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Factores personales y organizacionales asociados a la actitud hacia la investigación del profesorado de una universidad del Noroeste de México

Personal and organizational factors associated with the attitude towards research of faculty at a university in Northwest Mexico

Fatores pessoais e organizacionais associados à atitude em relação à pesquisa do corpo docente de uma universidade no noroeste do México

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Resumen

El estudio tuvo como objetivo determinar la asociación de factores personales y organizacionales, de manera interactiva e individual, con la actitud hacia la investigación del profesorado de una universidad del Noroeste de México. Participaron 281 profesoras y profesores de nivel pregrado y posgrado, a quienes se les aplicó una escala de actitud hacia la investigación científica, considerando las dimensiones de interés, vocación y valoración. Los resultados mostraron que las variables personales asociadas a una alta actitud hacia la investigación fueron la pertenencia al Sistema Nacional de Investigadoras e Investigadores (SNII), la participación en grupos de investigación y la producción científica. En cuanto a las variables organizacionales, se asociaron la impartición de asignaturas relacionadas con la investigación y la contratación con plaza indefinida (permanente). Respecto al factor con mayor efecto en una alta actitud hacia la investigación, destacó el factor personal, particularmente la pertenencia al SNII. Se concluye que la universidad tiene la responsabilidad de generar condiciones e incentivos, considerando las características del personal académico, a fin de favorecer una actitud positiva hacia la investigación. En este sentido, resulta fundamental atender tanto las variables organizacionales como las personales, con especial énfasis en estas últimas, para contribuir a la formación investigativa y al fortalecimiento de una cultura de investigación en la universidad.

Palabras clave: actitudes, educación superior, investigación científica, profesorado, instituciones de educación superior.

Abstract

The study sought to explore the relationship between personal and organizational factors, both individually and interactively, and the attitude toward research activities among faculty members at a Northwestern Mexican university. A total of 281 undergraduate and graduate professors participated, completing a scale that assessed their attitude toward scientific research, focusing on the dimensions of interest, vocation, and appreciation. The results indicate that attachment to the National System of Researchers (SNII) is a personal variable strongly associated to participation in research groups and scientific production. Regarding organizational variables, teaching research-related courses and holding a permanent position were associated with a more positive attitude toward research. Among the factors influencing a high attitude toward research, personal factors, particularly SNII membership, showed to

be the most significant. The study concludes that the university is responsible for creating conditions and incentives that consider the characteristics of academic staff to foster a positive attitude toward research. In this context, it is crucial to address both organizational and personal variables, with a particular focus on the latter, to enhance research training and strengthen a research culture within the university.

Keywords: attitudes, higher education, scientific research, faculty, higher education institutions.

Resumo

O estudo teve como objetivo determinar a associação de fatores pessoais e organizacionais, de forma interativa e individual, com a atitude em relação à investigação do corpo docente de uma universidade do noroeste do México. Participaram 281 professores de nível de graduação e pós-graduação, aos quais foi aplicada uma escala de atitude em relação à investigação científica, considerando as dimensões de interesse, vocação e valorização. Os resultados mostraram que as variáveis pessoais associadas a uma alta atitude em relação à investigação foram a pertença ao Sistema Nacional de Investigadores e Investigadoras (SNII), a participação em grupos de investigação e a produção científica. Quanto às variáveis organizacionais, foram associadas o ensino de disciplinas relacionadas com a investigação e a contratação com vínculo indefinido (permanente). Em relação ao fator com maior efeito numa atitude positiva em relação à investigação, destacou-se o fator pessoal, particularmente a pertença ao SNII. Conclui-se que a universidade tem a responsabilidade de criar condições e incentivos, considerando as características do pessoal académico, a fim de promover uma atitude positiva em relação à investigação. Nesse sentido, é fundamental atender tanto às variáveis organizacionais quanto às pessoais, com ênfase especial nas últimas, para contribuir para a formação investigativa e o fortalecimento de uma cultura de investigação na universidade.

Palavras-chave: atitudes, ensino superior, investigação científica, corpo docente, instituições de ensino superior.

