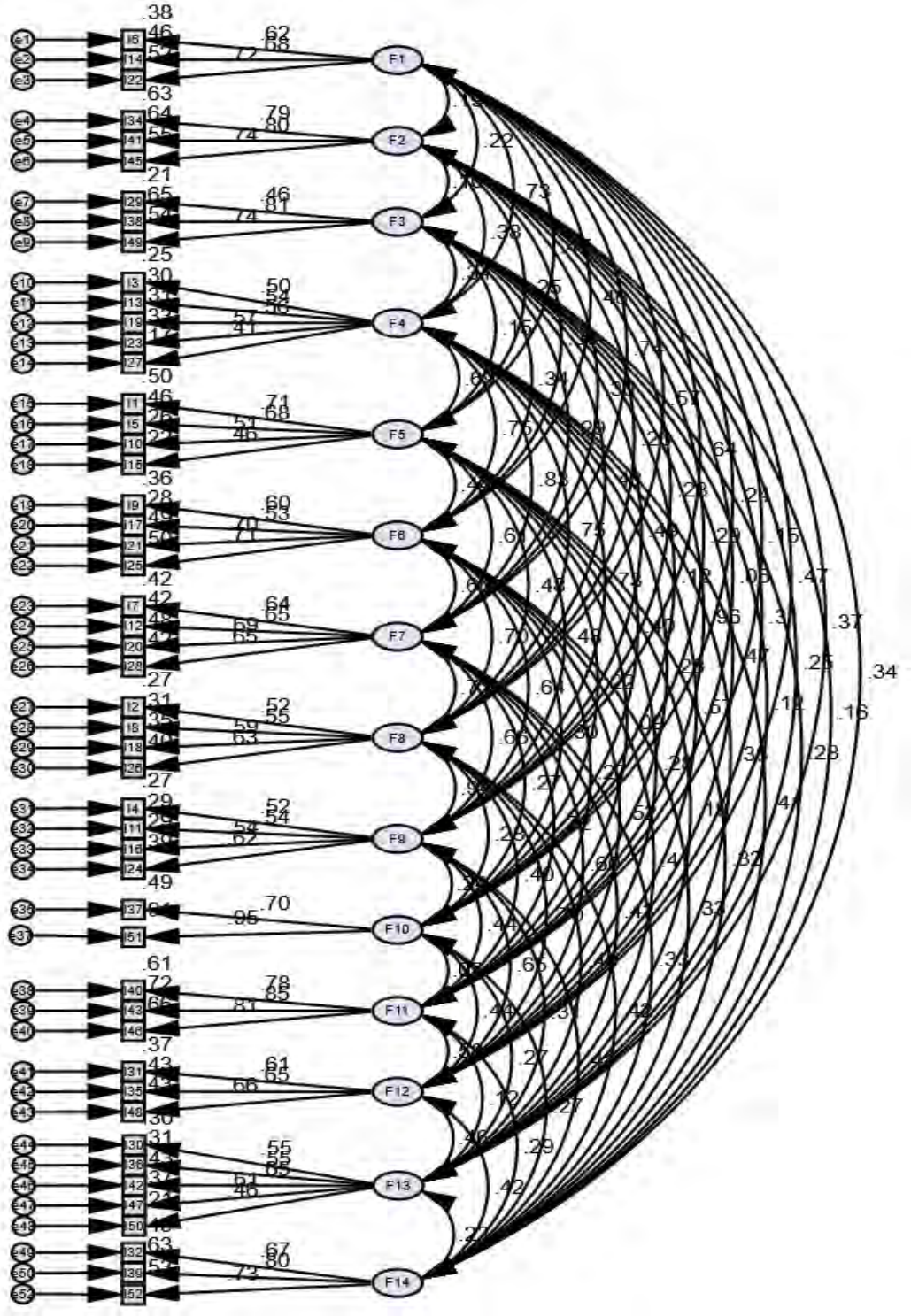


*Figure 1. Factorial structure of SAL*

Regarding the descriptive statistics, as shown in table 3, the items with the highest mean were items 14 (M = 3.46 SD = .708) and 22 (M = 3.48, SD = .699) and the item with mean item 37 was lower (M = 2.49, SD = 1.024). The skewness and kurtosis of the items of the items was adequate, since none presented a value ≤ ± 1.5 (Kline, 2011). This means that the items that make up the scale are not redundant measures. After reviewing the Z-score and Mahalanobis distance statistics, the non-existence of atypical cases in the study sample was established.

