

THE EFFECT OF LIFE EVENTS, PERCEIVED STRESS, RESILIENCE AND SEX ON THE QUALITY OF LIFE OF UNIVERSITY STUDENTS: CONDITIONAL PROCESS

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Abstract

The objectives of the study were: a) to estimate the direct effect of life events on the dimensions of quality of life (Physical Health, Psychological Health, Social Relations, and Environment), b) to estimate the indirect effect of perceived stress on the relationship between events vital and the dimensions of quality of life, c) the moderation of resilience and sex on both effects in university students. 327 university students participated, 56,9% women, aged between 18 and 24 years. Perceived stress was found to mediate the relationship between life events and the quality-of-life dimensions. It was also found that sex and resilience did not moderate the direct and indirect effect in any of the dimensions of quality of life. This study provides proof of the mechanisms of perceived stress, resilience, and sex on the relationship between life events and the quality of life of university students.

KEY WORDS: *quality of life, perceived stress, resilience, life events, university students.*

Resumen

Los objetivos del estudio fueron: a) estimar el efecto directo de los sucesos vitales sobre las dimensiones de la calidad de vida (Salud física, Salud psicológica, Relaciones sociales y Entorno), b) estimar el efecto indirecto del estrés percibido sobre la relación entre los sucesos vitales y las dimensiones de la calidad de vida, c) la moderación de la resiliencia y el sexo sobre ambos efectos en estudiantes universitarios. Participaron 327 estudiantes universitarios, 56,9% mujeres, con edades entre 18 y 24 años. Se encontró que el estrés percibido medió la relación entre sucesos vitales y todas las dimensiones de calidad de vida. También se encontró que el sexo y la resiliencia no moderaron el efecto directo e indirecto en ninguna de las dimensiones de la calidad de vida. Este estudio aporta pruebas sobre los

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mecanismos del estrés percibido, la resiliencia y el sexo sobre la relación entre los sucesos vitales y la calidad de vida de estudiantes universitarios.

PALABRAS CLAVE: *calidad de vida, estrés percibido, resiliencia, sucesos vitales, estudiantes universitarios.*

Introduction

University students are in a transition period between adolescence and adulthood (World Health Organization, 2020), so they are subject to transformation processes and events that require significant changes in what they usually do, called life events (Holmes & Rahe, 1967). For example, they must adapt to university life, maintain academic standing to ensure their place in the university, try to live independently (Seo et al., 2018), have painful emotional experiences, and be subject to certain dangers (Camargo et al., 2009). Life events have consequences on physical and psychological health, academic performance, and lifestyle (Holmes & David, 1989; Opoku-Acheampong et al., 2017; Seo et al., 2018). It is also known that the greater the number or intensity of life events, the greater the negative impact on well-being, with moderate to strong effects (Burns & Machin, 2013; Denovan & Macaskill, 2017; Linden et al., 2018).

Recently, interest has grown in knowing the mechanisms that explain the association between life events and Quality of Life (QoL), which is defined as the perception an individual has of his or her life based on a conception of the world, values, expectations, objectives, concerns, and standards (WHOQOL Group, 1993). Among these, perceived stress could have a mediating function, since it is considered a variable resulting from life events (Cohen et al., 1983), and is positively associated with life events of moderate to moderately strong effects among university students (Linden et al., 2018; Tholouli et al., 2016; Zou et al., 2018) and is negatively related to QoL with moderate to moderately strong effects and with slightly higher effect sizes in the psychological well-being domain (Civitci, 2015; Huéscar, & Moreno-Murcia, 2017; Opoku-Acheampong et al., 2017; Seo et al., 2018; Shi et al., 2015; Xuhua He et al., 2018).

On the other hand, the impact of life events and perceived stress on QoL could be moderated by resilience, which refers to the ability of people to recover from adverse events (Smith et al., 2008). It has been informed that life events occur equally in people with high or low resilience and that there is a high negative correlation between perceived stress and resilience in university students (García-León et al., 2019), while between resilience and CV, positive relationships are observed with moderately strong to strong effects (Denovan & Macaskill, 2017; Tempski et al., 2015; Tepeli & Tari, 2018; Xuhua He et al., 2018).