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Introduction

Research plays a fundamental role in the development of nations. Its sustained strengthening, increased investment in this area, and a larger number of researchers are essential for responding effectively to the challenges of the current context (Organisation for Economic Co-operation and Development [OECD], 2019; Sarmiento, 2020). From this perspective, higher education acquires a strategic role, both in generating knowledge and innovation and in forming a critical and proactive generations capable of addressing diverse problems. Thus, as part of this mission, highly qualified professionals, as well as entrepreneurs and researchers, can be seen as key agents in the growth of each country.

Furthermore, research, as a core function of the university, constitutes an essential dimension of academic activity and a primary indicator of institutional quality. Within this framework, the role of university faculty acquires significant importance, both due to their responsibility to act as research agents in addition to their teaching duties (López, 2015), and due to their capacity to promote research within the university (Munguía-Reyes & Garduño, 2022). In this context, it would be expected that research would be one of the faculty's strengths, and if not, at least that they would be interested in it and recognize its value and relevance. This is because the attitude toward science and scientific research is closely linked to critical and proactive training, which is fostered when attitudes and aptitudes are developed in both faculty and students (Barrios & Ulises, 2020).

In this regard, a strong attitudinal component among teachers is fundamental, as it fosters the acquisition of research skills, which enable the conduct of systematic studies and the generation of scientific knowledge. This component is also expressed in the ability to persevere, commit, engage in self-directed learning, and respond to the demands of research, as well as the challenges currently faced by teachers (Buendía-Arias et al., 2018; Fontaines-Ruiz et al., 2019; Kakupa and Xue, 2019).

From this perspective, an investigative approach that prioritizes questioning and problematization as the cornerstones of the educational process strengthens pedagogical practices and promotes the development of academic initiatives aimed at improving educational quality and addressing relevant social problems (Buendía-Arias et al., 2018; León-León & Zúñiga-Meléndez, 2019). Consequently, there is a commitment to research training in the university setting, where this approach characterizes faculty performance and influences students' scientific endeavors (Pascual-Arias & López-Pastor, 2024). Studying attitudes toward research offers an opportunity to contribute to strengthening the quality of

teaching and the training of future researchers (Agu et al., 2024). In this regard, their analysis becomes more relevant, given that research processes are complex and demand effort and commitment, as well as the construction of one's own identity as a researcher and the willingness to train and to engage in ongoing self-training (Cruz, 2020; Fontaines-Ruiz et al., 2019; Kakupa and Xue, 2019).

Within this framework, it is pertinent to address the construct of attitude, the study of which originated in the field of social psychology. From a classical perspective, Allport (1935) defined it as a mental and neurological state that predisposes one to a response and exerts an active influence on human behavior and its relationship with the context. Subsequently, Morris and Maisto (2005) expanded this conception by describing attitude as a relatively stable structure that integrates beliefs, feelings, and behaviors toward a given object or situation.

In operational terms and more generally, attitude can be understood as a predisposition to action and the adoption of specific, organized, and persistent forms of response, derived from feelings generated by socially significant objects and constructed from experience. From this perspective, its multidimensional nature is emphasized, as it involves cognitive, emotional, and behavioral components (Allport, 1935).

In this context, the study of attitudes takes on special relevance, given that negative beliefs and attitudes can hinder learning processes when they are not adequately regulated. In contrast, positive beliefs and attitudes foster confidence in performance and contribute to strengthening self-assurance in one's own abilities (Iqbal et al., 2023). From this perspective, positive attitudes toward research have high potential to facilitate entry into the scientific field and promote the development of skills necessary to meet the demands of research processes and produce quality outputs (Cota et al., 2019).

Consequently, the analysis of attitudes towards research is particularly relevant, as it fulfills two fundamental purposes: a) to serve as an element that supports learning processes and, at the same time, as a result of these; and b) to provide significant predictive value, since knowledge of a person's manifest attitudes towards an object allows us to infer their subsequent behavior (Cruz et al., 2021).

Attitude toward research has been conceptualized as an articulated set of beliefs, feelings, and dispositions linked to research practice (Rojas et al., 2012). From this perspective, it is understood as an intentional, persistent, and acquired process, based on values and perceptions that guide participation in scientific activity (Aldana et al., 2020). It

also implies a relatively stable predisposition toward research, characterized by the organization of beliefs and feelings that favor practices such as collaborative work, systematicity, modesty, and intellectual rigor—central elements of scientific performance (Palacios-Serna, 2021).

