




## Locus of control and aggression in University of San Carlos students, central campus

### *Locus de control y agresión en estudiantes de la Universidad de San Carlos, sede central*

Francisco José Ureta Morales   
Universidad de San Carlos de Guatemala  
fureta@psicousac.edu.gt

Mavis Rodríguez   
Universidad de San Carlos de Guatemala  
mrodriguez@psicousac.edu.gt

Elena María Soto Solares   
Universidad de San Carlos de Guatemala  
esoto@psicousac.edu.gt

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#### Abstract

The research problem addressed in this study is to know the levels of aggression and type of locus of control of the students of the USAC, for which the present study was raised in 8 Academic Units. The Locus of Control (LOC) scale was applied electronically, adapted for adults from the version for adolescents, including the “Buss and Perry Aggression Questionnaire” model. A descriptive, cross-sectional and comparative design was applied, based on quantitative methodology. Likewise, a two-stage sampling was applied, random selection of the 8 academic units and then cluster sampling in the classrooms of second, sixth and tenth semester students, 1,344 students participated. In the internal LOC there are no differences by semester of studies ( $p > .050$ ) and students between 30 and 35 years old have a lower average ( $p < .50$ ). For the external LOC of the second semester, it is higher and reduces as the semesters of study progress ( $p < .050$ ), and a student between 30 and 35 years of age with a higher average; the external LOC increases with increasing age ( $p < .50$ ). The aggression variable indicated that students in the tenth semester have a lower GPA ( $p < .001$ ) and from 30 to 35 years with less aggression, it decreases as age increases ( $p < .001$ ). Results that coincide and contrast with previous research consulted and will be a contribution to Guatemalan psychology; it is suggested to include it in the programs of accompaniment and psychological attention of the students.

#### Keywords

Perception of control, internal LOC, external LOC, aggression, aggression evaluation

#### Resumen

El problema de investigación abordado en este estudio es conocer los niveles de agresión y tipo de locus de control de los estudiantes de la USAC, por lo que se planteó el presente estudio en 8 Unidades Académicas. Se aplicaron por la vía electrónica la escala de Locus de Control (LOC), adaptadas para adultos de la versión para adolescentes, incluyendo el modelo de “Cuestionario de Agresión de Buss y Perry”. Se aplicó un diseño de tipo descriptivo, transversal y comparativo, con base en la metodología cuantitativa. Así mismo, se aplicó un muestreo bietápico, selección aleatoria de las 8 unidades académicas y luego muestreo por conglomerados en las aulas de estudiantes de segundo, sexto y décimo semestres, participaron 1,344 estudiantes. En el LOC interno no hay diferencias por semestre de estudios ( $p > .050$ ) y los estudiantes de 30 a 35 años lo tienen en menor promedio ( $p < .50$ ). Para el LOC externo del segundo semestre es mayor y se reduce al avanzar en los semestres de estudios ( $p < .050$ ), y estudiante de 30 a 35 años con mayor promedio; el LOC externo aumenta con mayor edad ( $p < .50$ ). La variable agresión indicó que los estudiantes del décimo semestre tienen menor promedio ( $p < .001$ ) y de 30 a 35 años con menor agresión, se reduce conforme aumenta la edad ( $p < .001$ ). Resultados que coinciden y contrastan con anteriores investigaciones consultadas y será un aporte a la psicología guatemalteca; se sugiere incluirlo en los programas de acompañamiento y atención psicológica de los estudiantes.

#### Palabras clave

Percepción de control, LOC interno, LOC externo, agresión, evaluación agresión

## Introduction

The variables of aggression and LOC are poorly investigated by USAC students, only one study was identified addressing fate control in college students that included USAC (Luna et al., 2021), both variables have relevance to mental health. High levels of aggression could increase aggressive behaviors in the university setting and, have implications for student performance. For the LOC, it is necessary to identify the type of LOC they present, internal or external, in order to attend to the educational processes as a reference element. It is also necessary to inquire about both variables in specific groups of students, workers and non-workers, by age intervals and marital status. These comparisons allow the identification of those groups in need of mental health care, as well as the planning programs and projects of student care for success and failure within the university environment.

The Locus of Control construct was developed by Rotter in 1966 as quoted by Visdómine-Lozano (2006):

If the person is able to perceive that the event is contingent with his behavior or even with his own permanent characteristics, it will be understood to be a belief in internal control, [on the other hand] when an effort perceives a personal action, but not being entirely contingent with it, in our culture it will be perceived, as the result of luck, in other words, therefore, it has been said to be a belief in external control (p. 731).

Rotter developed a Locus of Control scale, where reinforcement, reward, or gratification can be recognized as crucial in the acquisition and performance of skills, abilities, and knowledge (Ureta et al., 2022, p.13). However, the perception will vary from person to person, depending on whether the reinforcement is under the control of others or the forces surrounding it.

In the words of Rotter (1966) cited by Visdómine-Lozano (2006), it is possible to assert that there is a belief in external control, meaning that if a person perceives that the event depends on their behavior permanently, this has been called a belief in internal control (Ureta et al., 2022, p. 13).

