

FACTORIAL STRUCTURE OF THE QUESTIONNAIRE OF LABOR EXPECTATIONS IN UNIVERSITY STUDENTS (CEL-U), PREDICTIVE CAPACITY AND SOCIODEMOGRAPHIC, EDUCATIONAL AND JOB EXPECTATIONS CHARACTERIZATION IN A SAMPLE OF STUDENTS FROM THE METROPOLITAN UNIVERSITY.

ESTRUCTURA FACTORIAL DEL CUESTIONARIO DE EXPECTATIVAS LABORALES EN ESTUDIANTES UNIVERSITARIOS (CEL-U), CAPACIDAD PREDICTIVA Y CARACTERIZACIÓN SOCIODEMOGRÁFICA, EDUCATIVA Y DE EXPECTATIVAS DE TRABAJO EN UNA MUESTRA DE ESTUDIANTES DE LA UNIVERSIDAD METROPOLITANA.

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Abstract

This document presents a study on the factorial structure of the questionnaire of job expectations among university students at the Metropolitan University in Caracas, Venezuela. The main objective of the study was to analyze the predictive capacity and sociodemographic, educational, and job expectations characterization in a sample of university students. The research design was approved by the Research Directorate of the Metropolitan University and involved the participation of twenty-eight sections. The instrument used was a job expectations questionnaire that included 17 items. The results showed that the predictive capacity of the questionnaire was high and that personal attributes and outcome perspective are relevant for assessing the quality of university education and the job placement of university graduates. Additionally, it was found that the majority of surveyed students had job expectations related to their career and that most of them were willing to work abroad.

Keywords: Factorial structure. Questionnaire. Job expectations. University students.



Resumen

Este documento presenta un estudio sobre la estructura factorial del cuestionario de expectativas laborales en estudiantes universitarios de la Universidad Metropolitana en Caracas, Venezuela. El objetivo principal del estudio fue analizar la capacidad predictiva y la caracterización sociodemográfica, educativa y de expectativas de trabajo en una muestra de estudiantes universitarios. El diseño de la investigación fue aprobado por la Dirección de Investigación de la Universidad Metropolitana y se contó con la participación de veinte y ocho secciones. El instrumento utilizado fue un cuestionario de expectativas laborales que incluía 17 ítems. Los resultados mostraron que la capacidad predictiva del cuestionario fue alta y que los atributos personales y la perspectiva de resultados son relevantes para valorar la calidad de la formación universitaria y la inserción laboral de los egresados universitarios. Además, se encontró que la mayoría de los estudiantes encuestados tenían expectativas laborales relacionadas con su carrera y que la mayoría de ellos estaban dispuestos a trabajar en el extranjero.

Palabras clave: Estructura factorial. Cuestionario. Expectativas laborales. Estudiantes universitarios.

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Introduction

Higher education continues to represent a global challenge. It is expected to be of quality and also relevant, training students to perform well in the world of work. In recent years, Higher Education Institutions have incorporated strategies, especially focused on the training of competencies, which have made it possible to shorten the gap between education and the world of work, enabling students to learn and experience the demands of a job through concrete experiences (Acosta and Vuotto, 2001). Various international reports on Higher Education indicate that it is imperative to have a system for monitoring graduates in the labor market to evaluate and strengthen the relevance and quality of Higher Education. Graduate observatories, aimed at monitoring the labor market insertion of graduates, have been developed in the European context; however, they are still incipient in Latin America.

Despite the expansion of higher education, which implies that young people increasingly have a higher level of formal education, there is evidence of an increase in the difficulty of finding employment, which brings with it a series of problems related to the lack of equity and inclusion (Weller, 2007).

Venezuelan university degrees are in a situation of concern regarding professional careers given the evident difficulties that currently exist with the labor market, even more so in the current crisis that our political, social, economic and moral environment is enduring. In developed countries, employability is related to the level of education of the working population; in other words, employability is always higher in the population with a higher level of education (OECD, 2014).

However, even though there are no figures for Venezuela, the economic crisis has caused, among other things, that the quality of employment, especially among higher education graduates, is very low, with a high level of rotation, precariousness in contracts and above all in salaries. It can be stated, as indicated by Palací and Moriano (2013), that the current labor market is characterized by increased outsourcing (service sector), greater flexibility in all aspects (schedules, teleworking), market segmentation and redefinition of positions (teleworking, outsourcing, consulting, entrepreneurship) and what perhaps most directly and personally affects the university graduate, the increase in unemployment and job insecurity, with uncertainty, loss of bargaining power and low pay. Therefore, there could be negative feelings among university students in the current labor market scenario: feelings of insecurity, disappointment and uncertainty due to the lack of opportunity to find a good job in Venezuela and having to migrate to other countries that can offer a range of opportunities. The aforementioned evidences the need for an approach between labor expectations and students,

so that the institution fulfills more efficiently one of its main functions, which is to train students for professional performance, the level of labor market insertion of its graduates being one of the quality indicators of its management (Jimenez, 2009).

According to Hernández-Fernaud (2011), the personal characteristics of the students, their attitude and initiative, as well as the perception of their employability will be determining factors in the labor market insertion process, which seems to be related to labor expectations: set of beliefs, attitudes and values of people with respect to work. Venezuelan society, even in the crisis in which it is immersed, has been making a considerable effort to invest in Higher Education. This effort, which comes from families, foundations or public and private institutions, is justified because higher education studies are considered, in the medium and long term, as a range of monetary and non-monetary benefits, both individual and collective.

Different authors and studies carried out on labor expectations and the future of university students list the individual benefits of university education as well as the social benefits. Some of them are (Pastor et al. 2007):

- Obtaining a university degree allows the graduate to obtain a higher income in the labor market.
- The probability of being active in the labor markets is higher than those of any other level of studies, especially for women.
- University studies increase an individual's attractiveness to companies, increasing his or her employability.
- University studies can have positive effects on the propensity for entrepreneurship.
- University education generates positive effects on the stability of the labor cycle of individuals. In other words, people have more stable jobs and are less likely to suffer episodes of unemployment.

University education also generates a whole series of benefits for individuals and society that cannot be quantified in monetary terms and should be noted, such as (McMahon, 2009):

- The higher the level of education, the better the health of the person, the greater the conservation of the environment and the lower the crime rates.
- It has positive effects on gender equality, social and political participation, which increases social capital.
- It has a positive influence on the upbringing of children. They receive better care and training in the home, in addition to increasing the likelihood that they will go on to university studies.

In short, “university studies provide individuals with a set of skills to deal with present and, more importantly, future imbalances. No other type of investment in education provides these capabilities and, for this reason, university studies generate positive expectations about the future employment of individuals in a society with a labor market and knowledge that changes and needs to be updated faster and faster” (Pastor, et al. 2012). In the Venezuelan context, and especially for the Universidad Metropolitana, it is imperative to know if its students are aware of the realities of the labor market, if this is accompanied by the decision to opt for this training (their career), their personal skills, economic aspects and the reality of the labor market inside and outside Venezuela.

The present research is based on the research entitled: “Study on labor expectations in higher education” (Benhayón, Castañón and Pidal, 2019). The project of this research was approved by the Directorate of Research of the Metropolitan University as established by its regulations in 2018 (departmental endorsement, approval of external referees and approval of the research committee), which sought to determine the validity of the structure of the Instrument on Labor Expectations in Higher Education (CEL-U), constructed by Castañón, Benhayón and Pidal (2019), in undergraduate students of the Metropolitan University.

Method

Participants

The undergraduate student population of Universidad Metropolitana, for the year 2019 was composed of 3707 students, of which 55.33% were male, maintaining a statistically significant difference ($\chi^2=42.089$; $p=0.00$), median ($\omega=0.107$) and potent ($1-\beta=1.00$) with respect to women. Of the 15 careers offered, the statistical majority ($\chi^2=1387.714$; $p=0.00$) belonged to the business administration career ($P=15.86\%$) and the statistical majority ($P=85.71\%$; $\chi^2=4448.098$; $p=0.000$) entered by means of the diagnostic, placement and comprehensive evaluation exam (PDU).

