INDEX OF UNDERGRADUATE STUDENTS' ATTITUDE TOWARDS SCIENTIFIC RESEARCH: A STUDY IN PERU AND SPAIN

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ABSTRACT

The aim of this research was to determine the attitude towards scientific research in undergraduate university students from Peru and Spain. The research was descriptive, comparative and cross-sectional. The sample consisted of 953 undergraduate students currently enrolled in universities in Spain (485) and Peru (468), and the information was collected through convenience sampling. The General Index of Attitude towards Research instrument was applied, which was adapted for the study. Its statistical validation was carried out and high reliability of the instrument was proved with a Cronbach's Alpha of 921. According to the questionnaire scores, a sociodemographic survey was also applied. Regarding the results, it was found that students from Peru have a high predisposition towards research (51.5%) compared to students from Spain (23.5%). Regarding knowledge about research, students in both countries recognize that scientific research is not adequately valued (60.6% in Spain and 54.3% in Peru); however, they would like to carry out educational scientific research (63.3% and 71.2, respectively). Regarding the evaluation of the quality of university education, undergraduate students from Spain perceive a better quality in their education (7.22 out of 10), quality of the program in which they are enrolled (7.31 out of 10), quality of fellow students (7.46 out of 10), and welfare and infrastructure services (7.30 out of 10). It is concluded that students from Peru show a better attitude towards research (M=28.98, DT=10.26) than students from Spain (M=22.61, DT=8.28).

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INTRODUCTION

Scientific research is an activity aimed at obtaining significant findings that increase human knowledge and enrich science (Ianni, 2017; Rivera et al., 2017). Thus, research and scientific innovation have made current university assignments a daily activity for students, sometimes becoming a mandatory requirement to reach a specific education level (Rodríguez-Ponce, 2017; Vera et al., 2018; Hernández et al., 2020) such as final research assignments as detailed below.

Also, research has become one of the conditions to evaluate universities that, with the aid of technology, make the difference between past and contemporary culture. Certainly, universities realize that their students' research potential is stimulated through various formulas, such as scholarships or research incubators, and even the potential staff turnover before retirements. There are enough reasons to justify that scientific research in universities allows the student to reach a significant level by creating and understanding new information, knowledge and technologies, thus, giving rise to creative and innovative professionals (Bernaza et al., 2017; Martínez Villalba & Sánchez Muñoz, 2018).

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During the last few years, the social role of universities has changed in a more generalized way (Imbernón & Guerrero, 2018). Universities have changed from being just a repository of knowledge to being an institution that strengthens professional competencies, where students do not only acquire knowledge, but also research skills (Arechavala, 2011). For this reason, the institutional scientific policy in higher education plays an important role within the educational process (Larran-Jorge & Andrades-Pena, 2015; Roque et al., 2019). Universities seek to promote a research model not only among their teaching staff, but also in the training of students (Canales, 2011). Research is considered the bridge that links theory and practice of knowledge, empowering academic and professional work (Velandia-Mesa et al., 2017; Gálvez et al., 2019), and at the same time, it becomes necessary to adapt to today's changing labor market.

Human behavior depends on a series of predispositions, so a positive attitude towards research will provide students with more opportunities to reach ideas and critical thinking in the search for solutions (Mamani, 2015). Attitude is the precursor to action (Rodríguez & Caurcel, 2020). The current attitude model is a concatenation of "perception" of the phenomenon and its developers, a "feeling" awakened within the person for it and a "predisposition" towards its development. The study on attitude towards scientific research is closely related to critical training in the development of teachers' and students' abilities to produce scientific knowledge as the core of professional training (Figueredo, 2020).

Students' attitude towards scientific research (IAI) is an indicator of the quality of education since teaching how to do research is a cross-cutting element in the organization of undergraduate education processes (Rojas et al., 2012). Attitudes towards research are students' predispositions that come from internal psychological states (beliefs and cognitions) with a positive or negative feeling for research, according to the traditionally accepted attitude model (Rodríguez et al., 2021), which is linked to the development of students' abstraction, critical analysis and synthesis skills (Chara-Saavedra & Olortegui-Luna, 2018). The study of these attitudes gives an opportunity to implement quality measures in the field of higher education (Rojas-Mancilla & Cortés, 2017).

First of all, it is necessary to provide contexts in attitudes toward scientific research in both Spain and Peru. In Peru, research at universities is a requirement associated with the education quality of future professionals. The new Peruvian University Law 30220 specifies that research is a mandatory requirement for universities, in accordance with one of the basic conditions established by the National Superintendency of Higher Education (SUNEDU) for the operation of public and private universities in Peru (University Law). For universities, research is considered a mandatory fundamental process, meeting society's needs by producing knowledge and developing technologies (Ünver et al., 2018; Estrada, 2021). Among the different strategies to promote research in Peru, training of new researchers stands out, becoming one of the conditions to train future professionals (Hernández, 2020). Although it is important that spaces for research are provided, there are still difficulties in the dissemination mechanisms, such as scientific journals. If research results are not published within the scientific community, it is as if it had not been conducted (Rojas-Mancilla & Cortés, 2017; Turpo-Gebera et al., 2020).

