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Psychological Capital and Work Stress Mediated by Authentic Leadership and Moderated by Gender



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ABSTRACT

The purpose of this study was to validate a model that examines the effect of psychological capital on work stress, the mediation of authentic leadership, and the moderating effect of gender on this relationship. The study used a structural equation analysis to validate the research hypotheses in a sample of firms from different industries. The results confirm that psychological capital has a negative impact on work stress, as well as a positive relationship with authentic leadership, and the latter has a negative impact on work stress. The mediating effect of authentic leadership on the relationship between psychological capital and work stress was also confirmed. In addition, gender moderation shows that the impact of psychological capital on reducing work stress is stronger for women than for men. The findings provide conceptual information for improving employee performance by empirically validating the relationship between three constructs that have not previously been studied in an integrated manner. It also takes into account the differences between men and women in coping with work stress, which is very important for organizations. The surveys of the constructs studied are a potential source of information for managers because they help identify factors that contribute to improved employee performance. As with all research that examines

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psychological constructs, the present study has limitations related to the operationalization of these constructs. Future studies could replicate and extend the research in other economic sectors and with other demographic and cultural variables. The influence of other contexts on the relationships studied could be identified.

KEYWORDS: *psychological capital, authentic leadership, work stress and gender*

Introduction

In recent years, there has been a growing need for organizations to understand the variables that help improve the performance of their employees (Zakaria et al., 2020) and examine whether there is any differentiation between women and men in these aspects. This search identified three variables: psychological capital, which helps to identify how to improve their professional career (Amor et al., 2021; Finch et al., 2020); work stress, which is a very influential variable that hinders their good performance (Uysal, 2019); and authentic leadership, which is a buffer variable for stressful situations that may affect them (Shahid & Muchiri, 2017).

The study of the variables that influence good employee performance is important because it contributes to a company's ability to develop a competitive advantage (Murtza et al., 2021). For this reason, it is the most studied in industrial management and organizational behavior (López-Cabarcos et al., 2022). However, there is a demand for further analysis of the variables that can affect it (Adil & Kamal, 2020; Reyhanoglu & Akin, 2022; Uysal, 2019), particularly to be able to identify the impact of gender on job performance, given that women constitute 50% of the workforce (Franczak & Margolis, 2022).

However, the literature review indicated that the variables in our study have been studied only in some specific sectors, mainly in Asian countries. That is why more studies are needed in other business sectors (Nair et al., 2021; Patnaik et al., 2021) and in other cultural contexts (Bilgeturk & Baykal, 2021; Hao et al., 2020).

To fill these gaps, a model based on theories of social cognition (Bandura, 1986) and resource conservation (Hobfoll, 1989) was empirically validated. This model integrated the relationships between the variables

proposed in the present study and analyzed them in a context where similar research is still lacking.

The structure of this article includes a review of the relevant literature and a summary of the theory supporting the hypotheses of the model. It also outlines the description of the methodology of the empirical study, presents the results, and discusses the main findings, considering the limitations of the study and suggesting possible future lines of research.

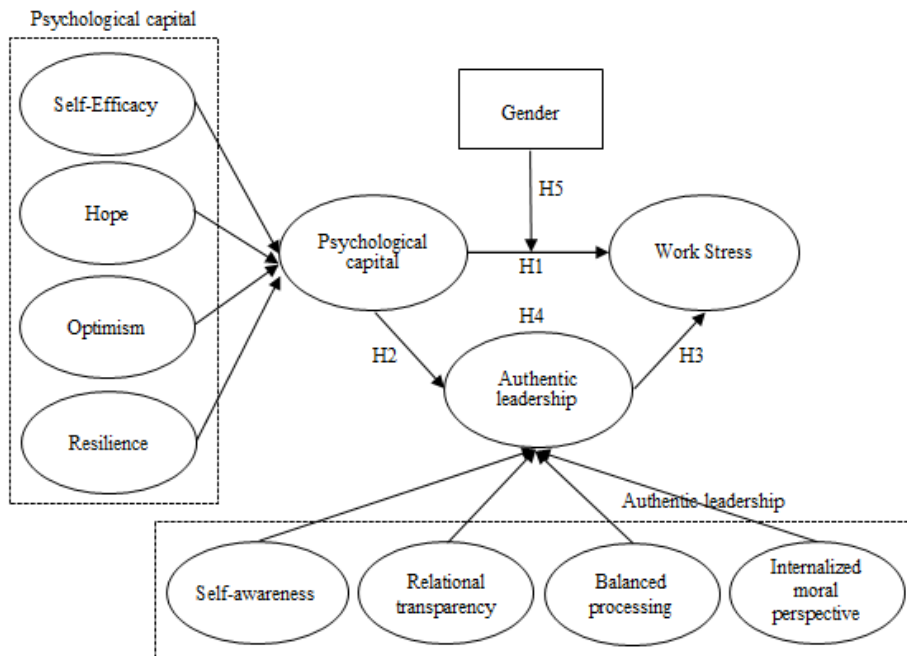
Theoretical Framework

Psychological capital is a highly influential variable in job performance that helps to resist and cope with work stress, so there is a need for further studies in different contexts (Patnaik et al., 2021) to clarify how it affects other determinants of work stress (Narsa & Wijayant, 2021). It is also conceptually related to the resource conservation model (Hotbfol, 1989) and, thus, to leadership.