The sample included 691 undergraduate students from that university, who were selected through non-probabilistic sampling by intention. The sample size exceeded the minimum required ($n=381$) calculated with 95% confidence and a maximum admissible error of 5%. In addition, it can be considered a large sample ($n>500$) for construct validity studies (Hernández, Ponsoda, Muñiz, Prieto, & Elosua, 2016a & 2016b). Likewise, it exceeded the minimum size required when applying an Exploratory Factor Analysis (EFA) or Confirmatory Factor Analysis (CFA) to a 25-item test ($n_{\text{exploratory}}=125$ and $n_{\text{confirmatory}}=250$), according to the specifications described by Hair, Anderson, Tatham and Black (1999). The majority were women ($P=53.84\%$), although it maintained a significant ($\chi^2=4.065$; $p=0.04$), small ($\omega=0.077$) and non-powerful ($1-\beta=0.52$) difference with respect to the percentage of men ($P=46.16\%$). The statistical majority ($\chi^2=215.174$; $p=0.000$) belonged to the psychology major ($P=12.90\%$), although the percentage of systems engineering ($P=10.58$) and business administration ($P=11.45\%$) students, were percentage-wise similar to it ($Z=1.34$ and $Z=0.82$, respectively). Likewise, with the exception of production engineering ($Z=2.16$) and business administration

($Z=2.95$), the percentage of students in the sample, in each of the other 13 programs offered at the university, were not statistically significantly different from the percentage observed in the population ($|Z|<1.96$). As in the population, the statistical majority ($\chi^2=800.863$; $p=0.000$) entered through the PDU ($P=84.16\%$), and of these, the majority ($\chi^2=550.054$; $p=0.000$) did not require previous preparation, so they entered the first quarter directly into the career ($List_1=54.31\%$). Likewise, most of them report that when choosing the career they sought information about the study curriculum ($P=89.00\%$), this being a statistically significant ($\chi^2=420.436$; $p=0.000$), large ($\omega=0.78$) and powerful ($1-\beta=1.00$) difference, with respect to those who did not ($P=11.00\%$). The cumulative academic index of the majority ($\chi^2=316.178$; $p=0.000$) was between 14.0 - 15.9 points (36.80%), within a scale ranging from 0 to 20 points. With respect to the socioeconomic level of their homes, the majority of the participants ($\chi^2=844.043$; $p=0.000$) were characterized by choosing a medium-high level (60.64%), living in a home that, without being luxurious, is comfortable and in optimal sanitary conditions. The occupation of the economic responsible in the home of the majority ($P=60.09\%$; $\chi^2=781.791$; $p=0.000$) was: managerial employee, merchant, business owner or free professional practice. With respect to the subjective perception of economic privilege, where 1 implies perceiving oneself as part of the "less privileged" social stratum and 5 as part of the "more privileged" stratum, the majority chose option 3 ($P=38.86\%$), maintaining a statistical similarity with those who chose option 4 ($P=37.39\%$; $Z=0.56$). Likewise, the statistical majority of students reported that their father ($P=72.86\%$; $\chi^2=144.013$; $p=0.000$) and mother ($P=79.86\%$; $\chi^2=246.006$; $p=0.000$) possessed university studies. The majority of the students consulted ($P=70.04\%$; $\chi^2=511.805$; $p=0.000$) pay their university tuition on their own or on behalf of family members. The majority have 2 years of studies within the institution ($P=34.78\%$; $\chi^2=779.304$; $p=0.000$). Finally, the majority indicated that the area in which they consider they can perform better according to the training they have acquired is in management positions within companies ($P=31.78\%$; $\chi^2=502.69$; $p=0.000$).

Instrument

A questionnaire was designed with 54 questions that explored socio-demographic characteristics (sex, age, economic level of housing, occupation of the person responsible for the household, stratum to which he/she believes he/she belongs, father's and mother's university studies), educational characteristics (means of entrance to the institution, academic performance, method of payment of tuition, year and route of entrance to the university, career, when entering, sought information about the curriculum), labor characteristics (areas of future performance once graduated, need for a degree, pursuit of the ideal job from the current career, valuation of the career by society in Venezuela and abroad, perception of economic improvements and quality of life from the exercise of the career, perception of being an agent of change from their career, valuation of further education and choice of university for further studies, preferred type of hiring, salary expectation) and the CEL-U, whose content was validated by "four professors of the Metropolitan University and a pilot test was conducted with students" (Castañón, Ocanto and Tirado, 2019, p.65).

Procedure

The research design was approved by the Research Department of the Universidad Metropolitana (Caracas-Venezuela). Prior to the application of the instrument, permissions for its application were obtained from the corresponding authority (Dean of Students). Formal consent was obtained and the support of professors was orally requested to apply the instrument in their classes. Twenty-eight (28) sections participated and the subjects were asked to voluntarily access the instrument link through their telephones to answer it. The principle of free participation with free abandonment prevailed. There was no refusal of any participant. All the subjects who participated in the sample, as well as the collaborating teachers, were informed about the objectives of the research. Oral consent was obtained from the participating teachers and students to ensure their anonymity. Confidentiality in the handling of information was guaranteed for all. The database was archived and analyzed by the research team.

Data Analysis

The present instrumental study (Montero and León, 2007), was conducted following the logic of Anderson and Gerbin's (1988) 2-step method, also known as: "unrestricted (exploratory) model but with a confirmatory purpose" (Joan and Anguiano-Carrasco, 2010, p. 24) or simply AFE with confirmatory purposes (Pérez-Gil, Chacón, & Moreno, 2000), which is "widely used to perform item analysis, especially in the early stages of scale development [... and] in the development, validation and use of most psychometric measures, especially in non-cognitive domains" (Lorenzo-Seva & Ferrando, 2020, p. 1). Furthermore, it was applied according to the strategy of rival models (Hair, Anderson, Tatham, & Black, 1999) and its objective was to identify the best factorial structure that explains the responses to the CEL-U, as well as the indicators of internal consistency and the parameters for its correction and interpretation in a sample of university students from the Universidad Metropolitana de Venezuela (UNIMET); We also sought to identify its predictive capacity on a set of variables related to work expectations and to characterize its scores, based on another set of sociodemographic and educational variables of the university students analyzed. For the above, first the item analysis was carried out and it was determined that: 1) there were responses across the full range of options for each item and if there was any item that distinguished itself from the others in its average response pattern, 2) the presence of the univariate normality assumption from the significance ($p_{K-S} > 0.05$) of the Kolmogorov (1933) Smirnov (1939) coefficient with significance correction (Lilliefors, 1967; Dallal and Wilkinson, 1986) and 3) compliance with the measure of sampling adequacy (MSA), whose interpretation will follow the criteria described by Dziuban and Shirkey (1974) in both Pearson-based inter-item correlation matrices $[_{MCPearson}]$ and polycorrelation matrices $[_{MCPolycoric}]$.

The adequacy of the inter-item correlation matrices was then determined by verifying that: 3) there are no positively undefined matrices, since they do not have negative values in the diagonal of the inverse matrix (Lorenzo-Seva and Ferrando, 2021) in both $_{MCPearson}$ and $_{MCPolycoric}$ matrices 4) the existence of a possible factorial structure, based on: 4.1) its determinant ($d \neq 0$), 4.2) the Kaiser - Meyer and Olkin sample adequacy coefficient (KMO) whose interpretation will follow the criteria described by Kaiser in 1974 and 4.3) the significance of Bartlett's Sphericity

($p_{\text{Bartlett}} < 0.05$). It was also verified: 5) the presence of the multivariate normality assumption from the Multivariate Relative Kurtosis (RMK) and Mardia's test (1970), to determine whether the calculations in the Confirmatory Factor Analysis (CFA) will be performed from the Maximum Likelihood (ML) or Unweighted Least Squares (ULS) method, depending on whether or not the assumption is met respectively (Batista and Coenders, 2000) 6) that there are no factorial models that imply: 6.1) an improper solution (Cuttance, 1987; Hoffmann, Stover, de la Iglesia, and Liporace, 2013) 6.2) Heywood cases (Lloret-Segura, Ferreres-Traver, Hernández-Baeza, and Tomás-Marco, 2014). The set of possible factor models was identified and described, both for $_{\text{MCPearson}}$ as well as $_{\text{MCPolychoric}}$ in: 7) criteria that do not require re-sampling, namely: 7.1) Cumulative Explained Variance ($_{\text{Explained}} > 60\%$ ($_{\text{Explained}} > 60\%$), 7.2) eigenvalue (λ) greater than or equal to 1 [$\lambda > 1$], 7.3) the drop contrast in the sedimentation plot, and 8) in those criteria that require re-sampling, namely: 8.1) the Partial Minimum Average Test (MAP), 8.2) the Classical Parallel Analysis (CPA) and 8.3) the Optimal Parallel Analysis (OPA).