In Spain, research is highly recognized at universities, where this type of activity mostly takes place even in cooperation with some Research Centers, Institutes and Units of private and, especially, public institutions. Evaluation of universities as an institution and the promotion of its faculty depend, to a large extent, on its research projects and their dissemination. There is also a body for the national evaluation of research evidence, the National Agency for Quality Assessment and Accreditation (ANECA), born in 2002, and, within it, there is a specific unit called the National Commission for the Evaluation of Research Activity (CNEAI), which has already existed since 1989 (Giménez-Toledo, 2015). At regional level, there are also agencies for this purpose. The relationship between teaching and research activity is accepted, although it would be appropriate to verify it through empirical study. Undergraduate students are also encouraged to do simple research under supervision, with a view to preparing their End of Degree Project (TFG). They can conduct a more complex and even more supervised research work as a final assignment. In addition, there are various research grants in undergraduate studies to introduce students to research. However, research performed by students is scarce and the number of grants is small. In graduate studies, students do somewhat more research, especially in the Master's Research Project (TFM) within the framework of master of research degree, but that is not the case of doctoral candidates. In Spain, it is also difficult to publish research papers in scientific journals, the number of which has a very low impact.

Evaluating the attitude towards research is very opportune, in the first place, in order to know the student's understanding and recognition of the content expressed by the teacher (which should derive from cutting-edge and impact research); to know their willingness to become a professional who develops their work by means of action-research mechanisms, which are currently used for professional work, for example, teaching, and particularly, to estimate the desire of these students to professionally perform scientific research. To conduct this evaluation between two countries such as Peru and Spain implies conducting a comparative approach between the Ibero-American tradition and the European Higher Education Area, with the same instrument, given the coincidence. As explained in the prospective study, broadening the horizons of both contexts would be very important for the transfer of measures that have proved effectiveness in the different contexts.

In short, in each context, research is recognized as a drive for innovation and development. It is predominantly developed at universities, and there are difficulties or little encouragement for students to conduct it. This problem leads to the need to know students' attitude towards research developed at their universities, such as recognition of their research professors and their lessons and as a task to be developed in university assignments and in their professional future. In other words, there are two main reasons why an adequate attitude towards research is needed among undergraduate students: first of all, it is a formula for empowering the faculty and the students themselves. It empowers the professor because students with the right attitude towards research increase the recognition of the content and lessons masterfully taught by the professor. Thus, a good selection of content to be taught to students is based on quality avant-garde research, and even on the faculty's own research processes. Conversely, without an optimal attitude towards research, it is impossible for this faculty members' work to be recognized. On the other hand, current university teaching is based on constructive learning models, in which students are required to play a fully active role. Hence, individual and collaborative research by students contributes to the desired construction of their own knowledge and the homogeneous knowledge transfer (among students) when shared with others in the classroom, as a relevant combination to heterogeneous exposures (faculty members to students).

In addition, today's university graduates must show a good attitude towards research and a certain competency to develop it, under the current model of professional performance of Research-Action. This has become relevant since the consolidation of research, even in certain traditionally quantitative disciplines such as psychology (Rodriguez & Caurcel, 2019). Indeed, there is currently a demand for professionals trained in "learning to learn", "learning to do" and "learning to know", who are aware of the fact that university cannot teach all the skills required by the labor market, which is also enormously changing. Professionals are required to seek continuous training after undergraduate education, and to assiduously undertake a process of self-training through research, initiative, experimentation, trial and error, interprofessional collaboration and problem solving. All of these are Action-Research modalities, which are not focused on knowledge construction but on professional and work performance improvement.

The above has not been sufficiently studied. That is, it is yet to be studied how a good student's attitude towards research (as well as the faculty's attitude, institutional attitude and the attitude in general) improves their opinion on their professors, contents and their way of studying and learning, as well as of entering and developing in the labor market. Consequently, preliminary knowledge of the university students' attitude towards research is required. Thus, the need for research is supported, which also feeds on the traditional recommendation to undertake research on attitude as a conditioning and binding component with behavior. In this regard, attitude and action are the two sides of the same coin, always linked, always related.

Studies on this topic have already been conducted, unlike in Spain, where written studies about it have been hardly found (Gallego-Arrufat & Díaz-Martín, 2015). Its relevance lies in its effect on the representation of the university, in its dedication to this work as eminent professional development after graduation from university, within the current research-action role demanded, or continuation in university for pursuing research. The above explains the importance of this study, which has been noted by previous authors (Fernández & Jonson, 2015; Rojas et al., 2020).

Given the importance of this study, it is surprising that it is not a consolidated research topic for universities, which together with their formative quality should study the attitude of their students towards research as a perception, feeling and predisposition towards it. The mutual contribution between institutions, as occurs among professors, should be a source of enrichment for said

institutions. However, there are no studies that compare the outlooks considered in this research, although their evaluation can provide interesting data and proposals to transfer effective strategies and actions and an international character to research studies. With this perspective, Hussain & Ara (2013) conducted a comparative study. The specialized literature does include studies related to other attitude dimensions as concrete resources, for example, attitude towards technologies, current phenomena, educational inclusion, etc. in different contexts, groups, generations, etc. It is interesting, therefore, to know the attitude of students towards research. Although goals of science education in Spain and Peru are different, social need and justification are identical. Indeed, the comparative study can reveal gaps in a context and potentialities. This will inform on successful ways of working and developing the attitude under study. A comparative study and cross-sectional design are appropriate.

Therefore, this study seeks to explore the construction of an index of undergraduate students' attitude towards scientific research, involving specialized training as a condition of universities in two Ibero-American countries, Peru and Spain. Therefore, its objective is to compare the attitudes towards research of Peruvian and Spanish students. The specific objectives include: (1) to measure the psychometric values of a scale to quantify the attitude towards research adapted to the Peruvian and Spanish contexts. To validate the scale designed based on other scales; (2) to quantify the Peruvian undergraduate students' attitudes towards research. It will be especially useful to propose actions aimed at improving the perception, feeling and predisposition towards research of the studied group; (3) to quantify the Spanish undergraduate students' attitudes of towards research. As in the previous case, it is complemented with suggestions for development of attitude towards research, as a necessary competency for them; (4) to verify the previous partial results, not with the aim of establishing categories or hierarchies, but to transfer strategies adapted from some contexts to others, in order to improve the attitude.

