

Anxiety and Attitude towards Research in Graduate Students in Times of COVID-19, Lima-Peru

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Abstract:

Objective: To know the level of anxiety and attitude towards scientific research in postgraduate students of a private university in Lima; also, to determine the association between the variables in a COVID-19 setting **Method:** Quantitative, non-experimental-descriptive-cross-sectional; population made up of 378 postgraduate students and a probabilistic sample of 206 doctoral students of a university, Lima-East Peru. The instruments used were the "State-trait Anxiety inventory STAI" to measure state anxiety and trait anxiety (**Spielberger et al., 2015**) and EACIN scale to measure the attitude towards scientific research. **Results:** the results evidenced that 85% of the participants presented a high level of state anxiety, while 44.2% presented above average trait anxiety; on the other hand, 42.7% evidenced a good level of attitude towards scientific research. The Chi-square test evidenced a significant association between the state anxiety variable and attitude towards scientific research at a confidence level of $p=0.025 < 0.05$; on the other hand, the association between trait anxiety and attitude towards scientific research evidenced a confidence level of $p=0.000 < 0.05$. **Conclusions:** There is evidence that the high average and high level of state anxiety and trait anxiety, propitiate a regular and good attitude towards scientific research of graduate students in Lima - Peru.

Keywords: Anxiety, aggression, COVID-19, pandemic.

1. Introduction

In a contemporary society, in which globalization prevails and the permanent change of a society immersed in the advancement of science and technology, where there are increasing demands, results in people suffering from psychological disorders such as anxiety, stress and others (**Spielberger et al., 2015**), which have been increased in these times, where the whole world is going through a pandemic caused by COVID-19, which has generated alterations in the mental health of the population (**Aleman- Arrebola et al., 2020, Ozamiz-Etxebarria et al., 2020**); Furthermore, this situation has generated uncertainty for coping with this reality caused by social confinement, so it is important to make decisions and strategies to counteract the consequences of the pandemic (**Ozamiz-Etxebarria et al., 2020**).

This scenario of a new normal generates changes in habits, in lifestyles, in the ways of relating restricted by confinement, generating anxiety and reducing self-efficacy and the decrease in the academic performance of students (**Giminiani et al., 2020**); In addition, it influenced the academic field as a consequence of the change from face-to-face education to

virtual education, which becomes a challenge, impacting the university community (**García-Peñalvo et al., 2020**). This change in education generated a gap in many segments of the academic population, especially in adults where insufficient technological skills are evidenced that do not allow them to perform effectively in different work and academic activities (**Rodicio-García et al., 2020**).

On the other hand, universities must develop research skills in their students, which allows them to create and manage knowledge; in addition to expanding the horizons of science and creating innovations for the benefit of humanity; For this reason, the need to promote positive attitudes towards research, making the student understand nature in a critical and organized way, transferring these attitudes to everyday life situations (**Aldana, et al., 2020**); In addition, knowledge is in continuous construction and needs a positive disposition to work in a team in a systematic way, oriented to the production of knowledge and the solution of problems (**De las Salas et al., 2014**).

The attitude towards research is made up of three components; the cognitive, related to the knowledge that the person has about the perception of the physical object, which allows him to exert action on them; the affective, is associated with feelings of like or dislike, which provides positive or negative feelings related to the object; the behavioral one is related to the behavior of the person in specific situations before certain objects (**De las Salas et al., 2014**). These attitudes drive research activity, which the university student must have in his personality for scientific research in higher education institutions.

In this sense, it is a priority to develop strategies that contribute to the achievement of scientific research competencies in university students, restructuring the curricular content, in order to achieve the expected objectives and competencies, promoting the culture of publications (**Gálvez, D et al., 2020**); For this, the proactive attitude of the researcher must be taken into consideration, which is necessary to have a better scientific production (**Olivera, 2020**). In addition, a positive attitude towards research leads to obtaining significant results, even more so considering the context and environment where the research takes place (**Shaukat et al., 2014**).

The purpose of the research is to know the level of anxiety and attitude towards scientific research in graduate students from a private university in Lima; also, determine the association between variables in a COVID-19 environment.