All these analyses were carried out using the Principal Components (PC) and Minimum Residuals (MINRES) methods, according to the use of $_{\text{MCPearson}}$ or $_{\text{MCPolychoric}}$ respectively. In both cases Varimax rotation was used, in order to comply with the independence assumption required by the factorial measurement models (Johnson, 2000), even more so when these factorial scores will later be used to predict other variables (Nunally and Bernstein, 1995) of importance in the context of university students' employability. To identify which factorial model best explained the responses to the CEL-U, the CFA was performed using the ML or ULS method depending on whether the multivariate normality assumption is met (Batista and Coenders, 2000) and 9) the fit indicators were analyzed: absolute, incremental and parsimony in: 9.1) all models obtained in the AFE, 9.2) the original theoretical structure (*A priori* criterion according to Hair, et al. 1999), 9.3) duplicate models of the previous ones, but adding a second level factor score that would represent the total score of Job Expectation of College Students and 9.4) a single first level factor model that also represents this total score without the need to underlie latent factors. 10) According to Hair et al. (1999) and Batista and Coenders (2000): the chi-square (χ^2) and its ratio with respect to the degrees of freedom (χ^2/ gl), the root mean square residual (RMSR), the root mean square error of approximation (RMSEA), the non-centrality index (NCP) and the expected cross-validation index (ECVI), will be lower in the model with better fit to the data; as well as they will be higher: the goodness-of-fit index (GFI), the parsimony normed fit index (PNFI) and the parsimony goodness-of-fit index (PGFI). The significances (p) of the χ^2_p and the RMSEA_p , will be less than 0.05 in the models with better fit and the adjusted goodness-of-fit index (AGFI), the non-normalized goodness-of-fit index (NNFI), also known as the Tucker - Lewis index (TLI), the normalized fit index (NFI) and the comparative fit index (CFI) will be higher, within a range between 0.90 and 1.00 point, in the model with better fit. 11) For the internal consistency analysis, the Omega coefficient (Ω) of Heise and Bohrnstedt (1970), which applies to the context of factorial tests, was calculated and interpreted (Muñiz, 1998). 12) Scale correction parameters were performed under the systematic regression method (DiStefano, Zhu, and Mindriță, 2009), and 12) for its qualitative interpretation Tukey's (1977) hinge method was used.

To characterize the scores with respect to qualitative sociodemographic and educational variables, the significance of Student's t statistic (p_t) or the Mann-Whitney U test (p_U) was used when the groups were dichotomous and depending on whether or not the homoscedasticity assumption was met, evaluated with the significance of Levene's statistic ($p_{Levene} > 0.05$). In case the comparison groups were of the polychotom type, the significance of the Analysis of Variance (p_{ANOVA}) was used if the homoscedasticity assumption was met, otherwise that of the Kruskal Wallis test (p_H) was used. To determine in which dyad of the polychotomous groups significance, effect size and statistical power of their differences (post-hoc analysis) could be appreciated, p_U or p_t ($p < 0.05$), Cohen's d ($d > 0.20$) and statistical power ($1 - \beta > 0.80$) were used. In those cases where the existence of a linear trend is suspected, given the existence of at least one hierarchical order between the variables, ETA correlation analysis was performed, whose interpretation will follow the criteria of Prieto and Muñiz (2000) and its most recent update by Hernández et al. (2016a and 2016b). Finally, to determine the predictive capacity of the CEL-U, on quantitative level variables, the magnitude of the product-moment correlation coefficient (Pearson, 1904; Pearson and Pearson, 1922) was analyzed, whose interpretation followed the classification of Hernández et al. (2016a and 2016b). Finally, as the questions used as external validation criteria of the CEL-U were qualitative and polytomous level, a discriminant analysis or multinomial logistic regression was performed, depending on whether the homoscedasticity assumption was met respectively from the significance of Box's M statistic (p_M). The interpretation of the predictive capacity was based on the analysis of the relationship of the CEL-U with each criterion separately (R) according to the classification of Hernández et al. (2016a and 2016b) and with its ability to predict beyond chance, an aspect that was analyzed based on the Chi-square analysis (χ^2) and its significance (p_{χ^2}) with respect to the overall percentage of prediction of the CEL-U on the responses to each question considered as a criterion.

Results

In the 25 items of the CEL-U no response option was observed that was not chosen by the participants, it was determined that none of them met the univariate normality assumption ($p_{K-S} < 0.05$), although all items met the expected level of MSA ($MSA > 0.50$), both for $MCP_{Pearson}$ and $MCP_{Polycoric}$, with p23 and p24 being meritorious ($0.80 > MSA < 0.90$) and the rest of the items being wonderful ($MSA > 0.90$).

Likewise, it was considered that an underlying factor structure did exist, both for the $MCP_{Pearson}$ and for $MCP_{Polycóricas}$ since: the d was adequate in both ($d_{Pearson} = 6 \cdot 18 \times 10^{-06}$; $d_{Polychoric} = 6 \cdot 61 \times 10^{-08}$), the KMOs were wonderful ($KMOP_{Pearson} = 0 \cdot 94$; $KMOP_{Polychoric} = 0 \cdot 94$) and both $p_{Bartlett}$ were significant ($p_{Bartlett-Pearson} = 0 \cdot 000$; $p_{Bartlett-Polychoric} = 0 \cdot 000$). It was also possible to determine that it was not possible to ensure the multivariate normality assumption ($RMK = 1.263$; $p_{kurtosis} = 0 \cdot 000$), which is why the calculations in the AFC will be made from the ULS method. No factor models involving an improper solution or Heywood cases were observed, both in $MCP_{Pearson}$ and for $MCP_{Polycoric}$. The possible factor models are presented in Table 1.

Table 1: Possible CEL-U factor models. N/A = Not applicable

Model	No. Factors		Items per Factor					
	Level 1	Level 2	F1	F2	F3	F4	F5	F6
1	4	0	From p6 to p9, p16, p19 and p20	From p1 to p5, p21 and p22	From p10 to p15, p17 and p18	From p23 to p25	N/A	N/A
2	4	1	From p6 to p9, p16, p19 and p20	From p1 to p5, p21 and p22	From p10 to p15, p17 and p18	From p23 to p25	N/A	N/A
3	6	0	From p1 to p5, p21 and p22	From p6 to p9	p10, p12, p14, p15, p18	p11, p13, p19, p20	from 23 to p25	p16 and p17
4	6	1	From p1 to p5, p21 and p22	From p6 to p9	p10, p12, p14, p15, p18	p11, p13, p19, p20	from 23 to p25	p16 and p17
5	2	0	From p6 to p20	From p1 to p5 and from p21 to p25	N/A	N/A	N/A	N/A
6	2	1	From p6 to p20	From p1 to p5 and from p21 to p25	N/A	N/A	N/A	N/A
7	3	0	From p23 to p25	From p6 to p20	From p1 to p5 and p21, p22	N/A	N/A	N/A
8	3	1	From p23 to p25	From p6 to p20	From p1 to p5 and p21, p22	N/A	N/A	N/A
9	4	0	From p1 to p5, p21 and p22	From p23 to p25	From p10 to p15; p17 and p18	From p6 to p9; p14, p16, p19 and p20	N/A	N/A
10	4	1	From p1 to p5, p21 and p22	From p23 to p25	From p10 to p15; p17 and p18	From p6 to p9; p14, p16, p19 and p20	N/A	N/A
11	2	0	p1, p2, from p23 to p25	From p3 to p22	N/A	N/A	N/A	N/A
12	2	1	p1, p2, p23 to p25	From p3 to p22	N/A	N/A	N/A	N/A
13	1	0	From p1 to p25	N/A	N/A	N/A	N/A	N/A

Of all these models, the one that best explains the CEL-U responses was the Model₃, since, as shown in Table 2, it has the lowest χ^2 ($\chi^2= 1.100.21$) as well as the χ^2/gf ($\chi^2/gf=4.23$), the RMSR (RMSR= 0.04), the RMSEA (RMSEA=0.031), the NCP (NCP= 840.21) and the ECVI (ECVI= 1.78); it is also one of the models with the highest GFI (GFI= 0.99). The p's of the χ^2 and RMSEA do not serve to distinguish which model is the best fit, since all were significant ($p<0.05$).

Table 2: Absolute fit measures of the possible factorial models of the CEL-U.