METHODS

Undergraduate students must be trained from the very beginning, not only during their professional studies but also through the creation of research incubators that allow for the advancement of science and technology.

The study is non-experimental because variables are not manipulated, and cross-sectional because the information is gathered at a single period of time (Hernández et al., 2014). In this regard, this research design was developed due to the limited access of the population caused by the pandemic situation (UNESCO IESALC, 2020). In other words, data were collected from each group of participants at a single period of time and using a single technique (questionnaire) and instrument in both contexts. The study is descriptive and comparative because it will describe the most important characteristics of the sample, in this case, the attitude towards research of undergraduate students from two countries. In addition, it is comparative as it aims to establish differences between countries. The comparison will provide information on possible benefits of some independent variables in each country. Moreover, it is of a basic and field type because the purpose is to gather information from reality in order to increase scientific knowledge, and thus better understand a problem (Escobar & Bilbao, 2020).

The questions used were quantitative and were made using an instrument that studies the attitudes towards research in undergraduate students. The instrument applied was adapted from different sources (Rojas et al., 2012; Rojas & Méndez, 2017), included 17 items related to the General Index of Attitude towards Research that made it possible to establish the general levels of attitude towards research, and had three dimensions: Self-Assessment (IAE), Faculty Influence (IP) and Institutional Influence (IINT).

In addition, questions about other aspects related to students' attitude towards research and the evaluation of the education quality received by students in their universities were considered. Sociodemographic questions were considered to better find the characteristics of the population studied (see Table 1). It was statistically validated as it is an instrument derived from several others and adapted to the contexts under study. High reliability of the instrument was verified, a Cronbach's Alpha of .921 was obtained, a value that showed the reliability of the instrument applied.

The sample was non-probabilistic since it gathers information from people who were of interest to this research, in order to offer richness in collection and analysis of data (Hernández et al., 2014). Due to the current pandemic situation, the research was aimed at university students who want to participate, have access to the Internet, thus meeting the criteria for inclusion and exclusion.

The sample consisted of 953 undergraduate students currently enrolled in universities in Spain (485) and Peru (468) and was taken through convenience sampling. In Table 1, the majority of the population participating in this study is women (80.4% for Spain and 73.5% for Peru). In addition, the average age of the participants is 23.

Table 1. Characteristics of the Study Population by Country

		Country			
		Spain		**Peru**	
		f_x	%	f_x	%
Sex	Woman	390	80.4%	344	73.5%
	Man	95	19.6%	124	26.5%
Total		485	100.0%	468	100.0%
Age	17 to 22	392	80.8%	278	59.4%
	23 and older	93	19.2%	190	40.6%
Total		485	100.0%	468	100.0%
Main professional education funding source	Parents/Relatives	259	53.4%	267	57.1%
	Grant or Similar	183	37.7%	39	8.3%
	Own Funds	36	7.4%	120	25.6%
	Others	7	1.4%	42	9%
Total		485	100.0%	468	100.0%
Academic hours	Day	336	69.3%	136	31.9%
	Night	12	2.5%	0	0.0%
	Mixed	137	28.2%	290	68.1%
Total		485	100.0%	468	100.0%
Main Occupation	Only study	359	74.0%	274	58.5%
	Study and Work	126	26%	194	41.5%

Source: Research database. Prepared by the author.

The highest percentage corresponds to undergraduate students between 17 and 22 years old, accounted for 80.2% by Spain and 59.4% by Peru. Another most outstanding characteristic is that the main professional education funding source are parents and relatives with 53.4% for Spain and 57.1% for Peru. However, it can be observed that Spain shows a higher percentage, 37.7%, in access to scholarships or similar as compared with 8.3% for Peru. In addition, 25.6% of Peruvian students use their own funds to pay their education as compared with 7.4% of Spanish students. With respect to academic hours, Spain has a higher percentage in day hours, 69.3%, and Peru has higher percentage in mixed hours, 68.1%. Finally, in terms of main occupation, it can be observed that almost ¾ of the Spanish sample (74%) only studies. However, it can be observed that 41.5% of the Peruvian sample studies and works.

The data collection procedure involved digitizing the attitude towards research index instrument into a Google form and adding the informed consent at the beginning of the form in order to comply with the ethical research requirements. This strategy made it possible to reach more university students despite the pandemic situation. An access was given to fill out the research instrument, where students could enter their answers in real time, which were saved for later downloading and processing. A two-month deadline was established for the total collection in both countries. The estimated time to complete the instrument was approximately 15 minutes.

The Statistical Package for Social Sciences (SPSS V. 25.0) and Microsoft Excel were used in the result analysis procedure. The levels of attitude towards research and their respective dimensions were determined and the results of the 17-item questionnaire were analyzed by applying frequency analysis, dispersion curves and cut-off

RESULTS AND DISCUSSION

points. In the analysis of students' research knowledge objectives by country and the general evaluation of university education quality by country, tables with frequencies and percentages were developed. Finally, central tendency analysis and inferential calculations (Student's t and Cohen's d) were used to identify significant differences in the samples of Spanish and Peruvian students.