Quoting Mayora-Pernía and Fernández (2015), "LOC has evolved from being a dichotomous variable to a multidimensional one; some research shows a relationship between LOC and academic performance in higher education. Therefore, the results reflect the need to address this issue in Latin America" (Ureta et al., 2022, p.11). Johnson et al. (2015) suggested that job performance is related to certain variables influencing LOC and personality.

Studies by Koeske & Kirk 1995 and Rees & Cooper 1992, cited by Oros (2005), have suggested that individuals with an internal LOC tend to have better job quality, high job satisfaction, lower emotional fatigue, and lower rates of workplace conflicts, among other factors (p.91). In studies correlating education and LOC, Mexico analyzed a factorial scale in university students (Bibiano et al., 2016), and Costa Rica, using a validated and standardized measurement instrument, showed some results with adolescents (Smith-Castro, 2014).

On the other hand, the category of aggression is considered multifactorial in the literature; it is regarded as a behavior that is harmful, intentional, and aversive. "On some occasions, it has an assertion of dominance, where the subject seeks to eliminate everything that threatens what they believe should exist" (Fang & Hoyos, 2009 as cited in Ureta et al., 2022, p.15). Several definitions of aggression have been developed, and three elements are common in them: a) its intentional nature, b) the aversive consequences it has on object or other people, including oneself, and c) its

expressive variety, manifesting in multiple ways (Carrasco and Gonzáles, 2006).

Most studies on this construct have been conducted in psychiatric, forensic, neurological, and criminological fields (Castellano and Castellano, 2012). Researchers do not have enough instruments contextualized to Latin American realities; therefore, they opt for the use of international instruments (López and Orpinas, 2012). It should be noted that the school, family, and technological environments are variables that promote studies on aggression with the purpose of countering high violence rates in Latin American countries (Castellano & Alonso, 2006 as cited in Ureta et al., 2022, p. 18). In the case of Guatemala, it is a little-studied topic but has gained importance with studies on aggression in school settings. A survey was conducted with a sample of 18,780 sixth-grade students in 993 official educational centers, of which 8% of the students reported being constant victims of group aggression, which is the most common form of aggression (Gálvez-Sobral, 2011).

There are studies that relate LOC and aggression in Latin America and Spain. Niño (2019) found a moderate positive correlation between LOC and aggressive behavior in psychology pre-professional practice students in Peru. Bouquet and Reidl (2017) analyzed some factors intervening in aggressiveness in Mexican adults and found that a lack of control, magical thinking, inefficacy, and fatalism as components of LOC are predictors of aggression. They concluded that negative self-evaluation or a lack of perception of control over the environment, as well as personality characteristics associated with emotional instability and a tendency to stress, tend to facilitate the development of not only aggressive thought patterns but also aggressive behaviors (Bouquet et al., 2017,

p. 117). Finally, González-García et al. (2014) found a positive correlation between external LOC and external expressions of anger, trait anger, and reaction anger. They concluded that having a greater external LOC is related to higher levels of anger in adult table tennis players in Spain. Therefore, there is a tendency to associate both variables, and this research will contribute to increasing evidence of the relationship between LOC and aggression.

This study was conducted in 2021 in eight academic units of USAC at its central campus in Zone 12 of Guatemala City. It utilized a quantitative methodology with the application of two psychometric instruments. Its aim was to investigate, analyze, and present how internal and external LOC variables and aggression behave in groups of university students at USAC. It provides results about the sampled students and comparisons between different age groups, working status, marital status, and the semester they are studying. These interactions were not previously documented, making them relevant for consideration in the planning and implementation of psychological support and counseling programs for students.

## Materials and Methods

A quantitative method with a quantitative analytical-explanatory approach was applied, using a descriptive, cross-sectional, and comparative design. A two-stage sampling was carried out, with the random selection of 8 academic units and cluster sampling in classrooms of students from the specified semesters, with voluntary participation from students who wished to participate electronically. The first stage was random, selecting 8 academic units out of the 18 academic units at the USAC central campus, Excluding the School of Psychological Sciences, where the instrument pilot testing took place. A confidence level of 95%

resulted in a sample confidence value of 26.57, which is very low for generalizing to the entire USAC central campus population, so the analyses are confined to the obtained sample only. The second stage was non-random, based on convenience, as efforts were made in each of the selected units to have students in the second, sixth, and tenth semesters of their degree programs complete the instruments. Since participation was voluntary for those who expressed interest, the sampling was not random.

The sample that provided the information consisted of 1344 students from eight randomly selected academic units at USAC: the Faculty of Chemical and Pharmaceutical Sciences, the School of Science and Technology of Physical Activity and Sports (ECTAFIDE), the Faculty of Architecture, the Faculty of Humanities, the Faculty of Veterinary Medicine and Animal Science, the Faculty of Economic Sciences, the Faculty of Dentistry, and the School of History. In terms of the sample selection process and characteristics, it should be noted that the participants were students aged between 18 and 35, enrolled in the second semester of 2021, in the second, sixth, or tenth semester of their programs, who provided voluntary consent for participation through the virtual instrument.

## Instruments

### Sociodemographic Data Survey

At the beginning of the instruments, the following sociodemographic variables were included to specify the type of student who completed them: whether they were enrolled at USAC in the second semester of 2021, schedule, gender, academic unit, employment status, semester of enrollment, age, marital status, and cultural group.