Model No.	Absolute Adjustment								
	χ^2	χ^2_p	χ^2/df	GFI	RMSR	RMSEA	RMSEA _p	ECVI	NCP
1	1,232.41	0.00	4.58	0.99	0.05	0.072	0.00	1.95	963.41
2	1,248.01	0.00	4.61	0.99	0.05	0.072	0.00	1.97	977.01
3	1,100.21	0.00	4.23	0.99	0.04	0.031	0.00	1.78	840.21
4	1,152.41	0.00	4.28	0.99	0.05	0.034	0.00	1.83	883.41
5	1,703.12	0.00	6.22	0.98	0.06	0.087	0.00	2.62	1,429.12
6	1,611.33	0.00	5.90	0.98	0.06	0.084	0.00	2.49	1,338.33
7	1,263.28	0.00	4.70	0.99	0.05	0.073	0.00	1.99	994.28
8	1,278.89	0.00	4.72	0.99	0.05	0.073	0.00	2.01	1,007.89
9	1,464.74	0.00	5.39	0.99	0.05	0.080	0.00	2.28	1,192.74
10	1,464.74	0.00	5.39	0.99	0.05	0.080	0.00	2.28	1,192.74
11	2,279.33	0.00	8.32	0.98	0.06	0.100	0.00	3.45	2,005.33
12	2,279.31	0.00	8.35	0.98	0.06	0.100	0.00	3.45	2,006.31
13	2,491.32	0.00	9.06	0.98	0.07	0.110	0.00	3.76	2,216.32

The indicator with the best fit to the data is highlighted in bold italics.

Table 3 shows that, except for the AGFI, whose highest value (AGFI= 0.99) is found in the Model₃, none of the incremental fit indicators serves to distinguish the model that best fits the CEL-U responses, since all of them have the same value (CFI=1.00; NFI=1.00 and NNFI=1.01). And although this model cannot be considered the most parsimonious as it does not have the highest PNFI and PGFI (PNFI=0.92; PGFI=0.91), it can also be pointed out that its PNFI (PNFI₃=0.87) can be considered adequate, given that it does not have a substantial difference with the maximum (the difference should not be greater than 0.09 points).

Table 3: Incremental fit and parsimony measures of the possible factorial models of the CEL-U and indicators of the cumulative explained variance in the first level models according to their source matrix.

Model No.	Incremental Adjustment				Parsimony Adjustment		First Level Factors					No. of Factors	
	AGFI	IFC	NNFI or TLI	NFI	PNFI	PGFI	source matrix	cumulative % of total δ^2 explained	χ^2	p χ^2	ω	Level 1	Level 2
1	0.98	1.00	1.01	1.00	0.90	0.82	Pearson	55.93%	1.41	0.24	0.12	4	0
2	0.98	1.00	1.01	1.00	0.90	0.82	Pearson	N/A	N/A	N/A	N/A	4	1
3	0.99	1.00	1.01	1.00	0.87	0.79	Pearson	63.61%	7.41	0.01	0.27	6	0
4	0.98	1.00	1.01	1.00	0.90	0.82	Pearson	N/A	N/A	N/A	N/A	6	1
5	0.98	1.00	1.01	1.00	0.91	0.83	Pearson	45.93%	0.66	0.42	0.08	2	0
6	0.98	1.00	1.01	1.00	0.91	0.82	Pearson	N/A	N/A	N/A	N/A	2	1
7	0.98	1.00	1.01	1.00	0.90	0.82	Polycoric	62.58%	6.33	0.01	0.25	4	0
8	0.98	1.00	1.01	1.00	0.90	0.82	Polycoric	N/A	N/A	N/A	N/A	4	1
9	0.98	1.00	1.01	1.00	0.91	0.82	Pearson	51.16%	0.05	0.82	0.02	3	0
10	0.98	1.00	1.01	1.00	0.91	0.82	Pearson	N/A	N/A	N/A	N/A	3	1
11	0.97	1.00	1.01	1.00	0.91	0.82	N/A	N/A	N/A	N/A	N/A	2	0
12	0.97	1.00	1.01	1.00	0.82	0.91	N/A	N/A	N/A	N/A	N/A	2	1
13	0.97	1.00	1.01	1.00	0.92	0.83	N/A	N/A	N/A	N/A	N/A	1	0

Table 3 also shows us that the Model₃ comes from $MCP_{Pearson}$ and is composed of 6 first level factors, whose cumulative percentage of total variance explained ($P=63.61\%$) is the highest among all the models compared, as well as being significant ($\chi^2_p = 0.01$) and moderately ($\omega=0.27$) above chance.

Table 4: Parameters for the correction of CEL-U

Item	Factor						μ	δ
	1	2	3	4	5	6		
p1	0.32	0.01	-0.15	-0.08	-0.07	0.04	3.13	0.70
p2	0.31	0.05	-0.15	-0.11	-0.05	0.01	3.14	0.71
p3	0.27	-0.10	0.07	-0.06	-0.05	-0.07	2.93	0.83
p4	0.27	-0.16	0.11	-0.00	-0.07	-0.10	2.70	0.94
p5	0.26	0.04	-0.12	-0.07	-0.03	0.01	3.12	0.70
p6	0.05	0.30	-0.01	-0.10	-0.09	-0.16	3.10	0.78
p7	-0.02	0.30	-0.06	-0.10	0.01	0.01	3.29	0.77
p8	-0.09	0.32	0.06	-0.19	0.02	0.04	3.27	0.75
p9	-0.03	0.35	-0.16	0.03	-0.02	-0.09	3.23	0.78
p10	-0.06	-0.01	0.34	-0.03	-0.00	-0.12	3.06	0.93
p11	-0.02	-0.18	-0.02	0.43	-0.06	0.06	3.03	0.92
p12	-0.04	-0.07	0.45	-0.09	0.00	-0.17	2.95	1.00
p13	0.02	-0.14	0.01	0.42	-0.03	-0.15	2.84	0.94
p14	-0.11	0.07	0.14	0.14	0.02	-0.13	3.13	0.84
p15	-0.08	0.11	0.26	-0.14	-0.08	0.06	3.17	0.85
p16	-0.03	-0.05	-0.16	0.04	-0.07	0.67	3.32	0.94
p17	-0.11	0.08	0.21	-0.25	-0.02	0.36	3.02	0.93
p18	-0.02	-0.25	0.22	0.15	-0.05	0.15	2.12	1.12
p19	-0.12	0.10	-0.15	0.40	-0.00	-0.04	3.10	0.88
p20	-0.12	0.12	-0.16	0.34	-0.00	0.06	3.45	0.69
p21	0.07	0.03	0.04	0.10	0.04	-0.20	3.04	0.79
p22	0.12	-0.17	-0.04	0.02	0.04	0.29	2.74	0.86
p23	-0.11	0.03	-0.10	0.03	0.51	-0.09	2.90	0.77
p24	-0.07	-0.04	0.00	-0.07	0.52	-0.08	2.86	0.86
p25	-0.00	-0.13	0.03	-0.09	0.29	0.25	2.76	0.85

Their correction and interpretation parameters are presented respectively in Tables 4 and 5. They were assigned the names: Quality of Academic Training (Factor₁), Attributes to deal with everyday situations (Factor₂), Attributes to deal with creative and innovative situations

(Factor₃), Attributes to deal with situations with own criteria and commitment (Factor₄), Value of the professional in the labor market (Factor₅) and Attributes to deal with contexts and situations of national and international order (Factor₆); which will be explained in more detail in the discussion section. Finally, its internal consistency was excellent ($\Omega=0.982$).

Table 5: Parameters for interpretation of the CEL-U

Hinge	Level	Factor					
		1	2	3	4	5	6
5	Very high	$Z_1 > 2.72$	$Z_2 > 2.86$	$Z_3 > 2.49$	$Z_4 > 2.71$	$Z_5 > 2.37$	$Z_6 > 2.47$
4	High	$2.72 > Z_1 > 0.73$	$2.86 > Z_2 > 0.72$	$2.49 > Z_3 > 0.71$	$2.71 > Z_4 > 0.72$	$2.37 > Z_5 > 0.61$	$2.47 > Z_6 > 0.69$
3	Expected	$0.73 > Z_1 > -0.60$	$0.72 > Z_2 > -0.70$	$0.71 > Z_3 > -0.48$	$0.72 > Z_4 > -0.60$	$0.61 > Z_5 > -0.56$	$0.69 > Z_6 > -0.50$
2	Under	$-0.60 > Z_1 > -2.60$	$-0.70 > Z_2 > -2.84$	$-0.48 > Z_3 > -2.26$	$-0.60 > Z_4 > -2.59$	$-0.56 > Z_5 > -2.31$	$-0.50 > Z_6 > -2.28$
1	Very Low	$Z_1 < -2.60$	$Z_2 < -2.84$	$Z_3 < -2.26$	$Z_4 < -2.59$	$Z_5 < -2.31$	$Z_6 < -2.28$

With respect to the characterization of the CEL-U with respect to the sociodemographic and educational variables considered, we found that, in terms of sex there were only statistically significant ($p_t = 0.007$; $p_{Levene} = 0.08$), median ($d = 0.205$) and powerful ($1 - \beta = 0.852$) differences in the Factor₂ in favor of women ($\mu_2 = 0.09$; $\delta_2 = 0.94$), so it can be pointed out that the more the student is male ($\mu_2 = -0.11$; $\delta_2 = 1.06$), the lower his score in the factor of attributes to deal with everyday situations; without implying a linear relationship ($ETA = 0.102$), when the factor is assumed to be sex-dependent.

