

RESEARCH ARTICLE

Psychological Safety and Job Performance: The Mediating Role of Work Engagement and Job Crafting

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Abstract

Modern organizations ask employees not only to accomplish their tasks, but also to cooperate effectively and be innovative. Psychological safety, the conviction of the employees that the workplace is a safe place, is an important factor in predicting these behaviours, but the explanations for these effects are not fully known. The aim of this study is to investigate the mediating role of work engagement and job crafting in the relationship between psychological safety and three types of work performance: task performance, contextual performance, and creative performance. A cross-sectional study was conducted on a sample of 316 employees (46.52% female). Data were collected with self-report questionnaires. Work engagement and job crafting completely mediated the effect of psychological safety on task performance and contextual performance, but the effect on creative performance was fully mediated only by work engagement. The study contributes to the development of theory by providing an explanatory mechanism in the relationship between psychological safety and three types of performance. From a practical perspective, fostering psychological safety can help organizations to increase employees' work engagement, job crafting, ultimately leading to enhanced performance.

Keywords

psychological safety; job crafting; task performance; contextual performance; creative performance

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Introduction

In the rapidly evolving landscape of modern organizations, where innovation, adaptability, and creativity are key drivers of success, companies expect from employees not only to perform in their tasks, but also to come up with new ideas or to cooperate effectively (Frazier et al., 2017). An important factor in stimulating such behaviors among employees is psychological safety, representing the conviction of the organization's members that the workplace is a safe place for risk-taking (Edmondson, 1999). Although studies show that psychological safety is positively associated with several types of workplace performance (Frazier et al., 2017), the mechanisms by which psychological safety leads to performance are not fully understood by researchers. Considering this gap in the scientific literature, previous systematic analyzes (Newman, Donohue, & Eva, 2017) suggested the study of mediators in the relationship between psychological safety and performance in the framework of organizational theories that are based on job resources.

In line with the Conservation of Resources (COR) theory (Hobfoll, 1989) and the Job Demands-Resources (JD-R) model (Bakker, 2015), the aim of this study is to investigate the mediating role of work engagement and job crafting in the relationship between psychological safety and three types of work performance: task performance (fulfilling the formal job requirements, responsibilities, and tasks that are explicitly outlined in the job description), contextual performance (voluntary actions and behaviors that go beyond an employee's formal job requirements), and creative performance (generating innovative ideas, solutions, and approaches to tasks and problems) (Koopmans et al., 2011). From a theoretical point of view, the present study contributes to the existing literature by considering several types of performance as outcomes of psychological safety. In addition, the research contributes to the understanding of the mechanisms by which psychological safety leads to performance. From a practical point of view, the study emphasizes the role that psychological safety can have in the

management of several types of performance in organizations. The study can inform human resources policies and training programs for managers with the aim of increasing psychological safety and indirectly the performance of employees.

Psychological Safety and Performance

Psychological safety refers to a shared belief within a group or organization that one can express ideas, opinions, concerns, and take interpersonal risks without fear of negative consequences, such as embarrassment, marginalization or punishment (Newman et al., 2017). The link between psychological safety and job performance can be explained through the lens of the Conservation of Resources (COR) theory (Hobfoll, 1989), highlighting the significant role that psychological safety plays in facilitating resource accumulation and preservation, ultimately leading to enhanced performance (Newman et al., 2017). COR Theory is a psychological framework that explains how individuals strive to acquire, preserve, and protect their resources in order to cope with stress and maintain well-being (Hobfoll, 2001). The theory is based on several key postulates that explain the underlying principles and mechanisms of resource dynamics.

One postulate posits that individuals are inherently motivated to acquire and invest in resources that they value. People seek to obtain and maintain resources that contribute to their well-being and functioning, which can include tangible and intangible assets, personal characteristics, and social connections (Hobfoll, 1989). Another postulate suggests that individuals are sensitive to the potential loss of resources, therefore individuals may engage in resource-protective behaviors to avoid resource depletion (Hobfoll, 2001). Finally, one postulate posits that resource gain leads to a positive cycle of resource accumulation and increased well-being, meaning that when individuals experience resource gains, they are better equipped to acquire and preserve additional resources, leading to enhanced resilience and well-being (Hobfoll, 1989).