Work stress is a common phenomenon in different business environments that affects employees individually and differently (Kumasey et al., 2014; Zakaria et al., 2020) as well as the organization, so there is a need to study the factors that help to address it in more detail (Uysal, 2019). It is also essential to identify the impact of gender in relation to these variables, given the gender gap that exists due to a different distribution of financial resources and access to education between men and women (Antonijević et al., 2022).

Another variable that contributes to improving employee performance is managerial leadership (Zakaria et al., 2020) and, in particular, the authentic leadership construct (Crawford et al., 2020), which optimizes the development of psychological capital and the reduction of work stress through the fair allocation of resources (Adil & Kamal, 2020). There are several studies in the literature on the impact of authentic leadership, but more research is needed in countries with different cultures and business sectors (Bilgetürk & Baykal, 2021; Nair et al., 2021; Wu & Xu, 2022). Figure 1 shows the model based on the literature reviewed in the study. The hypothesized relationships between the constructs of the model are discussed below.

Figure 1: Theoretical model



Note(s). This figure presents the theoretical model and hypotheses. Single-headed arrows represent the hypothetical directional paths. Source: Author's own creation.

Source: Authors

Psychological Capital

This construct is defined as the state of the positive development of an individual, which comprises the psychological resources that he/she can manage to improve his/her performance (Luthans et al., 2007; Wang et al., 2017). It consists of four dimensions: self-efficacy or confidence to make an effort in the face of challenges, hope to persevere with goals and plans, optimism to maintain a positive attitude about the future, and resilience to overcome adversity (Luthans et al., 2007; Nolzen, 2018; Patnaik et al., 2021; Sekhar, 2021).

More specifically, self-efficacy is an individual's belief in his or her ability to act in the manner necessary to achieve specific goals and also reflects confidence in the ability to exert control over one's motivation, behavior, and social environment (Bandura, 1977). Therefore, self-efficacy influences the competencies that enable individuals to engage in modern

organizations characterized by different types of management and leadership (Zaman et al., 2021). Resilience is the factor that helps individuals adapt to environments that are perceived as stressful; it is considered a reflection of leadership ability and is also related to well-being, as it contributes to increased levels of self-efficacy (Warshawski, 2022). Hope is formed by the individual's belief that he or she can create viable ways to achieve his or her goals and is related to optimism, which helps employees achieve greater motivation by creating new possibilities through realistic goals in the organization (Kim et al., 2021).

Dimension 4, optimism, is a positive expectation of outcomes and a predictor of hope (Finch et al., 2020). Optimism makes it easier for people to engage in problem-solving behaviors (Black et al., 2020). It also maintains a positive approach through problem-oriented actions to create a controlled environment, even in the face of a difficult situation (Oja et al., 2019).

Work Stress

The construct of work stress is an individual phenomenon that occurs when an individual is faced with a situation in which he or she perceives that his or her capabilities are being exceeded (Narsa & Wijayant, 2021). It is part of the psychosocial emotions that affect performance (Lui & Johnston, 2019), and can occur momentarily or be sustained over time (Kumasey, 2014). Stress can also be influenced by factors such as behaviors, time pressures, level of workload, relationships between colleagues, and it can also include the type of profession, with a focus on organizational behavior and managerial responsibilities (Ismail et al., 2019).

According to Patnaik et al. (2021), work stress causes various problems in people's performance, mostly in the workplace, and occurs when people faced with a difficult or challenging situation perceive an individual lack of resources. This is related to Hobfoll's (1989) Resource Conservation Theory, which states that in the face of a stimulus, there are different responses caused by perception and that personal characteristics are resources for coping with stress. According to Pradhan et al. (2021), to better manage work stress, people need to identify their own resources and acquire future resources. It is a phenomenon that can occur in various activities related to the performance of employees (Lee & Lee, 2018). However, they can also be caused by social stressors (daily, family,

financial problems) and environmental stressors (humidity, lighting, poor ventilation) (Stranks, 2005).

Authentic Leadership

Walumbwa et al. (2008) mentioned that it is a construct that helps to develop a positive psychological capacity and ethical climate that reduces external negative factors that influence the performance of employees. Adil and Kamal (2020) indicated that authentic leadership is associated with a work climate that enhances the development of positive psychological capabilities in its employees to cope with work stress and that it is associated with negative psychological states. Authentic leadership involves ethical and transparent behaviors that create a trusting environment with employees to help them develop greater self-awareness, moral perspective, a better balance of information and transparent relationships, improving the management of work stress (Ismail et al., 2019). What distinguishes authentic leadership from other styles is that the leader fosters the development of followers through self-awareness and behavioral regulation (Sims et al., 2017). According to Kim et al. (2020), it is a construct that considers four dimensions: self-awareness (recognition of strengths and weaknesses), relational transparency (the leader has an approach of openness towards his/her followers), internalized moral perspective (the leader's virtues and values), and balanced processing (decision making with analysis of data and opinions of his/her followers).

