Resilience and stress coping strategies of university students in times of pandemic

Hugo Condori Meléndez1, Mirtha Sussan Trejo de Ríos2, Juan Carlos Lázaro Guillermo3, Lila Ramírez Zumaeta4, Carlos Alberto Giles Abarca5

1Universidad Nacional de Educación Enrique Guzmán y Valle, Peru
2Universidad Nacional José Faustino Sánchez Carrión, Peru
3Universidad Nacional Intercultural de la Amazonia, Peru
4Universidad Privada de Pucalipa, Peru
5Universidad Nacional Mayor de San Marcos, Peru

Abstract

The objective is to determine if Resilience and stress coping strategies significantly influence each other in college students during the COVID-19 pandemic. A prospective and cross-sectional quantitative design study, 128 students from the National Intercultural University of the Amazon, Peru were selected: 96 men (75.0%) and 32 women (25.0%), mean age 18.3 years (SD = 2.3). The Adapted Resilience Scale of Peru (ERAPE) and the Coping Mode (COPE) were used. Resilience had a significant effect at a moderate level, and coping strategies focused on problems and emotions, with planning, active coping, and lack of emotional support dominating. Effects on proportional inverse correlation can be identified through avoidance strategies: mental and behavioral withdrawal, denial, and substance use.

Keywords: Emotional support, resilience, active coping, COVID-19, academic stress.

INTRODUCTION

The arrival of COVID-19 has forced many countries to quarantine to prevent the spread of the virus; With this in mind, the educational landscape follows an emergency law intended to prevent direct action in more than 190 countries, affecting around 90% of students worldwide (1).

Thus, the state of emergency demonstrates the need to respond to the digital transformation and pave the way for the expansion of virtual education (2), which through the measures taken include isolation, physical and social distancing, and cessation of activities (3), and leads to different responses in the population, since it represents an interruption in the development of mental health, as well as interpersonal support and interactions and coping strategies related to levels of moral stress in many situations (4).

Therefore, several authors agree that mental health is one of the areas most altered by COVID-19 (5).

In the academic field, a series of studies have been published that show an increase in educational insecurity, dissatisfaction, sleep problems and mental deterioration, negatively influencing students' performance and inducing processes of stress, anxiety and depression (6).

The experiences refer that students may exhibit anxiety, sadness, irritability, insomnia, disconnection, increased consumption of alcohol or tobacco in response to the stress of situational demands. In this way, distance education adapts and its performance and academic future depend on it, just as preschool students carry the overload created by the objective of obtaining vacancies (7). They can have negative consequences where the presence of academic pressure is particularly pronounced (8).

Access this article online

Quick Response Code: www.pnrjournal.com

DOI: 10.47750/pnr.2022.13.04.091

Address for correspondence: Hugo Condori Meléndez
Universidad Nacional de Educación Enrique Guzmán y Valle, Peru
Email: hcondori@une.edu.pe

How to cite this article: Hugo Condori Meléndez, Mirtha Sussan Trejo de Ríos, Juan Carlos Lázaro Guillermo, Lila Ramírez Zumaeta, Carlos Alberto Giles Abarca, Hugo Condori Meléndez et al: Resilience and stress coping strategies of university students in times of pandemic, J PHARM NEGATIVE RESULTS 2022;13:679-685.
This abnormality, called academic stress, occurs when there are multiple demands or stressful stimuli, such as overload of academic activity, limited time to complete tasks, difficulty accessing technology, regularity of exams, etc.; students receive, which requires excessive effort (9), this increases individual difficulties, such as financial and family difficulties, increases the probability of generalized stress in students and has consequences of the individual and group level (10).

The origin of stress involves the interaction of different factors, it is presented as a response to change and acts as a stimulus that allows the individual to stimulate other actions in order to fully adapt to the impact or change externally, as well as to achieve the objective; it can also be harmful when it becomes frequent and you don't have a choice or a strategy (11). In this sense, coping involves a series of actions at the cognitive-emotional level, which are manifested in response to stressors to restore balance, suppress triggering responses and regulate and respond to stressful emotions, and at the same time address the problems that cause them (12).

In relation, the context of the pandemic and the variety of influences that emerged during the transition from live to virtual learning life examined other cognitive, behavioral, motivational, and affective-psychological resources to motivate students to activate different learning strategies coping for academic success (13).