In the COR framework (Hobfoll, 1989), psychological safety, as an intangible resource, becomes a crucial factor in the process of protecting and acquiring resources. The theory suggests that when employees feel psychologically safe, they can better allocate and mobilize their resources towards achieving higher levels of job performance. Psychological safety can represent a job resource, which can be used to acquire other relevant resources for increasing performance. Also, psychological safety protects employees from potential resource loss that may occur in environments characterized by blame or fear of punishment. Not being focused on protecting existing resources due to an unsafe environment, employees will be motivated to invest existing resources to obtain even more resources. In a psychologically safe workplace, employees are more likely to feel secure, enabling them to focus more on their tasks, leading to improved job performance. In such an environment, employees are more likely to engage in risk-taking behaviors, leading to the acquisition of valuable information, knowledge, and skills. In the end, they will reinvest these resources in work activities, utilizing them optimally for job-related performance.

An updated version of COR theory (Hobfoll, 2001) suggests that resources can be managed in a proactive manner (i.e., proactive coping), in the sense that individuals seek to accumulate reserves of resources and to put themselves in circumstances that favor the acquisition of subsequent resources in order to cope with possible upcoming stressful events. In our specific case, when employees are in a psychologically safe environment, they do not have to focus on avoiding certain resource losses (e.g., loss of reputation as a result of stigmatization, criticism or punishment of personal initiatives). Therefore, as a proactive coping strategy, employees will naturally be motivated to prepare for future negative situations and will try to accumulate additional resources. Thus, they will invest existing resources to perform at work and obtain additional resources as a result of their high performance.

In line with the predictions of COR theory (Hobfoll, 1989; 2001), meta-analytical findings

showed that psychological safety and in-role performance are positively associated (Frazier et al., 2017). The most studied explanatory mechanism in this relationship is learning behaviors (e.g., offering and seeking feedback, discussing errors, experimenting with new ideas). The role of this mediator is supported by both qualitative and quantitative studies (Edmondson, 1999). Team learning behavior mediates the positive link between psychological safety and team performance (Kim et al., 2020). Kostopoulos and Bozionelos (2011) differentiated between two types of learning that can explain this relationship: exploratory learning (a flexible and varied approach to tasks, discovering and experimenting with new ideas) and exploitative learning (selecting and refining ideas and implementing them). Also, Google's People Analytics Unit identified psychological safety as the best predictor of success in teams (Bergmann & Schaeppi, 2016).

Regarding contextual performance, engaging in behaviors that go beyond formal job requirements (e.g., initiating changes, suggestions for improvement) involves an investment of resources (e.g., time, energy) and possible risks (e.g., disapproval from colleagues or managers). Based on the COR theory (Hobfoll, 1989; 2001), when the risks of losing resources are limited, employees will be naturally motivated to engage in behaviors that develop individual, team, and organizational resources. Psychological safety creates a supportive environment which motivates them to go beyond their formal duties and engage in voluntary citizenship behaviors. This explanation is supported by meta-analytic results (Frazier et al., 2017), the correlation between psychological safety and contextual performance being .32.

The same reasoning can be applied to creative performance. In a safe environment, where there is no risk of losing certain resources, employees can invest existing resources to generate and test innovative ideas (Frazier et al., 2017). For example, in healthcare teams, psychological safety increases creative performance through information sharing and know-how sharing (Kessel et al., 2012). Indeed, a recent meta-analysis highlighted the positive relationship

between psychological safety and creativity (Frazier et al., 2017).

Hypothesis 1. Psychological safety is positively related with task performance, contextual performance, and creative performance.

The Mediating Roles of Work Engagement and Job Crafting

Although previous studies have indicated positive relationships between psychological safety and different types of performance, the explanatory mechanisms for these relationships are not fully understood. Based on COR theory (Hobfoll, 1989) and the Job Demands-Resources (JD-R) model (Bakker, 2015), we expect work engagement and job crafting to serially mediate the link between psychological safety and performance. Work engagement, from the perspective of the JD-R model, refers to a positive and fulfilling state of mind that employees experience when they are fully absorbed, enthusiastic, and dedicated to their work (Bakker, 2011). Job crafting, when viewed from the JD-R perspective (Bakker, 2015), refers to the process through which employees actively and intentionally modify their job demands and resources to optimize their work experience and well-being. It involves four types of behaviors: (1) increasing structural job resources (e.g., seeking additional training opportunities, requesting more flexible working hours, or initiating job rotations to gain new skills), (2) increasing social job resources (e.g., building stronger networks with colleagues or seeking out mentoring relationships), (3) increasing challenging job demands (e.g., volunteering for additional responsibilities, seeking out opportunities to take on new projects, or actively seeking challenges to enhance skill development), and (4) decreasing hindering job demands (e.g., reducing certain responsibilities or avoiding demanding social relationships at work) (Tims et al., 2012).