2. Methodology

Quantitative, non-experimental-descriptive-cross-sectional study. The population consisted of 378 students from four doctoral programs at University, Lima-East Peru Campus. Probabilistic sample of 206 students, according to the formula for finite populations. In the inclusion of the research, students who were studying different cycles of doctoral studies who gave their informed consent were considered; on the other hand, the exclusion criteria were those students who decided not to participate in the research.

The instruments used in the research were the “State-trait Anxiety inventory” STAI, which consists of 20 items for state anxiety whose responses correspond to the ordinal scale nothing

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= 0, some = 1, quite a bit = 2, a lot = 3 and 20 items for trait anxiety that should be answered with almost never = 0, sometimes = 1, often = 2 and almost always = 3 (Spielberger et al., 2015) and to measure attitude towards scientific research The EACIN scale was used, consisting of 34 items and three dimensions: affective, cognitive and behavioral; the score of the items ranges from 0 to 4; where 0 = strongly disagree, 1 = disagree, 2 = neither agree nor disagree, 3 = agree, 4 = strongly agree (Aldana de Becerra et al., 2016). The instruments were applied through emails obtained from the database of the participants enrolled in the 2020-II semester, the results of which were organized in an Excel sheet for further processing with the statistical program SPSS version 25, which allowed obtaining the tables and association results of the variables through the Chi square test.

The participation of the members of the research had the informed consent; in addition, they were informed and guaranteed anonymity, as well as that the data collected would be for the sole purpose of research.

3. Results

Table 1. Association between state anxiety and attitude towards scientific research

			Attitude towards scientific research			total
			bad	regular	good	
Anxiety Status	Above average	Count	6	17	8	31
		% of total	2,9%	8,3%	3,9%	15,0%
	High	Count	42	53	80	175
		% of total	20,4%	25,7%	38,8%	85,0%
Total		Count	48	70	88	206
		% of total	23,3%	34,0%	42,7%	100,0%

Source: Own elaboration.

As can be seen in Table 1, It is observed that 85% (175) of those surveyed have a high level of state unemployment, while 15% (31) are above the average. Furthermore, 42.7% (88) of those surveyed have a good level of attitude towards scientific research, 34% (70) have a fair attitude level, and 23.3% (48) have a bad level of attitude towards scientific research.

Of the 175 (85%) surveyed who present high state anxiety; 20.4% (42) have a bad attitude towards research, 25.7% (53) show a regular attitude towards research and 38.8% (80) have a good attitude towards research.

Of the 31 (15%) surveyed who present an above-average state anxiety; 2.9% (6) show a bad level of attitude towards research, 8.3% (17) show a regular level of attitude towards research and 3.9% (8) are located at a good level of attitude towards research.

Pearson's Chi square association test = 7.359 (2) with a p value = 0.025 <0.05, consequently, it is evidenced that there is a significant association between the variables state anxiety and attitude towards research.

Table 2. Association between trait anxiety and attitude towards scientific research

			Attitude towards scientific research			total	
			bad	regular	good		
Trait anxiety	Short	Count	6	29	18	53	
		% of total	2,9%	14,1%	8,7%	25,7%	
	Average trend	Count	2	20	20	42	
		% of total	1,0%	9,7%	9,7%	20,4%	
	Above average	Count	38	13	40	91	
		% of total	18,4%	6,3%	19,4%	44,2%	
	High	Count	2	8	10	20	
		% of total	1,0%	3,9%	4,9%	9,7%	
	Total		Count	48	70	88	206
			% of total	23,3%	34,0%	42,7%	100,0%

Source: Own elaboration.

As can be seen in Table 2, of the 206 respondents, 44.2% (91) present a level of trait anxiety above the average, 25.7% (53) present a low level of trait anxiety, 20.4% (42) are located at the level trait anxiety with a tendency to the average and 9.7% (20) show a high level of trait anxiety.

Of the 91 (44.2%) surveyed who have an above-average level of trait anxiety; 18.4% (38) have a good level of attitude towards scientific research, 6.3% (13) have a regular level of attitude towards scientific research and 19.4% (40) have a good level attitude towards scientific research.

