

Impact of optimism versus pessimism on life satisfaction in university students

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Abstract

Being optimistic or pessimistic is a form of intuitive, premonitory thinking that is conditioned by one's personal experience. Some authors consider this attitude to be a subjective construction relating to expectations generated, motivation and effort. Others authors consider it to be a personality trait linked to life satisfaction and adaptive response to context. For this study, 561 university students participated, with an average age of 20.31 years (± 3.46). The instruments used were the Life Orientation Test (LOT-R) and the Satisfaction with Life Scale (SWLS). The aim of the study was to determine the structure of the LOT-R instrument, since many studies have questioned its unidimensional or two-dimensional structure, which compromises the instrument's validity. Subsequently, it was related to the SWLS through a Structural Equation Model. The results showed that the two-dimensional model (optimism and pessimism) was the most appropriate ($\chi^2/df = 4.36$; RMSEA=.072; SRMR=.044; GFI=.960; CFI=.979). Subsequently, the results described above were related to the Life Satisfaction variable, which reinforced the theoretical model proposed. Findings corroborated the double dimensionality of the LOT-R instrument, with a positive relationship between optimism and life satisfaction, and a negative relationship between pessimism and life satisfaction.

Keywords: disposition; life satisfaction; optimism; pessimism; university students

Resum. *Influència de l'optimisme versus pessimisme en la satisfacció vital d'estudiants universitaris*

Ser optimista o pessimista és una forma de pensament intuïtiu, premonitori i condicionat per la mateixa experiència. Diferents autors consideren aquest posicionament una construcció subjectiva relacionada amb les expectatives generades, la motivació i l'esforç. Altres autors, però, el consideren un tret de personalitat lligat a la satisfacció amb la vida i la resposta adaptativa al context. En aquest estudi van participar 561 estudiants universitaris,

amb una edat mitjana de 20,31 anys ($\pm 3,46$). Els instruments utilitzats van ser: LOT-R i SWLS. L'objectiu d'aquest estudi va ser determinar l'estructura de l'instrument LOT-R, ja que molts estudis n'han qüestionat l'estructura unidimensional o bidimensional, cosa que compromet la validesa de l'instrument. Posteriorment, es va relacionar amb l'escala SWLS mitjançant un model d'equacions estructurals. Els resultats van mostrar que el model bidimensional (optimisme i pessimisme) va ser el més adequat ($\chi^2/gf = 4,36$; RMSEA = ,072; SRMR = ,044; GFI = ,960; CFI = ,979). Posteriorment, els resultats descrits anteriorment es van relacionar amb la variable Satisfacció amb la Vida, cosa que va reforçar el model teòric proposat. Les troballes van corroborar la doble dimensionalitat de l'instrument LOT-R, amb una relació positiva entre l'optimisme i la satisfacció amb la vida i una relació negativa entre el pessimisme i la satisfacció amb la vida.

Paraules clau: disposició; estudiants universitaris; optimisme; pessimisme; satisfacció vital

Resumen. *Influencia del optimismo versus pesimismo en la satisfacción vital de estudiantes universitarios*

Ser optimista o pesimista es una forma de pensamiento intuitivo, premonitorio y condicionado por la propia experiencia. Diferentes autores consideran este posicionamiento una construcción subjetiva relacionada con las expectativas generadas, la motivación y el esfuerzo. Otros autores, sin embargo, lo consideran un rasgo de personalidad ligado a la satisfacción con la vida y la respuesta adaptativa al contexto. En este estudio participaron 561 estudiantes universitarios, con una edad promedio de 20,31 años ($\pm 3,46$). Los instrumentos utilizados fueron: LOT-R y SWLS. El objetivo de este estudio fue determinar la estructura del instrumento LOT-R, ya que muchos estudios han cuestionado su estructura unidimensional o bidimensional, lo que compromete la validez del instrumento. Posteriormente, se relacionó con la escala SWLS a través de un modelo de ecuaciones estructurales. Los resultados mostraron que el modelo bidimensional (optimismo y pesimismo) fue el más adecuado ($\chi^2/gf = 4,36$; RMSEA = ,072; SRMR = ,044; GFI = ,960; CFI = ,979). Posteriormente, los resultados descritos anteriormente se relacionaron con la variable Satisfacción con la Vida, lo que reforzó el modelo teórico propuesto. Los hallazgos corroboraron la doble dimensionalidad del instrumento LOT-R, con una relación positiva entre el optimismo y la satisfacción con la vida, y una relación negativa entre el pesimismo y la satisfacción con la vida.