To this end, it is important to consider that the application of coping strategies is closely related to the personality traits of the person and can be a solution or persistence to the concern. Therefore, the stress response will change and may manifest itself in adaptive or dysfunctional behaviors that will induce regulation of stressful events that, if effective, will not be irritating and, if not, may affect the health of the individual men male (14).

Thus, coping and the strategies used to deal with stressful situations are significant factors to consider in students because they correspond to complex and ambiguous cognitive and behavioral activities, thanks to which they can face stressful situations, adapt, react, adapt and behave (15), facing the shortcomings of life and developing mental resilience is seen as a tool that contributes to the adaptation to stress and its consequences (16).

Resilience refers to a person's ability to withstand adverse events, including the combination and interactions of protective and risk factors between the person's own internal and external factors, enabling him or her to navigate risk and adversity from a constructive form but variable with time and change (17).

This research seeks to determine whether resilience and stress coping strategies significantly influence each other in pre-university students during the COVID-19 pandemic. Considering the classification of Folkman and Lazarus (1985) (18), which evaluates a complete series of thoughts and actions taken in response to stressful situations; problem-oriented strategies refer to directed action to solve problems, emotional focus on the modulation of emotional responses, and avoidance strategies focused on the acceptance of avoidance behavior in the face of stressors. Therefore, the objective is to determine if resilience and stress coping strategies significantly influence each other in university students during the COVID-19 pandemic.

**METHOD**

This study is of a quantitative and strategic nature since data is collected and analyzed to analyze a particular population group based on the statistical inference of the sample and determine the relationship between two variables (19). It is a cross-sectional study of predictive design because it seeks to determine the impact of resilience on strategies for coping with academic stress in students from the Department of Basic Sciences, of a university in the Peruvian Amazon, in the context of COVID-19.

The selection of the participants was made by uncertainty sampling, for convenience because the sampling was not random but adequate according to the characteristics of the study (20) with inclusion criteria that included: i) being regular students enrolled in the cycle 2022-I; ii) have punctual attendance in the virtual classroom registers; iii) informed consent to participate in the study through the form sent through Google Forms, and exclusion criteria where the following were considered: i) enrolled in the 2022-I cycle with irregular attendance and ii) students who did not consent to participate Of the investigation.

In this way, this study had the participation of 128 students of the basic sciences careers at university located in Ucayali, Peru; made up of men (n = 96, 75.0%) and women (n = 32, 25.0%) aged between 17 and 22 years (M = 18.3, SD = 3.02).

**THE RESILIENCE SCALE (RS) WAS ORIGINALLY CREATED BY WAGNILD AND YOUNG (1993)**

To assess the level of resilience of adolescents and adults (21). In this study, a scale adapted to the sociocultural context of the Amazon in Peru was used, consisting of 25 items with a measure of scores through a Likert scale with 7 points ranging from (1 = strongly disagree) to (7 = strongly disagree). Agreement that makes up the equity dimensions (7, 8, 11, 12); freedom (6, 9, 13, 17, 18, 19, 24); persistence (1, 2, 4, 14, 15, 20, 23); personal satisfaction (16, 21, 22, 25), and no feelings of loneliness (5, 3, 19). Their scores ranged from 25 to 175 points, with a high score corresponding to high resistance.

The adjusted scale has the full range of psychometric properties, with appropriate global internal consistency, assessed by Cronbach’s alpha coefficient (α = 0.89) and item-test correlations, whose scores range from (0.23 to 0.71), estimating statistically significant coefficients for each scale size at which the device has been configured to fully measure the resilience structure as an absolute value.

Evidence of Coping Styles to Stress (COPE), originally
created by Carvet et al. (1997) and adapted to the context of Peruvian students (22) in which a validity [KMO= 0.803, p=0.005; \(x^2;=8709.03\text{df}=1768, \ p< 0.05\)] and consistency through Cronbach's alpha coefficient of the dimensions (\(\alpha = 0.55\) to 0.90). This questionnaire consists of 52 items with a Likert-type rating scale with 4 response options; The researchers studied 13 coping strategies classified as problem-focused coping, emotion-focused coping, and avoidance.