It can be observed in Figure 1 that with respect to the index of attitude towards research (IAI), Peruvian students have higher percentage (51.5%) compared to Spanish students (23.5%), with a difference of 27.8%.
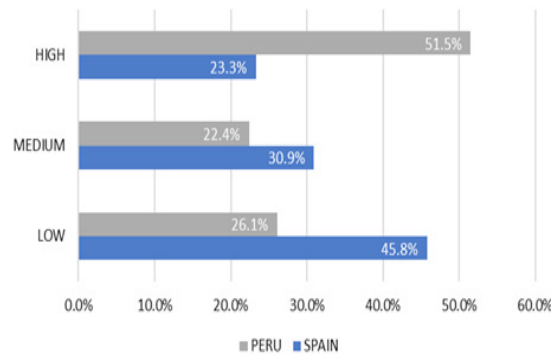

Figure 1. Levels of Index of Attitude Towards Research. Source: Research Database. Prepared by the Author.

With respect to medium level, Spain shows higher percentage (30.9%) compared to Peru (22.4%), with a difference of 8.5% in Spain. Finally, it was observed that Spain exhibits higher percentage of low level of attitude towards research with 45.8% in comparison to Peru which accounts for 26.1%, showing a predominant low level in Spanish undergraduate students by 19.7%.
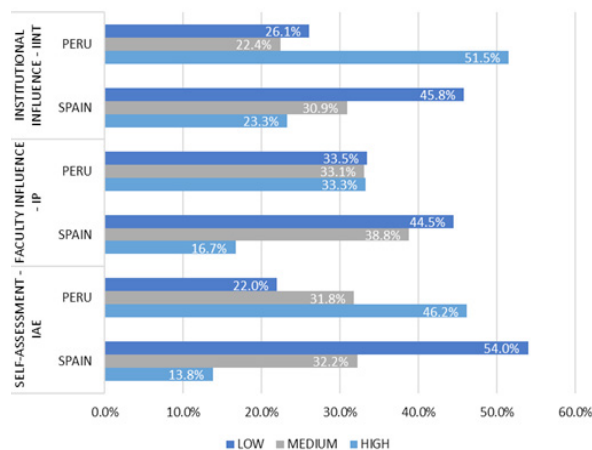

Figure 2. Indicators of Attitude Towards Research. Source: Research Database. Prepared by the Author

Figure 2 referring to institutional influence (IINT) shows that Peruvian students think that universities have a high level of influence on research development (51.5%) in comparison to Spanish students with only 23.3%, showing a difference of 28.2% in favor of Peru. In the dimension of faculty influence on research training, Peruvian students exhibit high influence (33.3%). On the contrary, only 16.7% of Spanish students think that the faculty influence is higher, showing a difference of 16.6% in favor of Peru. Finally, with respect to the self-assessment dimension (IAE), Peruvian students show high values, 46.2%, compared to Spanish students who exhibit only 13.8%, thus showing a difference in favor of Peru of 32.9%.

Table 2 shows information on students' knowledge about research in which participants from both countries recognize that scientific research is not adequately valued, with 60.6% for Spain and 54.3% for Peru. Besides, it is observed that there is greater ignorance in Spain, with 25.6% of students recognizing that they do not know about the subject, compared to 16% of Peruvian students.

Table 2. Students' Knowledge about Research by Country

Students' Knowledge about Research		Spain	Peru
		%	%
Is scientific research adequately valued?	No	60.6%	54.3%
	Does not know	25.6%	16%
	Yes	13.8%	29.7%
Do you know the research system of your university?	Does not know	56.9%	14.7%
	Small extent	32.6%	32.1%
	Moderate extent	9.7%	45.5%
	Large extent	0.8%	7.7%
Do you think that students from your university are trained in educational scientific research?	Does not know	34.4%	8.8%
	Small extent	38.8%	38.9%
	Moderate extent	23.3%	41.9%
	Large extent	3.5%	10.5%
Do you think that your university promotes the development of science production?	Does not know	20.2%	7.5%
	Small extent	36.3%	25.6%
	Moderate extent	35.7%	43.4%
	Large extent	7.8%	23.5%
Do you participate in research groups or research projects in your university?	Does not know	70.3%	23.7%
	Small extent	19.4%	43.8%
	Moderate extent	7.4%	22.4%
	Large extent	2.5%	10%
In your particular case, would you like to be engaged in research?	Does not know	30.7%	8.8%
	Small extent	30.3%	18.2%
	Moderate extent	30.1%	47.4%
	Large extent	8.9%	25.6%
Am I interested in conducting/participating in educational research?	Does not know	6.2%	2.4%
	Small extent	30.5%	26.5%
	Moderate extent	45.8%	40.6%
	Large extent	17.5%	30.6%

Source: Research database. Prepared by the author.

Finally, it is observed that for 13.8% of Spanish participants, scientific research is adequately valued, as well as for 29.7% of Peruvian students. As to whether they know the research system of their university, it can be observed that Spanish participants do not know about the topic, which is reflected in options such as does not know (56.9%) and small extent (32.6%) in comparison to Peruvian participants, which is reflected in options such as large extent (7.7%) and moderate extent (45.5%). In addition, as to students' research training, percentage is low: large extent for Spain (3.5%) and for Peru (10.5%). Higher percentages were also found in the promotion of the development of scientific production of universities in Peru, with 23.5% in large extent option, as compared with Spain, with 7.8% in large extent option as well. There is a low tendency in the participation of research groups or research projects in their universities since Spanish stu-

dents consider that they do not know the groups (70.3%) or know them to a small extent (19.4%); with respect to Peruvian students, they do not know them (23.7%) or know them to a small extent (43.8%). It should be noted that only 2.5% of Spanish students participate in research groups or projects, in comparison to 10% of Peruvian students. There is also a greater predisposition of Peruvian students to be engaged in research: moderate extent (47.4%) and large extent (25.6%) as compared with Spanish students who do not

express their desire to be engaged in research since they do not know (30.7%) or know to a small extent (30.3%). Finally, predisposition to conduct or participate in educational research was found, with percentages higher than 60% in the case of Spain: moderate extent (45.8%) and large extent (17.5%) and for Peru: moderate extent (40.6%) and large extent (30.6%).