## Discussion

The importance of the study lies in the dimensions of the SAL. Students who plan and monitor their learning are considered self-regulated students and their attitudes lead them to be responsible for their learning and persist in academic tasks; they are effective students who continuously produce their own learning and are motivated due to the fact that their judgments about their competence of carrying out the task (perception of self-efficacy) are high (Pintrich, 2000).

The objective of the present study was to examine the validity and reliability to count with an adequate measure for the SAL in Mexican students. This scale can be used as a screening tool or with research purposes. Considering the obtained results, the SAL presents good functioning and acceptable psychometric properties.

In relation to the internal structure, the results support the composition of the 14 sub-factors of SAL, which is consistent with the original study (Marsh et al., 2006). The results obtained have enough empirical support to interpret the construct of learning approaches from a multidimensional point of view. As well, the results are as expected for the screening measures (Domínguez-Lara, & Merino-Soto, 2017) and enough for its application in research contexts.

## Conclusion

The objective of the present study was to examine the validity and reliability to count with an adequate measure for the SAL in Mexican students. This scale can be used as a screening tool or with research purposes. Considering the obtained results, the SAL presents good functioning and acceptable psychometric properties.

In conclusion, the results of the analysis of reliability and CFA of the Mexican version of SAL presents good psychometric properties to measure the learning approaches in high school students, nonetheless, it is necessary to continue performing more psychometric studies on diverse student populations. But the implementation of self-reports measures such as SAL in investigations on a national level, taking into consideration its easy application, represents a line of investigation that could be of great interest for private and public education.

## Recommendations

It is recommended to continue applying SAL in high schools. It would be favorable if the results obtained were correlated with the academic performance. In this way, it will be possible to suggest to educational institutions the insertion of subjects that develop self-regulation in students through training: learning strategies and increasing motivation and the perception of self-efficacy. It is also suggested to validate the SAL at the undergraduate level because at this level it is necessary for the students to have enough metacognitive skills that allow them to continue with their learning throughout their lives

## Limitations

The limitation of the study is that it was only applied to high school students. Furthermore, the SAL is a self-administered instrument, which can lead the student to answer in terms of social desirability.

## References

Alonso, C., Gallego, D., & Honey, P. (1999). *Los estilos de aprendizaje. Procedimientos de diagnóstico y mejora* [Learning styles. Diagnostic procedures and improvement]. Ediciones Mensajero.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*(2), 122-147. https://doi.org/10.1037/0003-066X.37.2.122

Carmines, E. G., & McIver, J. P. (1981). Analyzing Models with Unobserved Variables: Analysis of Covariance Structures. In G. W. Bohrnstedt, & E. F. Borgatta (Eds.), *Social Measurement: Current Issues* (pp. 65-115). Sage Publications, Inc.

Deci, E. L., & Ryan R. M. (2000). Target article: The "what" and "why" of goal pursuits: human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01

DeVellis, R. F. (2003). *Scale development: Theory and applications*. Sage Publications.

Domínguez-Lara, S. A., & Merino-Soto, C. (2017). Versión breve de la Escala de afrontamiento ante la ansiedad e incertidumbre preexamen (COPEAU) en universitarios peruanos [Short version of the Coping Scale for pre-test

anxiety and uncertainty in Peruvian university students]. *Educación Médica/ Medical Education, 19*(2), 67-72. https://doi.org/10.1016/j.edumed.2017.04.011

Fujikoshi, Y. (2000). Transformations with improved chi-squared approximations. *Journal of Multivariate Analysis, 72*(2), 249-263. https://doi.org/10.1006/jmva.1999.1854

González, J., Núñez, J., González, S., & García, M. (1997). Autoconcepto, autoestima y aprendizaje escolar [Self-concept, self-esteem and school learning]. *Psicotema/ Psicothema, 9*(2), 271-289.

Hair, J., Anderson, R., Tatham, R., & Black, W. (2014). *Análisis multivariante* [Multivariate analysis]. Prentice Hall.