Initially, the fieldwork involves contacting the student welfare office to design the study, approving it by the university council, and selecting participants who can receive remote information about the study, its appropriate objectives, and their participation. The information is collected through a form created in Google Forms, which is provided to students previously identified according to the records of students admitted to the 2022-I cycle, belonging to the organization of the institution where the research was carried out; This construction takes place from January to July 2022. Once the expected response was received, access to the form was closed, the information received was exported to a Microsoft Excel spreadsheet, and the corresponding rating was determined on a scale.

The assessment was prepared according to the guidelines of the American Educational Research Association and the American Psychological Association (APA). Therefore, before the introduction of the assessment tool, consent was obtained by signing the informed consent, which ensured the reliability of the data provided; In this way, the students participated voluntarily and anonymously.

For the statistical processing of the data, the XLSTAT program (Version 2022.3.2) was used. Descriptive statistics were first collected. Then, the reliability of each tool is tested against Cronbach's alpha, and the assumptions of normality and linearity were analyzed by linking the scores corresponding to each variable around the Pearson correlation, with significance \(r > 0.70\) for the dependence of both variables and the assumption of independence of those allowed, with a percentage error not greater than 2.5%, analyzing the magnitude of the Durbin-Watson statistic. Finally, to investigate the predictive value of resistance parameters for coping strategies, a linear regression analysis was performed to obtain the best fit.

### RESULTS
Of the 128 participants, 75.0% of men and 25.0% of women were between 17 and 22 years old, with a mean of 18.3 (SD = 3.02). Table 1 lists the levels of resistance and coping skills by gender of the participants. It can be seen that both sexes are dominated by a medium tolerance to frost; however, women present a higher percentage of rigidity than men (33%, and 24% respectively); Similarly, in the case of coping skills, it can be concluded that the highest scores are concentrated in the averages of each strategy; At the same time, both women (39%) and men (30%) have an advantage when using problem-oriented strategies, but emotion-oriented strategies stand out more than the second most used in women (33%) and avoided in men (22%).

### Table 1. Levels of resilience and coping skills according to the gender of university students

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Low*</th>
<th>Medium*</th>
<th>High*</th>
<th>Low**</th>
<th>Medium*</th>
<th>High*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem-focused</td>
<td>8%</td>
<td>59%</td>
<td>39%</td>
<td>21%</td>
<td>52%</td>
<td>30%</td>
</tr>
<tr>
<td>Coping Focused on emotion</td>
<td>13%</td>
<td>55%</td>
<td>33%</td>
<td>33%</td>
<td>46%</td>
<td>22%</td>
</tr>
<tr>
<td>Avoidant coping</td>
<td>35%</td>
<td>46%</td>
<td>22%</td>
<td>29%</td>
<td>48%</td>
<td>26%</td>
</tr>
<tr>
<td>ER</td>
<td>14%</td>
<td>52%</td>
<td>33%</td>
<td>13%</td>
<td>60%</td>
<td>24%</td>
</tr>
</tbody>
</table>

* Stratified sample of women
* Stratified sample of men
ER = Resilience Scale

Table 2, in turn, presents the internal consistency indices (Cronbach’s alpha) and descriptive statistics. For the internal consistency analysis, the stability variable obtained a very high confidence percentage in the study group with Cronbach's alpha = 0.90. In addition, the value of the COPE size is higher than the allowed value (\(\alpha > 0.75\)), it should be noted that the scale is established by the university.

Regarding the relationship between resilience variables and
coping strategies, resilience was positively and significantly associated with problem-focused coping strategies \( (r = 0.780; p < 0.05) \), emotion-focused coping \( (r = 0.70, p < 0.05) \); it also has a significant and negative effect on avoidance strategies \( (r = -0.90; p < 0.05) \).

Table 2. Descriptive analysis of reliability and linear interdependence of RE and COPE.