As for the perceived economic level of housing, the "intermediate" category had to be discarded for analysis first, since there were no students in this category. The only factor of the CEL-U that showed significant differences was the Factor₄ ($p_H = 0.025$; $p_{Levene} = 0.011$). *Post-Hoc* analysis, revealed that there was an intermediate effect size between the differences of students who perceive their housing to be of a low economic level ($\mu_4 = -0.31$, $\delta_4 = 1.14$), with respect to those who perceive it to be of low - medium level ($d = 0.49$; $\mu_4 = 0.24$, $\delta_4 = 1.05$), medium - high ($d = 0.32$; $\mu_4 = 0.03$, $\delta_4 = 0.92$) or high ($d = 0.36$; $\mu_4 = 0.10$, $\delta_4 = 1.08$) and of these, were statistically significant ($p > 0.05$) and powerful ($1 - \beta > 0.80$) that of medium-high ($p = 0.008$; $1 - \beta = 0.89$) or high ($p = 0.005$; $1 - \beta = 0.88$), without there being a linear relationship between them ($ETA = 0.129$), assuming the factor as dependent on the perceived economic level of the dwelling; so it can be concluded that, when the economic level of the dwelling is perceived to be low, the lower the scores in the factor of attributes to face situations with own criteria and commitment, with these differences (significance, power and effect size) starting from the perception of medium - high, without it growing from there. No significant differences were observed in any of the 6 factors of the CEL-U, with respect to: the occupation of the person responsible for the household's finances, or whether the father has completed university studies.

In terms of perceived socioeconomic stratum, the only factor that showed significant differences was Factor₃ ($p_H = 0.04$; $p_{Levene} = 0.007$). The *Post-Hoc* analysis, however, revealed that, although there is an intermediate effect size when comparing students who perceive themselves as less privileged ($\mu_3 = 0.40$, $\delta_3 = 0.63$) in favor of these, with respect to the remaining students whose perception of their economic status is higher (all d were greater than 0.20 points and the other μ_3 were less than 0.40), without there being a linear relationship between them on the Factor₃ ($ETA = 0.126$), and in some of them the differences were not statistically significant ($p > 0.05$) and powerful ($1 - \beta < 0.80$); therefore, it can be pointed out that there is an intermediate but not significant and powerful tendency to increase the score of the factor of attributes to deal with creative and innovative situations, when students perceive themselves as less economically privileged.

With respect to whether or not the mother did or did not do university studies, although statistically significant differences were found in the Factor₄ ($p_t = 0.04$; $p_{Levene} = 0.275$), in favor of those who did not ($\mu_4 = 0.15$, $\delta_4 = 0.96$), with respect to those who did ($\mu_4 = -0.04$, $\delta_4 = 1.01$), such differences are small ($d = 0.199$) and not powerful ($1 - \beta = 0.673$), so neither did it assume a linear relationship ($ETA = 0.078$) that would assume that to the extent that a mother did not study at university, she would increase the score on the factor of attributes for coping with situations with self-judgment and commitment.

Regarding how they pay their tuition at the university, it was found that only the Factor₄ ($p_{ANOVA} = 0.001$; $p_{Levene} = 0.123$), showed a significant difference and it is presented in an intermediate ($d = 0.29$), significant ($p_U = 0.000$; $p_{Levene} = 0.064$) and powerful ($1 - \beta = 0.96$) way between those students who pay on their own or their relatives assume the payment of their tuition ($\mu_4 = -0.06$, $\delta_4 = 1.03$), with respect to those who pay through a student scholarship ($\mu_4 = 0.21$, $\delta_4 = 0.90$), without there being a linear relationship between them (ETA), so it can be concluded that to the extent that a student or a family member pays the tuition or part of it, the lower score they will have in the factor of attributes to face situations with own criteria and commitment, compared to those who have access to some type of student scholarship.

With respect to the number of years at the university, a significant ($p < 0.05$) and sufficient ($0.20 < r < 0.35$) relationship was observed with respect to factors 1 ($r = -0.281$; $p = 0.000$) and 6 ($r = -0.215$; $p = 0.000$), so it can be concluded that the more time a student spends at the university, the lower his or her score will be in the factors of quality of academic training (Factor₁) and attributes to deal with national and international contexts and situations (Factor₆).

With respect to the university entrance route, it was found that the only factor that showed significant differences was the Factor₄ ($p_{ANOVA} = 0.05$; $p_{Levene} = 0.591$). The *Post-Hoc* analysis, revealed, that there are intermediate and statistically significant differences in favor of those who enter through the preparation course for higher studies (CPES: $\mu_4 = 0.28$, $\delta_4 = 0.92$), with respect to those entering by the comprehensive assessment (EI: $\mu_4 = -0.12$, $\delta_4 = 1.01$; $d = 0.41$; $p_t = 0.04$; $p_{Levene} = 0.877$) or by the diagnostic, placement and comprehensive assessment test (PDU: $\mu_4 = -0.03$, $\delta_4 = 1.01$; $d = 0.31$; $p_t = 0.02$; $p_{Levene} = 0.361$). Although there is no statistical power in some of the observed differences ($1 - \beta_{EI} = 0.66$ and $1 - \beta_{PDU} = 0.78$), nor can a linear relationship be

assumed between them ($ETA=0.93$) assuming Factor₄ as dependent on the income pathway. It can be concluded then that to the extent that a student enters through the CPES, a higher score is expected in the attribute factor for coping with situations with self-judgment and commitment.

Likewise, in the case of students who entered through the PDU, significant differences were observed in factors 1 and 3 respectively ($p_{ANOVA1}=0.022$; $p_{Levene1}=0.056$; $p_{H3}=0.003$; $p_{Levene3}=0.020$). In the case of Factor₁, intermediate differences were observed and against students who did not require prior preparation upon entry (List : $\mu_{11}=-0.11$, $\delta_1=0.96$), with respect to: those who required prior preparation in language (List : $\mu_{31}=0.13$, $\delta_1=1.05$; $d=0.24$), those who required preparation in both language and mathematics and a third instrumental component (List : $\mu_{41}=0.16$, $\delta_1=0.99$; $d=0.28$) and , those that required even more basic preparation in both language and mathematics and a third instrumental component (List : $\mu_{51}=0.32$, $\delta_1=0.72$; $d=0.51$); this difference being statistically significant for those who entered through List 4 and 5 ($p_{t4}=0.004$; $p_{Levene4}=0.719$; $p_{t5}=0.040$; $p_{Levene5}=0.215$) and powerful only for those who entered through List₄ ($1-\beta_4=0.89$). All of the above assumed that there was no linear relationship between the entry lists on the Factor₁ score ($ETA=0.135$) and, therefore, to the extent that a student did not require prior preparation at the time of entry, the lower score he/she would have on the quality of academic training factor.

In the case of Factor₃, intermediate differences were observed and against students who did not require prior preparation upon entry (List : $\mu_{11}=-0.11$, $\delta_1=1.05$), with respect to: those who required prior preparation in language (List : $\mu_{31}=0.10$, $\delta_1=0.82$; $d=0.23$), those who required preparation in both language and mathematics, and a third instrumental component (List : $\mu_{41}=0.16$, $\delta_1=0.94$; $d=0.27$) and , those that required even more basic preparation in both language and mathematics and a third instrumental component (List : $\mu_{51}=0.48$, $\delta_1=0.53$; $d=0.70$); being statistically significant and powerful this difference for the case of those who entered by list 4 and 5 ($p_{t4}=0.007$; $p_{Levene4}=0.118$; $1-\beta_4=0.87$; $p_{U5}=0.004$; $p_{Levene5}=0.004$; $1-\beta_5=0.94$). All of the above assumed that there was no linear relationship between the entry lists on the Factor score₃ ($ETA=0.152$) and, therefore, to the extent that a student did not require prior preparation at the time of entry, the lower score he/she will have on the factor of attributes to address creative and innovation situations.

