Transformational Leadership, Organizational Climate, and the Mediating Role of Psychological Safety*

Liderazgo transformacional, clima organizacional y el papel mediador de la seguridad psicológica

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Abstract

Research on the relationship between transformational leadership and work climate has revealed interesting findings regarding how a leader can influence and improve employees' perception of a company. However, the mediating role of psychological safety in this relationship is still unclear. This study examines the mediating role of psychological safety in the relationship between transformational leadership and organizational climate. Data were collected from 558 workers of public and private companies in Colombia, using a quantitative approach with a correlational-predictive and cross-sectional design. The hypotheses involved in the proposed mediation model were tested using structural equation modelling, specifically the partial least squares (PLS-SEM) technique with the SmartPLS version 4. The results confirmed the mediation of psychological safety, with an indirect effect of transformational leadership on organizational climate through psychological safety of .203, with a 95% confidence interval between .129 and .297. In summary, this study demonstrates the positive indirect influence of transformational leadership on organizational climate mediated by psychological safety. These findings have implications for team and organizational management.

Keywords

Organizational climate, transformational leadership, psychological safety, mediation, good health, well-being

Resumen

Las investigaciones sobre la relación entre el liderazgo transformacional y el clima laboral han revelado hallazgos interesantes acerca de cómo el líder puede influir y mejorar la percepción de los empleados sobre la empresa. Sin embargo, el papel mediador de la seguridad psicológica en esta relación aún no está del todo claro. Este estudio examina el papel mediador de la seguridad psicológica en la relación entre el liderazgo transformacional y el clima organizacional. Los datos se recopilaron de 558 trabajadores de empresas públicas y privadas en Colombia, mediante un enfoque cuantitativo, con un diseño correlacional-predictivo y transversal. Las hipótesis planteadas en el modelo de mediación propuesto se probaron mediante modelos de ecuaciones estructurales, específicamente con la técnica de mínimos cuadrados parciales (PLS-SEM) empleando el software SmartPLS versión 4. Los resultados confirmaron la mediación de la seguridad psicológica, con un efecto indirecto del liderazgo transformacional sobre el clima organizacional a través de la seguridad psicológica, de 0,203 (IC 95 %: 0,129–0,297). En síntesis, este estudio demuestra la influencia indirecta positiva del liderazgo transformacional sobre el clima organizacional, mediada por la seguridad psicológica. Estos hallazgos tienen implicaciones para la gestión de equipos y organizaciones.

Palabras clave

Clima organizacional, liderazgo transformacional, seguridad psicológica, mediación, salud, bienestar

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Introduction

Organizational environments are currently undergoing significant transformations, driven mainly by globalization and the adoption of information technologies. These changes are having a profound impact on the structure and dynamics of organizations, particularly in redefining the functions, roles, and competencies traditionally assigned to leaders and managers. The concept of a single chain of command and formal leadership exercised by a single person, as posited in classical management theory, has become obsolete in the context of today's organizations (Cernas-Ortiz & Mercado-Salgado, 2023; Gil Rodríguez & Alcover, 2015). Instead, contemporary organizations are characterized by the presence of temporary members, often geographically dispersed, who perform intellectual tasks and are integrated into flexible structures, frequently changing groups, and part of multiple teams simultaneously. In this context, new scenarios have emerged that demand alternative and adaptive leadership profiles and roles, processes of flexibility and permanent communication, as well as trust and commitment, so that all members of the organization feel satisfied and can meet the established goals.

In this regard, leadership and organizational climate are fundamental in building personal relationships and worker productivity; both variables can be affected by a multiplicity of factors (Contreras et al., 2009; Fajardo-Castro, Díaz-Fúnez, & Mañas-Rodríguez, 2024). In recent years, the importance of the leader's role in creating a productive and psychosocially functional climate for achieving organizational goals has been emphasized (Kao et al., 2023; Reyes et al., 2018). Thus, a broad relationship has been established between effective work teams, innovation, and psychological safety—key aspects in the development of effective leadership (Arias, 2014). Psychological safety in the workplace fosters a culture that promotes open and safe spaces for generating ideas, thereby strengthening the organizational climate and driving innovation (Gil et al., 2008).

However, the measurement, adaptation, and validation of instruments to assess transformational leadership, organizational climate, and psychological safety are essential to ensure that the data collected accurately reflect the perceptions and experiences of the Colombian population. As evidenced in the literature, cultural adaptation is necessary to provide linguistic and metric equivalence when applying instruments developed in foreign contexts, especially those in non-Spanish-speaking countries. For example, Valencia (2008) achieved adequate equivalences in the KIDSCREEN and VSP-A instruments adapted for children and adolescents in Colombia, demonstrating that cultural adaptations are necessary to preserve the instruments' reliability and validity in the new context. Similarly, Rodríguez et al. (2016) in the National Mental Health Survey of Colombia and Rey et al. (2010), when validating instruments to assess cultural practices and exposure to violence in Bogotá, showed that cultural and socioeconomic factors specific to Colombia can influence how the items of these instruments are interpreted and answered. These adaptations are equally crucial in a study on transformational leadership, organizational climate, and the role of psychological safety. Colombian organizational culture can influence employee perceptions of leadership and psychological safety climate, given that factors such as respect for authority, collectivism, and valuing interpersonal relationships are relevant elements in the Colombian context. Using instruments validated in Colombia allows these cultural subtleties to be captured, reducing the risk of bias and increasing the validity of the results. This is especially relevant when analyzing mediating variables such as psychological safety, which can play a different role in the relationship between transformational leadership and organizational climate in environments with greater sensitivity to hierarchical relationships. Studies, such as those by Márquez-Lugo et al. (2021), on burnout syndrome in Colombia underscore the importance of cultural adaptation and validation of instruments to ensure that the results are representative and applicable in specific contexts.

