

## Academic stress in Higher Technology students

### *Estrés académico en estudiantes de Tecnología Superior*

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#### **Abstract**

*The main objective of this research was to identify the level of academic stress to students of Higher Technology in Finance of a public higher education institution of the city of Guayaquil-Ecuador. The research design was non-experimental cross-sectional, with a non-probabilistic sample for convenience of 210 students, who have a stay in the institution greater than six months. The process of authorizing, surveying and analyzing information was carried out in the third quarter of 2017. The tool used was the SISCO Academic Stress Inventory designed by Dr. Barraza Macías Arturo of the Universidad Pedagógica de Durango in Mexico. In this investigation, the instrument obtained a high level of reliability with a score of 0.894 according to Cronbach's Alpha. In conclusion, academic stress is present in the middle level, with the demands of the environment such as overload, the major triggers of psychological reactions.*

#### **Keywords**

*Stress, academic stress, education, technology, Psychology.*

**Suggested form of citing:** Álvarez-Silva, Luis Antonio, Gallegos-Luna, Roberto Medardo, & Herrera-López, Pablo Samuel (2018). Academic stress in Higher Technology students. *Universitas*, 28, pp. 193-208.

### **Resumen**

El objetivo principal de esta investigación fue identificar el nivel de estrés académico al que están expuestos los estudiantes de Tecnología Superior en Finanzas de una entidad de educación superior pública de la ciudad de Guayaquil-Ecuador. El diseño de la investigación fue no experimental de corte transversal, con una muestra no probabilística por conveniencia de 210 estudiantes, quienes tienen una permanencia en la institución mayor a seis meses. El proceso de autorización, levantamiento y análisis de la información se realizó en el tercer trimestre del año 2017. La herramienta que se utilizó fue el Inventario de Estrés Académico SISCO diseñado por el Dr. Barraza Macías Arturo de la Universidad Pedagógica de Durango en México. En esta investigación el instrumento obtuvo un alto nivel de confiabilidad con un puntaje de 0.894 según Alfa de Cronbach. En conclusión, el estrés académico está presente en nivel medio, siendo las demandas del entorno tales como la sobrecarga, los mayores desencadenantes de reacciones a nivel psicológico.

### **Palabras clave**

Estrés, estrés académico, educación, tecnología, Psicología.

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## **Introduction**

At present, the circumstances to which the individual is exposed are of multiple characteristics. The subject works in a social reality influenced by different events. The person throughout his life fulfills facets and roles in the family, educational and employment ambits. In the last decades, the conditions have changed in a more competitive way, placing great emphasis on knowledge and work (Matilde, Iglesias, Saletab, & Romaya, 2016).

Knowledge, learning and education are very important facets in the development of people. However, studying for these facets demands time, effort and dedication. Going through these stages, especially higher level education, is a stressful situation for many, since the person is faced with a different form of learning than that which occurred in the previous training stages, an example of this is autonomy, academic support networks, the new environment, teaching models and the development of technical skills (García-Ros, Pérez-González, Pérez-Blasco, & Natividad, 2012).

Therefore, in the present context and in accordance with organizational changes, today's higher-level students are enrolling in many relatively new situations. At present the student body is immersed in a series of demands that obey to a global competitiveness norm, in which the academic requirement has become an important protagonist in the superior level, in fact, the fulfillment of these demands can constitute a source of stress in individuals (Herrera & Moletto, 2014).

In this research, education will be under a strong level of attention, especially higher education, based on one of the latent phenomena that occur in our daily level which is the stress caused by teaching processes or also called academic stress, which from a biological approach, can be considered as a physiological response of the subject to the demand of the educational environment that affects their performance (Maturana & Vargas, 2015).

Within the educational field, the existence of elements that attract a higher level of academic stress in the student body is identified. It is observable that one of them is the stage of taking tests, some of them standardized. Research indicates that these events of taking tests or exams present a higher index of psychological tension, stress and worry in most students (Domínguez-Lara, 2016). Anxiety is another factor that is added to the process of academic stress, it can also be considered as a normal adaptive response when facing a threat, which can cause the subject to increase its performance or in turn be imbalanced by its activity, due to the lack of sufficient resources (Castillo, Chacón, & Díaz-Véliz, 2016).