Those students who, when choosing their career, sought information about the curriculum, had an intermediate and significant difference in both the Factor₁ ($\mu_1=0.04$, $\delta_1=0.98$; $d_1=0.323$; $p_{t1}=0.005$; $p_{Levene1}=0.24$) as in Factor₆ ($\mu_6=0.98$, $\delta_6=0.98$; $d_6=0.292$; $p_{t6}=0.012$; $p_{Levene6}=0.07$) and being only powerful in the case of Factor₁ ($1-\beta_1=0.844$); compared to those who did not seek information about the study curriculum ($\mu_1=-0.30$, $\delta_1=1.12$; $\mu_6=-0.27$, $\delta_6=1.11$) and without a linear relationship between them ($ETA_1=0.106$; $ETA_6=0.096$), so that, when the student seeks this information at the time of choosing the career, he/she will have higher scores in the factors of: quality of academic training and attributes to address national and international contexts and situations.

With respect to the cumulative academic index, the only factor that showed significant

differences was Factor₄ ($p_{ANOVA} = 0.01$; $p_{Levene1} = 0.078$). *Post-Hoc* analysis, revealed that while there was an intermediate effect size in the difference between those students with a cumulative academic index between 10 and 11.9 points ($\mu_4 = -0.18$, $\delta_4 = 1.20$) from those whose index was between 16 and 17.4 points ($d = 0.28$; $\mu_4 = -0.12$, $\delta_4 = 0.91$), between 17.5 and 18.4 points ($d = 0.32$; $\mu_4 = 0.17$, $\delta_4 = 0.97$) or between 18.5 and 20 points ($d = 0.47$; $\mu_4 = 0.29$, $\delta_4 = 0.78$). However, none of these differences were statistically significant ($p > 0.05$) or powerful ($1 - \beta > 0.80$), perhaps part of the explanation as to why the above or a greater difference between students according to their cumulative academic index was not appreciated, is due to the rank restriction bias (Aron and Aron, 2002), since the scores of said index range from 0 to 20 points and in the sample there were only students with an index higher than 10 points, which implies that all of them are approved according to Article 152 of the Venezuelan Universities Law (1970). It can be concluded then that to the extent that a student has an accumulated index between 10 and 11.9 points, he/she will have a lower score in the factor of attributes to face situations with his/her own criteria and commitment.

Regarding the area in which the student considers he/she can perform better according to the training acquired, differences were detected only in factors: 2 ($p_{ANOVA} = 0.002$; $p_{Levene} = 0.715$), 3 ($p_U = 0.000$; $p_{Levene} = 0.000$) and 4 ($p_{ANOVA} = 0.000$; $p_{Levene} = 0.638$). In Factor₂, those students who chose the governmental organizations or public policy option had the highest mean ($\mu_2 = 0.34$, $\delta_2 = 1.01$) and a low ($d = 0.10$), non-significant ($p_t = 0.398$; $p_{Levene} = 0.700$) and non-powerful ($1 - \beta = 0.21$) difference with those who chose the community advocacy or social service option ($\mu_2 = 0.24$, $\delta_2 = 1.02$), thus distinguishing itself from the rest of the occupational options considered, with whom it maintains an intermediate effect size ($0.80 > d > 0.20$) and therefore the score in the factor of attributes to deal with everyday situations tends, to be higher in these occupations. In the Factor₃, those students who chose the option of own entrepreneurship had the highest mean ($\mu_3 = 0.18$, $\delta_3 = 0.98$) and a low, significant and non-powerful effect size ($d = 0.10$; $p_t = 0.031$; $p_{Levene} = 0.724$; $1 - \beta = 0.70$) with those who chose the option of managerial positions in companies ($\mu_3 = 0.05$, $\delta_3 = 0.93$), thus distinguishing it from the rest of the job options considered, with whom it maintains an intermediate effect size ($d > 0.20$) and therefore the score in the factor of attributes to address creative and innovation situations, tends to be higher in these occupations. In the Factor₄, those students who chose the research and development option had the highest average ($\mu_4 = 0.23$, $\delta_2 = 0.94$) and a low ($d = 0.18$; $d = 0.20$) and not powerful ($1 - \beta = 0.46$; $1 - \beta = 0.62$) difference with those who chose the options respectively of: community promotion or social service ($\mu_2 = 0.08$, $\delta_2 = 0.84$) or teaching or training ($\mu_2 = 0.04$, $\delta_2 = 1.05$); although in the case of the former, the low difference observed ($d = 0.18$) turned out not to be significant ($p_t = 0.129$; $p_{Levene} = 0.220$) and in the latter it was ($p_t = 0.049$; $p_{Levene} = 0.482$). The above implies that these are distinguished from the rest of the occupational options considered, with whom they maintain an intermediate effect size ($0.80 > d > 0.20$) and therefore the score in the factor of attributes to face situations with own judgment and commitment tends to be higher in the students who choose these 3 occupations.

In terms of the career of study, differences were detected only in factors: 2 ($p_{ANOVA} = 0.000$; $p_{Levene} = 0.949$), 3 ($p_U = 0.000$; $p_{Levene} = 0.002$) and 4 ($p_{ANOVA} = 0.000$; $p_{Levene} = 0.248$), 5 ($p_{ANOVA} = 0.001$;

$p_{Levene}=0.141$) and 6 ($p_U=0.005$; $p_{Levene}=0.046$). In Factor₂, those students who were industrial mathematics had the highest mean ($\mu_2=0.52$, $\delta_2=1.15$) and a low ($d<0.20$), non-significant ($p<0.5$) and not powerful ($1-\beta<0.80$) with those who were in liberal studies ($\mu_2=0.51$, $\delta_2=0.96$; $d=0.01$; $1-\beta=0.05$; $p_t=0.979$; $p_{Levene}=0.842$), education ($\mu_2=0.49$, $\delta_2=0.79$; $d=0.04$; $1-\beta=0.06$; $p_t=0.936$; $p_{Levene}=0.477$) and law ($\mu_2=0.47$, $\delta_2=0.89$; $d=0.05$; $1-\beta=0.06$; $p_t=0.919$; $p_{Levene}=0.871$), thus distinguishing itself from the rest of the careers offered, with whom it maintains an intermediate effect size ($0.80>d>0.20$) and therefore the score in the factor of attributes for dealing with everyday situations tends to be higher in these careers. In the Factor₃, those students who were business administration had the highest average ($\mu_3=0.46$, $\delta_3=0.65$) and a low difference ($d<0.20$), not significant ($p<0.5$) and not powerful ($1-\beta<0.80$) with those studying production engineering ($\mu_3=0.42$, $\delta_3=0.87$; $d=0.06$; $1-\beta=0.09$; $p_t=0.753$; $p_{Levene}=0.101$), thus distinguishing itself from the rest of the careers offered, with whom it maintains an intermediate ($0.80>d>0.20$) or large ($d>0.80$) effect size and therefore the score in the factor of attributes to address creative and innovation situations, tends to be higher in these careers. In the Factor₄, those students who were education had the highest average ($\mu_4=0.56$, $\delta_4=1.17$) and a low ($d<0.20$), non-significant ($p<0.5$) and not powerful ($1-\beta<0.80$) with those who studied systems engineering ($\mu_4=0.50$, $\delta_4=0.82$; $d=0.06$; $1-\beta=0.08$; $p_t=0.806$; $p_{Levene}=0.288$) or electrical engineering ($\mu_4=0.49$, $\delta_4=0.88$; $d=0.07$; $1-\beta=0.07$; $p_t=0.839$; $p_{Levene}=0.643$), thus distinguishing itself from the rest of the careers offered, with whom it maintains an intermediate ($0.80>d>0.20$) or large ($d>0.80$) effect size and therefore the score in the factor of attributes to face situations with own criteria and commitment, tends to be higher in these careers. In the Factor₅, those students who were business administration had the highest average ($\mu_5=0.36$, $\delta_5=1.01$) and a low ($d<0.20$), non-significant ($p<0.5$) and non-powerful ($1-\beta<0.80$) with those who studied education ($\mu_5=0.291$, $\delta_5=0.83$; $d=0.08$; $1-\beta=0.09$; $p_t=0.776$; $p_{Levene}=0.328$) or accounting ($\mu_5=0.288$, $\delta_5=0.43$; $d=0.10$; $1-\beta=0.08$; $p_U=0.713$; $p_{Levene}=0.046$) or industrial mathematics ($\mu_5=0.25$, $\delta_5=1.25$; $d=0.10$; $1-\beta=0.08$; $p_t=0.811$; $p_{Levene}=0.855$) or production engineering ($\mu_5=0.19$, $\delta_5=0.98$; $d=0.18$; $1-\beta=0.25$; $p_t=0.336$; $p_{Levene}=0.832$), thus distinguishing itself from the rest of the careers offered, with whom it maintains an intermediate effect size ($0.80>d>0.20$) and therefore the score in the factor of the value of the professional in the labor market tends to be higher in these careers. Finally in the Factor₆, those students who were in economics had the highest average ($\mu_6=0.44$, $\delta_6=0.93$) and a low difference ($d<0.20$), not significant ($p<0.5$) and not powerful ($1-\beta<0.80$) with those studying accounting ($\mu_6=0.26$, $\delta_6=1.18$; $d=0.17$; $1-\beta=0.12$; $p_t=0.617$; $p_{Levene}=0.280$), thus distinguishing itself from the rest of the careers offered, with whom it maintains an intermediate ($0.80>d>0.20$) or large ($d>0.80$) effect size, and therefore the score in the factor of attributes to address national and international contexts and situations tends to be higher in these careers.