These studies highlight the need for organizational research to carefully consider the Colombian cultural context. Without these measurements and adaptations, the instruments may not accurately reflect Colombia's cultural and organizational reality, which could affect the interpretation of the data and limit the usefulness of the findings for developing effective leadership and organizational climate interventions in the country.

In this way, it is convenient to establish what role leadership plays in psychological safety and its effect on the organizational climate, to establish relationships

and mediations that are relevant for the development of healthy and effective work environments for organizations; even more so considering the environments of high uncertainty, complexity, stress and change that organizations face, where leaders must respond effectively and efficiently. The State of the Global Workplace Report (Gallup, 2023) indicates, in relation to the global sample (around 1,000 people per country), that only 21 % of employees are engaged at work, and only 33 % of employees consider that they are thriving in their overall well-being in a work environment that continues to be stressful. This highlights the importance of studying work environments in today's complex and dynamic settings. In this context, the objective of the research is to investigate the relationship between transformational leadership, psychological safety, and organizational climate among employees of Colombian companies.

Theoretical Background

Transformational Leadership

Leadership is defined as the leader's ability to influence employees and guide them towards achieving a vision, especially crucial in times of crisis when adaptation and recovery are essential (Riggio & Newstead, 2023). Burns (1978) introduced the concept of transformational leadership, highlighting its exceptional character by focusing on the motivation, morale, and guidance of collaborators. This approach, characterized by its multidimensional nature (Bednall et al., 2018), initially referred to the support that a leader provides to collaborators not only in their tasks but also in building strong relationships (Bass & Avolio, 1993). Transformational leadership goes beyond personal interests, driving collective well-being and fostering high levels of performance, determination, and confidence (Bass, 1999; Farra et al., 2024). Transformational leaders guide their collaborators towards self-discovery and achievement of shared goals (Bass, 1999).

This guidance is achieved when leaders prioritize the interests of employees and the team's vision. Transformational leaders attend to the needs of employees, interacting in a charismatic way to inspire and encourage exceptional efforts (Bass, 1999). Four components characterize this leadership: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Avolio, 1993; Salarzai & Hasanzai, 2023). Over the years, these dimensions have been reassessed, incorporating elements such as shared vision, inspirational communication, and support for individual needs (Álava-Atiencie & Quinde-Lituma, 2023; Rafferty & Griffin, 2004).

Organizational Climate

Over the past three decades, psychologists and sociologists have explored the concept of work climate. From a cognitive perspective, climate refers to how people perceive and make sense of their work environment, encompassing the shared perception of events, practices, and behaviors valued by a group (Shao et al., 2017). Although sometimes confused with organizational culture, climate tends to be temporary and subjective, whereas culture is linked to ingrained values, shared beliefs, and history (Boh & Wong, 2013; Powell et al., 2021). The organizational climate has a significant influence on the work atmosphere and employee motivation. Rodríguez (2015) identifies dimensions such as informal relationships, work environment (including physical), social recognition, and informal climate. He also links variables such as physical environment, management style, size, social environment, and personal characteristics to organizational climate.

In this sense, organizational climate encompasses the physical environment, organizational structure, social relationships, personal characteristics, and behavior in the organization (Salazar-Estrada et al., 2009). A model developed by Quinn and Rohrbaugh in 1983 proposes four quadrants to define climate:

(1) Supportive climate: Refers to collaborative relationships, teamwork, and mutual help.
(2) Innovation climate: Encourages creativity and the reception of new ideas.
(3) Climate of goals: Focuses on goal orientation, competitiveness, and productivity.
(4) Climate of rules: Seeks stability and efficiency based on established norms and rules.

The scientific literature has also identified variables related to climate, including leadership, group processes, job characteristics, and satisfaction (Gil Rodríguez & Alcover, 2015).

Psychological Safety

The "team's psychological safety," as defined by Edmondson (1999), refers to the trust and secure relationships within work teams that face interpersonal challenges and risks. This involves creating emotionally safe workplace spaces, fostering environments where expressing ideas and innovating are priorities, and attending to

interpersonal factors to establish healthy work environments (Leiter et al., 2015). This question is relevant because work has undergone a significant transformation over time and is now more psychologically hazardous than physically demanding (Health and Safety Executive [HSE], 2022).

In the context of psychological safety, secure relationships at all work levels, especially trust in leaders and superiors, generate positive conditions and predict individual performance (Gutiérrez-Álvarez et al., 2023; Li & Tan, 2013). This influences the psychological availability of the worker, allowing them to behave and project themselves within the organization without fear of negative consequences (Kahn, 1990).

Psychological safety is fostered in work interactions and predicts team performance, decision-making, trust, and effective communication (O'Donovan & McAuliffe, 2020a, 2020b). In addition, negative supervision affects perceptions of psychological safety, which in turn influences organizational identification and creativity (Liu et al., 2016).

In this regard, literature shows that there are factors that coexist as barriers or facilitators of psychological safety; for example, the particular context can influence the construction of environments endowed with psychological safety; other factors could influence as barriers, such as the individual personalities of the team, the influence of the leader, the responsibility framed in the roles of the team and the haste with which they must be assumed. Thus, since barriers are not easily modified, building psychological safety is a challenge for managers of organizations and work teams (Grailey et al., 2021).

Transformational Leadership and Psychological Safety

Several studies linking leadership and psychological safety demonstrate a mediating relationship between these two factors. This is shown in the research by Iqbal et al. (2020), an empirical study conducted in a textile company in Pakistan with a sample of 175 workers. The results showed that psychological safety acts as a mediating variable between ambidextrous leadership and organizational citizenship oriented towards change. The authors suggest that future studies should focus on this relationship in companies across various industries and with a larger sample size.