The main objective of this study was to: Determine the level of academic stress experienced by students in the Technology in Finance career of a public entity of a higher level institution, which has more than ten years of service to the community, which has as mission: the formation of technicians and technologists of higher level (Instituto Tecnológico Superior Vicente Rocafuerte, 2017). On the other hand, the specific objectives of the study are based on the identification of the theoretical and cultural aspects of stress and academic stress, the analysis of the results of the provided inventory and, finally, conclusions of the results obtained.

## **Stress**

The term stress began to gain momentum in the mid-twentieth century, in these times it was beginning to be considered as a daily factor of society,

in which, the origin of it was related to stressors (Arribas, 2013). Therefore, to define the term it is necessary to focus on its origin. The beginning of the term stress derives mainly from Physics, especially from the section of physical phenomena such as force, pressure and distortion (Mazo, Londoño, & Gutiérrez, 2013).

The stress concept is due to the conception made by the physiologist Hans Selye, who around the 1930s, while he was a medical student at the University of Prague, analyzed a series of patients suffering from symptoms and consequences of common characteristics, such as loss of weight, appetite and other nonspecific symptoms, so Selye defined this situation General adaptation syndrome. While Hans continued his studies in the area of Biology he began experimenting with laboratory rats on effects on his nervous and lymphatic systems, which led him initially to the term biological stress, later to be called stress. After that, in the 60's Selye published his book on stress (Berrío & Mazo, 2011).

Selye defined stress as the non-specific response of the organism to the demands presented to it (Espinel, Robles, & Álvarez, 2015).

In fact and in opposition to this theory, criticisms were made by other sciences such as Psychology, in which they pointed out that the biologic approach to stress was exclusively defined by the physiological response of the person, and other elements were not considered. Therefore, Selye's biological perspective was not the only one that addressed the issue (Martín, 2007).

Therefore, the American psychologist Richard Lazarus of the University of Berkeley around the 90s, was the one who presented another approach to the subject of stress, in which he pointed out his opposition to the physiological or biological posture, he indicated that stress is not only one answer, rather it is a process between the causative stimuli, the reactions that are provoked and the situations that mediate the interaction, that is, a process between the individual and the environment. Therefore, the characteristic of a procedural or transactional approach (Martín, 2007).

Lazarus made a striking scientific publication, which was entitled *The Stress and Emotions*, in this publication refers to the use of qualitative and quantitative methodologies to address stress. This publication is a legacy for the generations of stress researchers. On the other hand, the later studies of Lazarus focused on the theme of emotions, coping and stress, also indicated that these concepts are linked and form a conceptual unit (Gómez, 2002).

## **Academic stress**

The universal definition of academic stress could not be established, based on the fact that approaches to stress management are varied and relative.

According to Orlandini (1999), the differences in the types of stress are classified according to the source that gives rise to it, therefore in this case work stress, medical stress, academic or school stress, etc. can be considered. (Barraza, 2005). In addition, people throughout their student life while they are in the process of learning are prone to endure psychological tensions which is called academic stress (Alfonso, Calcines, Monteagudo, & Nieves, 2015).

There is a relatively varied approach at the conceptual level on academic stress, which defines this type of stress as that factor that is caused by the demands of the educational environment and affects teachers and students. Academic stress is discomfort that the student feels due to physical, emotional, interpersonal relationships, environmental causes and that can influence with pressure the development of competencies that face a context of academic performance, cited by (Alfonso, Calcines, Monteagudo, & Nieves, 2015).

Following this order of ideas, the present research is based on the theoretical construct that states that academic stress is a systemic process with characteristics of adaptation, mainly psychological, that manifests itself in a representative manner, with greater incidence in secondary and higher education (Barraza-Macías, 2009).

As noted by Inga (2009), research related to academic stress in the higher level, detail that the elements of greatest incidence are the excessive burden of tasks, the lack of time at the time of carrying out activities, the characteristics of teachers, periodic evaluations and the obligatory nature of certain extracurricular activities, cited by (Alfonso, Calcines, Monteagudo, & Nieves, 2015).

## **Higher Technology Careers**

Ecuador, in October 2008, presented one of the significant changes of great importance in its history; this was when the new political charter regarding Higher Education was approved (Tolozano, Lara, & Illescas, 2015).