The JD-R model (Bakker, 2015) is based on the premise that jobs can be described by two main categories of factors: job demands (aspects of a job that require sustained physical, cognitive, or emotional effort from the employee, such as workload, time pressure, and role ambiguity) and job

resources (factors that facilitate an individual's ability to cope with job demands and achieve work-related goals, such as social support, feedback, and opportunities for development). These factors influence employees' attitudes, behaviors, and overall work outcomes. The model proposes a motivation process that employees go through in the workplace: when job resources are high, they can lead to increased work engagement, job satisfaction, and positive performance outcomes. Employees are more likely to be motivated, proactive, and resilient when they perceive their job as providing them with the necessary resources to perform well. According to the JD-R model, when employees have resources, they are more engaged in their work, which makes them craft their job more. Finally, as a result of job crafting behaviors, employees will have more resources available and will be more efficient in their work.

We expect psychological safety to be a resource that starts this motivational process. Based on the JD-R approach, psychological safety can represent a resource that makes employees more engaged in their work. When the level of engagement is higher, employees will seek to invest their existing resources to obtain even more job resources. Employees can achieve this through job crafting behaviors, which will ultimately lead to higher performance. Indeed, previous results support the positive link between psychological safety and both work engagement (Frazier et al., 2017) and job crafting (Plomp et al., 2019) and the mediating role of job crafting in the association between psychological safety and performance (Lee, 2022). In line with COR theory (Hobfoll, 1989) and the JD-R model (Bakker, 2015), we expect work engagement and job crafting to serially mediate the links between psychological safety and task performance, contextual performance, and creative performance. Our expected model is presented in Figure 1.

Hypothesis 2. Work engagement and job crafting serially mediate the links between psychological safety and task performance, contextual performance, and creative performance.

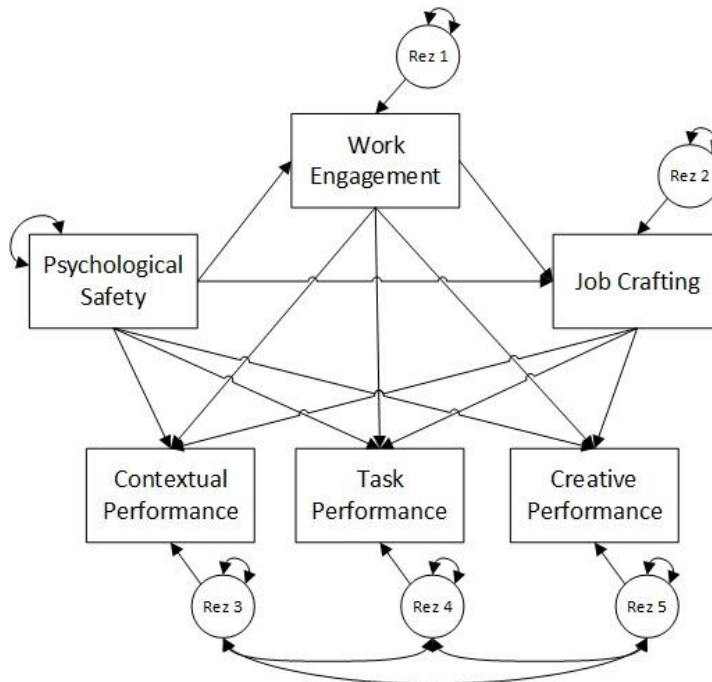


Figure 1. The proposed research model

Methods

Participants and Procedure

A total of 316 employees (46.52% female) from Romania were included in the study, with the age between 20 and 67 years ($M = 44.31$ years, $SD = 10.77$ years). 47.47% of the participants had over 10 years of experience in the company, 13.29% between 3 and 5 years, followed by 17.72% between 5 and 10 years, and 13.61% between 1 and 3 years. A non-experimental, cross-sectional study was conducted on a Romanian company, the employees completed the questionnaires during a periodic assessment. Before the questionnaires were administered, the participants were briefed and informed that data were confidential and the participation in the study was voluntary.

Measurements

Psychological safety was assessed with the Psychological Safety Scale (Edmondson, 1999), a questionnaire with 6 items (e.g., "Members of this organization are able to bring up problems and tough issues.") scored on a 5-point scale, $\alpha = .55$, which had adequate

psychometric properties in previous studies (e.g., Kark & Carmeli, 2009).