Other researchers (Iqbal et al., 2021) sought to investigate the relationship between corporate leadership and employees' innovative behavior, with a specific focus on the mediating role of psychological safety. This research revealed the mediating effect of psychological safety between the independent variable, entrepreneurial leadership, and the dependent variable, innovative behavior, suggesting the importance of creating flexible environments. These results are consistent with other studies that place the importance of psychological safety as a mediating variable and its impact on organizational leadership and other variables (Arias, 2014; Canel-Ortega, 2023; Jabbar et al., 2023). Similarly, another study found that psychological safety partially mediates the relationship between inclusive leadership and employee innovative behavior, and it also affects inclusive leadership in the organization (Wang, Chen, & Li, 2021).

Likewise, the following studies highlight the relevance of psychological safety in performance, creative development, and innovation in the workplace, demonstrating its role in fostering effective work teams. Given the multifaceted nature of climate change and the aforementioned factors, psychological safety can impact the role of the leader and the work environment. According to Wang, Chen, and Li's (2021) research, leadership is an antecedent variable of innovative behavior. Here, psychological security and creative self-efficacy are employed as mediating variables, consistent with previous research. The study involved 418 employees in the manufacturing industry in China, focusing on leadership and its positive impact on employee innovative behavior. Business innovation is a major factor in organizations, prompting us to consider possible changes that influence the innovative behavior of employees.

Additionally, research on transformational leadership and job performance suggests that psychological safety serves as a mediating factor in this relationship. The research conducted by Wang, Chen, Yang, and Juan (2021) took place in six hospitals in Taiwan, involving 73 nurse managers and 719 nurses. The results indicate a statistically significant positive correlation between transformational leadership and work performance at the group level. Psychological safety, identified as a mediating variable, is considered by management leaders to be essential for achieving higher performance from nurses.

In this way, psychological safety enables employees to express their ideas freely without fear of consequences in the workplace. Leaders play a crucial role in ensuring the safety of their collaborators. Research supports the mediating role of psychological safety in the

relationship between leadership and the performance of their collaborators (Liu et al., 2016). In addition, the moderating role of identification with the organization, recognized as the main source of positive outcomes for workers concerning leaders' emotions and psychological safety, was found (Liu et al., 2016). On the other hand, the research by Rego et al. (2020), which involved 85 team leaders from 35 organizations in Portugal, focused on studying the leaders' humility in various situations and the psychological security of the work team. The results showed a moderating relationship: when leaders exhibit high levels of humility among team members, it also generates high levels of psychological safety and contributes to the creation of ethically sound organizations.

As in previous research, psychological security serves as a moderating variable between work well-being and employee creativity. The results were obtained from applying an instrument to 139 dyads—supervisor-employee pairs—in four Chinese companies. It was concluded that the leader's behavior has a positive effect on employee creativity and, in turn, on psychological safety, reinforcing the positive relationship between work well-being and creativity (Wang, Chen, & Li, 2021).

Transformational leadership, characterized by inspiring and motivating employees to achieve higher performance levels and commit to collective goals (Bass, 1985), is crucial in strengthening psychological safety in organizations. Aguilar et al. (2023) note that transformational leaders, by demonstrating empathy and openness, create a supportive environment where employees feel secure enough to express themselves. This is essential in Latin American work environments, where authority figures can be perceived as inaccessible. A transformational leader who supports their collaborators and fosters a safe space can break with this perception, encouraging employees to get more involved and communicate their ideas and concerns without fear.

The relationship between transformational leadership and psychological safety also translates into better group performance. Aguilar et al. (2023) conclude that effective leadership promotes a safe environment and inspires a mindset of continuous learning and proactivity in teams. Transformational leaders strive to achieve organizational goals while also prioritizing the personal and professional development of each team member. Consequently, an environment of psychological safety influenced by transformational leadership allows employees to explore new ideas and develop competencies critical to organizational success.

Based on the above, we propose the following hypothesis:

Hypothesis 1: Transformational leadership will be positively related to psychological safety.

Psychological Safety and Organizational Climate

At the empirical level, a key consideration in the organizational environment is how variables at both group and individual levels interact to influence behavior within the organization. According to Vásquez Pailaqueo et al. (2021), trust and security relationships facilitate the development of safe climates in the organization; in other words, they made evident the mediating role of organizational trust between engagement, work performance and transformational leadership, which confirms one of the assumptions of the HERO (Healthy Organization) model of Salanova et al. (2014), where not only organizational resources and practices are relevant, such as leadership, but also the mediating role of healthy employees (with adequate levels of work engagement and self-confidence) should be considered, even more, affecting a highly relevant variable such as performance.

A study in 40 local states in Thailand recognized that psychological safety plays a mediating role between the ethical climate of organizations and the motivation to whistleblow within these entities. Thus, psychological safety plays a relevant role not only at the organizational level, but also at the individual level (Potipiroon & Wongpreedee, 2021). This research confirms the relevance of psychological safety and its role in the ethical climate within public organizations. At the same time, another variable to consider is the psychological safety climate itself. This refers to how the leader's charisma can influence psychological safety, which, in turn, positively affects motivation and behavior to collaborate and share knowledge (Shao et al., 2017).

According to Sağnak's (2017) study, ethical leadership is related to voice behavior in teachers, with this relationship being mediated by the ethical culture of the organization and the psychological safety of its members. Leaders manage and build the organizational culture and climate, significantly affecting the organization's value system and the behavior of their followers. In this way, considering ethical leadership as a predictor and psychological security as a mediator, voice behavior is affected; specifically, it involves the confidence and security to participate in procedures, plans, and projects relevant to the organization.

At the same time, a meta-analysis highlights psychological safety as the most relevant variable in relation to team learning and its performance within the organization. It serves as the main predictor and varies only in relation to the complexity of knowledge in team tasks (Sanner & Bunderson, 2015). Similarly, the climate of psychological safety has an impact on innovation processes (Nienaber et al., 2015). In this sense, Baer and Frese (2003) found in a study with German organizations that the climate towards initiative and psychological safety was positively related to longitudinal change in the performance of assets and the achievement of strategic objectives and the company's mission; likewise, initiative and psychological safety are appreciated as moderators between process innovations and organizational performance. Aguilar et al. (2023) highlight the importance of psychological safety as a mediator in the relationship between organizational climate and job performance, given that a safe environment favors open communication, creativity, and learning within teams. In the Latin American context, where interpersonal relationships and respect for hierarchy are deeply rooted values, fostering an organizational climate that prioritizes psychological safety can help overcome cultural barriers and enhance employee well-being and commitment.