In the field of research attitudes, several approaches have attempted to explain them. While some studies address this from a three-dimensional perspective that includes affective, cognitive, and behavioral aspects (Aldana et al., 2016), others consider dimensions such as interests, the usefulness of research, research orientation, vocation, intrinsic motivations, and institutional context (Aldana et al., 2020; Rojas-Solís et al., 2021).

In this regard, and as part of the theoretical framework of this work, the contributions of Aldana et al. (2020) are considered. They establish the dimensions of vocation, valuation, and interest to explain attitudes toward research. According to their precepts, a *vocation for research* implies a calling to investigative work, characterized by rigorous processes that require both innate and acquired skills to produce scientific knowledge. *Interest in research* describes the motivation to generate knowledge and the search for factual information to understand and solve scientific problems. *Valuing research* encompasses the recognition of research aimed at identifying problems and developing solutions, while simultaneously strengthening the personal and professional qualities of the researcher.

However, in the literature review, although there is a wide variety of work on attitudes (towards statistics, mathematics, inclusion, for example), fewer studies address attitudes towards research, and even fewer are focused on faculty. A large proportion of the research centers on undergraduate and graduate students (Kakupa & Xue, 2019; Rojas-Solís et al., 2021). This situation is further exacerbated when considering faculty attitudes towards research and their relationship to other factors, such as personal, contextual, and professional ones. There is a greater abundance of research on faculty perceptions, beliefs, behaviors, and activities related to the research profession, and very little on their own attitudes towards research and their connection to personal or organizational aspects. It would seem that a favorable attitude towards research is implicit in the indicators of research practices, and that there is a range of behaviors related to research.

In this regard, several efforts have been identified to highlight factors that, while not always addressed in the scientific literature with a direct link to attitudes toward research, have been related to the practice of research. These include: a) contextual factors, associated with funding practices and policies; b) academic disciplines, which shape specific academic

cultures; c) organizational factors, linked to the policies and practices of the institution where the researcher works; and d) individual motivations and obstacles, as well as personal variables such as age, gender, academic background, and training, among others (Gamboa, 2024; Palencia and Verdugo, 2023).

In this regard, Silva et al. (2020) show that the scientific activities of the teaching staff are influenced by both personal factors, including academic training and the personal and family costs associated with the research career, and by institutional factors, including guidelines, requirements and administrative management processes.

In reviewing studies on the relationship between various factors and attitudes toward research, works such as Avidov-Ungar's (2023) were identified, reporting that faculty involvement in research is conditioned by aspects such as motivation, experience, and professional trajectory. This evidence highlights the influence of individual factors, which can also affect attitudes toward research. Meanwhile, the findings of Dieguez et al. (2023) show that organizational spaces that actively promote both innovation and research create ecosystems conducive to the development of positive attitudes toward research. Thus, the role of the institutional environment in shaping dispositions toward research is evident (Ghabban et al., 2019).

Considering these approaches and background, it is evident that, while information exists on the relevance of various personal and organizational factors to faculty attitudes toward research, analyses and studies focused on this construct within the teaching population are scarcely documented, particularly in Higher Education Institutions (HEIs) in the country. Therefore, the overarching goal of this study was to determine the association of personal and organizational factors, both individually and interactively, with faculty attitudes toward research at a university in northwestern Mexico. The specific objectives were: (1) to identify the personal and organizational factors associated with faculty attitudes toward research, and (2) to determine which factor, personal or organizational, has the strongest association with this attitude.

Method and materials

Type of study

The epistemological approach of this study was quantitative, with a non-experimental, cross-sectional, and correlational design. This approach is relevant because it is based on data collection to verify the objectives and hypotheses formulated based on the variables studied (Hernández & Mendoza, 2018). Similarly, the variables and their relationships were described without manipulation, and data collection was carried out at a single, specific point in time (Creswell, 2014).

Participants

The research involved university faculty members from campuses located in the cities of Empalme, Guaymas, Obregón, and Navojoa, in the state of Sonora, Mexico, belonging to a public, decentralized, and autonomous university in that state. The non-probability sample consisted of 281 participants, of whom 45.20% were men (n = 127) and 54.80% were women (n = 154), enrolled in various undergraduate and graduate programs at the university. Regarding age, 35% of the participants were between 25 and 35 years old, another 35% between 36 and 45 years old, 19.4% between 46 and 55 years old, and 10.6% were over 56 years old. Regarding academic qualifications, 70% of the sample held a doctoral degree, while the remaining 30% held a master's degree. Inclusion criteria for participation in the study were: a) having a current teaching contract at the university during the data collection period, and b) having at least one assigned class group during that period. The only exclusion criterion was that faculty members who had never conducted or collaborated on any research would not be eligible to participate.