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>DE</th>
<th>α</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resilience Scale (RE)</td>
<td>80</td>
<td>6</td>
<td>0.90</td>
<td>-</td>
</tr>
<tr>
<td>Stress coping skills (ESA)</td>
<td>85</td>
<td>6</td>
<td>0.88</td>
<td>-</td>
</tr>
<tr>
<td>Problem-focused coping (PCC)</td>
<td>37</td>
<td>4</td>
<td>0.95</td>
<td>0.78*</td>
</tr>
<tr>
<td>Problem-focused emotions (ACE)</td>
<td>33</td>
<td>3</td>
<td>0.88</td>
<td>0.70*</td>
</tr>
<tr>
<td>Avoidance strategies (AE)</td>
<td>23</td>
<td>3</td>
<td>0.90</td>
<td>0.51*</td>
</tr>
</tbody>
</table>

M: mean; SD: standard deviation; α: Cronbach's alpha; \( r > 0.70; * < 0.05 \)

The analyzes were then performed to test assumptions about normality, error independence, and alignment. The analysis shows that the distribution of the variables is within acceptable limits, except for the strategic use of narcotic substances and emotions \( (g^2 = 4; \beta > 0.50 \leq 0.70; p < 0.05) \), which indicates that the distribution of errors \( (\leq 2.5\%) \), and a lack of multicollinearity because the values \( (\text{tolerance} = 1.05; \text{FIV} = 1.05) \) were acceptable.

To this end, a linear regression analysis was performed to assess the predictive power of resistance to coping strategies. In this way, it can be shown that resilience has a moderate and statistically significant positive effect on problem-focused coping and emotion \( (R^2 \geq 0.70 \leq 0.90; \beta \geq 0.50 \leq 0.90 p <0.05) \). In this sense, the higher the level of resilience a student has, the more constructive strategies to deal with stressful situations, and plan and execute activities. Coping or cognitive response contributes to better coping with the unpleasant sensations caused.

Similarly, a negative and statistically significant effect was found on the coping strategy at a low level \( (R^2 \geq 0.72 \leq 0.90; \beta \geq 0.50 \leq 0.70; p < 0.05) \), which means that the more resilient the student body, the better they use coping strategies to distract their attention from a stressful situation, denying its existence and replacing it with thoughts or distractions that prevent them from being able to concentrate as low as possible. Conflict resolution (table 3).

Table 3. Regression assessment between resilience and coping strategies dimensions

<table>
<thead>
<tr>
<th></th>
<th>R^2</th>
<th>F</th>
<th>β</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resilience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem-focused strategies</td>
<td>0.70</td>
<td>180</td>
<td>0.76</td>
<td>0.05</td>
</tr>
<tr>
<td>Emotion-focused strategies</td>
<td>0.72</td>
<td>96</td>
<td>0.70</td>
<td>0.05</td>
</tr>
<tr>
<td>Avoidance strategies</td>
<td>0.70</td>
<td>78</td>
<td>-0.80</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Note. \( R^2 = \) linear fit coefficient; \( \beta = \) standardized coefficient beta

**Discussion**

University students experience various stressors related to educational activities and the pressures imposed on them by personal and family demands, which indicates the desire to enter university; thus, students are more affected by the current pandemic, as they have to adapt to a new type of learning, dealing with the emotions created by COVID-19 and the uncertainty of their academic future.

In this situation, they must have the proper coping strategies and resilience to deal with the current reality in a way that is conducive to academic success. Thus, the objective of this study was to determine if there is a significant effect of resisting coping strategies and to explain its scope. In the context of social sciences, the term has been adapted to describe people who, despite living in risky situations, develop mentally healthy; Resilience is defined as the ability to emerge from adversity, adapt and recover to access a meaningful life after moments of crisis (23).

Build the elements of fairness, persistence, confidence, happiness, and personal satisfaction; that incorporates a set of positive personal qualities that facilitate individual adaptation, where the combination of experiences at different stages of development will contribute to overcoming public success in important life events (24).

In this way, considering that the educational context implies a series of challenges, academic and psychosocial demands that favor or negatively affect performance, and the context of the COVID-19 pandemic has triggered an increase in these demands for the new educational modality, and has represented a greater presence of stress factors in students (25), the authors confirm that their resilience will play a significant role in the coping strategies they implement to overcome difficulties and achieve academic success. However, research on resilience as a predictor of coping strategies in pre-university students is under-researched, especially in the current context of COVID-19.
Therefore, the results show that pre-university students have average recovery, with minimal difference between the sexes, causing women to score higher than men in medium and high resilience; This is consistent with research such as that of Bucheli and Martínez (2022) in which levels of resilience were identified in a positive category (medium-high) with a slight favorable difference in favor of women in the dimensions of personal satisfaction, self-confidence, and perseverance; however, studies carried out on students of the same age ranges have shown high levels of resilience (26, 27); It may be due to determinants such as the difference between stable and future students, and the impact of the current context of COVID-19, which, as reported by Miguel Román (2020), seems to be a factor in the increase in anxiety, nervousness, and emotional instability, possibly directly related to lower levels of immunity (28).