Furthermore, the studies reviewed by Aguilar et al. (2023) suggest that psychological safety allows employees to engage in collaborative practices that strengthen the organizational climate. When teams feel that their contributions are valued and they will not be punished for errors or suggestions, relationships of trust are more likely to develop. Group performance is optimized (Carmeli & Gittell, 2009). This relationship is especially relevant in Latin America, where hierarchies often influence work dynamics. An organizational climate focused on psychological safety benefits performance and contributes to the development of a resilient organizational culture that is prepared to adapt to the challenges of the current context.

Based on the above reflections, we propose the following hypothesis:

Hypothesis 2: Psychological safety will be positively related to organizational climate.

Transformational Leadership and Organizational Climate: A Mediated Relationship

According to Ostroff et al. (2013), there are some antecedent variables to organizational climate, such as context, organizational practices, and leadership. Leadership is one of the predominant factors in predicting climate (González-Herrera et al., 2014). Likewise, empirical research has shown that leadership styles, such as transformational leadership, contribute to creating a positive organizational climate (Kohan et al., 2018).

On the other hand, the model proposed by Kopelman et al. (1990) provides a theoretical framework for explaining the relationship between climate and other variables, such as leadership. According to this model, human resource management practices, including leadership, act as antecedents of organizational climate. In other words, human resource practices influence employees' perceptions of their work environment, which, in turn, predict affective states such as job satisfaction, directly impacting productivity and work performance (Griffith, 2006).

Transformational leadership is strongly related to organizational climate, understood as the set of shared perceptions about the organization's policies, practices, and procedures (González-Romá & Peiró, 2014). Aguilar et al. (2023) highlight that in organizations where leaders practice transformational leadership, the organizational climate tends to be more positive and receptive to change. This type of leadership fosters collaboration and trust, which are essential in an organizational environment oriented toward development and innovation, where employees feel valued and motivated to contribute actively.

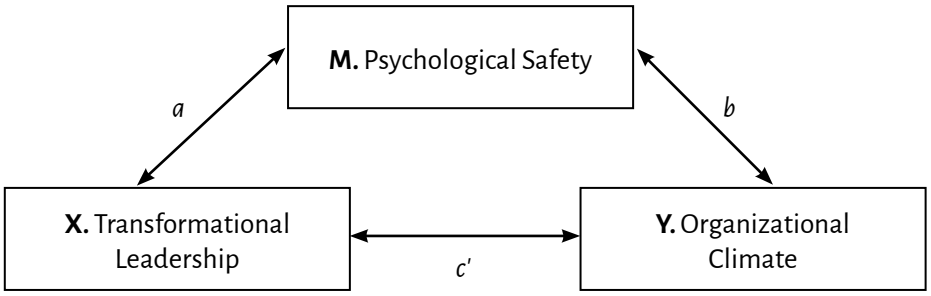
Specifically, research in Latin America has explored the relationships between leadership, psychological safety, and organizational outcomes. Transformational leadership has a positive influence on psychological safety in organizations, mediating the relationship between leadership and team behaviors (Forte et al., 2024). Studies have also shown significant correlations between leadership styles, organizational climate, and job satisfaction (Cuadra Peralta & Veloso Besio, 2019). A comprehensive review of 85 studies across various organizational contexts in Latin America examined the links between psychosocial risks, health, and performance, highlighting the need for further research in this region (Pujol-Cols & Lazzaro-Salazar, 2021). In El Salvador, a study in private schools found that transactional leadership was positively correlated with teachers' self-perceived performance and that leadership styles significantly predicted most dimensions of teacher performance (Orellana-Hernández, 2019). These findings highlight the crucial role of leadership in shaping organizational

outcomes within Latin American contexts. Furthermore, Aguilar et al. (2023) highlight the need for additional research on psychological safety and transformational leadership in Latin America. They carried out a systematic review that included 196 studies; only four from the Ibero-American region were identified (two in Brazil and two in Spain). This shows a lack of empirical research in Latin America and underlines the importance of expanding empirical evidence in the region to better understand these organizational and cultural phenomena.

Additionally, in a systematic review by Newman et al. (2017), 44 empirical studies were identified that analyze the antecedents of psychological safety at different levels of analysis, finding the predominant role of psychological safety as a mediator (38 of the 44 studies) to explain how organizational practices, leadership, and individual team differences, among other variables, influence workplace outcomes at the individual, group, and organizational levels, as is the case of organizational climate. Although there is little empirical evidence to support the relationship between these two variables, we can find theories that support this type of relationship, such as Blau's (1964) social exchange theory, where employees with a high level of psychological safety can experience feelings of support and respect in the workplace, which in turn improves their perception of the work environment. With these arguments in mind, we propose the following hypothesis:

Hypothesis 3: Transformational leadership will show a positive indirect "effect" on organizational climate, mediated by psychological safety (see Figure 1).

Figure 1. Research Model: Mediating Role of Psychological Safety



Note. Simple mediation model.

Method

Design

This research employed a quantitative, non-experimental, correlational-predictive, and cross-sectional design to examine the mediating role of psychological safety in the relationship between transformational leadership and organizational climate (Hernández-Sampieri et al., 2018). To enhance the explanatory and predictive power of the analysis, we used Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) method. This approach enabled a detailed examination of mediation effects, including direct, indirect, and total effects, and provided insights into the explained variance (R^2) for each endogenous variable, thereby strengthening the robustness of our findings.