Psychological Capital and Work Stress

The literature suggests that psychological capital helps to cope with work-related stress (Wang et al., 2017; Pradhan et al., 2021). There is also a mediating effect of psychological capital with work stress related to variables such as religion, satisfaction and sleep quality (Li & Zhang, 2019; Narsa & Wijayant, 2021, Pradhan et al., 2021; Wang et al., 2017; Xie et al., 2021). Regarding the effect of work stress, the literature indicates that it has a mediating effect on psychological capital, but relates it to other variables, such as employee turnover intention (Celik, 2017).

Many studies suggest that people with higher levels of psychological capital perform better and cope better with stress. It has also been found that each component of psychological capital can be related to stress in different ways, both as a buffer and as a contributor to stress (Narsa & Wijayant,

2021). In the work environment, stress has a higher frequency due to organizational and environmental factors that lead the individual to perceive a scenario that exceeds their capabilities. However, a person with positive psychological resources may have a greater advantage in preventing stress through self-efficacy and resilience to adapt quickly, as well as hope and optimism that help to generate different paths with a realistic approach to face and reduce work stress (Patnaik et al., 2021).

There is a study in the medical service area in China that shows that in some emergency departments, people with low stress did not have high psychological capital, but also that low work-related stress is associated with higher well-being and higher psychological capital (Hao et al., 2020). Employees with positive psychology, a part of psychological capital (Corbu et al., 2021; Friend et al., 2016), are able to cope with the challenges of work (Hao et al., 2020). It can also be mentioned that psychological capital has a greater effect when it acts as a whole, compared to the individual performance of its components (Luthans et al., 2007). This shows the need to continue studying this relationship and to consider some moderators that help to fully understand the impact of psychological capital (Patnaik et al., 2021). Therefore, Hypothesis 1 was formulated as follows:

H1. Psychological capital has a direct and negative impact on work stress.

Psychological Capital and Authentic Leadership

Some authors suggest that there is a mediating effect of psychological capital with authentic leadership, but relate it to employee behavior, job satisfaction, work engagement, and organizational culture (Kim et al., 2020; Hu et al., 2018; Ramalu & Janadari, 2020; Slåtten et al., 2019). Only one study of the relationship between psychological capital and authentic leadership theory has been found (Petersen & Youssef-Morgan, 2018).

Authentic leadership focuses on the behavior of leaders in an ethical climate. It also uses positive psychology to foster greater self-awareness, moral perspective, information balance, and transparency; thus, there is a link between psychological capital and authentic leadership (Slåtten et al., 2019). There are also studies that examine the relationship between authentic leadership and the psychological behaviors of workers in traditional settings. A study on public institutions in Indonesia showed that a greater effect between authentic leadership and psychological capital could

not be identified in home-based workers, mainly more in women than in men (Daraba et al., 2021).

Likewise, Shahid and Muchiri (2017) discussed the positive impact of authentic leadership on job performance through psychological capital. The literature also shows that authentic leadership creates an environment that can foster hope, self-efficacy, and resilience, three of the four components of psychological capital. As stated by Petersen and Youssef-Morgan (2018), psychological capital has a positive relationship as an antecedent in the development of authentic leadership, and psychological resources may have more relevance in the development of authentic leadership than organizational aspects. For this reason, it is necessary to include it in further studies, organizations, and data collection. Therefore, Hypothesis 2 was formulated as follows:

H2. Psychological capital has a direct and positive effect on authentic leadership.

Authentic Leadership and Work Stress

Authentic leadership is a construct that is related to stress, helps reduce burnout, improves organizational communication, and reduces turnover intentions (Adil & Kamal, 2020; Ismail et al., 2019; Lee & Lee, 2018). Although the relationship with stress has been studied in some countries and sectors, there is a need in academia to include more constructs that contribute to a better understanding of the influence of authentic leadership in managing work-related stress (Ismail et al., 2019).

In the literature, studies focusing on academic sectors have been identified, for example, in Malaysia, mainly in primary schools, where a moderate negative relationship between authentic leadership and teachers' work stress was found (Ismail et al., 2019). Other studies of university professors in Pakistan show an indirect influence of authentic leadership on burnout and performance (Adil & Kamal, 2020). There is also a study in the sales sector in Korea that identifies an important role of authentic leadership in creating a favorable environment that helps reduce work stress (Lee & Lee, 2018), which is reinforced by what was mentioned by Manoppo (2020) that work stress can be better managed by improving leadership skills. However, some authors (Donkor et al., 2022) mention that this relationship needs to be further analyzed. Therefore, Hypothesis 3 was formulated as follows:

H3. Authentic leadership has a direct and negative effect on work stress.