Table 6: Predictive ability of the CEL-U with different external criteria

Ask	R	Overall percentage of correct prediction	χ^2	p-value χ^2
Do you consider that you need a degree in order to opt for better job opportunities?	,201	77,5%	96,92	0,000
Will the career you are studying help you get your dream job?	,390	71,9%	97,15	0,000
Do you consider that the career you are studying is valued by Venezuelan society?	,380	54,5%	97,83	0,000
Do you consider that the career you are studying is valued abroad?	,319	86,8%	96,56	0,000
Do you believe that the career you are studying will offer you economic improvements in general, compared to the lifestyle you have received from your family?	,261	86,8%	96,56	0,000
Do you think you could provide a better quality of life for your children by completing your current studies?	,393	55,5%	97,79	0,000
Do you believe that the career you are studying can make you an agent of change?	,338	76,9%	96,95	0,000
Would you choose UNIMET to continue your education in Venezuela?	,404	96,7%	96,17	0,000
Where do you want to work as a future professional?	,253	50,3%	98,00	0,000

Table 6 details that the predictive capacity of the CEL-U is generally sufficient ($0.20 < R < 0.35$) or good ($0.30 < R < 0.45$), since that was the qualification of the quality of the prediction in half of the questions 8 questions that could be analyzed by means of multinomial logistic regression, since the homoscedasticity assumption was not fulfilled in any of them ($p_M < 0.05$). Likewise, all of them had a predictive capacity significantly different from chance ($p_{\chi^2} < 0.05$). The questions: Do you think that you need a degree to opt for better job opportunities, Do you think that you should continue training, could not be analyzed considering that maximum likelihood estimates do not exist or some parameter estimates were infinite.

The questions that had sufficient predictive ability ($0.20 < R < 0.35$) were: Do you consider that the career you are studying is valued abroad, Do you think that the career you are studying will offer you economic improvements in general, compared to the lifestyle you have received from your family, Do you think that the career you are studying can make you an agent of change, Where do you want to work as a future professional, Where do you want to work as a professional?

The questions that had a good predictive capacity ($0.30 < R < 0.45$) were: Will the career you are studying help you to get your ideal job?, Do you consider that the career you are studying is valued by Venezuelan society?, Do you think that you could provide a better quality of life for your children with the completion of your current studies?, Would you choose UNIMET to continue your education in Venezuela?

In this sense, to the extent that a student has a higher score in Factor₅ (attributes to address creative and innovative situations; $\beta=0.43$; $p=0.000$), in Factor₅ (Value of the professional in the labor market: $\beta=0.25$; $p=0.022$) and a lower score in Factor₆ (and Attributes to address national and international contexts and situations; $\beta=-0.22$; $p=0.041$), he/she will tend to respond that he/she wishes to work in Venezuela.

If the student has a low score in the factors: 1 (Quality of Academic Training: $\beta= -1.06$; $p=0.000$), 3 (Attributes to address creative and innovative situations: $\beta=-0.52$; $p=0.001$) and 6 (Attributes to address national and international contexts and situations: $\beta=-0.38$; $p=0.010$), he will tend to answer that he would not choose UNIMET to continue his training in Venezuela.

If the student has a low score in the factors: 1 (Quality of Academic Training: $\beta=-0.78$; $p=0.000$), 2 (Attributes to address everyday situations: $\beta=-0.63$; $p=0.000$) and 3 (Attributes to address creative and innovation situations: $\beta=-0.32$; $p=0.001$), he/she will tend to answer that he/she does not believe that the career he/she is studying can turn him/her into an agent of change.

If the student has a low score in the factors: 1 (Quality of Academic Training: $\beta=-1.10$; $p=0.000$), 3 (Attributes to address creative and innovative situations: $\beta=-0.66$; $p=0.002$), 5 (Value of the professional in the labor market: $\beta=-0.59$; $p=0.005$) and 6 (Attributes to address national and international contexts and situations: $\beta=-0.77$; $p=0.000$), will tend to respond that they do not believe they could provide a better quality of life for their children with the completion of their current studies.

If the student has a low score in factors: 1 (Quality of Academic Training: $\beta=-0.51$; $p=0.001$), 5 (Value of the professional in the labor market: $\beta=-0.32$; $p=0.039$) and 6 (Attributes to address contexts and situations of national and international order: $\beta=-0.53$; $p=0.000$), he will tend to respond that he does not believe that the career he is studying will offer him economic improvements in general, compared to the lifestyle he has received from his family.

If the student has a low score in the factors: 1 (Quality of Academic Training: $\beta=-0.87$; $p=0.000$), 3 (Attributes to address creative and innovative situations: $\beta=-0.55$; $p=0.012$), 5 (Value of the professional in the labor market: $\beta=-0.52$; $p=0.020$) and 6 (Attributes to address

national and international contexts and situations: $\beta=-0.54$; $p=0.012$), will tend to respond that they do not believe that the career they are studying is valued abroad.

If the student has a low score in factors: 3 (Attributes to address creative and innovative situations: $\beta=-0.39$; $p=0.000$) and 5 (Value of the professional in the labor market: $\beta=-0.78$; $p=0.000$), he/she will tend to respond that he/she does not believe that the career he/she is studying is valued by Venezuelan society.

If the student has a low score in the factors: 1 (Quality of Academic Training: $\beta=-0.84$; $p=0.000$), 2 (Attributes to address everyday situations: $\beta=-0.50$; $p=0.025$) and 5 (Value of the professional in the labor market: $\beta=-0.47$; $p=0.042$), he will tend to respond that he does not believe that the career he is studying will help him to get his ideal job.

Discussion and conclusion

According to this sentence, what is requested is an opinion or judgment (*"considers"*) valuation (*"grade"*) in relation to the different factors resulting from the Winning Model. This value judgment is the consequence of a constructive process on the part of the subject, considering previous information, experiences and schemes that come into play when giving meaning and selecting a valuation for each component (question) of the factor, influencing his/her perception of the reality explored by that factor. Consequently, what is measured with the instrument is Perception of Job Expectations, given that, in perception as a cognitive process, the subject organizes the information he/she has about them in a meaningful way, to become aware of the context and his/her own experience, influencing the construction of a value judgment around each component or indicator considered in his/her job expectations (Factors).

To construct the definition of each factor, if the instrument measures Perception of Job Expectations, each factor represents different aspects that constitute or are associated with Job Expectations. By first taking into account the Theoretical Model that defines them, used to elaborate and validate (expert judgment) the 2-factor Prior Model instrument, the following elements that define Job Expectations are identified:

- *Self-knowledge about capabilities and interests and also aspects of the context* (Batlle et al, 2009).
- *Value judgments about one's own competencies to perform* (Bandura, 2001).
- *Outcome expectations: material, social and personal* (Bandura, 2001).

Then, as a second approach, when analyzing the resulting items in the winning model, distributed in the 6 Factors, the presence of the theoretical elements that define Job Expectations was confirmed. Consequently, the Value Judgment (Perception) on the presence or not of Personal Attributes (Knowledge, Training and Skills) and Perspective of Results (Personal and UNIMET's Attributes to obtain material, personal benefits) is constructed. Both to achieve Job Expectations:

- Component 1:

Subjects' Attributes for the achievement of their Job Expectations.

- a) Self-knowledge: Development of Capacities and competences.
- b) Knowledge of the Context (environment): type of career and characteristics of the work environment (e.g. changing work environment).

(Both knowledge corresponds to Factor 2. Attributes of the subjects, in the a priori Model), and Type of Career to Factor 1, in the a priori Model).

- Component 2:

Outlook for results (aspiration) and job expectations

- a) Materials: Value the relationship between cost (investment) and return (benefits in the labor field).
- b) Social: Valuation of UNIMET for the national labor market (UNIMET Brand) and job opportunities (insertion).

Finally, the third reference is the definition of competencies and their classification in the profile of the unimetado graduate, according to the Educational Model based on competencies of the Universidad Metropolitana.