Participants

Non-probabilistic convenience sampling was employed, enabling the selection of accessible cases that met the inclusion criteria. The above is based on the convenient accessibility and proximity of the subjects for the researcher (Otzen & Manterola, 2017). The sample consisted of 558 workers from Colombian companies who met the inclusion

criteria and who are part of work teams in public, private, and mixed organizations. There are two main criteria that support the sample size: the first suggests a minimum size (N), and the second is based on the proportion of people per item (N/p) (Lloret-Segura et al., 2014). The obtained effect size was 0.470, classified as high because it exceeded the threshold of 0.40. Regarding statistical power, a value of 0.95 was obtained, which is considered excellent according to established criteria (Caycho et al., 2016), since it exceeds the standard of 80%. With a sample size of 558 people, an alpha significance level of 0.05, and the effect size found, it can be concluded that the study has outstanding statistical power, calculated using the GPower software (Faul et al., 2009). Accordingly, the inclusion criteria correspond to the specific characteristics of the participating workers: being of legal age, being male or female, and having completed a minimum level of secondary education. Informed consent was obtained, and the participants explicitly agreed to participate in this research. Likewise, the exclusion criteria were being underage and having a civil or employment contract with the organization for less than three months.

The characteristics of the sample participants were as follows: 62% (346) were men and 38% (212) were women. In the age variable, the participants ranged from 19 to 70 years old, with the most frequent age range being 20 to 30 years old (39.8%), followed by 30 to 40 years old (26.9%), and 40 to 50 years old (23.1%). Regarding marital status, the most frequent marital status was found to be married (44.3%), while 32.6% were in a consensual union. The most representative educational levels in the sample were high school (53%) and graduate (15.9%). The most frequent types of contracts were employment (53.8%) and services (33.3%). The predominant salary was 67.6% between one and three minimum wages, and 19.2% less than one minimum wage. Finally, the most representative lengths of service in the sample were 1 to 5 years, accounting for 41.6%, and less than one year, at 39.1%.

Instruments

Transformational Leadership

It was measured using the Rafferty and Griffin (2004) questionnaire, developed from the MLQ and adapted to Spanish by Salanova et al. (2012). This questionnaire encompasses five dimensions (*vision, leader support, intellectual stimulation, inspirational communication, and personal recognition*); each dimension comprises three items. An example of an item is "Think about our personal needs." For all items, the responses were in a 7-point Likert-type format, from "1: *Strongly disagree*" to "7: *Strongly agree*." Since the instrument is not validated in the Colombian population, a CFA was performed on the sample of this study. The results support the construct validity of the instrument in the Colombian population, in which the five-factor model is verified (CMIN = 136.082 ($p < .001$); DF = 85; CFI = .98; TLI = .97; RMSEA = .04 [.030; .047]; SRMR = .03).

Psychological Safety

The psychological safety instrument used was the quantitative section of the scale developed by O'Donovan and McAuliffe (2020b), who created a mixed scale from six psychological safety instruments to measure this construct in medical personnel (O'Donovan & McAuliffe, 2020b). Fajardo-Castro, Manrique-Torres, et al. (2024) adapted this scale for use in the Spanish-speaking Colombian population. The CFA supports the construct validity in the Colombian population of the O'Donovan scale, in which the three-factor model is verified (CMIN = 443.785 [$p < .001$]; DF = 149; CFI = .94; TLI = .93; RMSEA = .06 [.055; .064]; SRMR = .04). The instrument is composed of 19 items and three dimensions: a) *the team leader*, composed of nine items; 2) *peers/other team members*, composed of seven items; and 3) *the team*, composed of three items (O'Donovan & McAuliffe, 2020b). An example item is: "If I had a question or was unsure of something regarding my role at work, I might ask my team leader." For all items in the questionnaire, the responses were presented in a 7-point Likert-type format, ranging from "1: *Strongly disagree*" to "7: *Strongly agree*."

Organizational climate

The Focus 93 questionnaire was administered; this questionnaire was developed by the European research team FOCUS ("First organizational Climate/Culture Unified Search"; Van Muijen et al., 1999) and adapted for the Colombian population by García-Rubiano (2020) with the following fit indices from the CFA: CMIN/DF = 2.24 ($p < .001$); CFI = .99; TLI = .98; RMSEA = .067. The questionnaire measures four dimensions (*support, innovation, goals*, and rules). The dimensions of support and innovation consist of four items, while the dimensions of goals and rules each consist of three items. An example of an item is "Colleagues help each other to get the job done." For all items in the questionnaire, the responses were in a 7-point Likert-type format, from "1: *Strongly disagree*" to "7: *Strongly agree*."

Sociodemographic Data Questionnaire.

Data such as age, sex, socioeconomic stratum, education, position, type of contract, salary, seniority within

the organization, profession, and composition of the work team were recorded.

Procedure

This research was carried out in the following phases:

Phase I: Call for companies. The proposal, including the objectives, was communicated to the various human resources departments of the companies that met the inclusion criteria.

Phase II: Digital data capture. Once the participation of companies and workers was formalized, questionnaires were sent to employees of the various companies via a hyperlink using the SurveyMonkey tool. This allowed them to complete them during the working hours assigned by the human resources department. In the evaluation questionnaire, the study's objectives were made known, and anonymous and voluntary participation was specified, ensuring confidentiality in the handling of information (informed consent and authorization in accordance with Colombian law regarding the handling of personal data).

Phase III: Data processing and analysis

Phase IV: Discussion of the results obtained in the process and writing of the agreed products

Ethical Aspects

This article is the result of a research project entitled "Relationship between Transformational Leadership, Psychological Safety, and Organizational Climate in Employees of Colombian Companies," whose primary objective is to investigate the relationship between transformational leadership, psychological safety, and organizational climate among employees of Colombian companies. The ethical considerations for Colombia (Resolution No. 8430 of 1993), approval of the project by the research institution, which classified it as low risk, the Psychologist Act (Law 1090 of 2006), and the Habeas Data Act (Law 1581 of 2012) for the handling of personal data to carry out the research were complied with; no partial research data have been published.