Work engagement was measured with Utrecht Work Engagement Scale (Schaufeli et al., 2006), a 7-points Likert-type questionnaire, with 3 items for vigor (e.g., "When I wake up in the morning, I feel like going to work."; $\alpha = .86$), 3 items for dedication (e.g., "I am enthusiastic about my work."; $\alpha = .84$), and 3 items for absorption (e.g., "I am immersed in my job."; $\alpha = .65$). The internal consistency for the global score was $\alpha = .87$. The Romanian version of the scale had adequate psychometric properties for both the global score and for the three factors in previous research (e.g., Vîrgă et al., 2009).

Job crafting was measured with the Job Crafting Scale (Tims et al., 2012; Oprea & Ștefan, 2015), a questionnaire with 21 items on a 5-points scale and 4 sub-scales: increasing structural job resources (e.g., "I try to develop my capabilities."; $\alpha = .74$), decreasing hindering job demands (e.g., "I make sure that my work is mentally less intense."; $\alpha = .82$), increasing social job resources (e.g., "I ask my supervisor to coach

me.”, $\alpha = .80$), and increasing challenging job demands (e.g., “*When an interesting project comes along, I offer myself proactively as project co-worker.*”, $\alpha = .83$).

Task performance was measured with nine items (“*You achieve the objectives of your job.*”) from Goodman & Svyantek’s Performance Scale (Goodman & Svyantek, 1999), $\alpha = .87$. Contextual performance was measured with seven items (“*You assist your colleagues with their duties.*”) from Goodman & Svyantek’s Performance Scale (Goodman & Svyantek, 1999), $\alpha = .78$. Creative performance was measured with three items on a 7-points scale (e.g., “*How creative is your work? Creativity refers to the extent to which the employee develops ideas, methods, or products that are both original and useful to the organization.*”) (Oldham & Cummings, 1996), $\alpha = .90$.

Statistical Analysis

We used R (Version 4.2.3; R Core Team, 2022) and the R-packages dplyr (Version 1.1.2; Wickham et al., 2023), flextable (Version 0.9.1; Gohel & Skintzos, 2023), Hmisc (Version 5.0.1; Harrell Jr, 2023), kableExtra (Version 1.3.4; Zhu, 2021), lavaan (Version 0.6.15; Rosseel, 2012), mvtnorm (Version 1.1.3; Genz & Bretz, 2009), naniar (Version 1.0.0; Tierney & Cook, 2023), papaja (Version 0.1.1; Aust & Barth, 2022), PerformanceAnalytics (Version 2.0.4; Peterson & Carl, 2020), psych (Version 2.3.3; Revelle, 2023), readxl (Version 1.4.2; Wickham & Bryan, 2023), sasLM (Version 0.9.8; Bae, 2023), tynylab (Version 0.2.3; Barth, 2022), xts (Version 0.13.1; Ryan & Ulrich, 2023), and zoo (Version 1.8.12; Zeileis & Grothendieck, 2005) for all our analyses.

In order to verify the univariate normality, the initial assumptions assessment was performed by descriptive univariate analysis, data screening for outliers, and missing cases analysis; the Mardia indicator (Mardia, 1970) was computed to assess multivariate

normality. Internal consistency was assessed using the α Cronbach indicator. A confirmatory factor analysis based on diagonally weighted least squares was used to test the factorial validity and the dimensional structure of the instruments. Finally, the main SEM model was assessed based on robust SEM techniques and the parameters were estimated.

Results

An initial descriptive analysis was performed to assess the univariate normality assumptions for the scalar variables. Some extreme outliers were identified for Vigor (lower than 3), but only 22 (1.18%) cases were extreme, so we decided to remove entire cases. Results suggested that Increasing structural job resources, Task performance, Creative performance, Vigor, Dedication, and Absorption were negatively skewed. Decreasing hindering job demands and Increasing social job resources were positively skewed. Also, Decreasing hindering job demands and Increasing challenging job demands were platikurtic and Task performance, Vigor, Dedication, and Absorption were leptokurtic. The multivariate normality assumption based on Mardia coefficient (Mardia, 1970) was not met, as the Mahalanobis distances from centroid coordinates were between 1.45 and 7.23. A statistically significant multivariate positively skewed (Mardia = 15.99, Skewness = 842.30, $p < .001$) and a statistically significant multivariate leptokurtic distribution (Mardia = 160.08, Kurtosis = 8.98, $p < .001$) were observed.