Mediating Effect of Authentic Leadership on Psychological Capital and Work Stress

Although there is research on the mediating effect of authentic leadership in improving employee effectiveness and performance, this research is only related to training and job performance (Mira & Odeh, 2019). The literature shows the mediating effect of authentic leadership on psychological capital related to organizational support, organizational climate, and volunteer behavior (Bilgetürk & Baykal, 2021; Wu & Xu, 2022). Other authors, such as Lee and Lee (2018), have mentioned that there is an effect of organizational communication between authentic leadership and psychological capital and between psychological capital and organizational communication and work stress.

In an organization, an authentic leadership style plays an important role in developing psychological capital and good working relationships that improve performance and minimize employee stress (Kong et al., 2018). Authentic leadership creates an appropriate climate as social support that generates moods and psychological strengths in individuals. It can also measure the organization's support for the further development of psychological capital (Bilgeturk & Baykal, 2021).

There is also evidence of the mediating effect in relation to work stress, but for other leadership styles, such as toxic leadership and ethical leadership. (Elci et al., 2012; Uysal, 2019). Although there is research on the mediating effect of authentic leadership, these publications are related to variables such as training and job performance, which proves the need for further research on the mediating effect of authentic leadership (Mira et al., 2019). Therefore, Hypothesis 4 (H4) was formulated as follows:

H4. Authentic leadership has a mediating effect between psychological capital and work stress.

Gender Relationship between Psychological Capital and Work Stress

The impact of gender on the work environment has become relevant due to the fact that women make up approximately 50% of the workforce and the impact they have as leaders on job performance (Franczak & Margolis, 2022). Additionally, according to a study in Serbia, women are at

a disadvantage in the labor market, due to differences in income level, access to jobs and education (Moravčević et al., 2023). Similarly, a study conducted in India indicated that increasing the sense of unity within companies increases the psychological effect and female empowerment (Sharma & Kumar, 2021).

In a study of doctoral students in China, Liu et al. (2020) found that gender had a moderating effect on psychological capital and industry, with this relationship being stronger for female students than for their male counterparts. Likewise, according to Buonomo et al. (2020), in the education sector, female principals have to make greater efforts than their male counterparts to maintain a good work-life balance, which may lead to female workers being more likely to suffer from higher levels of burnout.

As mentioned by Liu et al. (2020), women have a greater need than their male counterparts to increase their psychological capital in order to improve their work experience. Also, according to Buonomo et al. (2020), further studies are needed to consider a larger population of women because of the importance of the moderating role of gender in coping with highly stressful situations and the effect of gender on psychological capital and levels of work stress. Further studies are also needed because there is no agreement on the effect of gender in relation to psychological capital and work stress (Kim et al., 2020; Liu et al., 2020). Therefore, Hypothesis 5 (H5) was formulated as follows:

H5. Gender moderates the relationship between psychological capital and work stress.

Methodology

The population consisted of 55,000 Peruvian companies on the Peru Top 2022 list. The managers could be identified by their level of higher education and contacted by email. The resulting sample consisted of 250 valid responses from the commercial, service and manufacturing sectors. Demographic characteristics were categorized by age and sex. Age was categorized as 20 to 39 years (61.5%), 40 to 59 years (37.7%), and over 60 years (0.8%). And in terms of gender, 54.8% were men and 45.2% were women. In terms of education, all (100%) had postgraduate higher education.

The minimum sample size was based on two criteria. The first, using simple random sampling, obtained a confidence level of 2.5 sigma (95.5%),

the most adverse possible case ($p=q=50$), and a sampling error of $\pm 5\%$. The second, conditioned by the use of PLS-SEM, indicated that a sample size of 100 to 200 was sufficient (Hoyle, 1995; Hair et al., 2009). Therefore, the sample size can be considered sufficient to validate the hypotheses and extrapolate the results.

Survey Instrument

To assess psychological capital, the questionnaire developed by Luthans et al. (2007) was used, which consists of four dimensions (self-efficacy, hope, optimism, and resilience). To measure work stress, the questionnaire proposed by Cohen et al. (1983) was applied. For the authentic leadership variable, the Walumbwa et al. (2008) questionnaire was used, which consists of four dimensions (self-awareness, relational transparency, balanced processing and internalized moral perspective). All items used a Likert scale ranging from one (strongly disagree) to five (strongly agree). Appendix 1 displays the survey instrument. In addition, the data corresponding to the control and moderating effect variables were coded: gender characteristics, age, type of organization, company sector, and role in their organization.