Information Processing and Analysis

The objective of the research was to explore the relationship between the predictor variable—specifically, transformational leadership—and the criterion variable, organizational climate, with psychological safety as a mediating variable (Ato & Vallejo, 2011). The statistical package SmartPLS version 4.1.0.9 (Ringle et al., 2024) was used to perform data analysis using the partial least squares technique (PLS-SEM). Descriptive statistics, such as the mean and standard deviation, were obtained and analyzed. The validity and reliability of the measurement model were also reviewed through internal validity, individual reliability, construct reliability, convergent validity, and discriminant validity. Finally, the structural model was assessed based on the variance of the endogenous or criterion variables, global fit, path coefficients, and bootstrapping.

Results

Descriptive Statistics and Correlations among Study Constructs

The study included three key constructs: *transformational leadership*, *psychological safety*, and *organizational climate*. Table 1 shows the descriptive data (mean and standard deviation) and correlations between the variables. Participants' mean scores for transformational leadership, organizational climate, and psychological safety were above the midpoint of the scale. All constructs are strongly and significantly positively correlated.

Table 1. Descriptive Statistics and Correlations among Latent Variables

Variable	*M*	SD	1	2
1. Transformational Leadership	5.27	1.09		
2. Organizational Climate	5.69	1.08	.712**	
3. Psychological Safety	5.52	1.08	.660**	.644**

Note. $^{**}p \leq .01$

Measurement Model

The evaluation of the reflective measurement model was carried out in four stages (Hair et al., 2017): (1) individual reliability of the indicators, (2) reliability of the constructs, (3) convergent validity, and (4) discriminant validity. First, we analyzed the reliability of the indices through their factor loadings. For most items, the factor loadings were higher than 0.7. Although a factor loading higher than 0.7 is desirable (Chin, 2009), researchers frequently obtain weaker external loadings (<0.70) in social science studies. In our research, there were four items, two belonging to the leadership variable and two to the psychological safety variable, that had loadings below 0.40, so we decided to eliminate them so that the composite reliability index (CR) and convergent validity (AVE) would not be affected (Hair et al., 2011). Therefore, a group of three scales with 44 items remained in the proposed model (see Table 2). Secondly, the reliability of the construct was examined using Cronbach's alpha and the composite reliability index. The results in Table 2 indicate that the CR and Cronbach's alpha of all the latent constructs in our model were higher than 0.70 (Hair et al., 2017). These results indicate that our measurement model exhibits good internal consistency. Thirdly, the average variance extracted (AVE) confirms the existence of convergent validity. The results show a mean-variance extracted value greater than 0.5 (Fornell & Larcker, 1981), thus verifying convergent validity (see Table 2). Finally, we checked discriminant validity. First, we used the Fornell and Larcker (1981) criterion, which requires that the square root of the AVE be greater than the correlation between constructs. Second, we used the heterotrait–monotrait correlation ratio approach (HTMT – 0.85) (Henseler et al., 2015). As shown in Table 3, all values remained below the 0.85 threshold, further confirming the discriminant validity of our measurement model (Chin, 2009).

Table 2. Measurement Model—Reliability and Convergent Validity

Construct and item description	TFL	PS	OC	CR	α	AVE
Transformational Leadership				.955	.948	.623
TLF 1	.715					
TLF 2	Dropped					
TLF 3	Dropped					
TLF 4	.809					
TLF 5	.833					
TLF 6	.821					
TLF 7	.540					
TLF 8	.718					
TLF 9	.730					
TLF 10	.815					
TLF 11	.844					
TLF 12	.872					
TLF 13	.881					
TLF 14	.880					
TLF 15	.731					
Psychological Safety				.949	.943	.523
PS 1		.692				
PS 2		.714				
PS 3		.600				

Construct and item description	TFL	PS	OC	CR	α	AVE
PS 4		.776				
PS 5		.739				
PS 6		.745				
PS 7		.821				
PS 8		.789				
PS 9		.721				
PS 10		.717				
PS 11		.622				
PS 12		Dropped				
PS 13		.718				
PS 14		.664				
PS 15		.707				
PS 16		.755				
PS 17		.739				
PS 18		.745				
PS 19		Dropped				
Organizational Climate				.952	.945	.589
OC 1			.590			
OC 2			.731			
OC 3			.762			
OC 4			.748			
OC 5			.839			
OC 6			.858			
OC 7			.845			
OC 8			.800			
OC 9			.834			
OC 10			.828			
OC 11			.773			
OC 12			.704			
OC 13			.660			
OC 14			.720			

Note. TFL: Transformational Leadership; PS: Psychological Safety; OC: Organizational Climate; CR: Composite Reliability; α: Cronbach's α; AVE: Analysis of the extracted variance

Table 3. Discriminant Validity

Construct	TFL	PS	OC
Fornell and Larcker's (1981)			
Transformational Leadership	.789		
Psychological Safety	.660	.723	
Organizational Climate	.712	.644	.767
Heterotrait-monotrait ratio (HTMT)			
Transformational Leadership	--		
Psychological Safety	.675	--	
Organizational Climate	.742	.671	--

Note. TFL: Transformational Leadership; PS: Psychological Safety; OC: Organizational Climate

Structural Model

After evaluating the measurement model, we considered the structural model. This evaluation was based on the magnitude and significance of the path coefficients, for which the bootstrap technique was used with 5,000 subsamples (Hair et al., 2011).