Palabras clave: disposición; estudiantes universitarios; optimismo; pesimismo; satisfacción vital

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1. Introduction

Over the last few years, there have been an increasing number of studies on the subjective analysis of reality in different contexts, including in education, with the aim of reducing the negative factors that prevent students from successfully achieving their goals. Such factors include high levels of frustration and stress due to the demands of their day-to-day lives (Huang et al., 2020), the dissatisfaction caused by not meeting expectations in adaptive processes (Gavín-Chocano et al., 2020), coping styles (Montgomery et al., 2017), predisposition to uncertainty (Gustems-Carnicer et al., 2017), and the evaluation of risk through attitude (Scheier & Carver, 2018). This has led to a change of approach, to focus on strengths, positive emotions, optimism and different factors relating to individual well-being.

Concepts such as optimism are among the most significant variables in educational contexts, as they are a good predictor of a students' emotional and cognitive adjustment, and their impact on academic results (Hinz et al., 2017). However, the importance of this variable is largely in how it interacts with well-being and life, as well as in terms of the adaptive processes used to overcome different adverse situations. Optimism is understood the favourable attitude or managing of expectations by individuals about their immediate future; the opposite or unfavourable situation is pessimism. This subjective duality between optimism and pessimism is related to the expectations that individuals generated about their own immediate future produces changes, developing thoughts, emotions and behaviours in a stable way (Scheier & Carver, 1985). Understood in this way, the pessimistic person will attribute negative situations to internal, stable and general causes, while the optimistic person will attribute them to external, unstable and specific causes (Lin & Peterson, 1990). Thus, an optimistic or pessimistic attitude will constitute an expected, learned, conditioned way of thinking, and will therefore affect the individual's behaviour. Different authors have argued that such an attitude is a cognitive-emotional structure related to motivation, effort or expectations of the near future (Scheier & Carver, 2018); however, others argue that it is a personality trait (Costa-Requena et al., 2014) related to life satisfaction, coping, and adaptive responses to adverse situations; especially as a response to explain negative situations, which acts as a mechanism for self-regulation of commitment and effort to achieve the goals set (Gaibor-González & Moreta-Herrera, 2020).

From this perspective, two complementary theoretical positions have been established: the first is a pessimistic-optimistic explanatory approach (Peterson & Seligman, 1984), and the second, a dispositional optimism approach (Scheier & Carver, 1985). The pessimistic-optimistic explanatory approach involves causal attributions – external, unstable and specific to the situation presented (optimistic explanatory style) or internal, stable and general (pessimistic explanatory style) – which the person has to face in his or her daily life. An extension of this model is the Hope-Hopelessness Theories model (Abramson

et al., 1989), which considers that specific attributions made after the occurrence of a negative event contribute to the development of depressive symptoms and stress. In the university context, different studies have shown that concrete attributions made after academic failure are the best predictor of the development of depressive symptoms (Liu et al., 2017).

Teachers' emotional states such as optimism and engagement have been shown to have an impact on to have an impact on their students' performance, which thus enables their development (Dong & Xu, 2022). The influence of optimism and life satisfaction on student development and academic achievement has been proven in adolescents (Usán-Supervía et al., 2022); so too has its link with the management of resilience and stress in this same age group (Popa-Velea et al., 2021). Evidence of the importance of optimism and satisfaction has also been found in university populations in different university contexts from different countries, such as in the study conducted by Kaiser et al. (2020) in Brazil, the research undertaken by Lun et al. (2018) among university students in Hong Kong, and the study by Roso-Bas et al. (2016) in Spain.