Regarding the sex, it has an important role in explaining the differences in QoL, generally with higher scores for men than for women (Alkatheri et al., 2020; Kobayasi et al., 2018; Limonero et al., 2012; Tempski et al., 2018; Rodríguez et al., 2017). These differences with respect to men have been attributed to women informing higher levels of negative emotions, anxiety, and depression when experiencing the risk of unexpected pregnancy, early motherhood, greater family dependence,

hormonal fluctuations, less time for physical activity and recreation, social stereotypes, the greater probability of distorted body image, and greater social pressure in inequitable contexts (Bonsaksen, 2012; Higueta-Gutiérrez & Cardona-Arias, 2015; Quiceno & Vinaccia, 2014; Rodríguez et al., 2017; Wanden-Berghe et al., 2015).

To our knowledge, the mechanisms that perceived stress, resilience, and sex have on the relationship between life events and QoL of university students in a causal system have not been analyzed, although several studies have explored some of the aforementioned relationships. Although there is evidence of a negative association between life events and QoL, it is important to identify the mechanisms that explain this relationship due to the difficulty of directly affecting life events due to their unpredictability or uncontrollable nature. Therefore, the objectives of this study were to estimate a) the direct effect of life events on the dimensions of QoL (Physical Health, Psychological Health, Social Relationships, and Environment), b) the indirect effect through perceived stress on the relationship between life events and the dimensions of QoL, and c) the moderation of resilience and sex on both effects in university students.

Method

Participants

Undergraduate students from a public university in western Mexico were evaluated in February 2020. To calculate the sample size, 6717 undergraduate students were considered, a confidence level of 95%, a margin of error of 5%, 50% heterogeneity, and a 10% margin of nonresponse. The result was at least 306 students, and the final sample was 327 participants.

In the selection of students, a two-stage, nonprobabilistic sampling was performed; so, the careers and semester degrees to be included were randomly chosen. The semesters selected were third and fifth, and the majors were Physician, Surgeon and Midwife; Telematics Engineering; International Business; Nutrition; and Veterinarian and Zootechnician. In addition, subjects were ages 18 to 24. The final sample ($n= 327$) was composed to a greater extent of the female sex (56.9%), and the mean age was 20.42 years ($SD= 1.12$). The socioeconomic level with greater frequency was C at 32.1%. This level is characterized by a majority of individuals who have the highest income, higher education, and a fixed internet connection, one-third of monthly income is allocated to food and 7% to education (*Asociación Mexicana de Agencias de Inteligencia de Mercado y Opinión*, 2020). Regarding marital status, 1.4% were informed of being in a free union and the rest were single. Thirty-one percent of the participants were working during the period in which the study was conducted.

Instruments

- a) *WHO Quality of Life Questionnaire-Brief Version* (WHOQOL-BREF; WHOQOL Group, 1998). The WHOQOL-BREF contains 26 items that integrate the dimensions of QoL: Physical Health, Psychological Health, Social Relationships,

and Environment. The scale identifies a personal profile where higher scores mean higher QoL. In the evaluation, a period of two weeks is indicated, and the response options are measured on a 5-point Likert scale. Each of the dimensions is scored separately, with a minimum score of 0 and a maximum of 100. For this study, the psychometric properties were adequate according to the results of the confirmatory factor analysis (CFA) through a bifactor measurement model: $\chi^2(488.02) = 228, p > .001$; comparative fit index (CFI) = .97; Tucker–Lewis index (TLI) = .97; root mean square error (RMSEA) = .05; (CI 90% [.05, .6]); and an omega coefficient (ω) of the general factor of .86, a total ω of .91 and a total Cronbach's alpha (α) of .91.