### Adolescent Locus of Control Scale

To assess the internal-external LOC of the

students, the Adolescent Locus of Control Scale was used. The instrument was adapted for adults by Villalobos and Campos in 2009, as cited by Smith-Castro (2014). The scale consists of 15 Likert-type questions with four points where 1 is (not at all), 2 is (a little), 3 is (quite), and 4 is (very much). Seven of the questions measure external control, and 8 measure internal control. The results are obtained based on the sum of the items, with high scores indicating high levels of external or internal locus of control, depending on the case.

### Buss and Perry Aggression Questionnaire

The Buss and Perry Aggression Questionnaire from 1992, adapted in the Costa Rican context by Brenes in 2009 and cited by Smith-Castro (2014), was applied to investigate aggression in different age groups. The final version consists of 29 Likert-type items with 4 points, where 1 is (totally disagree), 2 is (disagree), 3 is (agree), and 4 is (totally agree). The questionnaire comprises four subscales that represent physical and verbal aggression, anger, and hostility (Smith-Castro, 2014). For the application of both instruments, the respective authorization was requested, considering all ethical considerations in research.

## Procedure

In the pilot test conducted at the School of Psychological Sciences with 75 students of both genders, participants were asked to respond to the three aforementioned scales. Upon analyzing the instruments using Cronbach's Alpha, the following results were obtained: an external LOC of 0.645 and an internal LOC of 0.863, both of which align with those reported by the authors (Villalobos and Campos in 2009, cited by Smith-Castro in 2014). Regarding the Aggression Scale, the results showed a consistency of 0.921, which

is consistent with what the author (Brenes in 2009, cited by Smith-Castro in 2014) presented. The internal consistency of the instruments applied in the pilot and final administration was analyzed using Cronbach's Alpha, and since the questions were more similar, there was a higher level of internal consistency for the questions within each instrument. This index should be greater than or equal to 0.6. The formula can be found in Celina and Campo in 2005, as cited by Ureta (2021, p. 26).

For the final administration, communications and visits were conducted with the responsible individuals at the eight randomly selected academic units. Once positive responses were received, they were sent the links for the participants to complete the instruments online. These links were placed on the virtual platforms of each academic unit to ensure that they would be completed by their students. Upon completing the administration of the instruments, a letter of appreciation was sent to the participating academic units, thanking them for the permissions and support provided for the fieldwork.

### Data Processing and Analysis

Both scales were placed on the SurveyGizmo web platform to be filled out by the students. After the data collection period concluded, the database was obtained in Excel format for analysis using SPSS software. Data cleaning was performed, and cases that did not meet the established criteria were excluded. The original source (online questionnaires) was reviewed to identify outliers, missing values, and some inconsistencies in the information and data obtained.

The internal consistency of the instruments in the final administration was calculate using Cronbach's Alpha coefficient, with the

following results: Internal LOC had a value of 0.79, which decreased compared to the pilot (0.863), but its results remained consistent and reliable, with no items showing negative loadings or correlations in the scale. External LOC had a value of 0.837, which increased when compared to the pilot (0.645), and its results were also consistent and reliable, with no items showing negative loadings or correlations in the scale.

The Aggression Scale obtained a value of 0.896, which decreased compared to the pilot (0.921), but its results remained reliable and consistent. Items 4 and 15 loaded negatively on the scale; however, they were not removed to include both results in the study. Descriptive statistics (means and standard deviations) were calculated for the three assessed variables, along with Student's t-tests for mean differences and Analysis of Variance (ANOVA) for three or more groups. To confirm the differences in ANOVA, the Bonferroni post hoc test was performed, designed to adjust the error based on the number of comparisons made (all tests with  $p < 0.05$ ). It compares the means of t-levels for a factor after rejecting the null hypothesis ( $H_0$ ) that indicates equal means following ANOVA calculation. In this calculation, the  $\alpha$  value must be divided by the number of planned comparisons (Dagnino, 2014 and Scientific European Federation of Osteopaths, 2019).

### Ethical Considerations

Informed consent was obtained from the participants through an instrument specifically designed for this purpose. They were informed that their participation and completion of the instrument were voluntary, and they had the right to withdraw at any time. Responding to the instruments incurred no cost or harm to the students who chose to participate. The confidentiality of the information was ensured and used solely for the purposes of this research. Identifies and

the information obtained were not disclosed to anyone outside the research team. Ethical approval was obtained through the Bioethics Committee for Health Research at USAC prior to the execution of the study.

## Results

The instruments were completed by 1,344 students who met the inclusion criteria as previously mentioned. The sample was predominantly composed of females, with 1,026 students, representing 76.3% (Table 1). The sample was drawn from students in the eight selected academic units, including the Faculty of Humanities, Chemical and Pharmaceutical Sciences, Economic Sciences, Veterinary Medicine and Animal Science, Dentistry, as well as the School of History and ECTAFIDE.