A second approach, dispositional optimism, is defined as a personal tendency to evaluate future events positively, as a stable, temporary and situational position, which would imply a predisposition to persevere when goals are attainable (Scheier et al., 1994). This helps prevent dropout (Roso-Bas et al., 2016; Torres-Salazar et al., 2020), aids their adaptation to the university context to prevent the development of depressive symptoms (Fernández-González et al., 2015), and even increases their academic performance (Guillén et al., 2013).

In view of these findings, the objectives of the present study are: (a) to confirm the factor structure and reliability of the abbreviated version of the Life Orientation Test (LOT-R) in a sample of university students; (b) to analyse the existence of significant correlations between the factors of the assessment instruments of Optimism versus Pessimism (LOT-R) and Life Satisfaction (SWLS) respectively in a sample of university students; (c) to establish the existence of significant differences in the variables Optimism, Pessimism and Life Satisfaction with the socio-demographic variable Gender, in a sample of university students; and (d) to determine the effect of optimism versus pessimism on life satisfaction through a structural equation model (SEM) in university students.

2. Method

A quantitative study was conducted with a descriptive, comparative, correlational and cross-sectional design between the variables Optimism, Pessimism and Life Satisfaction, in order to determine the relationship between them. Based on these criteria, longitudinal and reliability measures were established through Cronbach's Alpha and Omega coefficient.

2.1. Participants

The population considered in this study was composed through a non-probabilistic purposive sample of students studying for degrees in education ($n=561$) at the Universities of Almería, Granada and Jaén, in the southeast of Spain, who agreed to participate on a voluntary basis. The gender distribution was as follows: 435 women (77.55%) and 126 men (22.45%), which coincides with the predominant proportion in education degrees at Spanish universities. The age range was between 18 and 48 years old, with an average age of 20.31 (± 3.46). The distribution by university context was 296 students from the University of Jaén (52.76%), 189 students from the University of Granada (33.69%) and 76 students from the University of Almería (13.55%).

2.2. Instruments

Life Orientation Test Revised (LOT-R) is a questionnaire designed to measure dispositional optimism (Scheier et al., 1994), and is a short and revised version of Scheier and Carver's (1985) Life Orientation Test (LOT). The test consists of ten items: three optimism statements (items 1, 4 and 10), three pessimism statements (items 3, 7 and 9) and four distractor items (2, 5, 6 and 8), the scores of which are not computed. Respondents answer each statement by indicating their level of agreement on a seven-point Likert scale ranging from strongly disagree to strongly agree. This scale measures the degree of optimism and pessimism; it is estimated that the higher values mean greater optimism, while the lower values mean greater pessimism. The reliability of the scores in our $\alpha=.88$ and $\omega=.88$, and a Cronbach's Alpha value $\alpha=.75$ and Omega coefficient $\omega=.76$, for pessimism.

The original version of the Satisfaction with Life Scale (SWLS) is by Diener et al. (1985). Specifically, we used the five-item version of the Satisfaction with Life Scale conducted by Vázquez et al. (2013). The scale in the Spanish version reports an internal consistency of $\alpha=.82$. The reliability of the scale scores obtained in our study is Cronbach's Alpha $\alpha=.84$ and Omega coefficient obtained from $\omega=.86$, respectively.

2.3. Procedure

We contacted the participants through their teachers at the Faculties of Education at the Universities of Almería, Granada and Jaén (Spain). We explained the purpose of the study to them, and asked them to ask their students if they wanted to participate in the process. The subjects were informed of the process to be followed, as well as the confidentiality and anonymity of the evidence collected. To administer the questionnaire, the Google Form® tool was used so participants could complete it on their mobile devices. The questionnaire was completed in class time, and they were given the opportunity to resolve any doubts they might have while answering the questionnaire. The ethical

standards and guidelines of the Declaration of Helsinki (WMA, 2013) were also followed.