Of the 42 students who have a trait anxiety with a level of tendency to the average; 1% (2) have a bad level of attitude towards research, 9.7% (20) have a regular level of attitude towards research, 9.7% (20) have a good level of attitude towards research scientific investigation.

Pearson's Chi square association test = 45.358 (6) with a p value = 0.000 <0.05, consequently, it is evidenced that there is a significant association between the variable's trait anxiety and attitude towards research.

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Table 3. Association between state anxiety and affective attitude towards scientific research

			affective attitude towards scientific research		total
			regular	good	
State anxiety	above average	Count	13	18	31
		% of total	6,3%	8,7%	15,0%
	high	Count	67	108	175
		% of total	32,5%	52,4%	85,0%
Total		Count	80	126	206
		% of total	38,8%	61,2%	100,0%

Source: Own elaboration.

As can be seen in Table 3, of the 206 participants, it is evident that 61.2% (126) present a good level of affective attitude towards research and 38.8% (80) present a regular level. Of the 175 (85%) participants who have high state anxiety; 32.5% (67) have a regular level of affective attitude towards scientific research and 52.4% (108) present a good level.

Of the 31 (15%) participants who have an above-average level state anxiety; 6.3% (13) have a regular level of affective attitude towards research, and 8.7% (18) present a good level.

Pearson's Chi square association test = 4.359 (2) with a p value = 0.045 <0.05, consequently, it is evidenced that there is a significant association between the variables state anxiety and affective attitude towards research.

Table 4. Association between state anxiety and cognitive attitude towards scientific research

			cognitive attitude towards scientific research			Total
			bad	regular	good	
State anxiety	Above average	Count	6	15	10	31
		% of total	2,9%	7,3%	4,9%	15,0%
	High	Count	36	95	44	175
		% of total	17,5%	46,1%	21,4%	85,0%
Total		Count	42	110	54	206
		% of total	20,4%	53,4%	26,2%	100,0%

Source: Own elaboration.

As can be seen in Table 4, of the 206 participants, it is evidenced 53.4% (110) present a regular level of cognitive attitude towards research, 26.2% (54) are located at a good level and 20.4% (42) present a level bad.

Of the 175 (85%) of participants who present a high level of anxiety; 17.5% (36) present a bad level, 46.1% (95) show a regular level and 21.4% (44) present a good level.

Of the 31 (15%) participants who have an above-average level of state anxiety; 2.9% (6) are located at a bad level of the cognitive attitude towards research; 7.3% (15) are at a regular level and 4.9% (10) show a good level.

Pearson's Chi square association test = 0.699 (2) with a p value = 0.705 > 0.05, consequently, it is evidenced that there is no significant association between the variables of state anxiety and cognitive attitude towards research.

Table 5. Association between state anxiety and behavioral attitude towards scientific research

			behavioral attitude towards scientific research			total
			bad	regular	good	
state anxiety	Above average	Count	5	12	14	31
		% of total	2,4%	5,8%	6,8%	15,0%
	High	Count	40	54	81	175
		% of total	19,4%	26,2%	39,3%	85,0%
Total		Count	45	66	95	206
		% of total	21,8%	32,0%	46,1%	100,0%

Source: Own elaboration.

As can be seen in Table 5, of the 206 participants, 46.1% (95) are located at a good level of behavioral attitude towards research, 32% (66) are located at a regular level and 21.8% (45) present a bad level.

Of the 175 (85%) participants who present a high level of state anxiety, 19.4% (40) present a bad level of behavioral attitude towards scientific research, 26.2% (54) are at a regular level and 39.3% (81) present a good level.

Of the 31 (15%) participants who present an above-average level of state anxiety; 2.4% (5) is located at a bad level behavioral attitude towards research, 5.8% is located at a regular level and 6.8% (14) a good level.

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Pearson's Chi square association test = 1.060 (2) with a p value = 0.589 > 0.05, consequently, it is evidenced that there is no significant association between the variables state anxiety and the behavioral attitude towards research.