Hernández, A., & Camargo, A. (2017). Adaptación y validación del Inventario de Estrategias de Autorregulación en estudiantes universitarios [Adaptation and validation of the Inventory of Self-Regulation Strategies in university students]. *Psychological Sum/ Suma psicológica, 24*(1), 9-16. https://doi.org/10.1016/j.sumpsi.2017.02.001

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Iniesta, A., & Mañas, C. (2014). Autoconcepto y rendimiento académico en adolescentes [Self-concept and academic performance in adolescents]. *International Journal of Developmental and Educational Psychology/ INFAD Revista de Psicología, 1*(2), 555-556. https://doi.org/10.17060/ijodaep.2014.n1.v2.472

Kline, R. B. (2011). *Principles and practice of structural equation modeling. Guilford Press.*

Lens, W., Paixão, M. P., & Herrera, D. (2009). Instrumental motivation is extrinsic motivation: so what??? *Psychologica/ Psicológica*, (50), 21-40. https://doi.org/10.14195/1647-8606_50_2

MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, *4*(1), 84-99. https://doi.org/10.1037/1082-989X.4.1.84

Marsh, H., Hau, K., Artelt, C., Baumert, J., & Peschar, J. (2006) OECD's Brief self-report measure of educational psychology's most useful affective constructs: cross-cultural, psychometric comparisons across 25 countries. *International Journal of Testing, 6*(4), 311-360. https://doi.org/10.1207/s15327574ijt0604_1

Nuñez, J., Amieiro, N., Álvarez, D., García, T., & Dovarro, A. (2015). Escala de evaluación de la autorregulación del Aprendizaje a partir de Textos (ARATEX-R) [Assessment Scale of Self-Regulation of Learning from Texts]. *European Journal of Education and Psychology*, *8*(1), 9-22.

Ovejero, A. (1993). Aprendizaje cooperative: Una eficaz aportación de la psicología social a la escuela del siglo XXI [Cooperative learning: An effective contribution of social psychology to the 21st century school]. *Psicotema/ Psicothema, 5*(1), 373-391.

Panadero, E., & Alonso-Tapia, J. (2014). How do students self-regulate? Review of Zimmermans's cyclical model of self-regulated learning. *Annals of Psychology/ Anales de psicología, 30*(2), 450-462. https://doi.org/10.6018/analesps.30.2.167221

Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 451-502). Academic Press. https://doi.org/10.1016/B978-012109890-2/50043-3

Rosyidah, M., Kharis, M., & Afifah, L. (2017). Back-translation technique to assess the students' translation of literary text. *International Journal of Language and Linguistics, 5*(1), 25-28. https://doi.org/10.11648/j.ijll.20170501.14

Salinas, A. M., Cárdenas, M., & Méndez, L. M. (2018). Habilidades cognitivas y metacognitivas para favorecer el desarrollo de competencias en estudiantes mexicanos de educación media superior [Cognitive and metacognitive skills to promote the development of competences in mexican students of higher secondary education]. *SocioTam, 28*(1), 159-175.

Tabachnick, B., & Fidell, L. (2001). *Using multivariate statistics.* Harper & Row.

Uriel, E., & Aldas, J. (2005). *Applied multivariate analysis*. Thomson.

Vázquez, A. (2009). Autoeficacia: Acercamiento y definiciones [Self-efficacy: Approach and definitions]. *Psychogent/ Psicogente, 12*(21), 231-235.

Vergara-Morales, J., Del Valle, M., Díaz, A., Matos, L., & Pérez, M. (2019). Perfiles motivacionales relacionados con la satisfacción académica de estudiantes universitarios [Motivational profiles related to academic satisfaction of university students]. *Anales de Psicología/ Annals of Psychology, 35*(3), 464-471. https://doi.org/10.6018/analesps.35.3.320441

Weinstein, C. E., & Mayer, R. E. (1986). The teaching of learning strategies. In M. C. Wittrock (Ed.), *Handbook of research on teaching.* McMillan.

Winne, P. H. (2001). Self-regulated learning viewed from models of information processing. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theoretical perspectives* (pp.153-189). Lawrence Erlbaum.