2.4. Data analysis

In order to achieve a better fit of the results obtained in each of the tests, the data were transformed according to their factor loadings (Kline, 2015). A confirmatory factor analysis (CFA) was carried out by using structural equation modelling with the AMOS and Jamovi statistical programmes. In relation to the coefficients considered in this study, the Chi-squared test (χ^2), the degrees of freedom (*df*), and the CFI, GFI, SRMR and RMSEA fit indices were used. In this regard, χ^2 should be understood from the ratio in relation to the degrees of freedom (χ^2/df), where the values should be between 2 and 5. The Comparative Fit Index (CFI) calculates the relative fit of the observed model, whose value should be greater than .90, which indicates a good fit. Similarly, a Goodness of Fit Index (GFI) above .90 indicates the proportion of variance and covariance of the model data. Similarly, the Standardized Root Mean Square Residual (SRMR), the standardized mean of the residuals, i.e. the difference between the observed and model matrix, if less than .10, indicates a good fit of the model. The Root-Mean Square Error of Approximation (RMSEA), as a measure of discrepancy, should have results below .08 (Remor et al., 2006).

Once the two-dimensionality of the LOT-R instrument had been verified, descriptive statistics (means and standard deviations) were obtained, and the reliability and internal consistency of each instrument were analysed a priori through Cronbach's Alpha and the Omega coefficient. We worked with the weighted sum of each variable, to overcome the limitations that could affect the proportion of variance and the correlation between the resulting scores in the Optimism, Pessimism and Life Satisfaction dimensions. Next, an analysis of mean differences according to gender was performed using Student's *t-test* for mean difference for unrelated samples. In addition, effect sizes are reported for the analyses performed. Finally, a structural equation model (SEM) was developed in order to show the existence of significant differences between each of the variables of the instruments used. In all cases, a confidence level of 95% (significance $p < .05$) was used, employing the Jamovi software in its version 1.2 and AMOS 25.

3. Results

First, the dependent variable considered was the revised version of the dispositional optimism structure (Scheier et al., 1994), adapted by Remor et al. (2006), asking whether the instrument was unidimensional or bidimensional (optimism-pessimism). In order to address this question, a confirmatory factor analysis (CFA) of the two models was performed, which showed that the two-dimensional structure was the most appropriate (see Table 1).

Table 1. Two-dimensional model of LOT-R

	χ^2	df	χ^2/df	GFI	CFI	RMSEA	Lower	Upper	SRMR	AIC	BIC	ECVI
OPT/ PESS	39.25	9	4.36	.960	.979	.072	.058	.110	.044	9561	9643	.138

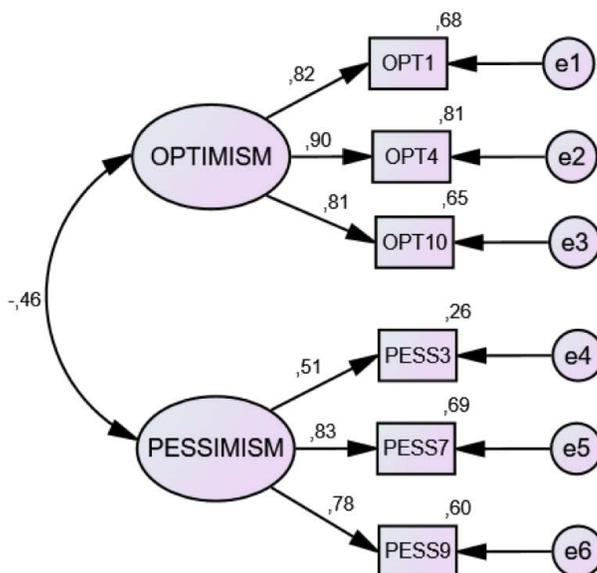
Note: OPT = Optimism, PESS = Pessimism, χ^2 = Chi-squared; GFI = Goodness Fit Index; CFI = Comparative Fit Index; RMSEA = Root-Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; AIC = Akaike information criterion; ECVI = Expected cross-validation index.