Table 6. Association between trait anxiety and affective attitude towards scientific research

			affective attitude towards scientific research		total
			regular	good	
Trait Anxiety	Short	Count	25	28	53
		% of total	12,1%	13,6%	25,7%
	Average tren	Count	17	25	42
		% of total	8,3%	12,1%	20,4%
	Above average	Count	29	62	91
		% of total	14,1%	30,1%	44,2%
	High	Count	9	11	20
		% of total	4,4%	5,3%	9,7%
Total		Count	80	126	206
		% of total	38,8%	61,2%	100,0%

Source: Own elaboration.

As can be seen in Table 6, of the 91 (44.2%) of participants who have an above-average trait anxiety; 14.1% (29) present a regular level of affective attitude, 30.1% show a good level. Of the 53 participants who presented a low-level trait anxiety; 12.1% show a regular level and 13.6% (28) present a good level.

Of the 42 participants who have a trait anxiety level with a tendency to the average; 8.3% (17) present a regular level of attitude towards research and 12.1% (25) are at a good level.

Of the 20 (9.7%) participants who have a high level of trait anxiety; 4.4% (9) show a regular level of affective attitude towards scientific research and 5.3% (11) show a good level.

Pearson's Chi square association test = 3.777 (3) with a p value = 0.287 > 0.05, consequently, it is evidenced that there is no significant association between the variables of trait anxiety and affective attitude towards research.

Table 7. Association between trait anxiety and cognitive attitude towards scientific research

		cognitive attitude towards scientific research			total	
		bad	regular	good		
Trait anxiety	Short	Count	6	27	20	53
		% of total	2,9%	13,1%	9,7%	25,7%
	Average trend	Count	0	32	10	42
		% of total	0,0%	15,5%	4,9%	20,4%
	Above average	Count	34	39	18	91
		% of total	16,5%	18,9%	8,7%	44,2%
high	Count	2	12	6	20	
	% of total	1,0%	5,8%	2,9%	9,7%	
Total		Count	42	110	54	206
		% of total	20,4%	53,4%	26,2%	100,0%

Source: Own elaboration.

As can be seen in Table 7, of the 91 (44.2%) of investigated subjects who have trait anxiety at an above-average level, 16.5% (34) present a poor level of cognitive attitude towards research, 18.9% (39) evidence a regular level and 8.7% (18) present a good level.

Of the 53 (25.7) participants who present a low level of trait anxiety; 2.9% (6) present a bad level of cognitive attitude towards research, 13.1% (27) present a regular level and 9.7% (20) are located at a good level.

Of the 42 (20.4%) of participants who have an average level of trait anxiety; 15.5% (32) have a regular level of cognitive attitude towards research and 4.9% (10) show a good level.

Of the 20 respondents who have a high level of trait anxiety; 1% (2) show a bad level of cognitive attitude towards research, 5.8% (12) show a regular level and 2.9% (6) show a good level.

The Pearson Chi square association test = 35.145 (6) with a $p = 0.000 > 0.05$, consequently, it is evidenced that there is a significant association between the variable's trait anxiety and the cognitive attitude towards research.

Table 8. Association between trait anxiety and behavioral attitude towards research

			behavioral attitude towards research			total	
			bad	regular	good		
Trait anxiety	Short	Count	5	26	22	53	
		% of total	2,4%	12,6%	10,7%	25,7%	
	Average trend	Count	6	14	22	42	
		% of total	2,9%	6,8%	10,7%	20,4%	
	Above average	Count	32	17	42	91	
		% of total	15,5%	8,3%	20,4%	44,2%	
	High	Count	2	9	9	20	
		% of total	1,0%	4,4%	4,4%	9,7%	
	Total		Count	45	66	95	206
			% of total	21,8%	32,0%	46,1%	100,0%

Source: Own elaboration.

As can be seen in Table 8, of the 91 (44.2) participants who have an above-average level of a trait anxiety; 15.5% (32) present a bad level of behavioral attitude, 8.3% (17) present a regular level and 20.4% (42) show a good level.