- b) *Social Readjustment Scale* (SRRS; Holmes & Rahe, 1967). The SRRS contains 43 events that are identified as life events experienced during the past year, which can precede an illness and require subjects to readjust their lives. The response scale is dichotomous, and a numerical value is assigned to the different life events to measure the magnitude of the readjustment, which are called units of vital change (UCV); the minimum score is 0 if there are no life events informed, and the maximum is 1455 in the case of informing the presence of the 43 events; 300 or more UCV is equal to an 80% chance of becoming ill in the near future; 150-299 UCV is equal to a 50% chance of becoming ill in the near future; less than 150 UCV is equal to a 30% chance of becoming ill in the near future. Regarding reliability and validity, CFA was not performed because life events do not constitute a psychological construct; however, the correlation between the ordering of the scores reported in Mexican students by Bruner et al. (1994) and those informed more recently was very high ($r = .93, p < .001$; Acuña et al., 2012), which indicates that the magnitude of the events is similar despite time.
- c) *Perceived Stress Scale* (PSS-10; Cohen et al., 1983). This scale measures the degree to which respondents consider their lives to be overwhelming, uncontrollable and unpredictable. It consists of 10 items. In the evaluation, a period of one month is indicated, and the response options are measured on a 5-point Likert scale. The minimum qualification score is 0, and the maximum is 40; the higher the score is, the greater the perceived stress. The results of the CFA of this study through a bifactor measurement model were $\chi^2(78.23) = 25, p < .001$, CFI = .98, TLI = .96, RMSEA = .07 (CI 90% [.05, .09]), as well as an ω of the general factor of .71, a total ω of .87 and α total of .83.
- d) *Brief Resilience Scale* (BRS; Smith et al., 2008). This is a self-report scale that measures the ability of the individual to recover from adversity and consists of 6 items measured on a 5-point Likert scale. The minimum score is 6, and the maximum is 30; the higher the score is, the greater the resilience. The results of the CFA of this study through a bifactor measurement model were $\chi^2(4.49) = 34, p = .21$, CFI = .99, TLI = .98, RMSEA = .03 (CI 90% [.00, .10]), as well as an ω of the general factor of .34, a total ω of .78 and α total of .71.

Procedure

In December 2019, the approval of the project with registration number CEI/005/2019 was obtained from the Research Ethics Committee of the university where the study was conducted. In February 2020, classrooms were selected, and the students were invited to participate. Subsequently, in a single session, the groups were transferred to the computer rooms at their universities to provide informed consent and answer the questionnaires in electronic format.

Data analysis

To verify the quality of the data, missing cases and response patterns were analyzed. Five cases presented response patterns, and 16 cases had 18 pieces of missing data, which represents 4.5% of the participants and 0.06% of the responses per case. Consequently, the Little MCAR test was applied, and it was found that the loss of data was not random ($p = .003$), so a multiple imputation was performed as proposed by Graham (2009).

The validity of the internal structure was verified by CFA for the instruments, except for the SRRS, due to the characteristics of the variable. We worked with bifactor models, which allow each item to weigh in a general factor and also in one or more specific factors, according to the dimensions of the instrument (Viladrich et al., 2017). For the BRS, the maximum likelihood estimator (ML) was used; for the PSS-10, the weighted least squares estimator adjusted for mean and variance (WLSMV) was used; and for the WHOQOL-BREF, the unweighted least squares (ULS) estimator was used (Viladrich et al., 2017).

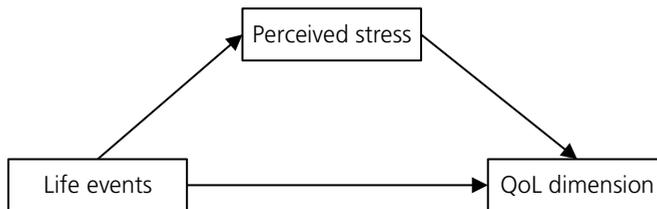
The chi-square estimators with degrees of freedom and statistical significance were calculated as indices of goodness of fit, considering a statistically null value of χ^2 as an index of excellence. In addition, the TLI and CFI indices were calculated, considering values greater than or equal to .95 as acceptable (Hu & Bentler, 1999), as well as RMSEA, taking into account values between .05 and .08 as an acceptable fit. Less than .05 is an excellent fit (Browne & Cudeck, 1993), integrating the confidence intervals, and a value greater than .07 is expected to be an excellent fit (Viladrich et al., 2017). The Cronbach's alpha (α) and the nonlinear reliability based on the structural equation model, also called the nonlinear omega coefficient (ω), of the total factor and the general factor were calculated, considering acceptable values equal to or greater than .70 (Green & Yang, 2009; Viladrich et al., 2017). For the previously described analyses, the statistical analysis program RStudio (RStudioTeam, 2018) was used.