The results support hypotheses 1 and 2 (see Figure 2). The results show how transformational leadership is positively related to psychological safety ($\beta = .660$, $p < .01$); psychological safety is positively associated with organizational climate ($\beta = .308$, $p < .01$). On the other hand, there was a direct, positive, and statistically significant effect between transformational leadership and organizational climate ($\beta = .508$, $p < .01$). Likewise, the results showed that 56 % of the variance in the organizational climate variable was explained by the predictors considered (see Table 4). The indirect effect of transformational leadership on organizational climate through psychological safety was .203, with a 95 % confidence interval ranging from .129 to .297. Given the above, we conclude that the indirect effect was statistically significant because the confidence interval does not include the value of zero; this result supports Hypothesis 3. Regarding the effect size (f2) for the relationships in our structural model, following the recommendation of Hair et al. (2014) and Cohen (1998), all hypotheses show significant effects. Finally, we estimated the Stone-Geisser Q2 (Geisser, 1975; Stone, 1974) and the standardized root mean square residual (SRMR) to assess the model's fit in PLS. The Q2 measures how well the model and its estimated parameters reproduce the observed values. Values greater than 0 indicate predictive relevance. Thus, the results of our study provide good evidence of predictive relevance, as the Q2 values for psychological safety and organizational climate were .428 and .501, respectively. The composite SRMR value for the model was .069, which is also below the .08 threshold recommended by Hu and Bentler (1999).

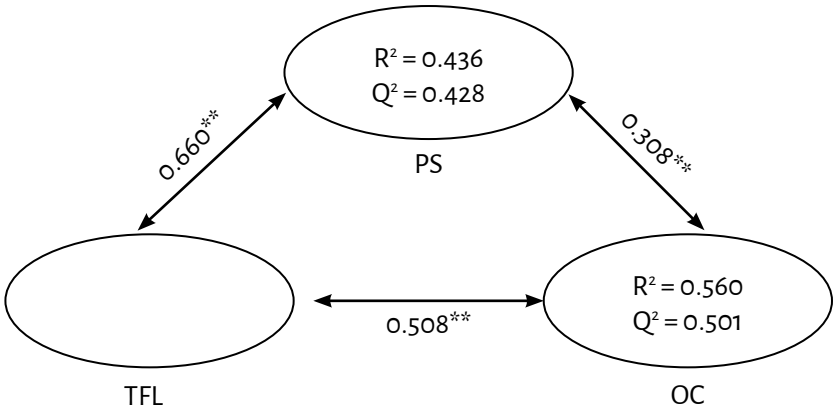
Table 4. Result of the Structural Model

Relationship	Path coefficient	*t*-value	95% CI (bias-corrected)	Support	f^2
TFL → OC	.508	9.721	[.403, .603]	Yes	.332
PS → OC	.308	5.759	[.208, .418]	Yes	.122
TFL → PS	.660	15.641	[.569, .735]	Yes	.772
Direct Effect (DE)					
TFL → OC	.508	9.721	[.403, .603]	Yes	.332
Indirect Effect (IE)					
TLF → PS → OC	.203	4.709	[.129, .297]	Yes	
Total effect					
DE + IE	.712	22.174	[.644, .769]		
R^2PS = .436; R^2OC = .560 Q^2PS = .428; Q^2OC = .501					
SRMR = .069					

* *p* < *.01.*

Note. *n* = 558. TFL: Transformational Leadership; PS: Psychological Safety; OC: Organizational Climate. Standardized path coefficients.

Figure 2. Result of the Basic Analysis Model



Note. Standardized path coefficients were reported.
**p* < .05 ***p* < .01 (two-tailed test).

Discussion

The objective of this study was to test a mediation model of the influence of transformational leadership on the organizational climate in the work context. To achieve this objective, the first hypothesis proposed was that transformational leadership has a positive and significant influence on psychological safety. This hypothesis was demonstrated ($\beta = .660$, $p < .01$). As a second hypothesis, we proposed that psychological safety is positively related to organizational climate. The results support this hypothesis ($\beta = .308$, $p < .01$). Finally, we posed as a third hypothesis that transformational leadership has a positive indirect "effect" on organizational climate, mediated by psychological safety. This hypothesis was also validated ($\beta = .203$, [.129, .297]).

Thus, the results show that, as expected, transformational leadership has a positive indirect influence on organizational climate, mediated by psychological safety. In summary, transformational leadership was positively related to psychological safety, which, in turn, was positively related to the organizational climate. From the results, this study contributes to the literature in three aspects: first, it empirically examined the relationship between followers' perceptions of transformational leadership and the team's perception of psychological safety; second, it showed relationships between the team's perception of psychological safety and the perception of organizational climate; and third, our most important finding has to do with the role of psychological safety as a mediating variable between the relationship of transformational leadership and organizational climate. This means that, to the extent that followers perceive transformational behaviors on the part of their leaders, this will allow team members to take interpersonal risks such as expressing their ideas, opinions and disagreements in an environment in which they feel safe, without fear of reprisals; in other words, consolidating better psychological safety at the individual level and with the work team, which in turn will increase the positive perception of the organizational climate. These results have a series of theoretical and practical implications that we discuss in the following sections.

Theoretical Implications

Regarding the theoretical contributions, it is worth noting that psychological safety is a significant variable in the development of research aimed at validating new theoretical models of organizational climate and leadership. Clearly, it is ratified that leadership is a variable that precedes and is a predictor of organizational climate (Kopelman et al., 1990; Ostroff et al., 2013). The above is validated and reinforced, considering that the psychosocial conditions of workers have undergone significant changes. The contents developed in work tasks across different economic sectors increasingly demonstrate a systematically higher level of psychosocial involvement from the worker. According to a United Kingdom study, the increase in work has led to changes in the management of the physical environment. It has become less physically dangerous, but the conditions make it less psychologically safe (HSE, 2022).

Therefore, this research not only contributes to expanding the empirical research on the variables of organizational climate, leadership, and psychological safety, but also highlights the need to develop research with a view to obtaining new theoretical models that conceive the importance of variables related to psychological safety and psychosocial comfort in workers. These aspects are crucial for the development of work, from an ecological approach and multilevel analysis (individual-group). They have also been the subject of interest in cognitive ergonomics and mental workload studies (Wickens & Carswell, 2006), as well as for strengthening social relationships within teams in organizations. Similarly, considering the mediating and cross-cutting potential of the psychological safety variable (Newman et al., 2017), it is appropriate to review in future research its analysis of the impact and effect on other variables at the organizational level.