Subsequent to this, for the achievement of the strategic objectives set out in the new constitution, Control Organisms responsible for Higher Education were formed, these are: The Council of Higher Education which aims at the planning, regulation and coordination of higher education in relation to the Executive function and society (CES).

The Board of Evaluation, Accreditation and Quality Assurance in Higher Education, which aims to progress the superior educational quality through evaluation and accreditation (CEAACES).

The National Secretariat for Higher Education, Science, Technology and Innovation exercises the stewardship of the public policies of Higher Education by linking the executive function with higher level institutions (SENESCYT).

Following this order of ideas, for an individual to acquire the competencies to adapt to a working environment, it is necessary that the educational contents are of great importance and importance along with the academic level he/she is studying (Villa & Flores-Crespo, 2002). Technical and technological education takes great momentum in our country, in agreement with nations that have it as a vanguard, since they strengthen technological higher education together with the formation of innovative technological institutions and careers designed to satisfy an occupational market (Ruiz-Larraguivel, 2011).

In technical and technological careers, the study time is shorter than traditional careers, and also promotes the relationship with organizations in their different areas, with the aim of developing an ideal level of competences in students (Ruiz-Larraguivel, 2011). The aforementioned government agencies are strategic allies in the development of Higher Technological Education in our country, also because their management is directed to the execution of public policies for technical and technological higher education (SENESCYT, 2015).

The Technology in Finance course at the Superior Technological Institute Vicente Rocafuerte is part of the management of the strengthening of Higher Technological Education, since it meets high quality standards and satisfies the demands of the working environment to which students, graduates and graduates are participants. The job profiles to which this career is directed are aligned to the activities and functions of the accounting, financial, tax, budgetary, and administrative analysis of the organizations, that is why the great importance of the career at the employability level.

## Methodology

The design of the present study is of a non-experimental transversal type, since it gathered the data at a specific moment in time. This period oscillated in the months that make up the third quarter of 2017. It is descriptive in scope, since it pointed out the characteristics of the studied phenomenon, in this case academic stress (Sampieri, Fernández, & Baptista, 2010).

## Sampling

For the present analysis, a non-probabilistic convenience sampling model was used in which the researcher's criterion prevails for the selection and formation of the sample (Sampieri, Fernández, & Baptista, 2010). The selection criteria of the sample fluctuate in that it is necessary to witness the educational factors of the organization, have a minimum of six months in the institution and have completed a minimum of ten subjects.

Therefore, according to the aforementioned criteria, it was obtained that the sample would be of the students who are studying the last module of the parallels from the 1st semester onwards; therefore the amount of 210 students of the Technology in Finance career was obtained. Other characteristics of the sample is that the subjects attend morning, evening and night work, so a group of subjects of the sample work in days of 8 to 10 hours a day before entering their academic day.

The average age of the students is 23 years. The number of male students is 96, this represents 45.71% and female is 114, and this represents 54.29%, as detailed in the following chart.

**Chart 1**  
**Percentage of students by gender**

Gender	Quantity	%
M	96	45.71%
F	114	54.29%
	210	100.00%

Source: Data reached in the study.

Elaboration: The authors.

Within the labor characteristic, 53.33% of the sample works, while 46.67% do not. Therefore, within the masculine gender, 75.00% work and 25.00% do not. Within the female gender, 35.09% work while 64.91% do not. As noted in chart 2.

**Chart 2**  
**Percentage of employability by gender**

Gender	Employed	%	Unemployed	%
M	72	75.00%	24	25.00%
				Total 96
F	40	35.09%	74	64.91%
				Total 114

Source: Data reached in the study.

Elaboration: The authors.

## Instrument

The technique used was the survey. The instrument used was the SISCO Inventory of academic stress, which has a wide range of applications in the higher academic field of Latin America (Marín, 2015, Bedoya-Lau, Matos, & Zelaya, 2014, Jérez-Mendoza & Oyarzo-Barría, 2015).

This inventory was validated by Dr. Arturo Barraza Macías in 2006, who is a research professor at the Pedagogical University of Durango in Mexico, through conceptual models (Barraza-Macías, 2006) and also by the description of the profiles of the students of the intermediate and superior level with academic stress (Barraza & Silerio, 2007).