For the descriptive analyses of the sociodemographic variables (sex, age, socioeconomic status, marital status and work), the frequencies and percentages, as well as the mean and standard deviation of age, were determined. To test the hypothesis that the residuals of the variables follow a normal distribution, the Kolmogorov–Smirnov (KS) test was applied. The mean and standard deviation of the scores of each instrument were calculated, as well as the bivariate Spearman correlations for the dimensions of QoL, life events, perceived stress and resilience. For the effect size, the following criteria were considered: approximately .10 for low

correlations, from .30 moderate and from .50 strong (Cohen, 1992). These analyses were performed with IBM SPSS Statistics v. 25.0.

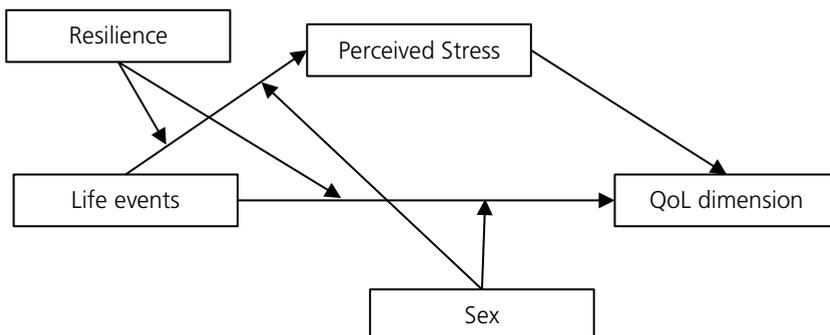
To test the hypothesis of the objective of this study, conditional process analyses were performed using IBM PROCESS for IBM SPSS Statistics v. 25.0. As suggested by Hayes (2018), coefficients of determination, standard deviations, statistical significance and confidence intervals were calculated. Model 4 was used to test the mediations (figure 1), one for each QoL dimension, and Model 10 to test the first-stage partial moderate mediations (figure 2). Also for each QoL dimension, sex was considered a dichotomous moderating variable and resilience as a continuous quantitative moderator, for which the pick-a-point method was used, which considers a standard deviation below the mean and a standard deviation above the mean. A confidence interval based on a bootstrap of 10,000 was also considered. The rest of the variables functioned as continuous quantitative variables. In addition, the criteria of Acock (2014) were considered for β , that is, < .20: low, between .20 and .50: moderate, > .50: strong, and the criteria of Cohen (1992) for R^2 , that is, .01: low, .10: moderate, and .25: strong.

Figure 1
Hypothetical self-created mediation model



Note: The right box applies to each quality of life (QoL) dimension: Physical Health, Psychological Health, Social Relationships, and Environment.

Figure 2
Hypothetical model of self-created conditional process



Note: The right box applies to each quality of life (QoL) dimension: Physical Health, Psychological Health, Social Relationships, and Environment.

Results

Table 1 shows the means and standard deviation of the scores obtained by the participants for each of the instruments. Moderate levels of CV are shown. The Psychological Health dimension has the lowest value, while the Physical Health dimension has the highest. Regarding life events, according to Holmes and Rahe (1967), the mean implies that participants have a 50% chance of becoming ill in the near future. Regarding perceived stress and resilience, both are presented at a moderate level.

Table 1
General scores of the instruments used in the study applied to young Mexican university students (*n*= 327)

Variable	<i>M</i>	<i>SD</i>	Range
Quality of life			0-100
Physical Health	65.97	13.56	--
Psychological Health	62.56	17.02	--
Social Relationships	65.64	19.42	--
Environment	64.27	13.85	--
Life events	234.51	145.58	0-1455
Perceived events	19.08	5.80	0-40
Resilience	18.74	3.87	6-30

The Spearman correlations shown in table 2 are mostly significant. Negative and low correlations are evident between life events and the dimensions of QoL: Physical Health, Psychological Health, and Environment; a positive and low correlation was obtained between life events and perceived stress, and moderate to strong negative correlations between perceived stress and all dimensions of quality of life, moderate to moderately strong positive correlations between resilience and quality of life dimensions, and a negative and strong correlation between perceived stress and resilience.