Results

The theoretical model includes reflective and formative constructs, and the PLS-SEM was used with the SmartPLS 3 statistical program to analyze the data. Likewise, the recommendations of Hair et al. (2021) were followed for the development of the different steps to be followed. The first step in the evaluation of reflective constructs was to evaluate the standardized outer loadings since each load needs to be greater than or equal to 0.7. The third column of Table 1 shows these loadings for each indicator. Only in the case of work stress some loadings were lower than the selected cut-off point (EL1, EL2 and EL3). However, no increase in construct reliability was observed after excluding these indicators. Therefore, it was decided to maintain all the indicators initially proposed for work stress.

The second step was to examine the results corresponding to the reliability of each construct, for which Cronbach's alpha and composite reliability were calculated. According to Table 1, Cronbach's Alpha results ranged from 0.788 to 0.936. Likewise, the results of the composite reliability were between 0.865 and 0.950. In both cases, adequate levels of

reliability were observed. In the third step, the convergent validity of the model was analyzed and the average variance extracted for each construct was calculated and evaluated (Hair et al. 2021). The mean variance extracted from each construct represents the sum of their respective loadings squared divided by the number of indicators. If the average variance extracted is greater than 0.5, the construct explains more than 50% of the variance of its indicators. On the other hand, if the mean of the extracted variance is less than 0.50, then more than 50% of the total variance is not attributable to the construct. It was also taken into account that each reflective construct has a correlation between its indicators. The last column of Table 1 shows that only work stress had an extracted mean variance lower than the cut-off point (0.479). However, Fornell and Larcker (1981) indicated that convergent validity is still adequate if the average variance extracted is less than 0.5 and the composite reliability is greater than 0.6.

Table 1: Assessment of the measurement model (reflective constructs)

Construct	Abbrev.	Outer loading	Cronbach's alpha	Composite Reliability	Average variance extracted
Self-Efficacy	AE1	0,893	0.936	0.950	0.759
	AE2	0.756			
	AE3	0.875			
	AE4	0.912			
	AE5	0.909			
	AE6	0.873			
Hope	EZ1	0.798	0.899	0.921	0.625
	EZ2	0.848			
	EZ3	0.710			
	EZ4	0.839			
	EZ5	0.862			
	EZ6	0.759			
	EZ7	0.703			
Optimism	OP1	0.858	0.912	0.934	0.739
	OP2	0.874			
	OP3	0.883			
	OP4	0.881			
	OP5	0.800			
Resilience	RE1	0.823	0.896	0.928	0.763
	RE2	0.913			
	RE3	0.893			

Construct	Abbrev.	Outer loading	Cronbach's alpha	Composite Reliability	Average variance extracted
Self-awareness	RE4	0.863	0.836	0.890	0.670
	AC1	0.861			
	AC2	0.804			
	AC3	0.844			
Relational transparency	AC4	0.762	0.847	0.897	0.686
	TR1	0.862			
	TR2	0.765			
	TR3	0.823			
Balanced processing	TR4	0.860	0.788	0.875	0.702
	PE1	0.865			
	PE2	0.882			
Internalized moral perspective	PE3	0.761	0.842	0.905	0.760
	PM1	0.822			
	PW2	0.909			
Work Stress	PM3	0.882	0.820	0.865	0.479
	EL1	0.592			
	EL2	0.614			
	EL3	0.671			
	EL4	0.716			
	EL5	0.768			
	EL6	0.728			
EL7	0.739				

Note(s). AF: Self-efficacy; EZ: Hope; OP: Optimism; RE: Resilience; AC: Self-awareness; TR: Relational transparency; PE: Balanced processing; PM: Internalized moral perspective; EL: Work stress.

Source: Authors' calculation

In the next step, the criterion of Fornell and Lacker (1981) was followed to assess the discriminant validity. According to both authors, the square root of the average variance extracted (AVE) of a construct must not exceed the correlation of that construct with the rest. Table 2 shows the discriminant validity of the first-order constructs of the proposed model.

Table 2: Discriminant validity assessment

Abbrev.	AF	EZ	OP	RE	AT	TR	PE	PM	EL	AVE
AF	0.871 ^a									0.759
EZ	0.677	0.791 ^a								0.625
OP	0.842	0.681	0.860 ^a							0.739
RE	0.847	0.676	0.841	0.874 ^a						0.763
AC	0.498	0.498	0.488	0.475	0.819 ^a					0.670
TR	0.473	0.440	0.421	0.439	0.773	0.828 ^a				0.686
PE	0.322	0.276	0.295	0.306	0.531	0.541	0.838 ^a			0.702
PM	0.537	0.471	0.438	0.502	0.719	0.740	0.501	0.872 ^a		0.760
EL	-0.327	-0.302	-0.362	-0.348	-0.344	-0.356	-0.223	-0.352	0.692 ^a	0.479

Notes. AF: Self-efficacy; EZ: Hope; OP: Optimism; RE: Resilience; AC: Self-awareness; TR: Relational transparency; PE: Balanced processing; PM: Internalized moral perspective; EL: Work stress; AVE (square root of the average variance extracted).