Instrument

To measure attitudes toward research, the Research Attitude Scale (EACIN-R) proposed by Aldana et al. (2020) was used, which includes the dimensions of vocation, appreciation, and interest. These dimensions are described operationally, as explained above. *Vocation for research* refers to the disposition toward research work, characterized by rigorous processes that demand innate and acquired skills for the production of scientific knowledge. *Interest in research* describes the motivation to generate knowledge and to conduct the search for factual information oriented toward understanding and solving

scientific problems. For its part, *the appreciation of research* refers to the recognition of research as a means to identify problems and develop solutions, as well as to strengthen the personal and professional qualities of researchers.

The Likert-type scale, in its original version, included 28 items distributed across the dimensions of interest in research (9 items), vocation for research (12 items), and appreciation of research (7 items), with response options ranging from strongly disagree (0) to strongly agree (4). For the present study, a Confirmatory Factor Analysis (CFA) was performed, from which a reduced version of the scale was obtained, consisting of a total of 10 items, distributed across the dimensions of vocation for research (4 items), interest in research (3 items), and appreciation of research (3 items) (see Table 1).

The fit indices of the confirmatory measurement model were acceptable, with standardized factor loadings (β) ranging from .40 to .60, as well as the following indicators: $\chi^2 = 48.81$, df = 32, p = .029, $\chi^2/df = 1.52$, CFI = 0.97, RMSEA = 0.04, 90% CI [0.014, 0.065], and SRMR = 0.04. Finally, the reliability of the scale was estimated using McDonald's omega coefficient (ω), obtaining a total value of .82. Likewise, the values per dimension ranged from .65 to .78, which indicates acceptable internal consistency for open, non-captive, or non-clinical populations (Katz, 2006).

Table 1. Dimensions and items of the construct attitude towards research under Confirmatory Factor Analysis (CFA)

A VOCATION FOR RESEARCH
-I like to streamline research-related work.
-I take every opportunity to showcase my work.
-I usually write to delve deeper into topics of interest.
I am organized in my research activities.
RESEARCH ASSESSMENT
-I believe that persistence contributes to achieving goals.
-In my opinion, research contributes to solving social problems.
-Working with others in research helps us achieve better results.
INTEREST IN RESEARCH (reverse items)
-I find research activities boring.
-Thinking about starting to investigate makes me feel discouraged.
-I think consulting scientific information is a waste of time.

Source: Own elaboration.

It is important to note that, in accordance with the research objectives, the scale included two sections: one corresponding to the dimensions and items of the construct "attitude toward research," and another referring to personal and organizational factors. For the purposes of this study, the variables for each factor were determined considering the contributions of Gamboa (2024), Palencia and Verdugo (2023), and Silva et al. (2020). Variables for the personal factor were defined as those inherent to the faculty, such as age, sex, academic background, years of teaching experience, participation in research groups, scientific publications, and membership in the National System of Researchers (SNII). These variables were collected through closed-ended questions with categorical or dichotomous response options, depending on the nature of each variable. Organizational variables included those dependent on the organization and work context, such as contract type (fixed or indefinite), teaching research-related courses, and affiliation with a specific area of knowledge. These variables were measured using closed-ended, multiple-choice questions, predefined according to the institution's academic structure.

Procedure

Regarding the steps followed in the study: (a) initially, authorization was obtained from the research ethics committee and institutional approval from the university under study; (b) data were collected using a Google Form, which was emailed to the faculty. The form included informed consent, which stipulated voluntary participation and minimal risk, in accordance with Article 96 of the General Health Law of Mexico, and specified that the results would be used strictly for academic and research purposes. Participants were also informed that, upon completion of the research, a report or the resulting manuscript would be emailed to them.