Competence: "Set of knowledge, skills, attitudes and values demonstrated by the individual in the performance of personal, academic, social and professional actions". (p.41)

All the items identified in the Winning Model are located in the type Generic Competencies and these are defined as those that "integrate fundamental knowledge to perform adequately and to coexist in society, independent of the specific discipline. They are part of the general and basic training and are developed transversally throughout the curriculum" (p.43).

With respect to qualitative variables, significant differences were found ($p < 0.05$), with adequate effect size ($d > 0.20$) and statistical power ($1 - \alpha > 0.80$) with respect to:

- Sex: In Factor 2 ($p = 0.07$), with an intermediate ($d = 0.205$) and statistically powerful ($1 - \alpha = 0.852$) difference in favor of a higher score in those who are male ($M = 0.09$; $D = 0.94$; $N = 372$) compared to female ($M = -0.11$; $D = 1.06$; $N = 319$).
- Diagnostic, Placement and Comprehensive Evaluation (PDU) test: in Factor 3 ($p = 0.006$), only for those who showed a significant ($p = 0.000$), intermediate ($d = 0.704$) and statistically powerful ($1 - \alpha = 0.94$) difference in favor of those who entered

through Schedule 1 (M=0.48; D=0.53; N=22) compared to those who entered through Schedule 5 (M=-0.10; D=1.05; N=340).

- When choosing the career they sought information about the curriculum: in Factor 1 ($p=0.005$), with an intermediate ($d=0.323$) and statistically powerful ($1-\alpha=0.844$) difference in favor of those who sought information (M=0.04; D=0.98; N=615) compared to those who did not (M=-0.30; D=1.12; N=76).
- In which area(s) do you consider that you can perform better according to the acquired training: In Factor 2 ($p=0.002$) only in those who showed a significant difference ($p=0.000$), intermediate ($d=0.350$) and statistically powerful ($1-\alpha=0.982$), with a tendency to have a higher score in those who indicated the Government Organizations/ Public Policy option (M=-0.30; D=1.12; N=76) compared to those who indicated the Business/Managerial Positions option (M=-0.01; D=1.00; N=510). In Factor 3 ($p=0.000$), only in those who showed a significant ($p=0.004$; $p=0.000$), intermediate ($d=0.331$; $d=0.451$) and statistically powerful ($1-\alpha=0.895$; $1-\alpha=0.999$) difference, which respectively would be in favor of those who indicated the options of: Government Organizations / Public Policy (M=-0.06; D=1.04; N=148), Business / Management Positions (M=0.05; D=0.93; N=510) and/or Own Entrepreneurship (M=0.18; D=0.92; N=427) compared to those who indicated the Teaching / Training option (M=-0.43; D=1.20; N=161).
- Will the career you are studying help you get your ideal job: In Factor 1 ($p=0.000$), only in those who showed a significant ($p=0.000$; $p=0.000$), intermediate ($d=0.702$; $d=0.604$) and statistically powerful ($1-\alpha=0.884$; $1-\alpha=0.999$), which respectively would be in favor of those considering Yes (M=0.17; D=0.96; N= 491) compared to those considering No (M=-0.70; D=1.48; N=17) or maybe (M=-0.40; D=0.92; N=182).
- Do you consider that the career you are studying is valued by Venezuelan society?: In Factor 3 ($p=0.000$), only in those who showed a significant ($p=0.001$; $p=0.000$), intermediate ($d=0.362$; $d=0.604$) and statistically powerful ($1-\alpha=0.962$; $1-\alpha=0.999$), which respectively would be in favor of those considering Yes (M=0.10; D=0.94; N= 332) or Maybe (M=0.09; D=0.96; N= 177), compared to those considering No (M=-0.28; D=1.09; N=181). In Factor 5 ($p=0.000$), only in those who showed a significant ($p=0.000$; $p=0.000$), intermediate ($d=0.677$; $d=0.518$) and statistically powerful ($1-\alpha=1.00$; $1-\alpha=0.99$), which respectively would be in favor of those who consider yes (M=0.30; D=0.84; N= 332), compared to those who consider maybe (M=-0.16; D=0.92; N= 177) and also to those who consider no (M=-0.39; D=1.17; N=181).

In conclusion, the objective of the present study aimed at identifying the best factor structure of the Career Expectations Questionnaire in University Students (CEL-U) of Benhayón et al (2019), based on the results of the CFA, the items were grouped into a structure of six (6) factors, being different from the a prior model constituted by two (2) factors. Below are the definitions of the six factors of the winning model:

Factor 1: The name of Perception of the Quality of Academic Training was chosen considering that it implies the knowledge of oneself regarding the complete training received at UNIMET and the value it gives to achieve their Labor Expectations and, favor their adaptability and return on investment in the labor field. This was observed in items 1, 2, 3, 4, 5, 21 and 22, when they evaluate at what level the knowledge acquired (p1), the training received (p2, p3, p4, p5) and the knowledge/competences (p21) received in their career (p1, p2), in the axes of general (p3), basic (p4) or professional (p2), in the axes of general training (p3), basic (p4) or professional (p5) or at UNIMET (p21 and p22), will help the student to reach his/her work expectations (p1, p2, p3, p4, p5), to work in a constantly changing work environment (p21) and with a positive cost-benefit ratio expected in the labor field (p22).

Factor 2: This factor was named Attributes to deal with everyday situations since it implies identifying the development of skills to communicate, solve problems, make decisions and critical thinking (observed in items p6, p7, p8 and p9, respectively), during general and basic training in the career, all of them personal attributes to perform functionally and coexist in the community, facilitating the achievement of their work expectations.

Factor 3: It was denominated as Attributes to approach creative and innovative situations because it refers to identifying the development of skills to innovate, undertake, work in teams, lead and protect physical health (observed in items p10, p12, p4, p15 and p18, respectively), during general and basic training in the career, all of them personal attributes to perform functionally and coexist in community, facilitating the achievement of their work expectations.

Factor 4: This factor was named as Attributes to face situations with own criteria and commitment, since it implies identifying the development of skills for handling technology, managing information, autonomy to learn and responsibility (Civic Commitment) (observed in items p11, p13, p19 and p20, respectively), during the general and basic training in the career, all of them personal attributes to perform functionally and coexist in the community, facilitating the achievement of their labor expectations.

Factor 5: It was named as Value of the professional in the labor market for this factor because UNIMET is identified as an educational brand that promotes their professional value and facilitates their insertion in the Venezuelan labor market. This was observed through items 23, 24 and 25, when it is identified that the Venezuelan labor market values the UNIMET graduate in general (p23) and in particular, the graduate of the career he/she is studying (p24), in addition to validating the effective actions that the institution carries out to facilitate insertion in the Venezuelan labor market (p25).

Factor 6: It was given the name of Attributes to address national and international contexts and situations because it identifies the development of skills for the mastery of a 2nd language, the ability to negotiate (observed in items p12 and p17, respectively), both during general and basic training in the career, imply personal attributes to perform functionally and coexist in community, facilitating the achievement of their work expectations.

When analyzing the items resulting from the winning model, it was confirmed in all factors the presence of indicators contemplated in the definition of Job Expectations, associated with Personal Attributes and Perspective of results, are relevant to assess the quality of university training, validate its relationship with the demands of the labor market and, the insertion and job satisfaction of university graduates (Pineda-Herrero et al, 2018).

With respect to Personal Attributes, which implies self-knowledge about competencies, abilities and interests and also aspects of the context, it is present in factors 2,3,4 and 6. The items that allow exploring these attributes, according to Battle et al (2009) and Bandura (2001), represent realistic indicators for the choice of the university institution considering the quality of the training and the professional value in the labor market. Likewise, all the skills identified in the items of the factors mentioned are consistent with the definition of competence and the classification of the graduate profile corresponding to the Educational Model based on competencies of the Metropolitan University, understood as the “set of knowledge, skills, attitudes and values demonstrated by the individual in the performance of personal, academic, social and professional actions” (p.41). Likewise, they were placed in the type Generic Competences, which integrate essential knowledge to perform adequately and coexist in society, in any discipline, constitute the general and basic training and are developed throughout the curriculum, in a cross-cutting manner (Renata et al, 2016).

Regarding the Outcome Perspective present in factors 1 and 5, there are items that explore the three types of outcomes proposed by Bandura (2001) in his definition of labor expectations: material outcome expectations (Valuing the cost-investment and return-benefit ratio in the labor field), social (Valuing UNIMET for the national labor market and prestige) and personal (Self-valuative reactions externalized as valuation of labor insertion opportunities), the latter being the main objective of university students (Perez, 2015).

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