Table 2
Bivariate correlations between the dimensions of quality of life, life events, perceived stress, and resilience (*n*= 327)

Variables	1	2	3	4	5	6
1. Physical Health	--					
2. Psychological Health	.58***	--				
3. Social Relationships	.41***	.48***	--			
4. Environment	.53***	.58***	.47***	--		
5. Life events	-.15**	-.15**	-.05	-.11*	--	
6. Perceived stress	-.49***	-.63***	-.33***	-.32***	.19***	--
7. Resilience	.42***	.47***	.30***	.30***	-.16**	-.60***

Note: **p*≤ .05; ***p*≤ .01; ****p*≤ .001.

Table 3 shows the direct relationships and the results of the four mediation models: Physical Health, Psychological Health, Social Relationships, and Environment. It is also shown that the direct relationship between life events and the dimensions of QoL are not significant, while the confidence intervals of the indirect effects are significant for each of the models, so perceived stress measured the relationship between life events and each of the QoL dimensions in university students, with the Psychological Health dimension model informing the largest effect size.

Table 3

Mediation of perceived stress in the relationship between life events and quality of life dimensions ($n= 327$)

Model	β	R^2	SE	p	IEI	SE	95% CI
Physical Health							
a	0.20	.04	.002	< .001	-.10	.002	[-.16, -.05]
b	-0.54	.29	.11	< .001			
c'	-0.13	.01	.004	.54			
c	-0.03	.0009	.005	.01			
Psychological Health							
a	0.20	.04	.002	< .001	-.13	.03	[-.19, -.06]
b	-0.65	.43	.12	< .001			
c'	-0.14	.02	.005	.73			
c	-0.01	.0001	.006	< .001			
Social Relationships							
a	0.20	.04	.002	< .001	-.06	.02	[-.11, -.02]
b	-0.36	.13	.17	< .001			
c'	-0.06	.004	.007	.94			
c	-0.00	.00	.007	.23			
Environment							
a	0.20	.04	.002	< .001	-.07	.02	[-.11, -.03]
b	-0.35	.12	.12	< .001			
c'	-0.11	.01	.005	.38			
c	-0.05	.002	.005	.03			

Note: IEI= Indirect effect index.

The conditional process models are different from each other since each model incorporates one of the dimensions of QoL (table 4). The left column shows the results of the moderation of sex (XW) and resilience (XZ) on the indirect effect; the central column shows the moderation of both variables on the direct effect, and the right-hand column shows the indices of moderate partial mediation along with the confidence intervals for each of the models. The confidence intervals of the four models were not significant. In the four cases, the intervals passed through 0; therefore, it was not possible to affirm for the study sample that sex or resilience moderated the direct or indirect effect of the models on QoL with Physical Health, Psychological Health, Social Relationships, and Environment.

Table 4
Moderation of sex and resilience on the mediation of perceived stress in the relationship between life events and quality of life dimensions (n= 327)

Interaction	B	SE	p	B	SE	p	PMMI	95% CI
	Perceived stress			Physical Health				
XW	-0,002	0,003	0,53	-0,005	0,009	0,53	2	[-0,004, 0,008]
XZ	0,0002	0,0005	0,67	-0,0002	0,001	0,88	-0,002	[-0,001, 0,0008]
				Psychological Health				
XW	-0,002	0,003	0,53	0,004	0,01	0,64	0,003	[-0,007, 0,014]
XZ	0,0002	0,0005	0,67	-0,0005	0,001	0,69	-0,0003	[-0,002, 0,001]
				Social Relationships				
XW	-0,002	0,003	0,53	-0,0005	0,01	0,97	0,001	[-0,003, 0,007]
XZ	0,0002	0,0005	0,67	0,0005	0,001	0,80	-0,0002	[-0,001, 0,0006]
				Environment				
XW	-0,002	0,003	0,53	0,0001	0,001	0,57	0,001	[-0,002, 0,005]
XZ	0,0002	0,0005	0,67	-0,62	0,16	0,93	-0,0001	[-0,0008, 0,0005]

Notes: PMMI= Partial moderate mediation index; XW= Life events x Sex. XZ= Life events x Resilience. The total model includes both perceived stress and each of the quality of life dimensions.