Practical Implications

Regarding the practical implications of this research, the results obtained can be applied to organizational dynamics, where transformational leadership can enhance personal relationships and worker productivity by fostering employee trust and commitment. Transformational leadership, after analyzing and determining that it has a direct and positive effect on psychological safety, ratifies what authors such as Iqbal et al. (2021), Iqbal et al. (2023), and Wang, Chen, Yang, and Juan (2021) express, in which the leader is in charge of structuring environments where the collaborator feels support, empowerment, and trust. In other words, a transformational leadership style is vital for companies where the leader builds trust, thereby improving interpersonal relationships with their team. According to Edmondson

and Lei (2014), transformational leadership, as confirmed in this research, leads to a better understanding of psychological safety and improved communication.

The research conducted by Hoekx et al. (2024) aimed to determine the relationship between employee engagement in family businesses, with a particular focus on the role of the CEO. Specifically, they analyzed the influence of transformational leadership on employee engagement and the mediating role that psychological safety plays in this relationship. A Belgian study involving 508 employees confirmed a positive relationship between transformational leadership and employee engagement, with psychological safety mediating this dynamic. Similarly, the research conducted by Rabiul et al. (2024) examines the role of psychological safety as an antecedent of meaningful work and as a mediator between transformational leadership (TFL) and meaningful work. The analysis of data obtained from 368 hotel employees in Bangladesh indicates that psychological safety not only positively predicts meaningful work but also acts as a mediator in the relationship between TFL and this type of work. These findings underscore the importance of creating a psychologically safe environment, which is critical to fostering meaningful work in the hospitality industry.

The organizational climate, recognized as the perception (or cognitive interpretation) of the individual, exhibits a positive relationship with transformational leadership and serves as an antecedent to employees' perception of the organizational climate. For an organization, it is important that its employees perceive and experience a positive climate. In this sense, the role of the leader is crucial to achieving the transformations required today in various contexts (Jiménez Carranza et al., 2021). Considering the above, the organizations under study are called to develop planned actions that include organizational development programs focused on leaders. Initially, these programs should analyze the team's needs, as this forms the basis for employees to be motivated, committed, and excel in their work performance. The transforming leader stimulates the collaborator, provoking a reaction that influences their decision to face unconventional situations. This is achieved through a collaborative environment between the parties, which generates psychological security among the team participants (Salazar-Estrada et al., 2009).

Psychological safety and work environment are closely related and have significant practical implications, as expressed by the results of this research, and determine a positive relationship; the work environment provides the collaborator with well-being and, therefore, a positive and healthy environment by intervening in the perception of psychological safety (Vasquez Pailaqueo et al., 2021).

Finally, psychological safety in work teams is a result of the exercise of assertive leadership that seeks to transform collaborators in organizations and significantly affects the positive perception of the work environment; both leadership and the work environment are found to be success factors that meta-analyses highlight in work teams (Da Costa et al., 2014). Likewise, psychological safety is a significant moderator of the climate, and its mediating potential is presented in other studies (Wang et al., 2025). Likewise, scales based on transformational leadership correlate very well with positive organizational environments (Bass & Avolio, 1995). In this sense, the role of the transformational leader and the trust that it generates in work teams that fosters psychological safety is relevant with respect to team formation and development processes, as well as transformational leadership in the prevention of psychosocial risk at work, as leadership is an important determinant in these risk processes (Perilla-Toro & Gómez-Ortiz, 2017).

The above is conducive at a practical level to constructing senior management and leadership training programs that focus on developing transformational skills and promoting psychological safety in work teams as aspects of special attention. The Global Human Capital Trends survey (Deloitte University Press, 2016) indicated that worldwide, 89% of organizations report that leadership is a special area of attention. Currently, companies are very interested in training their leaders, and the training must include significant elements based on research related to leaders and their work teams.

Limitations and Future Research

The present study has a few limitations that should be considered in further studies. First, the study focused on transformational leadership as the only antecedent, while other leadership styles, such as LMX leadership and authentic leadership, should be considered in future research; second, the sample was collected only in Colombia, which limits the generalizability of the results to other countries and cultures, so it would be necessary to replicate our study in different cultural settings to confirm or challenge our conclusions; third, the research design was cross-sectional in nature, thus limiting the potential to establish cause-and-effect relationships. Since cross-sectional studies capture data at a single point in time, they do not allow for the observation

of changes over time, making it difficult to determine whether one variable truly influences another. This limitation reduces confidence in asserting causal relationships, as the direction of influence between variables cannot be observed over time. Therefore, future studies should adopt longitudinal designs to better enable a stronger analysis of how these variables interact and evolve over time, as well as to assess causal relationships more effectively. Finally, various indicators could be used to measure the variables under study and to consider factors affecting the development of the results, such as the nature of the organizations studied.

Conclusions

This study demonstrates that psychological safety acts as a mediating variable in the relationship between transformational leadership and organizational climate. Transformational leaders foster a safe environment that allows team members to express their ideas, opinions, and disagreements, resulting in greater psychological safety for each team member. The model of transformational leadership mediated by psychological safety suggests that an organizational climate should be cultivated within a safe framework, encouraging open expression and supporting the organization's growth. Consequently, it is essential to train leaders to build and strengthen bonds with their collaborators, as this promotes higher levels of psychological safety in the workplace. Overall, the findings contribute to the theoretical understanding of leadership and organizational climate while offering practical implications for developing leadership practices that strengthen psychological safety and, in turn, improve organizational effectiveness.

Data Availability

The data supporting the findings of this study are available upon request from the corresponding author.

Conflict of Interest Statement

The authors declare no potential conflict of interest.

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