Table 3 presents a general assessment of the quality of university education on a scale of 0 to 10.

Table 3. General Assessment of the Quality of University Education by Country

General Assessment of the Quality of University Education, 0- 10 Point Scale	Countries (F and Level)	
	Spain	Peru
1. In my university	7.22 / medium	6.94 / medium
2. The program in which I am enrolled	7.31 / medium	6.91 / medium
3. My curriculum	7.10 / medium	7.19 / medium
4. My professors	7.27 medium	7.41 / medium
5. My fellow students	7.46 / medium	6.80 / medium
6. The university welfare services	7.22 / medium	6.5 / medium
7. The university infrastructures	7.30 / medium	6.44 / medium
8. The opportunities given by the university for research	5.76 / low	6.33 / medium
9. The scholarships and recognitions for students	5.25 / low	5.17 / low

Source: Research Database. Prepared by the Author.

Statement 1 shows that Spanish students perceive an average university quality of 7.22 and Peruvian students perceive an average university quality of 6.94. In statement 2, the average quality of the program in which students are enrolled is 7.31 for Spain and 6.91 for Peru. Statement 3, which asks whether it is related to the curriculum, the average quality results are 7.10 for Spain and 7.19 for Peru. In statement 4 regarding faculty, the average quality is 7.27 for Spain and 7.41 for Peru. Statement 5 shows that the quality of fellow students is slightly higher for Spain with 7.46 in comparison to Peru, which is 6.8. In statement 6, the Spanish students have better perception of

the welfare services provided by universities than Peruvian students, 7.22 and 6.5 for Spain and Peru, respectively. Statement 7 is related to infrastructure. Spanish students think that the quality has an average of 7.3 in comparison to Peruvian students who think that the average is 6.44. In statement 8 regarding the opportunities for research provided by the universities, the average for Peru (6.33) is slightly higher than that for Spain (5.76). Finally, in statement 9 regarding scholarships and recognitions provided by their universities, averages are almost similar in Peru (5.17) and Spain (5.25).

Table 4. Central Tendency and Inferential Calculations of IAI Scores between Spain and Peru

		n	Mean	SD	t	df	p	d
Index of Undergraduate Students' General Attitude towards Research	Spain	485	22.61	8.28	10.57	951	.000	.69
	Peru	468	28.98	10.26				

Note: n = sample; SD = Standard Deviation; t = Student's t; df = degrees freedom; p = p-value of significance; d = Cohen's d of effect size. Source: Research database. Prepared by the author.

Indeed, Table 4 shows that the differences in the overall IAI score between Spanish and Peruvian students reach the maximum level of statistical significance (p<.001), as shown by the Student's t calculation, and that the difference is of moderate size, as indicated by Cohen's d value for the effect size. Based on the averages, it can be concluded, as previously indicated by the percentages of answers, that Peruvian students show a more positive attitude towards research than those from Spain, although dispersion is also higher, as reflected by the standard deviation.

Scientific research plays a fundamental role in the development of a country where universities through research produce critical thinkers oriented toward the development of society by searching for solutions to the difficulties they have (Carrasco et al., 2018). Therefore, it is important to know students' subjective opinion on research (Huang et al., 2019), as positive attitudes towards science generate high levels of scientific interest (Zulirfan et al., 2018). The scope of the findings lies in the contribution to science itself, and its dissemination and continuation in new generations, and the socio-community development, due to the strong relationship between research and development, in addition to the recognition of researchers, their relationship with university profile and teaching and their influence on university learning. In this study, we analyzed the Peruvian and Spanish undergraduate students' attitude towards scientific research and the dimensions of self-assessment, faculty influence and institutional influence, discussing the results obtained with other similar research studies.

Regarding the characteristics of the study sample, differences were found between Spain and Peru, with Spanish students receiving more support through scholarships or similar. In that regard, in Peru there are benefit programs for university students. However, research reveals that access to them are not well established since urban middle-class students have more access to this type of benefits (Rodriguez, 2019).

With respect to the index of attitude towards research, a higher predisposition to research is observed in Peruvian students compared to Spanish students. These results differ from studies conducted in other countries where they found that undergraduate students exhibit low levels of attitude towards research (Rojas & Méndez, 2017; Maury-Sintjago et al., 2018). In a study presented in Peru by Cabrera-Enríquez et al. (2013), they found that an inadequate attitude towards research prevailed in undergraduate students. However, in a study conducted by Arellano-Sac-

ramento et al. (2017), they found that undergraduate students had an adequate attitude towards the production of scientific papers and participation in research. These results may be due to the creation of the National Superintendency of Higher Education (SUNEDU, by its Spanish initials) in 2014, in Peru, aimed at supervising and enhancing the education quality of universities. For this reason, universities sought alternatives to improve services, teaching and research for students, graduates and faculty in order to obtain the institutional license and continue offering educational service (Catacora & Mayta, 2018). For Spain, the only study found on students' attitude (Gallego-Arrufat & Díaz-Martín, 2015) indicates a low interest in research, as in this study. In this and other contexts, the implementation of programs to raise awareness of researcher's role and to encourage research in specific courses in order to build knowledge at personal and institutional level, and to increase the quality of research, has been proven to be effective.