The sample included both working and non-working students, with 745 working students accounting for 55.4%. The sample predominantly consisted of students in the second semester, totaling 415 (46.2%), while 386 students (28.7% of the total participants) were enrolled in the tenth semester. The sample included a higher number of students aged 18 to 23, accounting for 43.7%, and the 24 to 29 age group made up 29.8% of the sample. In terms of marital status, singles predominated with 1,031 students (76.7%). The majority of the sample identified as Ladino, totaling 985 (73.3%). 262 students identified as Mestizo, similar to Ladinos, making up 19.5% of the sample, while the remaining 7.2% identified as Xinca, Garifuna, Maya, or from another cultural group.

Table 1. Students by gender and Academic Unit who responded to the instruments.

Academic Unit	Gender							
	Male		Female		Other		Total	
	F	%	F	%	F	%	F	%
Faculty of Humanities	83	6.2	577	42.9	0	0.0	660	49.1
Faculty of Chemical and Pharmaceutical Science (FCQQFF)	98	7.3	275	20.5	0	0.0	373	27.8
Faculty of Architecture	34	2.5	55	4.1	1	0.1	90	6.7
ECTAFIDE	48	3.6	41	3.1	0	0.0	89	6.6
School of History	31	2.3	42	3.1	1	0.1	74	5.5
Faculty of Economic Sciences	12	0.9	19	1.4	0	0.0	31	2.3
Faculty Veterinary Medicine and Animal Science (FMVZ)	8	0.6	8	0.6	0	0.0	16	1.2
Faculty of Dentistry	2	0.1	9	0.7	0	0.0	11	0.8
Total	316	23.5	1026 <sup>a</sup>	76.3	2	0.1	1344	100.0

Note: Prepared by Ureta et al., 2022.

According to the results and analyses conducted by Ureta et al. (2022), the average internal LOC was 13.67, which is low when compared to the maximum possible score of 32 points, with each question having a maximum score of 4. The external LOC had an average of 21.87,

close to the scale's maximum of 28 points, indicating a stronger orientation toward external LOC in the sample. The average score on the aggression scale was 59.75 out of a maximum of 112 points, indicating moderate aggression as it just surpasses the halfway mark (Table 2).

Table 2. Descriptive statistics of the measured variables on the scales.

Variables	N	Minimum	Maximum	Mean	Scale Maximum <sup>a</sup>	Standard deviation
Total, internal LOC	1,342	8.00	27.00	13.67	32	3.68
Total, external LOC	1,341	7.00	28.00	21.87	28	3.84
Total, aggression scale	1,286	31.00	109.00	59.75	112	13.67

Note: a. This column represents the maximum possible score for each scale. Compiled by Ureta et al., 2022.

Regarding the comparison of students' internal LOC, the means of working students and non-working students were compared using a Student's t-test. Non-working students ( $M=14.10$ ,  $SD=3.75$ ,  $N=598$ ) were compared to working students ( $M=13.32$ ,  $SD=3.58$ ,  $N=744$ ). Assuming equal variances,  $F=0.747$ ,  $t(1340) = 3.873$ ,  $p < .001$ , which indicates a statistically significant difference between the two means. Therefore, it can be concluded that non-working students have a higher internal LOC than working students, and the effect size of this difference is moderate, with Cohen's  $d$  of 0.77, 95% CI [0.38, 1.17].

Next, the average internal LOC was compared with ANOVA based on the students' semester of enrollment for three different groups. Students on the annual plan were not included as they were too few, and their results might be unreliable, so they were excluded from all comparisons. In the second semester, the mean was ( $M=13.782$ ,  $SD=3.63$ ,  $N=620$ ), in the sixth semester, it was ( $M=13.785$ ,  $SD=3.72$ ,  $N=326$ ), and in the tenth semester, it was ( $M=13.400$ ,  $SD=3.74$ ,  $N=385$ ). There was no statistically significant difference between the groups, and the effect size was almost non-existent,  $F(2) = 1.478$ ,  $p = 0.228$ ,  $\eta^2 = 0.007$ . The assumption of homogeneity of variances among the three groups was verified (Levene  $F(2) = 0.406$ ,  $p = 0.666$ ), indicating that the means were equal. The Bonferroni post hoc test also confirmed that there were no differences between the three means.

The average internal LOC was compared with ANOVA by student-reported marital status for three different groups, widowed students were not included because they are very few and their results could be unreliable, they were excluded from all comparisons.

Married students had an average ( $M=13.15$ ,  $SD=3.51$ ,  $N=240$ ), unmarried students had an average ( $M=12.92$ ,  $SD=3.24$ ,  $N=71$ ), and single students had an average ( $M=13.84$ ,  $SD=3.72$ ,  $N=1,029$ ). A statistically significant difference was observed between the groups, with an almost non-existent effect size,  $F(2) = 4.979$ ,  $p = 0.007$ ,  $\eta^2 = 0.002$ . The assumption of homogeneity of variances among the three groups was confirmed (Levene  $F(2) = 1.127$ ,  $p = 0.324$ ), indicating that the means were different. Bonferroni's post hoc analysis indicated differences in the means between married and single students ( $p = 0.026$ ), with single students having the highest mean.