Of the 53 (25.7%) of participants who have a low level of trait anxiety; 2.4% (5) show a bad level of behavioral attitude towards research, 12.6% (26) show a regular level and 10.7% (22) are located at a good level.

Of the 42 (20.4%) of participants who are located at a level with a tendency to the average of trait anxiety; 2.9% (9) show a bad level of behavioral attitude towards research, 6.8% (14) show a regular level and 10.7% (22) show a good level.

Of the 20 (9.7%) of participants who have a high level of high trait anxiety; 1% have a bad level of behavioral attitude towards research, 4.4% (9) show a regular level, 4.4% show a good level.

Pearson's Chi square association test presents a p value of 0.000 which is lower than the significance level of 0.05, consequently, it is evidenced that there is a significant association between the variables trait anxiety and the behavioral attitude towards research.

The Pearson Chi square association test = 25.047 (6) with a p = 0.000 <0.05, consequently, it is evidenced that there is a significant association between the variable's trait anxiety and the behavioral attitude towards research.

4. Discussion

The pandemic caused by COVID-19 has altered the daily lives of millions of people in this 21st century; In addition to causing deaths and affecting the mental health of many people, generating high levels of stress, anxiety, depression in response to forced confinement

(Reynosa et al., 2020; Rivera et al., 2020). One of the most affected sectors is undoubtedly education, especially university, causing higher education centers to postpone their face-to-face classes and take on a new challenge through the provision of virtual classes (Lovón & Cisneros, 2020), which It caused 895,907 university students to adapt to a purely virtual education (Vivanco-vidal et al., 2020). Faced with this reality, the need arises to carry out studies that address the mental health of university students and how it affects the development of attitudes related to scientific research in a context of COVID-19.

As a product of confinement, university students present a high level of state anxiety, as a consequence of the isolation that produced an increase in the mental health of many people, due to the fact that they are confined to their homes, in addition to limited communication with their peers. which generates a state of anxiety and depression, which is aggravated when psychological intervention is scarce or absent during this health crisis (Xiao, 2020). In the study by Tamayo et al. (2020) it was shown that there is an increase in mental health problems in university students as a consequence of COVID-19, where 46% of participants indicated presenting anxiety and depression, while 22% indicated presenting depression and stress; 17% reported presenting post-traumatic stress. On the other hand, in relation to trait anxiety, it was located at the level above the average, which is possibly associated with an adaptation process that many people went through in this pandemic situation (Qiu et al., 2020). Likewise, Alemany-Arrebola et al. (2020) highlight the increase in anxiety levels as a result of a stressful situation related to confinement, in addition to going through critical experiences such as illness and death of a family member or friend due to COVID-19 that will affect the academic performance of student's college.

Both states of anxiety were increased in university students during prolonged confinement, due to an alteration in routine life, in addition to dealing with a virtual education, which requires having a technological equipment in addition to internet connectivity to participate in them; as well as, receiving abundant information imparted on educational platforms, applications and emails, which leads to feeling overwhelmed by this new form of education in which it is adapting (Pedró, 2020).

On the other hand, the results showed a good level of attitude towards scientific research during confinement, considering that university students find research a challenging topic that leads them to learn, in contrast to this result, in the study by Ramsay et al. (2020) it was evidenced that online research may be insufficient to achieve a change in the attitudes of university students, increasing the understanding of the terminology "research", but decreasing the intention to carry out research. In addition, deep knowledge and research skills favor the participation of university students in various investigations related to the field of their training, from laboratory experiments to clinical and community research projects (Juhari et al., 2020).

In relation to state anxiety, a significant association with affective attitude towards scientific research was demonstrated; In the study by Erconvaldo & Mena (2020) it was evidenced that university students presented state anxiety at a low and medium level at the time of diagnosis, as a consequence of the fear of contagion of COVID-19 and that it could

lead to death; This is why a psychotherapeutic intervention was carried out on the students to reduce the levels of anxiety and depressive symptoms, evolving satisfactorily. In this sense, preserving mental health is necessary during the pandemic, for which it is recommended to participate in physical activities such as exercise that favors the ability of people to face this difficult situation (**Khan et al., 2020**).