With respect to indicators of attitude towards research, both countries show different results in the dimensions of institutional influence, self-assessment and faculty influence on research training. The Peruvian students show higher values of influence on research development in comparison to Spanish students. These results may be due to what was proposed by Fernández & Villavicencio (2017) who think that teaching strategies and theoretical knowledge of professors may be the main reasons for undergraduate students to have unfavorable or no favorable attitudes towards research during their studies. Besides, Rojas et al. (2012) conclude that in order to know undergraduate students' attitude towards research, not only internal variables, but also the universities' and the faculty influence must be taken into account. Therefore, students' attitude can stem from various reasons since the conceptualization of attitude towards research is multimodal and is influenced by internal and external factors.

With respect to knowledge about research, students from both countries recognize that scientific research is not adequately valued, but they would like to conduct educational scientific research. These results are related to what is concluded by Gallego-Arrufat & Díaz-Marín (2015) and Mejía et al. (2019) who think that few professionals are engaged in research. This may be due to little research conducted in undergraduate studies that stimulate training in care-oriented activities rather than scientific training that seeks to encourage and proposes new knowledge. Ho-

wever, Erduğan (2020) conducted a study in Turkey and found that students who sought to become teachers display positive attitudes towards scientific research. Similar results were found by Sánchez-Duque et al. (2017) who conducted a study in Peru with students who participated in a conference, and they stated that their interest in research caused them to pursue basic science courses and their main motivations were to achieve personal prestige, improve their resume, and strengthen their knowledge and experiences in research. However, no student had published their research despite they had already presented it in national or international conferences. In Spain, some training for knowledge, awareness and encouragement is needed to awaken the desire for research in students (Gallego-Arufat & Díaz-Martín, 2015). So far, attitude towards research of healthcare practitioners (Ortuño-Sorinao et al., 2013; Gálvez et al., 2019) or of professionals pursuing graduate education (Padrosa et al., 2020) has been studied.

In Paraguay, Veloso et al. (2019) conducted a study in which he also thinks that institutional research is not adequately valued but highlights that most students think that conducting research will strengthen their professional life and have curiosity about research incubators or training programs for new researchers that they may have at their university. Other countries, such as Colombia and Mexico, have also addressed research of this nature, and try, through programs and actions, to improve students' attitudes towards research.

Peruvian students show a higher level of knowledge about the development of science production promoted by their universities. They think that their universities give greater opportunities to conduct research. They participate more in research groups or research projects but in low percentages. Besides, they would like to engage more in research as compared with Spanish students. These results may be due to the reports found by the National Superintendency of Higher Education (2020) in which public and private universities in Peru increased the number of their scientific publications, according to the Web of Science database, going from 576 in 2010 to 1643 in 2017. Improvement was also found in the quality of the faculty. However, it is still necessary to strengthen the conditions for research in the universities in both countries, taking into account that students do value the importance of conducting and participating in educational research, but it is necessary to produce variables strengthening the attitude from universities. Wise-

cup (2017) think that participation of students in subjects related to research methods causes them to perceive that the development of research is less difficult.

Finally, as to the university education quality assessment, Spanish undergraduate students perceive better education quality of the program in which they are enrolled, better quality of their fellow students, better welfare services and infrastructure. These results can be supported by what is proposed by Rojas & Aguirre (2015) who state that in Latin American and Caribbean countries, in comparison to European and U.S. countries, universities have different difficulties related to investment, funding and science and technology policies, as well as curriculum policy, research training programs, and pedagogical and educational processes.

CONCLUSION

The purpose of the study was to determine the attitude towards scientific research in undergraduate students from Peru and Spain. It was found that students from Peruvian universities show greater predisposition towards scientific research than Spanish students. The dimensions used were self-assessment, institutional influence and the faculty influence on the promotion and development of research. Undergraduate students are predisposed to research and think that research is important for professional development. However, they think that there are few opportunities at their universities. For this reason, it is suggested that research groups and research incubators may be created and/or strengthened, boosting participation of students and training programs for new researchers with incentives and recognition. In relation to the perception of the quality of university education, it was found that students from Spain perceive a better quality in the services the universities offer such as infrastructure, welfare services, scholarships and awards. Regarding the index of attitude towards research in Peruvian and Spanish university students, significant differences were found in Peruvian students who have a more positive predisposition for research as compared with Spanish students. With respect to prospective studies, it is recommended that investment, funding and science and technology policies, research curriculum and research training programs should be strengthened in Peruvian universities. In Spain, it is also recommended that programs for optimizing the attitude towards research be undertaken. These actions should be applied to the faculty

members, so that they play a research-action teaching role demanded by experts for its contribution to educational quality. This study shows how institutional policies contribute to an adequate attitude towards research, regardless of the education quality perceived by students. However, a pilot study with all its methodological and approach limitations should be considered. It is necessary to increase the representation of students from the countries involved as well as from other countries; the inclusion of faculty to enrich the perspectives, and of other sectors of the population; to incorporate documentary analysis to verify the research staff recognition and/or training programs in universities as well as to employ other research designs, including qualitative ones, to understand, through interviews, for example, the grounds of the attitude perceived by students.

REFERENCES

Arechavala, R. (2011). Las universidades y el desarrollo de la investigación científica y tecnológica en México: Una agenda de investigación. *Revista de la educación superior, 40*(158), 41-57.

Arellano-Sacramento, C., Hermoza-Moquillaza, R., Elías-Podestá, M., & Ramírez-Julca, M. (2017). Actitud hacia la investigación de estudiantes universitarios en Lima, Perú. *FEM: Revista de la Fundación Educación Médica, 20*(4), 191-197.