The average internal LOC was compared with ANOVA based on the age reported by the students, divided into three groups. The group of 18 to 23 years had a mean of ( $M=14.05$ ,  $SD=3.80$ ,  $N=587$ ), the group of 24 to 29 years had a mean of ( $M=13.62$ ,  $SD=3.84$ ,  $N=399$ ), and the group of 30 to 35 years had a mean of ( $M=13.10$ ,  $SD=3.14$ ,  $N=356$ ). A statistically significant difference was observed between the groups, and the effect size was almost non-existent,  $F(2) = 7.528$ ,  $p = 0.001$ ,  $\eta^2 = 0.011$ . The assumption of homogeneity of variances among the three groups was not met (Levene  $F(2) = 8.473$ ,  $p = 0.001$ ), indicating different means among

the groups. The Bonferroni post hoc test showed differences in means between students aged 18 to 23 and those aged 30 to 35 ( $p = 0.001$ ), with the latter having the lowest mean. It could be concluded that internal LOC decreases as age increases.

The next variable analyzed was the external LOC of the students, the same comparisons were made as with the internal LOC, first the averages of those who work were compared with those who do not with Student's *t* test, the averages were those who do not work ( $M=21.18$ ,  $SD=3.90$ ,  $N=597$ ) and those who do work ( $M=22.43$ ,  $SD=3.71$ ,  $N=344$ ). Assuming equal variances,  $F = 1.326$ ,  $t(1339) = 6.004$ ,  $p < .001$ , which indicates that the two averages have a statistically significant difference, this result showed that those who work have a higher external LOC than those who do not; the effect size of this difference is large, Cohen's  $d = -1.25$ , 95% CI [-1.66, -.84].

Comparison of the average external LOC was made with ANOVA according to the semester taken by the students for three different groups. In the second semester an average was obtained ( $M=22.28$ ,  $SD=3.52$ ,  $N=619$ ), in the sixth semester it was ( $M=21.62$ ,  $SD=3.99$ ,  $N=326$ ) and in tenth semester ( $M=21.49$ ,  $SD=4.14$ ,  $N=385$ ). If a statistically significant difference was obtained between groups and the effect size is almost nonexistent  $F(2) = 6.218$ ,  $p = 0.002$ ,  $\eta^2 = .009$ , the assumption of homogeneity of variances of the three groups was not tested, Levene  $F(2) = 4.411$ ,  $p = .012$ , indicating that the averages are different. The Bonferroni post hoc test was done which evidenced that the second semester is different from the sixth and tenth semesters ( $p = .026$ ,  $p = .005$ ), between the average of the sixth and tenth semesters there is no difference ( $p = 1.00$ ). The second semester has the highest average and decreases as the semesters advance.

The average external LOC was compared with ANOVA by students' marital status for three different groups. The married reached an average ( $M=23.07$ ,  $SD=3.51$ ,  $N=240$ ) that of the unmarried was ( $M=24.02$ ,  $SD=3.24$ ,  $N=71$ ) and the single ( $M=21.46$ ,  $SD=3.72$ ,  $N=1,028$ ). If a statistically significant difference between groups was obtained and the effect size is almost nonexistent  $F(2) = 30.034$ ,  $p = 0.001$ ,  $\eta^2 = .043$ , the assumption of homogeneity of variances of the three groups was tested, Levene  $F(2) = 1.127$ ,  $p = .324$ , indicating that the averages are different. Carrying out the Bonferroni post hoc analysis evidenced that if there are differences in the averages of the unmarried with the married and the united ( $p = .001$ ,  $p = .001$ ), that of the united is equal to that of the married ( $p = .178$ ), the unmarried have the lowest average external LOC.

External LOC was compared with ANOVA by student age in three different groups. The group from 18 to 23 years old has an average ( $M=21.18$ ,  $SD=3.75$ ,  $N=586$ ) the group from 24 to 29 years old was ( $M=21.75$ ,  $SD=4.08$ ,  $N=399$ ) and from 30 to 35 years old ( $M=23.13$ ,  $SD=3.40$ ,  $N=356$ ). If a statistically significant difference was obtained between groups and the effect size is almost nonexistent  $F(2) = 29.881$ ,  $p = 0.001$ ,  $\eta^2 = .043$ , the assumption of homogeneity of variances of the three groups was not checked, Levene  $F(2) = 4.926$ ,  $p = .007$ , indicating that the averages are different. Carrying out the Bonferroni test showed that there are differences in the averages of those aged 18 to 23 and those aged 30 to 35 ( $p = .001$ ), the latter having the highest average, it could be affirmed that as age increases, external LOC also increases.

The final variable analyzed was the students' aggression level (answered by a smaller number of students). The same comparisons were made, including a Student's *t*-test for the means of working and non-working students. The mean for non-working students ( $M=60.32$ ,  $SD=3.90$ ,  $N=574$ ) was compared



to that of working students ( $M=59.29$ ,  $SD=3.71$ ,  $N=712$ ). Assuming unequal variances,  $F=7.695$ ,  $t(1171.04) = 1.333$ ,  $p < .183$ , indicating no statistically significant difference between the two means. Surprisingly, working students had an external LOC like that of non-working students, with a large effect size, Cohen's  $d$  of 1.032, 95% CI  $[-0.487, 2.553]$ , although the means showed no difference.