Source: Authors' own.

The Goodness of Fit (GFI) coefficient was above .90, and the Comparative Fit Index (CFI=.979) was higher than 0.90, which indicates that at least 90% of the covariance of the data may be replicated by the model.

The values obtained for the root mean squared error (RMSEA) were less than .08 and the standardized root mean squared error (SRMR) was less than .05, which indicate an anticipated fit with the total value of the sample, according to the established parameters. The values of this indicator (Steiger & Lind, 1980) suggest compensating for the effect of the complexity of the model by dividing it by the number of grades of freedom to test the model. Values below .08 are indicative of a good fit: in this case RMSEA=.072 and SRMR=.044.

Figure 1 shows the covariance between the factors optimism versus pessimism, with a negative value (-.46), in agreement with previous studies, where

Figure 1. Factor Structure of the LOT-R

Source: Authors' own.

the highest correlation coefficients were OPT4=.90; PESS7=.83 and OPT1=.82.

3.1. Relationship between Optimism, Pessimism and Life Satisfaction

To study this relationship, life satisfaction was included as an independent variable, in addition to the sociodemographic variable gender. Table 2 shows the results of the correlation matrix, descriptive statistics (mean and standard deviation), reliability analysis (Cronbach's Alpha and Omega coefficient), which generally present an adequate level of reliability in each of the variables.

Table 2. Internal consistency, mean, standard deviation and Pearson correlation

Variables	α	ω	M (SD)	Optimism	Pessimism	Life Satisfaction
Optimism	.88	.88	4.067 (\pm 1.246)	–	–.364	.546**
Pessimism	.75	.76	3.174 (\pm .904)		–	–.258**
Life Satisfaction	.84	.86	4.027 (\pm .858)			–

Note: *M* = Mean, *SD* = Standard deviation, ** = $p < .01$.

Source: Authors' own.

Analysing the correlation between each of the dimensions, a statistically significant negative relationship is observed, as expected, between Optimism and Pessimism ($r(561) = -.364$; $p < .01$). The positive relationship between Life Satisfaction and Optimism ($r(561) = .546$; $p < .01$) and negative with Pessimism ($r(561) = -.258$; $p < .01$) is also observed.

3.2. Differences according to gender

To analyse the differences between means according to the sociodemographic variable gender (see Table 3), Student's t-test was developed for two independent samples. The results show the presence of statistically significant differences in Optimism $t = 3.164$; $p < .05$ where men obtain better results than women; therefore, the difference in both groups is evident, as the effect size is large. In the case of the variables Pessimism and Life Satisfaction, no signifi-

Table 3. Mean differences according to gender

Variables	Men <i>M</i> (SD)	Women <i>M</i> (SD)	<i>t</i> -test	<i>p</i>	Effect size Hedges' <i>g</i> (aj.)
Optimism	4.37 (\pm 1.11)	3.97 (\pm 1.26)	3.164	.041*	.991
Pessimism	3.15 (\pm .94)	3.18 (\pm .89)	–.261	.142	1.639
Life Satisfaction	4.15 (\pm .80)	3.98 (\pm .87)	1.931	.242	.249

Note: *M* = Mean, *SD* = Standard Deviation, *t* = Student t-test, *p* = significance, *g* (aj.) = Adjusted Hedges test.

Source: Authors' own.

cant differences are found in relation to gender ($p>.05$). Regarding the scores obtained, higher values were found in men than in women.