The instrument has 31 items, which are in sections that are: the first section that contains a dichotomous item to carry out the filtering process with what is obtained if the respondent is or is not a candidate to make the markings. The second section contains a scale item type Lickert with five response options ranging from 1 representing little to 5 that represent a lot, this section allows to identify the level of stress intensity to which respondents are prone.



The third section has 8 items, with a Lickert model of answer markup, in which the answer options range from 1 to 5, where 1 represents never, 2 represents rarely, 3 represents sometimes, 4 represents almost always and 5 represents always. This section allows the identification of external demands and their valorization as stressful stimuli.

The fourth section consists of fifteen items; these have a similar structure of the labeling model and Lickert typology as section three. In this section you can identify the symptomatology or reaction to the exposure of academic stress or stressor stimulus. The fifth and last section, presents similar Lickert type scaling and structure of marking that the third and fourth section, however, this presents six items. In this section it is possible to identify the frequency of strategies in the face of the stressful situation.

## **Procedure**

The regular process was carried out to request approval by the highest authority of the Institute. By means of a letter, the request for the authorization of the study, the application of the survey to the sample and the publication of the results obtained were carried out. This was granted by the authorities.

Therefore, in the third quarter of this year, the visit was made to the different classes of the aforementioned career, in order to socialize the characteristics, objectives, benefits, reason and scientific contribution that the study will provide for future research. On the other hand, the concept of stress and academic stress was socialized, from a practical point of view emphasizing that it is a phenomenon that is present in all stages of human life.

Subsequently, the SISCO inventory of academic stress was delivered to each member of the sample in order to read, analyze and answer the items, which was accepted on a regular basis.

Once the results of the surveys were obtained, we proceeded to classify according to the dichotomous item the surveys that were accepted and not accepted, with which it was obtained that 97.14% (204) of the surveys are acceptable for the study. As an additional data, in another study of similar topics in higher level Mexicans students proceeded to perform the process of reliability analysis of the instrument by means of the coefficient of internal consistency alpha of Crombach with which a percentage of 0.897 was obtained (Marin, 2015). An investigation in students from Peru showed

an internal coefficient of 0.89 according to alpha (Bedoya-Lau, Matos, & Zelaya, 2014). Another study conducted with students in Chile, showed an analysis of reliability through alpha with a score of 0.875 (Jerez-Mendoza & Oyarzo-Barría, 2015).

In the present investigation the reliability and validity analysis process was performed on the use of the instrument in our context, for which the statistical package SPSS 22 was used. For the reliability analysis, the internal consistency measure was used using the alpha coefficient of Crombach with which the score of 0.894 was obtained, in addition the method of halves of games was used with which a score of 0.849 was obtained for the first part and 0.812 for the second part. These data reflect the high level according to the interpretation of a reliability coefficient (Sampieri, Fernández, & Baptista, 2010).

The validity of the instrument was made through factor analysis with the Kaiser-Meyer-Olkin test (KMO) which yielded a score of 0.803, the sphericity test of Barlett obtained a degree of significance of 0.0 and the average of communalities oscillates between a minimum of 0.472 and a maximum of 0.800.

## Results

With respect to section 1, which contains the only item of dichotomous characteristics, 97.14% of the respondents confirmed that they have presented moments of concern during their last academic period, making this a point of generalization. As indicated in chart 3.

**Chart 3**  
**Answer to the Dichotomous question**

Dichotomous question	Quantity	Percentage
Positive answer	204	97.14%
Negative answer	6	2.86%

Source: Data reached in the study.

Elaboration: The authors.

With respect to section 2, 32.35% (average level) of the students presented intensity exposure to academic stress, as indicated in chart 4.

**Chart 4**  
**Exposure to the intensity of academic stress**

Intensity	Quantity	Percentage
1 little	14	6.86%
2 Avr -	40	19.61%
3 middle	66	32.35%
4 Avr +	58	28.43%
5 a lot	26	12.75%

Source: Data reached in the study.

Elaboration: The authors.

Section 3 shows the frequency with which environmental stressors act as stressful stimuli, therefore, 28.94% (sometimes) of the respondents indicate that this factor represents a medium level of incidence, as indicated in chart 5.