The comparison of the average aggression level was performed using ANOVA based on the students' semester of study for three different groups. In the second semester, an average of ( $M=60.94$ ,  $SD=13.46$ ,  $N=594$ ) was obtained, in the sixth semester, it was ( $M=60.24$ ,  $SD=13.42$ ,  $N=311$ ), and in the tenth semester, it was ( $M=57.35$ ,  $SD=13.96$ ,  $N=370$ ). A statistically significant difference was observed between the groups, with an almost negligible effect size,  $F(2) = 8.226$ ,  $p = 0.001$ ,  $\eta^2 = 0.013$ . The assumption of variance homogeneity among the three groups was confirmed (Levene  $F(2) = 0.138$ ,  $p = 0.872$ ), indicating that the means were different. The Bonferroni post hoc test revealed that the mean of the tenth semester was different from that of the sixth and second semesters ( $p = 0.017$ ,  $p = 0.001$ ), but there were no differences between the mean of the sixth and second semesters ( $p = 1.00$ ).

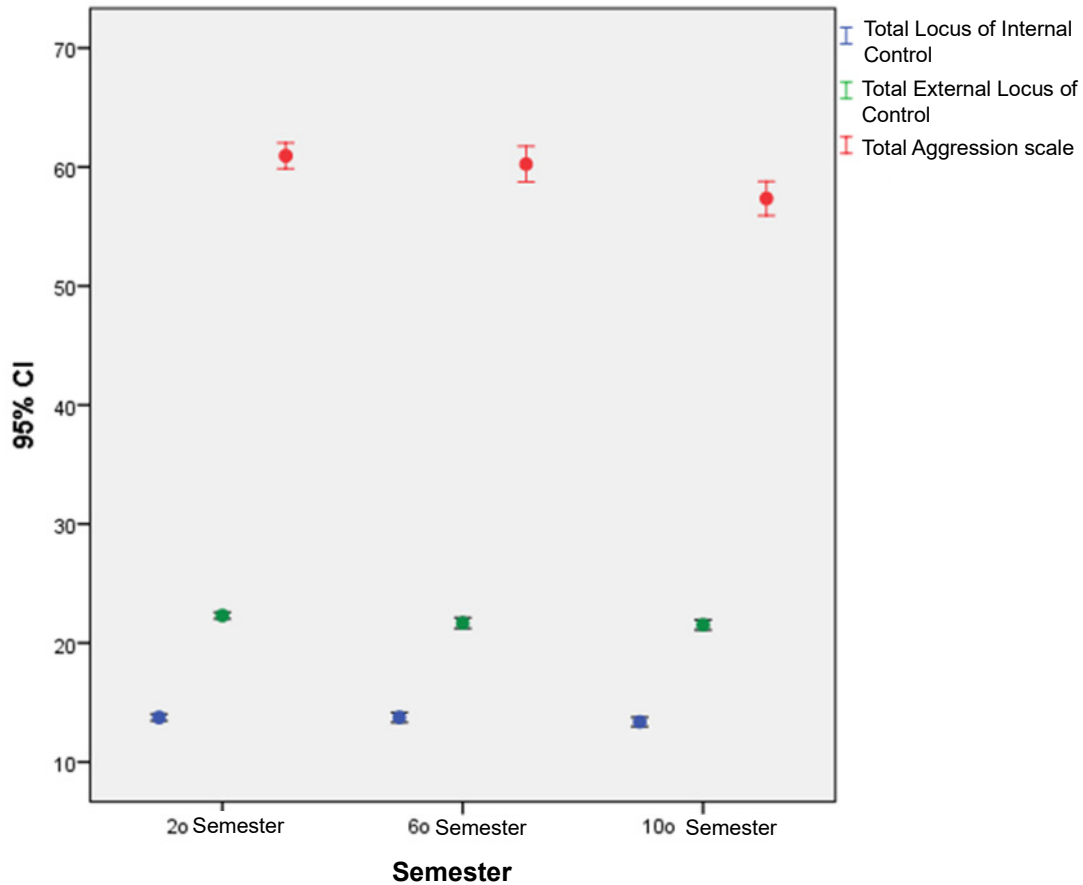
The tenth semester had the lowest average aggression, significantly decreasing in the last semester compared to the previous ones.

The average aggression level was also compared with ANOVA based on the marital status of the students. Married students had an average ( $M=56.16$ ,  $SD=13.23$ ,  $N=231$ ), the cohabiting (*unidos*) students had an average ( $M=61.63$ ,  $SD=14.52$ ,  $N=69$ ), and the single students had an average ( $M=60.46$ ,  $SD=13.57$ ,  $N=984$ ). A statistically significant difference was observed between the groups, with a nearly negligible

effect size,  $F(2) = 10.061$ ,  $p = 0.016$ ,  $\eta^2 = 0.043$ . The assumption of variance homogeneity among the three groups was confirmed (Levene  $F(2) = 0.343$ ,  $p = 0.709$ ), indicating that the means were different. The Bonferroni post hoc analysis indicated differences in the means between married students and single students, as well as between cohabiting and single students ( $p = 0.001$ ,  $p = 0.010$ ). The cohabiting students had the highest average aggression, while the cohabiting and married students had similar levels ( $p = 1.000$ ).