Data analysis

Prior to the analysis, it should be noted that the initial number of completed forms was 294. However, the authors decided to exclude those cases that did not report the area of knowledge variable from the analysis, due to its relevance to the study's objectives. As a result of this refinement process, the final sample consisted of 281 forms. The exclusion was performed using listwise elimination, as this was a key variable for subsequent analyses.

Descriptive analyses and contingency tables were performed to determine the relationship between categorical variables, considered as predictor and criterion variables, using the chi-square (χ^2) test. A binary logistic regression was also applied to confirm the predictive capacity of the measured factors with respect to attitude toward research, which was dichotomized for the purposes of the analysis. This type of regression allows for the analysis of the behavior of a categorical dependent variable based on one or more independent variables (Harris, 2021). The Statistical Package for the Social Sciences (SPSS), version 23, was used for the statistical analyses.

Results

Based on the analyses, the variable "attitude toward research" was determined by the total number of items on the scale and dichotomized (dummy variable). From the initial sample of 281 participants, two groups were derived: one representing a high level of attitude toward research and the other a low level. For the high-attitude group, faculty members with a score from the seventh decile upwards (average value > 3.4) were included and assigned a value of 1. For the low-attitude group, faculty members with a score corresponding to the third

decile (average value of 2.4) were included and recoded with a value of 0. Participants whose scores fell between the fourth and sixth deciles were excluded from the analysis to maximize the contrast between the extreme groups. Following this procedure, a subsample of 175 faculty members was obtained: 79 (45%) were categorized as having a low attitude and 96 (55%) as having a high attitude. Based on this, logistic regression was performed.

The contingency table relating the categorical factors (Table 2) shows significant associations between these factors and the level of faculty attitude (low/high). The group with a low attitude is predominantly characterized by having a fixed-term contract, not teaching research-related courses, not participating in research groups, not publishing scientific articles, and not belonging to the National System of Researchers (SNII). Conversely, the group with a high attitude systematically presents the opposite profile, reporting the presence of these factors. These data demonstrate a clear preponderance of the variables associated with a high level of attitude toward research.

Table 2. Frequencies of factors associated with attitude towards research

Personal and organizational factors of university faculty	Low level		High level		$\chi 2$	*p*
	Fr	*%*	*Fr*	*%*		
Type of contract						
Definite time	73	92.4	67	69.8	13.85	< .001
Indefinite time	06	7.60	29	30.2		
Teaching subjects in research						
No	58	73.4	45	46.9	12.60	< .001
Yeah	21	26.6	51	53.1		
Participation in research groups						
No	50	63.3	35	36.5	12.49	< .001
Yeah	29	36.7	61	63.5		
Publication of scientific articles						
No	43	54.4	33	34.4	7.09	.008
Yeah	36	45.6	63	65.6		
Membership in the National System of Researchers						
No	74	93.7	70	72.9	12.80	< .001
Yeah	05	6.3	26	27.1		

Note: n = 175 Source: Own elaboration.

In addition to the direct effect of the variables sensitive to the groups with low and high attitudes toward research, an interaction of the variables was performed based on the formation of two dimensions: (a) personal and (b) organizational; thus obtaining this effect of the set of variables for each dimension. The variables were multiplied together to observe their interaction and identify which ones most strongly influenced a high attitude.

To this end, a binary logistic regression was performed (see Table 3). The results indicated that the variables grouped under the personal dimension are those that most strongly promote a positive attitude toward research, showing a significant combined effect (OR = 3.23). In general, the positive values of beta coefficients confirm that all these variables exert a promoting influence, without inhibitory effects. Within this dimension, the variable with the strongest effect is membership in the National System of Researchers (SNII) (OR = 5.49).

This indicates that faculty members with this distinction have a significantly higher probability of demonstrating a positive attitude toward research, compared to those without it. On the other hand, although also significant, the variable showing the weakest association is the publication of scientific articles (OR = 2.28).

Table 3. Logistic regression of the factors associated with attitude towards scientific research

Factors/Variables	*B*	*HE*	*OR*	*95% CI*	*Wald statistic*
Organizational					
Type of contract	1.66	.47	5.26	[2.05, 13.47]	12.01**
Teaching research subjects	1.14	.32	3.13	[1.65, 5.93]	12.20***
Interactive effect	0.90	.24	2.46	[1.52, 3.98]	13.68***
Staff					
Participation in research groups	1.10	.31	3.00	[1.62, 5.57]	12.17***
Publication of scientific articles	0.82	.31	2.28	[1.23, 4.20]	6.99**
Membership in the National System of Researchers	1.70	.51	5.49	[1.99, 15.11]	10.90**
Interactive effect	1.17	.39	3.23	[1.50, 6.94]	9.09**

Source: Author's own elaboration. *Note.* **p<.01, ***p<.001.