Source: Authors' calculation

The next step was to evaluate the second-order formative constructs. In order to analyze this type of construct, the standardized external loadings were observed since, according to Hair et al. (2021), external loadings must be significant and greater than 0.5. Table 3 shows the results for the formative constructs (psychological capital and authentic leadership). In both cases, the indicators were significant and between acceptable values (0.558 and 0.916).

As a final step, the collinearity of each indicator was examined using the variance inflation factor (VIF) index proposed by Hair et al. (2021). These authors suggest that values equal to or greater than 5 represent critical levels of collinearity between indicators of a given construct. The results presented in Table 3 show that the formative constructs included in the model do not present collinearity problems.

Table 3: Assessment of formative constructs and their collinearity

Relationship	Outer loading	Standard deviation	p-value	VIF
AE → CP	0.914	0.055	***	4.558
EZ → CP	0.857	0.072	***	2.056
OP → CP	0.863	0.062	***	4.450
RE → CP	0.887	0.049	***	4.545
AC → LA	0.902	0.041	***	2.893
TR → LA	0.858	0.059	***	3.108
PE → LA	0.558	0.107	***	1.499
PM → LA	0.916	0.042	***	2.544

Notes. AE: Self-efficacy; EZ: Hope; OP: Optimism; RE: Resilience; AC: Self-awareness; TR: Relational Transparency; PE: Balanced Processing; PM: Internalized Moral Perspective; CP: Psychological Capital; LA: Authentic Leadership; *** $p < 0.001$; VIF: variance inflation factor.

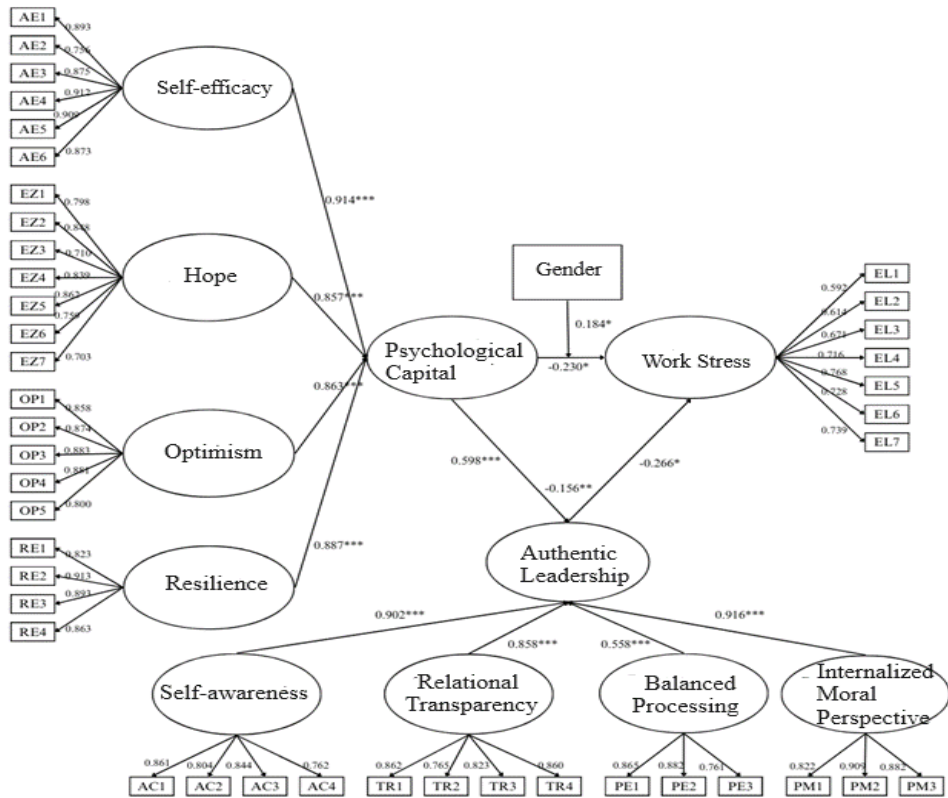
Source: Authors' calculation

Model Validation

Once the validity and reliability of the measurement model were confirmed, the structural model was examined. For this purpose, it was taken into account that the theoretical model included the estimation of a moderating effect (gender). Therefore, the two-stage approach (Chin et al., 2003) was implemented to analyze the effect of moderation when the independent variable is represented by a formative construct. This approach has greater statistical power and precision than the product indicator approach and the orthogonalization approach (Becker et al., 2018; Henseler & Chin, 2010).

The standardized root mean square residual (SRMR) and the normalized fit index (NFI) were used to evaluate the overall model fit. According to Henseler et al. (2015), the values of $SRMR < 0.08$ and $NFI > 0.9$ suggest that the data fit the model adequately. Therefore, the results obtained ($SRMR = 0.053$ and $NFI = 0.937$) indicate that the model has a satisfactory overall fit. Figure 2 shows the model structure relating the independent, moderator, and dependent variables under different values of the moderator variable.