The final comparison of aggression was based on the students' age, using ANOVA for three groups. The group of students aged 18 to 23 had an average of ( $M=62.13$ ,  $SD=3.75$ ,  $N=559$ ), the group of students aged 24 to 29 had an average of ( $M=58.88$ ,  $SD=4.08$ ,  $N=381$ ), and the group of students aged 30 to 35 had an average of ( $M=56.88$ ,  $SD=3.40$ ,  $N=346$ ). A statistically significant difference was observed between the groups, with an almost negligible effect size,  $F(2) = 17.294$ ,  $p = 0.001$ ,  $\eta^2 = 0.026$ . The assumption of variance homogeneity among the three groups was not met (Levene  $F(2) = 0.526$ ,  $p = 0.591$ ), indicating that the means were different. The Bonferroni test showed differences in the means between students aged 18 to 23 and the other two groups ( $p = 0.001$ ,  $p = 0.001$ ). The mean of students aged 24 to 29 was like the mean of students aged 30 to 35 ( $p = 0.179$ ), with the latter having the lowest average, suggesting that aggression decreases as age increases. Variations and trends were identified in the studied variables, with increases or decreases by age group and semester of study. These trends were reflected in internal LOC decreasing, external LOC increasing, and aggression decreasing (Figure 1). All effect sizes calculated in the comparisons are small or non-existent, except for internal LOC between working and non-working students, which had a large effect size. Therefore, it can be concluded that the remaining differences are influenced by the size of the samples and compared groups.

Figure 1. Averages of Internal LOC, External LOC, and Aggression by Age Groups



## Discussion

The results obtained apply to the levels and status of the variables only within the sample of 1,344 participating students. While the initial sampling of Academic Units was random, the instruments were completed by students who expressed interest in participating in the study. The limited sample confidence value prevents the generalization of these findings to the central campus of USAC. The results represent an initial starting point, shedding light on these two variables among USAC students. The Locus of Control (LOC) variable comprises two dimensions: internal and external LOC. The average internal LOC within the total sample was 13.67, which is relatively low. This result

contradicts the findings reported by García-Campos and García-y-Barragán (2011), who indicated a higher internal LOC in a similar sample of Mexican students. The higher internal LOC reported by non-working students contrasts with the significance of internal LOC for certain positions requiring internal control of workers, as shown by Meléndez and Toro (2005). This finding is also consistent with the work of Laborín et al. (2008), who demonstrated that internal LOC increases with the complexity of the job. Similar results were found in studies by Reeh, Hiebert & Cairns (1998); Chubb, Fertman & Ross (1997); Vera et al. (2003), as cited by Laborín et al. (2008). This research indicates that there are no differences in internal LOC as semesters progress, contrary to the findings of Dakduk, González and Montilla (2008), who discovered that higher levels of university education are associated with

increased internal LOC, which is also a predictor of academic success (Mayora-Pernía and Fernández, 2015).

Comparisons of marital status concluded that singles have the highest internal LOC, in line with the findings of Padilla and Díaz Loving (2011) that Mexican single youths have a high internal LOC that regulates their sexual behaviors. Regarding age, the research results indicated that the group of younger students (ages 18 to 23) has the highest internal LOC, contrasting with Laborín et al. (2008), who suggested that younger individuals have lower internal LOC. Other studies also support the notion that younger people have lower internal LOC, such as Chubb, Fertman & Ross (1997); Reeh, Hiebert, and Cairns (1998), as cited by Laborín et al. (2008).

According to Ureta et al. (2022): When external LOC was analyzed, it was found to be slightly higher in comparison to internal LOC, with an average of 21.87, approaching the 28 maximum points on the scale. The sample of responding USAC central students shows a greater tendency toward external LOC (Ureta et al., 2022, p. 55).

When analyzing external LOC in relation to the semesters being pursued, evidence was found that a higher semester corresponds to a lower external LOC. These results align with Laborín et al. (2008), who reported that higher education and university studies are associated with an increase in internal LOC. Comparisons of external LOC by marital status indicated that married and cohabiting individuals have a higher average than singles, in line with the findings of Padilla and Loving-Díaz (2011), who reported that Mexican youths in stable relationships have higher external LOC.

Regarding age, the results of this research indicate that as age increases, external LOC also increases, in contrast to Laborín

et al. (2008), who suggested that older age is associated with lower external LOC. However, these findings are consistent with those reported by Vera et al. (2009), who noted that older adults exhibit higher external LOC than younger individuals.

The results of the aggression scale indicated that those who work have the same levels of aggression as those who do not. When comparing these results, they do not coincide with various studies that highlight the aggression and aggressiveness of workers and their work environments. Health workers with professional burnout increase aggression towards themselves and their colleagues and others have a medium level of aggressiveness (Miret and Martinez, 2010; Diaz and Radler, 2013).

Workplace stress is correlated with aggressiveness and influences workplace accident rates (Tacza, 2021; Odar, 2021; Huincho, 2018). The comparisons of semester levels and age groups of participating students, which were associated in this study, indicate that as students progress through semesters and age increases, aggression decreases. These findings align with reports by other researchers, who observed more aggressive behaviors, certain forms of violence, and harassment among university peers, especially among those aged 18 to 25 in the early university years. These behaviors include physical violence towards dating partners (Castillo, 2013; Torres, 2010; Romero and Plata, 2015; Amemiya et al., 2019; Redondo, Inglés, and García, 2017).