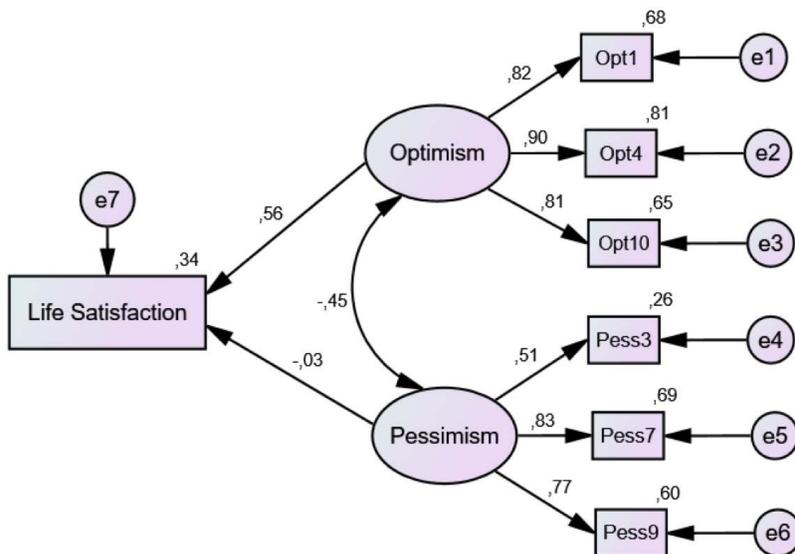
3.3. Differences according to gender

The model fit was tested based on the Chi-square (χ^2), the goodness-of-fit index (GFI) and the root mean square error of approximation (RMSEA), as a measure of absolute fit. The goodness-of-fit index (AGFI), the Tucker-Lewis Index (TLI) and the comparative goodness-of-fit index (CFI) as measures of incremental fit were also used. The Chi-squared ratio (χ^2) over degrees of freedom (CMIN/ df) and the Akaike's Information Criterion (AIC) were used as measures of parsimony fit. Subsequently, the effect was analysed through a structural equation model of the exogenous variables Optimism versus Pessimism and the endogenous observable variable Life Satisfaction.

The validity and fit of the established model was tested, with a significant associated Chi-squared (χ^2) value ($\chi^2=46.785$; $df=12$; $p<.001$). However, this statistic is sensitive to sample size and should be interpreted with caution. For this reason, different studies recommend using other indicators to evaluate model fit (Hu & Bentler, 1998). Among the most commonly used, we highlight the goodness-of-fit index (GFI), which presents a value of .972, indicating an acceptable model fit, as well as the comparative fit index (CFI) value, which obtains a value of .991. The incremental fit index (IFI) value obtains an acceptable value of .991. The Adjusted Goodness of Fit Index (AGFI) presents a value above .85, which also suggests a good fit. Finally, the root mean squared error (RMSEA) indicates an anticipated fit with the total population value, which is less than .08 to the established parameters. The values of this index were proposed by Steiger & Lind (1980), who suggested compensating for the effect of model complexity by dividing by the number of degrees of freedom to test the model. Values below .08 are indicative of a good fit; in our case it is .064. Consequently, the model fit is acceptable in relation to the data obtained.

Figure 2 shows the standardized weights between each of the variables, with a significance level of .005 (5% probability of error). The indicators with the highest regression weight of the variables below this value (see Table 4) correspond to Optimism (12.084), and negatively to Pessimism (-.703), which lacks significance and convergent validity; and finally, the relationship between Optimism and Pessimism (-6.997).

Figure 2. Structural Equation Model



Source: Authors' own.

Table 4. Regression weights and standardized regression weights

Relation between variables	Estimations	CR	p	SRW Estimations
Optimism < --- Vital Satisfaction	.416	12.084	**	.565
Pessimism < --- Vital Satisfaction	.059	-.703	.482	-.033
Optimism < - - > Pessimism	-.252	-6.997	**	-.454

Note: CR = Critical Ratio, SRW = Standardized Regression Weights, ** = $p < .01$.

Source: Authors' own.