Discusión

The objectives of this study were a) to estimate the direct effect of life events on the dimensions of QoL (Physical Health, Psychological Health, Social Relationships and Environment, b) to estimate the indirect effect through perceived stress on the relationship between life events and the dimensions of QoL, and c) the moderation of resilience and sex on both effects in university students. The direct effects of life events on the dimensions of QoL were not significant, while perceived stress mediated the relationship between life events and the Physical Health, Psychological Health, Social Relationships, and Environment dimensions of QoL. On the other hand, no evidence was found that resilience or sex moderates the direct effect of life events on the dimensions of the QoL or indirectly through perceived stress.

Regarding the direct association between life events and the dimensions of quality of life, no significant relationships were found in the mediation models for any of the dimensions; however, these relationships do not affect the probability of mediation considering the statistical criteria of Hayes (2013) for simple mediation. Based on previous studies (Burns & Machin, 2013; Denovan & Macaskill, 2017; Linden et al., 2018), a negative and significant relationship was expected; however, this was not significant, which is probably because in the present study, the dimensions of QoL

were measured, while in previous studies, similar variables such as well-being, life satisfaction, and positive and negative affect were measured.

With regard to mediation, the first specific relationship included was the association of perceived stress from life events, which was significant and positive with small effect size, and agrees with findings by Tholouli et al. (2016). These researchers also informed low effects when verifying that students who reported having higher levels of perceived stress experienced a greater number of life events during the past year, while cross-sectional studies informed significant and positive correlations with moderate effects (Linden et al., 2018; Zou et al., 2018). The correlations and regressions between life events and perceived stress had lower effect sizes than expected, which is probably due to two reasons: first, a participant may perceive an event as less relevant than another, since although the life events of the instrument of Holmes & Rahe (1967) are assigned a magnitude score, such as Cohen et al. (1983) report, this is nothing more than an event that depends largely on personal and contextual factors; therefore, the same event can have a different impact depending on the characteristics of the person and his or her context. Second, although Cohen et al. (1983) assume that perceived stress can be seen as a variable resulting from life events, and based on the axial evaluation of the interactional theory of stress by Lazarus, and Folkman (1986), it is expected that after an event occurs, the person generates a primary evaluation, a secondary evaluation and a reevaluation, in which corrections are made on previous evaluations, so that an event that occurred to the student during the previous year could not have an impact on stress in the present.

Between perceived stress and the Physical Health and Psychological Health dimensions, significant, negative and strong relationships were found, as well as moderate effects with the Social Relationships and Environment dimensions; these results coincide with the results obtained by Opoku-Acheampong et al. (2017), who attribute stress to the high standards imposed by the students, pressure from parents to perform well in school, overexertion to commit themselves academically even at the expense of the required amount of sleep, and lack of relaxation and inadequate socialization, which mainly affects psychological well-being. Other studies have presented similar results (Civitci, 2015; Praherso et al., 2017; Seo et al., 2018; Shi et al., 2015; Xuhua He et al., 2018). Although academic factors are important, this study shows that important changes in daily life or life events are also relevant for the increase in stress among university students, which can generate consequences at the level of physical and psychological health and contribute to anxiety and depression (American Psychological Association, 2019). In particular, dissatisfaction with physical health can be related to aspects such as pain, discomfort, energy level, fatigue and quality of sleep and rest, while dissatisfaction with psychological health can be related to aspects such as positive and negative feelings, work of reflection, learning, memory, concentration, self-esteem, body image and appearance (WHOQOL Group, 1993).

The mediation process between life events, perceived stress and the dimensions of QoL of university students can be explained because an event, whether school, family, social or personal, is part of the context, culture and value system of the person or the social group within which it operates. Further, changes in any of these factors can modify the perception of QoL, considering the fulfillment (or not) of the

objectives, standards, concerns and expectations of the student, since they are tested as part of an evaluation process, in which people compare satisfaction about the dimensions that have been relevant throughout their lives or are important in the present, with the satisfaction they felt in the past or with an ideal state (Skevington et al., 2004). In this case, stress is generated from the cognitive process of evaluation in the face of a life event, so that the greater the impact of the life event is, the greater the perceived stress and the lower the quality of life in the areas of Physical Health, Psychological Health, Social Relationships and Environment.