On the other hand, the results show the advantage of the problem-focused strategy in pre-university students, followed by the emotion-focused strategy, while the avoidance strategies are considered underused; showed a tendency to deal with stress healthily, since previous experiences provided by Uribe et al. (2018) establish close links between well-being and coping strategies, such as active coping, planning, and social support; therefore, they are considered the most suitable for conflict resolution (29). In the same way, emotion-focused strategies are considered positive, since they allow you to deal with negative and intense emotions, which helps maintain hope and morale that will ultimately help resolve a stressful situation (30).

Likewise, the results indicate that the strategies that seek to avoid the stress situation are the least used by pre-university students, so it is possible to identify that the reactions of denial, substance use, or mental and behavioral misunderstanding are the alternatives that they use less often; which contributes to the results in the levels of resilience (31), and coincides with low prevalence as positive, since the high use of these avoidance strategies generates higher levels of discomfort at the physical level, contributing to a greater risk of psychopathologies (32).

Therefore, it can be seen that university students often use health promotion strategies in situations perceived as stressful, about the resulting resilience results, this contrasts with what was mentioned by Tipismana (2019) who refer that resilience allows you to neutralize the psychosocial influence of the stressor, reducing the feeling of negative consequences; However, it should be noted that the levels of both strategy and volatility stability are not significantly different, indicating a medium-high trend and a low percentage in the stability level (33); therefore, it is necessary to further investigate these variables in this particular context, given the current pandemic situation, which could be a factor influencing the results of this study.

In addition to the above, the results of this study also show that resilience has a positive and significant impact on coping strategies focused on the problem, that is, resilient students, proactively facing problems, better self-organization, and better action plan they seek to cope with a stressful event and be aware of their resources and ability to achieve their goals, which makes it easier for them to take action to manage uncomfortable emotions and solve the problem. This coincides with research such as that carried out by Casas et al. (2015) who design more effective strategies to express themselves and communicate, as well as to deal with stressful situations or seek social support, pointing out that this will contribute to better decision-making (34), as González et al. (2018) and the active coping strategies that more effectively reduce the perception of stress and its consequences (35).

Consequently, on a practical level, pre-university institutions must encourage the development of intervention programs that focus on coping strategies and resilience, as well as educational institutions. Secondary school has a strong impact on students during their final years have moved to a different educational context and therefore face new situations that in many cases generate a need for stress in their lives, it is essential to consider that the current context of the pandemic has increased stress levels and is detrimental to the mental health, so the attention to these constructs is notable (36).

The present study suggests that, although there are studies focused on a population with characteristics like this, there is no evidence of an adequate number of studies with pre-university students, which suggests that it was found that the growth of research in the context of the pandemic has further subsided. This study may aim to encourage other authors to include this population in their studies, however, the small amount of previous evidence is one of the main limitations, therefore it does not contribute to a more detailed objection.

CONCLUSION

The results show that resilience positively affects emotional and problem-oriented strategies, namely positive coping, planning, limited coping and support tools, reinterpretation, positivity, growth and acceptance. On the other hand, the effects on the inverse correlation can be identified through avoidance strategies: mental and behavioral restraint, abstinence and drug use. These findings build on previous research confirming that resilience affects students’ coping strategies and are consistent with several studies showing higher levels of optimism, happiness, engagement, etc. in students with healthy coping and resilience strategies. Finally, for future research, it is advisable to repeat the study with a larger sample of students and consider different pre-university institutions that allow a broader view of the subject in the current situation, the current figure is also due to COVID-19 research. It focuses on the post-pandemic context, which makes it possible to determine if there are significant differences with the current results.


34. Casas Aznar, Ferran, Malo Cerrato, Sara, González Carrasco, Mónica, García Moreno, Yolanda, Viñas Poch, Ferran, Los estilos y estrategias de afrontamiento y su relación con el bienestar personal en una muestra de adolescentes. Anales de Psicología [Internet]. 2015;31(1):226-233. Recuperado de: https://www.redalyc.org/articulo.oa?id=16732936024