4. Discussion and conclusions

The main objective of this study was to determine the psychometric properties of the Dispositional Optimism questionnaire in Scheier et al.'s (1994) Life Orientation Test (LOT-R) in a sample of education students from the Universities of Almería, Granada and Jaén (Spain). First, the reliability of the scores of each of the instruments was verified through the calculation of Cronbach's Alpha and subsequently the Omega coefficient. The latter is the most appropriate estimate when there is a disparity in the factor loadings of each item (Tau-Equivalence), by working with the weighted sum of each variable and overcoming the limitations that could affect the proportion of variance (Domínguez-Lara & Merino-Soto, 2015).

In relation to the first objective of this study, regarding the structural validity of the instrument, the confirmatory factor analysis (CFA) corroborated the two-dimensional structure (optimism and pessimism) of the LOT-R instrument, which is the most appropriate, disagreeing with the theoretical conceptualisation reviewed by the authors. However, different papers over time (Gaibor-González & Moreta-Herrera, 2020; Huang et al., 2020; Ottati & Noronha, 2017) discuss this perspective, pointing to optimism and pessimism as different factors for several reasons: the lack of a well-defined grounded theory; the positive or negative disposition of each item; and the social desirability, age, cultural and intellectual level and context of participants (Ottati & Noronha, 2017). Similarly, Rauch et al. (2006) show that the deviation from the solution of a single factor does not imply deviation from the unidimensionality of the LOT-R instrument, when the effect is added to the result.

Regarding the second objective, to analyse the existence of significant correlations between the factors of the assessment instruments of Optimism versus Pessimism (LOT-R) and Life Satisfaction (SWLS) in a sample of university students, the results indicated a statistically positive correlation between the variable Life Satisfaction and Optimism; and a negative correlation with Pessimism, as expected. Different studies corroborate these results, finding that optimistic people have greater well-being, are able to face challenges successfully, and are more satisfied with their lives (Kleiman, 2017); in contrast, pessimistic people tend to believe that adverse circumstances will be prolonged in time, they will not find the necessary resources to change the situation, and therefore they will be more dissatisfied (Sanin & Salanova-Soria, 2016). In the university context, a premonitory optimistic or pessimistic attitude towards desired goals in the near future may be considered a good predictor of higher or lower academic performance, personal growth and life satisfaction (Torres-Salazar et al., 2020). This attitude will affect the university student's decision-making, their level of efficacy, and their adaptation to their environment (Gaibor-González & Moreta-Herrera, 2020; Huang et al., 2020).

For the third objective, to establish the existence of significant differences in the variables Optimism, Pessimism and Life Satisfaction with the socio-demographic variable Gender in a sample of university students, significant differences were found in the variable Optimism, with higher values for men than for women. There are few studies that corroborate these results, in which higher levels of optimism are found in men than in women (Jacobsen et al., 2014). Most studies do not find significant differences in relation to gender, establishing a similar behaviour in the groups (Hinz et al., 2017). In the case of pessimism, no evidence was found to show that women tend to have higher levels of pessimism than men, with the differences found to be inconsistent in one direction or the other (Liu et al., 2017). This is probably due to the characteristics of the sample and the structure of the test, with a greater number of women than men. In relation to Life Satisfaction and Gender, no significant differences were found either, with the data for men being higher than for women. Different studies in the university context have shown that women

tend to suffer more depressive states because they generally perceive problems and adverse situations more intensely, with pessimistic thinking habits prevailing (Denegri-Coria et al., 2017). Other studies, however, find higher levels of life satisfaction in women in relation to other variables such as pro-social behaviour, positive relationships with others, purpose in life and autonomy (Hinz et al., 2017; Torres-Salazar et al., 2020).

Finally, once the bi-factor structure of the LOT-R instrument was verified, an analysis was developed with the multi-variate statistical technique of structural equations to corroborate the positive relationship between Life Satisfaction and Optimism, and negative with Pessimism; the model showed a good fit, as expected from the literature reviewed. However, it is necessary to point out that despite the relevance of the data obtained, the structural model does not provide sufficient evidence to ratify this relationship; however, it does allow us to corroborate the two-dimensionality of the instrument (Gaibor-González & Moreta-Herrera, 2020).