Bernaza, G. J., de la Paz, E., del Valle, M., & Borges, L. D. L. C. (2017). La esencia pedagógica del posgrado para la formación de profesionales de la salud: una mirada teórica, crítica e innovadora. *Educación Médica Superior, 31*(4), 1-15.

Cabrera-Enríquez, J. A., Cruzado-Mendoza C., Purizaca-Rosillo, N., López-Samanamú, R. O., Lajo-Aurazo, Y., Peña-Sánchez, E. R., Apolaya-Segura, M., & Díaz-Vélez, C. (2013). Factores asociados con el nivel de conocimientos y la actitud hacia la investigación en estudiantes de medicina en Perú. *Revista Panamericana de Salud Pública, 33*(3), 166–73.

Canales, A. (2011). El dilema de la investigación universitaria. *Perfiles educativos, 33*(SPE), 34-44.

Carrasco, R. J. O., Toledo, R. D. V., & Hansen, O. S. (2018). Percepción y actitudes hacia la investigación científica. *Academo, 5*(2), 101-109.

Catacora, L., & Mayta, D. (2018). La investigación en el marco del proceso de licenciamiento institucional de universidades. *Revista de Ciencia y Tecnología, 4*(7), 5-8.

Chara-Saavedra, P., & Olortegui-Luna, A. (2018). Factores asociados a la actitud hacia la investigación en estudiantes universitarios de enfermería. CASUS. *Revista de Investigación y Casos en Salud, 3*(2), 83-88.

Erduǧan, F. (2020). Investigating Attitudes of Sports Science Faculty Students Towards Scientific Research. *International Education Studies, 13*(7), 122-127.

Escobar, P. & Bilbao, J. (2020). Investigación y Educación Superior. USA: Editorial Lulu.

Estrada, E. G., Córdova, F., Gallegos, N., & Mamani, H. (2021). Actitud hacia la investigación científica en estudiantes peruanos de educación superior pedagógica. *Apuntes Universitarios, 11*(3), 60-72.

Fernández, C., & Villavicencio, C. (2017). Habilidades investigativas para trabajos de graduación. *ACADEMO, 4*(1).

Fernández, M. B., & Johnson, D. (2015). Investigación-acción en formación de profesores: Desarrollo histórico, supuestos epistemológicos y diversidad metodológica. *Psicoperspectivas, 14*(3), 93-105.

Figueredo, A. L., Martínez, M. M., & Pérez, R. (2020). La gestión del conocimiento a través del uso de la literatura docente. *Mendive. Revista de Educación, 18*(2), 266-287.

Gallego-Arrufat, M. J., & Díaz-Martín, C. (2015). Actitud del alumnado hacia la investigación en educación: Trabajando con vídeos en estudios de grado. Universitas Tarraconensis. *Revista de Ciències de l'Educació, 1*, 8-29.

Gálvez, N., Gonzáles, Y., & Monsalve, M. (2019). Actitud hacia la investigación científica al final de la carrera de Enfermería en Perú. *Gaceta Médica Boliviana, 42*(1), 32-37.

Gálvez, N., Gonzáles, Y., & Monsalve, M. (2019). Actitud hacia la investigación científica al final de la carrera de Enfermería en Perú. *Gaceta Médica Boliviana, 42*(1), 32-37.

Giménez-Toledo, E. (2015). La evaluación de la producción científica: breve análisis crítico. *RELIEVE, 21*(1).

Hernández, R. M. (2020). La investigación y producción científica en el Perú. *Revista Gestión I+ D, 5*(1), 7-8.

Hernández, R. M., Marino-Jiménez, M., Forton, Y. R., & Sánchez, N. (2020). Research in University Students: Real Needs for the Implementation of a Formative Research Program. *Academia,* (20-21), 154-176.

Hernández, R., Fernández C., & Baptista, P. (2014). *Metodología de la investigación* (6ª ed.). México D.F.: Mc Graw–Hill Interamericana.

Huang, L., Huang, F., Tee, P. & Kuan, M. (2019). Constructs Evaluation of Student Attitudes towards Science, *EURASIA Journal of Mathematics, Science and Technology Education, 15*(12), em1792.

Hussain, I., & Ara, J. (2013). Master in Education Student Attitudes towards Research: A Comparison between two Public Sector Universities in Punjab. *South Asian Studies, 28*(1), 97-105.

Ianni, C. (2017). MIRAMDA: Una propuesta educativa emergente desde la investigación. Revista Arbitrada *Interdisciplinaria Koinonía, 2*(3), 9-30.

Imbernón, F., & Guerrero, C. (2018). ¿ Existe en la universidad una profesionalización docente?. *Revista de Educación a Distancia, 56,* 11.

Larran-Jorge, M., & Andrades-Pena, F.J. (2015). Analysis of social responsibility of universities from different theoretical stances. *Revista Iberoameria-*

cana de Educación Superior, 6(15), 91-107.

Mamani, O. J. (2015). Actitud hacia la investigación y su importancia en la elección de la modalidad de tesis para optar el título profesional. *Revista Científica De Ciencias De La Salud, 4*(1), 22-27.

Martínez Villalba, J. A., & Sánchez Muñoz, S. (2018). Generación de competencias con base en la gestión de conocimiento científico. REICE. *Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación, 16*(2), 61-76

Maury-Sintjago, E., Valenzuela-Figueroa, E., Henríquez-Riquelme, M., & Rodríguez-Fernández, A. (2018). Disposición a la investigación científica en estudiantes de ciencias de la salud. *Horizonte Médico (Lima), 18*(2), 27-31.