**Appendix**

*Students' Approaches to Learning (SAL) in Spanish*

| |
|---|
| 1) Cuando estudio, intento memorizar todo lo que pueda. |
| 2) Tengo la seguridad de que puedo entender el material más difícil presentado en textos. |
| 3) Cuando estudio, empiezo por averiguar exactamente lo que necesito aprender. |
| 4) Cuando me dedico a tratar de entender algo muy difícil, puedo aprenderlo. |
| 5) Cuando estudio, memorizo tanto como sea posible. |
| 6) Estudio para incrementar mis oportunidades laborales. |
| 7) Al estudiar, me esfuerzo lo mejor posible. |
| 8) Tengo la confianza de que puedo entender el material más complejo presentado por el maestro. |
| 9) Cuando estudio, intento relacionar el nuevo material con cosas que he aprendido en otras materias. |
| 10) Cuando estudio, memorizo todo el material nuevo de modo que pueda recitarlo. |
| 11) Si decido no obtener malas calificaciones, puedo lograrlo. |
| 12) Al estudiar, me esfuerzo y sigo intentando aunque el material sea difícil. |
| 13) Cuando estudio me esfuerzo por comprobar si recuerdo lo que he aprendido. |
| 14) Estudio para asegurar que mi futuro sea seguro económicamente. |
| 15) Cuando estudio, practico repitiendo el contenido a mí mismo una y otra vez. |
| 16) Si me propongo no equivocarme en ningún problema, lo logro. |
| 17) Cuando estudio, reflexiono sobre cómo esa información podría ser útil en la vida real. |
| 18) Tengo la confianza de que puedo hacer un excelente trabajo en tareas y exámenes. |
| 19) Cuando estudio, intento averiguar qué conceptos sigo sin entender. |
| 20) Al estudiar, intento dar lo mejor de mí para adquirir el conocimiento y las habilidades respectivas. |
| 21) Cuando estudio, trato de entender mejor el material al relacionarlo con cosas que ya sé. |
| 22) Estudio para obtener un buen trabajo. |
| 23) Cuando estudio, me aseguro de recordar lo más importante. |
| 24) Cuando quiero aprender algo bien, lo logro. |
| 25) Cuando estudio, reflexiono sobre cómo el material podría encajar con lo que ya he aprendido. |
| 26) Tengo la seguridad de que puedo dominar las habilidades que me enseñan. |
| 27) Cuando estudio y no entiendo algo busco información adicional para clarificarlo. |
| 28) Al estudiar, realizo mi mejor esfuerzo. |
| 29) Cuando realizo operaciones matemáticas, algunas veces quedo totalmente inmerso en ello. |
| 30) Me gusta trabajar con otros estudiantes. |
| 31) Aprendo rápidamente en la mayoría de las materias de la escuela. |
| 32) Me gusta intentar ser mejor que otros estudiantes. |
| 33) Me va mal en clases sobre otros idiomas. |
| 34) Porque leer es divertido, no quisiera dejar la lectura. |
| 35) Me va bien en la mayoría de las materias de la escuela. |
| 36) Aprendo más cuando trabajo con otros estudiantes |
| 37) Aprendo rápido otros idiomas. |
| 38) Como realizar operaciones matemáticas es divertido, no quisiera detenerme. |
| 39) El intentar ser mejor que otros me hace trabajar bien. |
| 40) Obtengo buenas calificaciones en matemáticas. |
| 41) Leo en mis tiempos libres. |
| 42) Doy lo mejor de mí cuando trabajo con otros estudiantes. |
| 43) Matemáticas es una de mis materias favoritas. |
| 44) Me gustaría ser el mejor en algo. |
| 45) Cuando leo, algunas veces la lectura me absorbe totalmente. |
| 46) Siempre me ha ido bien en matemáticas. |
| 47) Me gusta ayudar a que otras personas trabajen bien en equipo. |
| 48) Me va bien en exámenes en la mayoría de las materias de la escuela. |
| 49) En lo personal, las matemáticas son importantes para mí. |
| 50) Es útil juntar las ideas de todos al trabajar en un proyecto. |
| 51) Obtengo buenas calificaciones en clases sobre otros idiomas. |
| 52) Aprendo más rápido cuando trato de ser mejor que los demás. |