The results of the comparisons of averages for married, cohabiting, and single individuals indicated that cohabiting individuals exhibit the highest level of aggression. These findings align with the physical violence displayed by students towards their dating partners, which increases due to lack of communication, aggressive traits, and intransigence, as well as observing violence

among their parents, sexual and verbal-emotional aggression towards their partners in university environments, and adults in relationships with aggressive tendencies towards their partners (Redondo, Inglés, and García, 2017; Rojas-Solís, 2013; Rey-Anaconda, 2017; Rojas-Solís and Carpintero, 2011; Cuenca and Graña, 2016). The moderate level of aggression found in the university students in the sample does not appear to be a psychopathological symptom of clinical interest but may be part of the modal or basic personality of Guatemalans. This concept is based on the adaptation of individuals' basic personality to the culture and society in which they live, integrating within a specific culture and founded on common experiences shared by the people of a society, mediated by the personal characteristics produced by such experiences (Bogaert, 2016; Cueva, 2016).

As final reflections, it can be noted that the results either align with or contrast with those reported by other authors. Specifically, the findings that do not coincide with other research include low internal locus of control (LOC) among university students, low internal LOC among working students, equivalent internal LOC between students in the early semesters and those in advanced studies, younger students with higher internal LOC, lower external LOC among older students, and an equal level of aggression among non-working students. Possible explanations for these disparities could be attributed, first and foremost, to a sampling error, including students from other academic units, which could alter these results. Regarding the low average of internal LOC among students, it might be because in other countries, university studies genuinely foster critical and scientific thinking, which does not align with an external LOC prioritizing personal decisions as responsible for the outcomes in their lives. Concerning the low level of aggression among working students,

it could be due to the students in question occupying positions that do not require a great deal of initiative or leadership in carrying out their job responsibilities or their supervisors not allowing them to take such initiatives. Finally, concerning older students with lower external LOC than younger ones, a possible explanation is that life experiences have allowed them to solidify a greater awareness of the impact of their own decisions on their lives, something that younger individuals may not be in a position to perceive and appreciate. Given these concurrences and disparities, it is evident that more research is needed to further investigate and better understand the behavior of these variables. The current situation of the COVID-19 pandemic and virtual education, coupled with the evidence from this research, highlights the need to provide psychological support and guidance to USAC students.

It is suggested that the Welfare and Student Support Offices of the Academic Units that responded to this research and other USAC research initiatives should establish, implement, and evaluate programs for psychological support and guidance for their students. "These programs could be executed with the assistance of a professional psychologist, accompanied by psychology students performing supervised professional exercises (EPS)," (Ureta et al., 2022, p. 59) with the intention that the budgets are accessible for the Academic Units to cover and to promote the participation of Student Associations in these processes for greater impact and outreach among USAC students. It should be considered that these programs need not be of clinical treatment but should continue to be investigated further with focus groups and other qualitative techniques, exploring more potential clinical triggers of the aggression found in the study sample.

Finally, due to the trend towards external LOC, programs should promote in students

the responsibility that they themselves control their lives, assuming the positive or negative consequences of their actions. Their own successes and failures are, for the most part, the result of their effort and actions.

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### Authors' Contributions

Coordination, drafting, and review of the document: FU

Design of data collection or fieldwork: all authors

Data collection or contribution and fieldwork: MR, ES

Data cleaning, systematization, analysis, or data visualization: FU

Participation in data analysis, structure, and document writing: all authors.

### Supplementary Materials

There are no supplementary materials.

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### About the Authors

**Francisco José Ureta Morales** holds a Bachelor's degree in Psychology from USAC, a Master's in Educational Measurement, Evaluation, and Research from UVG, and is currently a Ph.D. student in Forensic Psychology at the Universidad Internacional Iberoamericana in Mexico. He is a professor in both undergraduate and postgraduate programs at the School of Psychological Sciences and the Faculty of Humanities and a researcher at DIGI - USAC.



**Mavis Rodríguez** has completed her master's degree in research at USAC and holds a Bachelor's degree in Psychology from USAC. She is an existential phenomenological therapist with training from Circulo Existencial in Mexico and ALPE in Argentina. She works as a university lecturer at the School of Psychological Sciences at USAC, reviews theses, and has participated in two research projects funded by DIGI, with another one in progress.

**Elena María Soto Solares** graduated with a Bachelor's degree in Psychology from the University of San Carlos of Guatemala. She holds a Master's degree in Clinical Psychology and Mental Health from the Universidad Mariano Gálvez. Elena works as a thesis reviewer and lecturer at the Center for Research in Psychology (CIEPs), School of Psychological Sciences, University of San Carlos of Guatemala.

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### Conflict of Interest Statement

I declare that I have no conflicts of interest that may have influenced the obtained results or the proposed interpretations.

### Informed Consent Statement

The study was conducted in accordance with the Code of Ethics and Good Editorial Practices for Publication.

## Derecho de uso

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