**Chart 5**  
**Exposure to the intensity of academic stress**

Demands/Stimuli	Percentage
1 Never	10.74%
2 Rarely	25.89%
3 Sometimes	28.94%
4 Constantly	22.71%
5 Always	11.72

Source: Data reached in the study.

Elaboration: The authors.

Section 4 shows three subdivisions that are framed in the physical, psychological and behavioral reactions of the students, with which it was obtained that the physical reaction category obtained 32.19% (rarely), the psychological category 34.90% (rarely) and the behavioral category obtained its highest percentage at the level of 31.44% (never), as evidenced in chart 6.

**Chart 6**  
**Physical, psychological and behavioral reactions**

Reactions	Quantity	Percentage	
Physical	Rarely	32.19	%
Psychological	Rarely	34.90	%
behavioral	Never	31.44	%

Source: Data reached in the study.

Elaboration: The authors.

The last section, number 5, shows the coping mechanism that students perform to deal with the phenomenon, for it the 31.60% of respondents indicated that this element is presented at a level that sometimes is repeated. As indicated in chart 7.

**Chart 7**  
**Coping with academic stress**

Strategies/coping	Percentage	
1 Never	10.26	%
2 Rarely	20.52	%
3 Sometimes	31.60	%
4 Constantly	21.66	%
5 Always	15.96	%

Source: Data reached in the study.

Elaboration: The authors.

## Conclusions

97% of the students of the present investigation confirmed the presence of stress in their academic instances.

The sample of the present study, confirmed that the intensity of academic stress is 73.53%, this score indicates that there may be an impact on the well-being and health of the subjects (Álvarez, Aguilar, & Segura, 2011).

28.94% of students perceive situations in the classroom as stressful. Among these factors, the most predominant are the overload of tasks and school work, the teachers' evaluations, not understanding the topics that are addressed in the class and the limited time to do the work.

At the level of physical, psychological and behavioral reactions, the highest incidence is the psychological reaction, in which anxiety, anxiety or despair, concentration and restlessness are the most punctuated with 34.90%. The physical reactions take second place with a score worthy of attention of 32.19%, in which the most common physical characteristics are: permanent tiredness, drowsiness or greater need to sleep, headaches or migraines. Finally, within this section, the behavioral factor has a score of 31.44%, so the most relevant factors are conflicts or peer discussions and reluctance to perform academic tasks.

The last section, analysis of coping strategies, made it possible to show that more than  $\frac{1}{4}$  of the students, that is, 31.60% of respondents, perform coping actions in situations that are characteristic of academic stress, the most common being the execution of a curriculum and assertiveness.

The level of academic stress that the students that make up the sample have is Medium. Therefore, the most important elements that originate it are the demands of the environment, in which the teacher, the methodology, the work load, the exams and the time are elements of important incidence in the development of this phenomenon. On the other hand, it is important to note that the intensity of the academic stress that students are exposed to is evident; this is corroborated by the number of days of classes and the amount of tasks presented by the students.

Following this order of ideas, the present study found that if there are reactions in students, those that predominate are psychological ones. The research process of this study obeys to a deductive and descriptive methodology, which possess benefits that allow us to contemplate the phenomenon in its natural development. The tool used is highly applicable to any educational environment in Latin America and has characteristics that facilitate interpretation, which is why it is one of the most used tools in the field.

According to this study of academic stress, this phenomenon is more noticeable in the female gender, considering that most people are investigated. The vast majority of people who work are male. In addition, there is a high

incidence of the work situation in the development of academic stress, so it can be noted that the workday also affects the development of stress.

According to this study of academic stress, this phenomenon is more noticeable in the female gender, considering that most people are investigated. The vast majority of people who work are male. In addition, there is a high incidence of the work situation in the development of academic stress, so it can be noted that the work also affects the development of stress.

This article was carried out in a Higher Education institution specialized in Financial and Administrative Technologies, in order to corroborate more studies of academic stress in provinces of our region and nearby countries, such as Peru, Chile, Mexico, all with the In order to contribute to more research on the subject and propose new models that reduce stress in students. This research is easily accessible to the educational research community and can serve as a reference for new inquiries on the same subject that contain other variables present in the educational phenomenon.

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Date of receipt: 2017/10/15; acceptance date: 2018/02/16;  
publication date: 2018/03/01