Figure 2: Estimation results



Notes: This figure presents the theoretical model and hypotheses. Single-headed arrows represent directional paths. $p^* < 0.05$ $p^{**} < 0.01$ $p^{***} < 0.001$. Source: Author's own creation.

Source: Authors

Table 4 shows the results of bootstrapping the structural model. In particular, the model was estimated without the moderator variable in order to evaluate the direct effect instead of the simple effect (Hair et al., 2021).

Table 4: Structural model estimation

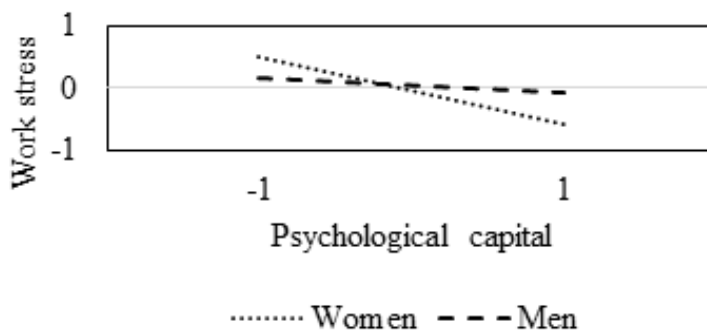
Research hypothesis	Path Coefficient	Standard deviation	p-value	Bca CI
CP → EL	-0.230	0.083	0.013	[-0.343, -0.045]
CP → LA	0.598	0.091	***	[0.367, 0.751]
LA → EL	-0.266	0.102	0.010	[-0.427, -0.043]
CP → EL (mediation effect)	-0.156	0.059	0.009	[-0.271, -0.039]
CP → EL (moderation effect)	0.184	0.093	0.025	[0.060, 0.440]

Notes. Bca CI: 95% bias-corrected and accelerated confidence intervals; *** $p < 0.001$.

Source: Authors' calculation

To complement this analysis, the graph of the slopes corresponding to the moderating effect of gender is presented. This graph shows the relationship between the independent and dependent variables (psychological capital and work stress) at different values of the moderator variable (gender). According to Figure 3, the dotted and dashed lines represent the relationship between psychological capital and work stress for women and men, respectively. It also shows that women have a lower slope than men. In other words, the negative relationship between psychological capital and work stress is strengthened in the presence of women, but this ratio decreases in the presence of men.

Figure 3: Gender moderator effect slope



Source: Authors

Hypothesis Validation

Hypothesis 1 predicted a direct and inverse relationship between psychological capital and work stress. The results ($\beta = -0.230$, $p\text{-value} = 0.013$) allow us to affirm that this hypothesis is validated, so the influence and direction proposed by the literature are correct.

Hypothesis 2 predicted a direct and positive relationship between psychological capital and authentic leadership. According to the results obtained ($\beta = 0.598$, $p\text{-value} < 0.001$), this hypothesis was validated, so the influence and direction between these constructs proposed by the literature was accepted.

Hypothesis 3 indicated a direct and negative relationship between authentic leadership and work stress. According to the results ($\beta = -0.266$, $p\text{-value} = 0.010$), this hypothesis was validated, and therefore, the influence and direction between these constructs, which has been formulated by the literature, was also accepted.

Hypothesis 4 stated that authentic leadership would have a mediating effect on the relationship between psychological capital and work stress. The results indicate that there is an indirect effect that is negative and significant ($\beta = -0.156$, $p\text{-value} = 0.009$), but the interaction term is positive and significant ($p\text{-value} = 0.025$). In this way, a partial mediation of authentic leadership in the aforementioned relationship is validated.

Likewise, Hypothesis 5 predicted that gender would moderate the relationship between psychological capital and work stress. The results of the present study concluded that this relationship does exist, thus empirically validating the theoretical proposals of the literature on the subject.

Discussion

The purpose of this study was to identify the factors that contribute to improving employee performance and evaluate how they exert this influence. A model was developed and validated on a representative sample of different industries. Regarding the relationship between psychological capital and work stress, the results found are consistent with those reported in the literature. It suggests that employees who have resources of their psychological capital are better able to face the challenges of work and reduce their work stress. Therefore, these findings meet the need for further

study of these variables in a different context (Hao et al., 2020; Patnaik et al., 2021).

Similarly, the validation of the relationship between psychological capital and authentic leadership is also consistent with Petersen et al.'s (2018) research which was developed in a different context. The findings on the influence of authentic leadership on work stress are supported by other authors (Manoppo, 2020) and also respond to the need for further research (Ismail et al., 2019). Moreover, the mediating effect of authentic leadership in the relationship between psychological capital and work stress is related to other studies on the mediating effect of various leadership styles on work stress (Elci et al., 2012; Uysal, 2019). This highlights the need for further research, mainly in other cultures (Bilgetürk & Baykal, 2021; Mira et al., 2019).