Thus, although the instrument was designed to analyse a single dimension, Dispositional Optimism (Scheier et al., 1994), the resulting two-factor structure corroborates the covariation between each of the items with those reagents that represent Optimism and Pessimism; factors that have been theoretically related to well-being and life satisfaction (Gavín-Chocano et al., 2020). Consequently, the analysis of the two models (one-dimensional and two-dimensional) seems to be sufficient to verify a better fit of the two-factor model. However, is it justified to differentiate between optimism and pessimism on the basis of the evidence reviewed in different LOT-R studies? This would certainly be a question of validity that could only be answered when external criteria are available or when the use of one model or the other is deemed justified. We believe that the advantage of establishing two dimensions compensates for the discrepancy of an inadequate fit, considering a greater or lesser degree of optimism as a consequence of the relationship with other variables (Ottati & Noronha, 2017).

The statistically positive relationship between life satisfaction and optimism allows us to corroborate two fundamental assertions: First, being optimistic or pessimistic is perceived not only as a handicap, but also as an attitude; that is, as a condition in which different aspects (cognitive, affective and behavioural) are involved, and the core of which is located in socially learned predispositions. Second, the adaptive function exists in a context in which objectives, goals and values are distinguished and influence the way individuals interpret, process and use information to achieve greater life satisfaction (Gavín-Chocano et al., 2020; Gustems-Carnicer et al., 2017; Hinz et al., 2017).

The main objective of this study was to determine the factor structure of the LOT-R instrument and its relationship with life satisfaction in university students, using the same original format (Scheier et al., 1994) in its adapted version (Remor et al., 2006). The results were consistent with different works that consider the two-dimensional format (optimism and pessimism) appro-

priate for analysing the resources necessary for a better adaptive response in students when facing adverse situations, although some limitations should be mentioned.

It has been shown that the extent of a teacher's predisposition to optimism improves student performance (Dong & Xu, 2022). It has also been shown that students' optimism and life satisfaction are related to their capacity for resilience (Popa-Velea et al., 2021) and favour the achievement of their academic goals (Usán-Supervía et al., 2022). The results obtained in university students follow the same trend as the ones presented in our study in other contexts (Lun et al., 2018; Kaiser et al., 2020; Roso-Bas et al., 2016).

The limitations of this study include the following: The study was carried out exclusively with university students, so it is suggested extending it to the general population, different cultural contexts or different age groups, in order to obtain more exhaustive results; this would offer a more heterogeneous sample, representative of the entire student population in the Spanish context. The statistical analyses carried out were limited to the evaluation of the LOT-R instrument and its relationship with the life satisfaction variable; however, it would be necessary to analyse optimism and pessimism with other variables such as emotional intelligence, resilience or burnout; it is suggested that future research should evaluate significant differences associated with other factors. Also, this research could be replicated with more subjects, and employ other data analysis strategies. In short, it is important to point out that research is needed to assess optimism and pessimism where the effect of the method is controlled, and to extend the range to analyse the correlation between each of the dimensions.

These results have several significant implications. First, they provide adequate information on the two-dimensional structure of the LOT-R instrument to assess the relationship with life satisfaction in university students. Second, the results are consistent with previous studies that consider that the LOT-R instrument could be used in different contexts. However, more studies, with more heterogeneous samples, are needed to confirm the validity of the scale in different contexts.

With regard to further directions, alternative forms of data collection and analysis are planned, in addition to those already present, which will allow the inclusion of other qualitative or mixed methods evidence (Uprichard & Dawney, 2019) in future studies. It will also be necessary to further explore the impact of the variables analysed in higher education, and their influence on students' educational achievement and personal development.

We conclude by pointing out that a study on the convergent validity of the LOT-R instrument is still needed, especially for a better theoretical understanding with different statistical models, diversifying the sample across age groups and cultural characteristics (Gaibor-González & Moreta-Herrera, 2020).

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