Discussion

The university is called upon to promote research in order to establish an educational model that contributes to knowledge production and the training of new researchers (Ganga et al., 2016; Matos and Cruz, 2018). In this context, faculty involvement in research and their attitudes toward it become fundamentally important. This study aimed to determine the association of personal and organizational factors, both interactively and individually, with faculty attitudes toward research at a university in northwestern Mexico. The specific

objectives were: (1) to identify the variables of both factors associated with this attitude, and (2) to determine which of the two factors has a greater influence on it.

Personal and organizational factor variables associated with attitude towards research

First, it was identified that the personal factor variables associated with a high level of attitude toward research were: a) membership in the National System of Research Research (SNII), b) publication of scientific articles, and c) participation in research groups. Meanwhile, the organizational factor variables associated with research were: a) teaching research courses and b) permanent employment (tenured position). When comparing both groups, it was observed that these variables were systematically absent in the group with a low attitude. This association could be explained by the fact that these variables are directly related to the activities and demands inherent in research, and in turn, are linked to the attitudinal component (Buendía-Arias et al., 2018; Fontaines-Ruiz et al., 2019; Kakupa & Xue, 2019). This pattern suggests that a high attitude could be supported by a set of conditions that tend to co-occur and reinforce each other.

These findings reinforce the contributions of studies such as that by Ghabban et al. (2019), who point out that faculty involvement in research is subject to various factors, including institutional, technological, political, and attitudinal ones, which can act as barriers or incentives to such work. Likewise, the results reveal that attitudes toward research are not isolated phenomena, but rather are shaped by the interaction between individual dispositions and the conditions of the university environment. This perspective is consistent with the position of Vargas-Delgado et al. (2022), who emphasize the need to adopt a hybrid approach that considers both the individual component and institutional dynamics, elements that can limit or strengthen both academic life and attitudes toward research.

In this regard, although studies directly linking attitudes toward research to various factors are scarce, it is possible to find international and national research that has analyzed related variables. For example, Okudawa (2018), in a study conducted in Nigeria, demonstrated a favorable attitude among the teaching and research staff of a research center. However, this study did not observe an association between this attitude and specific research activities, such as publishing articles, which contrasts with the findings reported here. This phenomenon has also been documented in other research, such as that of Li and Zhang (2022), who reported a weak relationship between publication output and attitudes toward

research. On the other hand, Habib et al. (2024) did find positive attitudes toward research and scientific publication among higher education teachers in Bangladesh; however, unlike the results of the present study, the most significant variables in their work were research training abroad and gender (with men showing a more favorable attitude).

In this regard, it is important to clarify that the publication of scientific articles has become one of the main indicators of success in Higher Education Institutions (HEIs). At the national level, and as established by Surdez et al. (2015), for Mexican research faculty, scientific productivity not only represents recognition but also constitutes the basis for accessing financial support such as the Program for Professional Teacher Development (PRODEP), the National System of Research Information (SNII), internal incentive programs for academic performance, among others.

However, in reviewing studies that significantly align with the findings of this work, the contributions of Aguilar and Cifuentes (2021) stand out. These authors, in investigating research productivity and the organizational conditions of teachers, found an association between attitudes toward research activities, mentoring practices, and participation in collaborative groups. Similarly, Palacios-Serna (2021), based on his results with teachers in Latin America, reports that research groups foster collaboration, methodological support, and emotional support—elements that contribute to sustaining both research activity and a positive disposition toward research. These conclusions directly support the finding of this study regarding the importance of participation in research groups as a variable associated with a positive attitude toward research.

Regarding membership in research groups, Fontaines-Ruiz et al. (2019) highlight, in their report, the relevance of these groups for learning. Their importance lies not only in the social function of research as a practice, but also in coping with and managing anxiety related to research activities, which subsequently facilitates the understanding of knowledge derived from discursive and disciplinary interactions. These psychosocial and cognitive aspects, taken together, contribute to forming and sustaining a positive attitude toward research.