The results on the impact of gender on the effects of stress contribute to reducing the inconsistencies found in the literature (Kim et al., 2020; Liu et al., 2021) and cover the need for further studies with samples of women entrepreneurs (Buonomo et al., 2020). In the entrepreneurial landscape in particular, women often face many challenges as a result of stereotypes and complex scenarios (Messikh, 2021; Rahman et al., 2022). According to Lazić et al. (2023), women entrepreneurs are considerably much more affected by economic instability than men. In this context, the study revealed that psychological capital represents a relevant resource to deal with work stress in the face of challenging working environments, particularly among women.

Conclusion

The study also has practical implications, reminding managers to encourage authentic leadership in their employees as it helps to reduce work stress, which is closely related to job performance (Mira & Odeh, 2019; Shahid & Muchiri, 2017). Likewise, a greater difference is identified in the reduction of work stress in women, which may be an effect of the empowerment of the respondents (Sharma & Kumar, 2021). It is essential that organizations adopt policies for valuing women at different executive levels.

The present study has several limitations. The research design, choice of data, and inferential procedures required unavoidable compromises. The use of retrospective perceptual measures of managers was a potential

limitation because such measures can introduce various forms of response bias. However, this is a methodological weakness shared by much of the research examining similar studies.

The study achieves its goals by providing a more complete understanding of the relationship between constructs that have been mentioned by other authors but have not been comprehensively validated. Therefore, this research provides results on three constructs that influence employee performance and the effect of gender that can affect the development of competitive advantage for organizations (Murtzaet al., 2021).

Finally, some recommendations for future research are presented. According to the results, authentic leadership and psychological capital are associated with low levels of work stress. In both cases, authentic leadership and psychological capital were represented by multidimensional constructs. In that sense, future studies should continue to examine mitigators of work stress from a multidimensional approach. Besides gender, future studies may include other sociodemographic variables as moderators, such as education level and age. Lastly, it is recommended that the proposed model be applied in other cultural settings. In particular, South American countries represent a suitable context, as women's labor force participation is increasing notably in this region.

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Appendix

Appendix I: Survey instrument

Statement	Abbrev.
<i>Self-efficacy</i>	
I know that I can analyze a long-term problem and find a solution	AE1
I feel confident contacting people outside the company (e.g., suppliers or customers) to discuss some problems	AE2
Even if the supervisor asks me to do extra work that I have never done, I trust in my ability to do it	AE3
I trust my performance and know that I can work under pressure and face challenging circumstances	AE4
I know that I can achieve my work objectives	AE5
If organizations change to a difficult-to-understand new system, I am sure I will be able to learn new things from that system	AE6
<i>Hope</i>	
I am currently pursuing my work goals vigorously	EZ1
I have several ways to achieve my work objectives	EZ2
Since I discovered that my performance appraisal was lower than the expected goal, I try to find other ways to work and improve	EZ3
Currently, I feel energized to achieve my work goal	EZ4
When I set goals and plan to work, I focus on achieving the goal	EZ5
I work based on the goals set by the belief "Where there is a will, there is a way"	EZ6
I tend to handle difficulties in one way or another at work	EZ7
<i>Optimism</i>	
I have optimism about what will happen to me in the future regarding work	OP1
At work, I know I can find a solution to every problem	OP2
I think that all the problems occurring at work always have a positive side	OP3
If I have to face a difficult situation, I believe that things will change for the better	OP4

Statement	Abbrev.
Regarding my current job, I believe that I will be successful in the future	OP5
<i>Resilience</i>	
I tend to take stressful things at work calmly	RE1
Even if I have failed at work, I try to do better again	RE2
Even though I feel uncomfortable with a lot of responsibility at work, I can go ahead and achieve success	RE3
I am undiscouraged and I am ready to face work difficulties	RE4
<i>Self-awareness</i>	
I can list my strengths and weaknesses	AC1
I seek feedback from others and act on it to improve	AC2
I accept the feelings I have about myself	AC3
I am aware of how others see me	AC4
<i>Relational transparency</i>	
I encourage people to share their opinions even if they oppose mine	TR1
I am true to myself. I always say what I mean and mean what I say	TR2
I admit when I have made a mistake	TR3
I support people and encourage them to pursue their dreams	TR4
<i>Balanced processing</i>	
Before any decision, I listen carefully to other people's points of view	PE1
I influence people to share my ethical views	PE2
I always do what is best for me	PE3
<i>Internalized moral perspective</i>	
My decisions in life are based on my core values and beliefs	PM1
I lead others based on my moral compass	PW2
I act based on my moral compass	PM3
<i>Work stress</i>	
How often have you successfully coped with the hassles of everyday life?	EL1
How often have you felt that you were coping effectively with major changes occurring in your life?	EL2
How often have you felt confident about your ability to handle your problems?	EL3
How often have you felt that things were going your way?	EL4

Statement	Abbrev.
How often have you been able to control what bothers you in your life?	EL5
How often have you felt that you had everything under control?	EL6
How often have you been able to control how you spend your time?	EL7

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