On the other hand, it was evidenced that there is no significant association between state anxiety and cognitive attitude towards research; In relation to the results found, **Trujillo (2020)** highlights that during this health emergency, university students were emotionally affected, increasing anxiety, stress, depression, anger, feeling of uncertainty, anguish and panic; demonstrating that as human beings we are more prone to an instability of our mental balance; in the same way **Cao et al. (2020)** show that 0.9% of the participants experienced severe anxiety, 2.7% moderate anxiety and 21.3% mild anxiety, influencing economic factors, having relatives or acquaintances who suffer from COVID-19, in the increase of anxiety in Chinese university students . Furthermore, no significant association was found between state anxiety and behavioral attitude towards research; in the study by **Abdulrahman et al. (2020)** 60.4% of Saudi university students were involved in research activities and 37.3% presented or published scientific articles; Likewise, they present a moderate level of knowledge and practice in research, in addition to showing a very positive attitude. Likewise, different factors can influence the perception, attitude and practice towards scientific research in university students, such as prior training, the motivated teacher and a favorable environment, all of which promote the general research experience (**Achi et al., 2020**).

In relation to the association between trait anxiety and affective attitude towards scientific research, it is evident that the variables do not present a significant relationship. In this regard, in the study by **Ramón et al. (2020)** it was shown that the majority of university students did not present psychological alterations during the pandemic, in addition to not presenting an idea of suicide, while a small group showed anxiety, depression and vulnerability to stress; This is an indicator that they had a coping attitude centered on the predominant emotion, favoring the control of negative emotions. On the other hand, in the study by **Wajid & Jami (2020)** it was revealed that university students show anxiety about research, as well as intensity of metacognition related to the reading process, which are moderators in the effectiveness of scientific research.

In contrast to the above, an association was found between trait anxiety and cognitive attitude towards scientific research, as well as between trait anxiety and behavioral attitude towards scientific research; These results are related to the study by **Majali (2020)** where it was shown that students with a medium level of anxiety present positive results in their academic performance and motivation; Likewise, the presence of a high level of anxiety produces a high level of academic achievement, but also reduces motivation towards learning; on the other hand, a low level of anxiety leads to diminished academic performance. Faced with this reality, it is necessary to develop intervention strategies in the mental health of university students that allow them to develop various techniques of assertive coping in the face of this pandemic (**Saravia-Bartra et al., 2020**); In addition, it is necessary to maintain

contact with loved ones through the telephone, social networks and creating new hobbies are strategies that can help reduce anxiety levels during the pandemic (**Talidong & Toquero, 2020**).

5. Conclusions

In this pandemic situation, the pre-pandemic daily life has been disrupted by abrupt changes at a global level in the different areas of human endeavor, both economic, social, educational, among others, as a consequence of the confinement caused by COVID-19. This new reality has hit the depths of the quality of life, creating anxiety in families that have been affected by the loss of family, work, and most importantly, feeling estranged from their loved ones and friends. All these vortexes of chaotic events have triggered high levels of anxiety in the population, which in healthy conditions is necessary and remains at levels within or below the average, constituting a motivating factor to achieve achievements; However, as anxiety / state and anxiety / trait increase above normal, it affects the emotional quality of those who suffer from it, becoming an obstacle in the achievement of the goals of graduate students from Lima-Peru.

Contrary to what was expected, it was found that the presence of high anxiety / state is associated with a regular and good attitude towards scientific research; Likewise, it is evidenced that an anxiety / trait above the average seems to encourage this scientific attitude. In the same sense, both anxiety / state and anxiety / trait above average and high are associated with a high affective, cognitive and behavioral attitude towards scientific research. However, despite the fact that there is a high association between state anxiety and cognitive and behavioral attitude, it is evident that these variables are not directly affected, but rather are independent variables.

Consequently, what could become an obstacle for graduate students to assume a proactive attitude towards scientific research, becomes an incentive to face the consequences of COVID-19, showing a flattering panorama to face new challenges that the future holds, although uncertain, glimpses a light of hope in a daily life totally different from the pre-pandemic.

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