On the other hand, it is also necessary to mention studies such as Maravilla's (2020), which found no relationship between the attitude toward research among teachers in the Philippines and variables such as gender, type of employment, and professional position. However, it did report significant differences with age, academic degree, and teaching experience. These findings partially contrast with those of the present study, in which the type of employment (holding a permanent position) did show a significant association.

Variables such as age, academic degree, and gender were not included in the final regression model, so they cannot be directly compared. Furthermore, Maravilla's (2020) study identifies research orientation (defined as the desire to learn how to conduct research) as the main driver of attitude, while in our study the variable with the greatest effect was membership in the National System of Research Incentives (SNII), an institutional distinction that is usually the result of a consolidated research career.

Regarding the type of contract for faculty in higher education, the findings of this study coincide with those of Bibi et al. (2023), who indicate that holding a permanent position is positively associated with greater involvement and participation in research activities. As observed in the results, permanent positions showed a significant association, corroborating the trend identified in that literature, although in the present study this association occurred within an interactive and cross-sectional model.

Regarding the teaching of research subjects, the contributions of Vargas-Delgado et al. (2022) report a positive relationship between this activity and attitudes toward research among Colombian faculty, which coincides with the findings of the present study. Additionally, and similarly, their work also associates participation in research training programs with these attitudes. Teaching research reinforces the premise that, by engaging in it, research-oriented thinking mechanisms are activated, and a greater awareness of the impact and identity of faculty researchers is maintained. In short, involving faculty in this task represents an important opportunity that can be linked to a favorable disposition and a consolidated academic identity. This premise invites reflection on how organizational practices can impact both training and positive attitudes toward research (Guzmán & García, 2016).

Personal factor as an enhancer of attitude towards research

Regarding the factor most likely to foster a positive attitude toward research, personal characteristics were identified. This finding could reflect that a favorable attitude is strongly associated with the perception of possessing the capabilities, skills, and expertise to participate in research activities. This perspective aligns with the contributions of Palacios-Serna (2021), who states that the attitude toward research is consolidated as greater knowledge is acquired through interaction with research, collaboration among peers, and academic training in the field. This suggests that personal characteristics develop and strengthen in appropriate contexts. Consequently, a relevant implication would be to design

organizational conditions that specifically foster these processes of knowledge acquisition and collaboration. This line of thinking coincides with the work of Gamboa (2024) and Palencia and Verdugo (2023), who also highlight the relevant role of certain personal characteristics in research activities.

Regarding the personal factors with the greatest capacity to foster an attitude toward research, membership in the SNII stood out. This finding, in particular, coincides with recent studies, such as that of Launio et al. (2024), who maintain that incorporation into research accreditation systems (such as the SNII in Mexico) not only acts as an economic incentive, but also represents recognition that implies prestige in scientific work and production, which in turn motivates a greater disposition toward this activity.

Although the analysis identified personal factors as the most influential, this must be interpreted in conjunction with working conditions. The findings reveal that favorable working conditions, such as the stability of a permanent position, are associated with a greater likelihood that faculty members will engage in key scientific activities, such as publishing articles, participating in research groups, and ultimately, obtaining distinctions such as membership in the National System of Research Research (SNII). This link can be understood from the perspective of motivation theory, where the satisfaction of basic needs (such as economic and job security) constitutes a foundation for the development of higher-order motivations, such as commitment to research (Gómez et al., 2014). Thus, job insecurity or uncertainty during critical professional stages can diminish motivation and the willingness to dedicate effort to long-term research activities.

Regarding the National System of Research and Innovation (SNII), it is necessary to consider its relevance in Mexico. This distinction is a national recognition for researchers, aimed at promoting and strengthening the quality of scientific research, technological development, and innovation generated in the country (National Council of Humanities, Sciences and Technologies [CONAHCYT], 2024; or the corresponding regulatory framework). According to Jiménez-Moreno (2019), the role of the SNII not only includes access to financial incentives but also plays a leading role due to its influence on the ethical and social values of academic communities. This influence, in turn, implies different ways of structuring scientific vocation and organizing the productivity of researchers.