Regarding the conditional process models, in this study, no evidence of moderation by resilience was found for any of the four models. To date, no similar studies have been found that integrate resilience as part of a mechanism with similar variables in university students. Most likely, the lack of evidence for the moderation of resilience is explained by the current lack of consensus on how to measure it, since previous studies (García-León et al., 2019; Tempiski et al., 2015; Tepeli & Tari, 2018; Xuhua He et al., 2018) have considered other resilience measures based on different conceptualizations of resilience from the one used in the present study and different dimensions that make up the instrument. The possibility of moderation should not be ruled out considering the measure and the conceptualization used.

On the other hand, Diminich and Bonanno (2015) state that at a given time, people can be more or less resilient depending on both recent events and changes in the course of their lives and add that older adults are more likely to show a stable pattern of adjustment after an acute stressor and experience lower long-term psychological costs compared to young adults. In addition, Bonanno, et al. (2012) clarify that resilient people experience distress, but it is transitory. It can last hours or days, so it is more accurate to say that resilient people simply continue with their daily lives when working, participating in social activities, and even experiencing activities of enjoyment and intimacy despite the anguish.

Regarding sex, no evidence of moderation was found for any of the four models of conditional processes, and to date, no similar antecedents have been found that integrate sex as part of a mechanism with similar variables among university students. However, antecedents have been found in which sex differences are not significant (Alkatheri et al., 2019; Fasoro et al., 2019). It is possible that the lack of evidence of moderation by sex is because men tend to be more sensitive to events related to work and economic factors, while women tend to be more sensitive to events related to emotional and social aspects, as reported by previous studies (Carrión et al., 2003; Kendler et al., 2001; Muratori et al., 2012). Therefore, the moderation of sex could depend more on the type of event, and perception may depend on context and personal characteristics (Cohen et al., 1983).

On the other hand, it is possible to observe that in both moderations, a similar phenomenon occurs, so it is interesting to consider the interaction between life events, perceived stress and resilience or sex as an essential part of the mechanism of conditional process; that is, the fact that this moderation did not work despite the antecedents, could be due to the difficulties of the SRRS of Holmes & Rahe (1967) in measuring the impact of life events on perceived stress. In addition, according to the proposal by Hayes (2018), these moderations cannot be ruled out, considering the level of trust or the sign of the association.

Likewise, this study has limitations that should be considered. First, the instruments used have their limits. The SRRS has difficulties in defining the impact of events on stress over time, and the BRS has low internal reliability indices; however, this could be due to the reduced number of items (Argibay, 2006), as well as the use of flexible estimators (ULS and WLSMV) for CFA. Second, the nonprobabilistic sampling technique, the disparity in the sample size between sex and the cross-sectional design are characteristics of the study that expose it to bias. Third, other variables, such as social support, depressive symptomatology or emotional intelligence, were not considered; recent studies have found that these variables are highly relevant for the perceived stress and QoL of university students (Enns et al., 2018; Fasoro et al., 2019; Foster et al., 2018; García-León, et al., 2019; Praharsó et al., 2017; Seo et al., 2018; Tholouli et al., 2016; Xuhua He et al., 2018; Zou et al., 2018).

This study provides evidence of the mechanisms of perceived stress, resilience and sex on the relationship between life events and the QoL of university students. The main finding is that perceived stress explained the relationship between life events and Physical Health, Psychological Health, Social Relations, and Environment dimensions. This information contributes to the explanation of the QoL among university students and reveals that the stress they perceive after the first month of the semester is moderate and mostly affects the Psychological Health dimension of the QoL, which is not only due to academic factors but also important changes in their lives, such as poor management of daily habits and other life events.

Consequently, future studies could delve into the mechanism that explains the relationship between life events and perceived stress, given that the effect sizes between these relationships were small. A possible hypothesis could be that this relationship is mediated by the contexts surrounding life events, whether in school, family or social environments, as well as certain personal characteristics since they end up playing an important role in the intensity of stress. Thus, variables such as social support or emotional intelligence are ways by which other researchers could continue to explore the mechanisms of explanation. It would be necessary to consider specific life events to be able to understand if there are more important characteristics. For example, systemic characteristics can linger by having rebound effects in the elements of the system, while others appear and disappear quickly. Another line of research is to study life events considering shorter timelines with the same length as the measurement of stress or the overlap of life events; that is, a summative effect should not necessarily be assumed. There may be multiplicative effects, for example, when the experience of the death of a relative is combined with the unemployment experienced by the person.

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