Mejia, C. R., Valladares-Garrido, M. J., Almanza-Mio, C., & Benites-Gamboa, D. (2019). Participación en una sociedad científica de estudiantes de Medicina asociada a la producción científica extracurricular en Latinoamérica. *Educación Médica, 20*, 99-103.

National Superintendency of Higher Education (2020). Universidades peruanas duplicaron publicaciones y docentes tras licenciamiento. Disponible en https://www.sunedu.gob.pe/sunedu-universidades-peruanas-duplicaron-publicaciones-y-docentes-tras-licenciamiento/

Ortuño-Soriano, I., Posada-Moreno, P., & Fernández-del-Palacio, E. (2013). Actitud y motivación frente a la investigación en un nuevo marco de oportunidad para los profesionales de enfermería. *Index de Enfermería, 22*(3), 132-136.

Padrosa, M., Moreno, C., Medina, R., Bautista, P., Lluch, M.T., & Puig, M. (2020). Actitud y motivación hacia la investigación en enfermeras que cursan formación postgraduada. *Ágora de enfermería, 24(2), 304-307.*

Rivera, C., Espinosa, J., & Valdés, Y. (2017). Scientific Research at Ecuadorean Universities: A Priority of the Education in Force. *Revista Cubana de Educación Superior, 36*(2), 113-125.

Rodríguez, A., & Caurcel, M. J. (2019). Aproximación cualitativa del escudriño en Psicología educativa. *Propósitos y Representacivas, 7*(1), 01-09.

Rodríguez, A., & Caurcel, M.J. (2020). Analysis of pre-service teachers' attitudes towards inclusive education. *RELIEVE, 26*(1).

Rodríguez, A., Gallego, J. L., Navarro, A., & Caurcel. M.J. (2021). Perspectivas actitudinales de docentes en ejercicio y en formación hacia la educación inclusiva. *Psicoperspectivas, 20*(1), 1-13.

Rodríguez, Y. (2019). Becas para educación superior: avances y tensiones en la promoción de la equidad en Perú. *Voces y Silecios. Revista Latinoamericana de Educación, 10*(2), 18-31.

Rodríguez-Ponce, E. (2017). Los desafíos estratégicos para la gestión de la investigación universitaria en la sociedad del conocimiento. Ingeniare. *Revista chilena de ingeniería, 25*(3), 362-365.

Rojas, C., & Aguirre, S. (2015). La formación investigativa en la educación superior en América Latina y el Caribe: una aproximación a su estado

del arte. *Revista Eleuthera, 12*, 197-222.

Rojas, I. D., Durango, J. A., & Rentería, J. A. (2020). Investigación formativa como estrategia pedagógica: caso de estudio ingeniería industrial de la IU Pascual Bravo. *Estudios pedagógicos (Valdivia), 46*(1), 319-338.

Rojas, M., & Méndez, R. (2017). Procesos de formación en investigación en la Universidad: ¿Qué le queda a los estudiantes? *Sophia, 13*(2): 53-69.

Rojas, M., Méndez, R., & Rodríguez, Á. (2012). Índice de actitud hacia la investigación en estudiantes del nivel de pregrado. *Entramado, 8*(2), 216-229.

Rojas-Mancilla, E., & Cortés, M. E. (2017). Vinculando la investigación científica con la formación de pregrado en carreras de la salud. *Revista médica de Chile, 145*(4), 549-550

Roque, Y., García, A., & Maldonado, A. (2019). Nivel de satisfacción con la estrategia de investigación científica en una facultad de la Universidad Nacional de Chimborazo, Ecuador. IE *Revista de investigación educativa de la REDIECH, 10*(18), 177-191.

Sánchez-Duque, J. A., Gómez-González, J. F., & Rodríguez-Morales, A. J. (2017). Publicación desde el pregrado en Latinoamérica: dificultades y factores asociados en estudiantes de Medicina. *Investigación en educación médica, 6*(22), 104-108.

Turpo-Gebera, O., Quispe, P. M., Paz, L. C., & Gonzales-Miñán, M. (2020). Formative research at the university: meanings conferred by faculty at an Education Department. *Educação e Pesquisa, 46*, e215876

UNESCO IESALC (2020). Covid-19 y educación superior: de los efectos inmediatos al día después. Análisis de impactos, respuesta y recomendaciones. Paris, Francia: UNESCO.

Ünver, S., Semerci, R., Özkan, Z. K., & Avcibasi, I. (2018). Attitude of nursing students toward scientific research: A cross-sectional study in Turkey. *Journal of Nursing Research*, *26*(5), 356-361.

Velandia-Mesa, C., Serrano-Pastor, F. J., & Martínez-Segura, M. J. (2017). Formative research in ubiquitous and virtual environments in Higher Education. *Comunicar, 51,* 09-18.

Veloso, R., Hansen, S., & Ortega, R. (2019). Percepción y actitudes hacia la investigación científica. *Revista Científica Estudios E Investigaciones, 8*, 47-48.

Vera, M., González, E. C., Vera, L. A., & Chávez, S. (2018). La investigación formativa en la Universidad Ecuatoriana: una experiencia personal. *Revista Boletín Redipe, 7*(4), 89–98.

Wisecup, A. (2017). Take It or Leave It: Students Attitudes about Research Methods. *Didactics of Sociology, 45*(1),73-79.

Zulirfan, Iksan, H., Osman, K, y Mohd, S. (2018). Take-home-experiment: Enhancing students' scientific attitude. *Journal of Baltic Science Education, 17*(5), 828 – 837.