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Conclusions

In this regard, it was possible to answer the stated objectives, revealing that the personal factors associated with a high level of attitude toward research were: membership in the National System of Research Research (SNII), publication of scientific articles, and participation in research groups. Meanwhile, the organizational factors associated with a high level of attitude toward research were: teaching research courses and having a permanent contract (tenured position).

It is worth noting that the presence or absence of these variables allowed for a significant differentiation between low and high levels of attitude, demonstrating that they represent key elements in its configuration. This situation prompts reflection on the role of the faculty. Without faculty members committed to research and possessing a positive attitude toward it, students are likely to encounter limitations in identifying role models in their professors, as well as in receiving conceptual rigor, methodological guidance, and opportunities to participate in research projects. This scenario could perpetuate deficiencies in research training, knowledge production, and ultimately, the availability of qualified researchers—a particularly relevant problem for the Latin American context and, specifically, for Mexico.

The finding identifies personal factors as having the greatest predictive power for a positive attitude toward research, notably highlighting membership in the National System of Research Information (SNII), which proves to be central. This reinforces the relevance of the conditions, skills, and attitudes of those involved in scientific activity in embracing research as an integral part of their training and professional performance. Consequently, addressing attitude toward research as a multidimensional variable in higher education implies considering both institutional aspects (what is promoted or incentivized) and individual aspects specific to the faculty member, which were the focus of this study.

Therefore, academic administrators are encouraged to create working conditions that foster faculty involvement in research. This includes, where possible, promoting permanent positions or, alternatively, designing projects that offer greater stability. It is also crucial to facilitate opportunities for faculty to teach research-related courses, in addition to other conditions that, according to the literature, have shown influence, such as membership in the National System of Researchers (SNII). This last point raises the need to evaluate which specific institutional conditions can help faculty achieve this distinction. Furthermore, it is a priority to identify the research characteristics and trajectories of the faculty, which would

allow for accurate assessments to inform the design of proposals that positively impact their attitude toward research. The ultimate goal of these actions would be to contribute to the development of their potential for knowledge production.

Based on these reflections, and considering the scope of this study, it is necessary to clarify its limitations. These are primarily related to the sample size and its confinement to a single university, which affects the possibility of generalizing the results to other institutional contexts. Nevertheless, these limitations do not diminish the significant scientific contribution of this work to the study of attitudes toward research. On the contrary, this study adds to the efforts undertaken in Mexico to address this construct among university faculty. Reflecting on the results provides relevant information for understanding the academic sector, its scope, achievements, and challenges in research, and specifically regarding attitudes toward scientific research.

The variables associated with the faculty require constant analysis, as this group represents the fundamental link for realizing the ideals, processes, and projects that the university proposes to achieve its goals. In conclusion, the importance of establishing a foundation for a positive attitude toward research is recognized, enabling faculty to see themselves as key agents in the generation of knowledge. In this way, they can join students, organizations, and the community as co-participants in solving the problems of their contexts.

Future lines of research

The findings presented here represent empirical evidence that can be used to further efforts aimed at developing perspectives, models, and systemic approaches to attitudes toward research. Based on this evidence, it is possible to propose lines of future research. One initial approach would be to replicate this study with a broader population, including Higher Education Institutions (HEIs) from various regions of Mexico, both public and private. Subsequently, international comparisons could be undertaken. Additionally, it is relevant to compare attitudes toward research between students and faculty, and to identify the predictor variables in each case.

Related to the above, it would be valuable to include a greater number of variables in the study of attitudes toward research. This would encompass other organizational aspects such as resources, spaces, and allocated time, as well as the level of experience and research competence of the teaching staff. Additionally, a qualitative approach would allow for a deeper understanding of the experiences, motivations, and subjective meanings that underlie

teachers' attitudes. Furthermore, experimental studies could be designed to evaluate the effect of specific interventions, such as training in project formulation, the development of research skills, or the use of technology, on strengthening attitudes toward research.

For Higher Education Institutions (HEIs), this information is crucial, as it allows them to guide concrete actions to promote and strengthen their performance in the field of research. The ultimate goal of this process would be to establish a genuine and robust research culture through a continuous cycle of dialogue, discussion, reflection, and strategic reorientation of institutional policies and practices.

Originality of the work and conflict of interest

This manuscript is declared to be an original work, is not under review in any other publication, and there is no conflict of interest.

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