Most of the Spearman’s ρ correlations were statistically significant (see Table 1), with values between .08 and .58 and the correlation matrix was positively defined. Only contextual performance was associated with psychological safety, partially supporting Hypothesis 1.

Table 1. Means, Standard Deviations, and Correlations Among Study Variables

Variables	M	SD	1	2	3	4	5
1. Psychological safety	24.38	6.07					
2. Work engagement	14.18	3.03	.26				
3. Job crafting	15.99	4.35	.32***	.20***			
4. Task performance	30.31	3.87	.08	.46***	.19***		
5. Contextual performance	22.56	3.16	.21***	.45***	.34***	.58***	
6. Creative performance	15.50	3.74	.25	.50***	.21***	.54***	.51***

Note. *** $p < .001$.

We further analyzed a model in which work engagement and job crafting serially mediated the links between psychological safety and the three types of work performance. Convergence was acquired after 66 iterations, estimating 21 parameters, based on 316 data, and a saturated model was obtained ($\chi^2 = 0$, $df = 0$, $p = NA$, $CFI = 1$, $SRMR = 0$, $RMSEA = 0$, $p = NA$, 90% $CI [0, 0]$). By

analyzing the path coefficients, we found that the direct relationships between psychological safety and the three types of performance were not statistically significant and the relationship between job crafting and creative performance was not statistically significant, therefore these paths were eliminated, gaining 4 degrees of freedom and resulting in an over-identified model that could be tested.

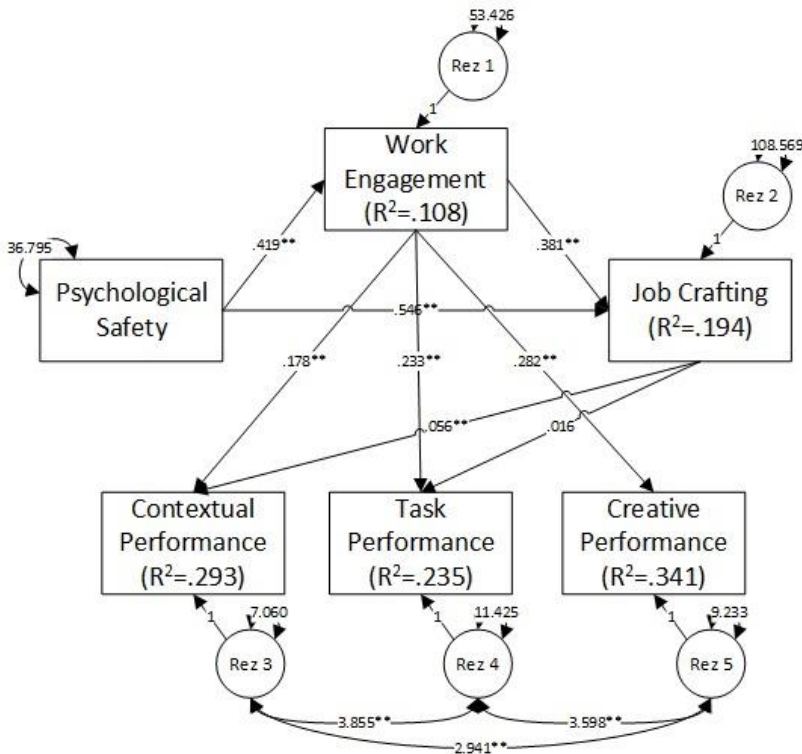


Figure 2. Estimates for the relationships between psychological safety, work engagement, job crafting, and performance

A plausible, well sustained model was observed after 62 iterations, estimating 17 parameters, based on 316 participants, and the fit indices were acceptable ($\chi^2 = 18.99$, $df = 4$, $p = .001$, $CFI = .97$, $SRMR = .04$, $RMSEA = .04$, 90% $CI [0, 0.10]$, $p = .48$) (see Figure 2). Psychological safety had a direct, positive, and statistically significant effect on job crafting ($B = .55$, $z = 4.82$, $p < .001$, $\beta = .28$), as well as a positive and statistically significant indirect effect, mediated by work engagement ($B = .80$, $z = 7.26$, $p < .001$, $\beta = .58$), therefore we concluded that work engagement partially mediates the effect of psychological safety on job crafting. Work engagement was the strongest predictor for all three types of performance: creative performance ($B = .28$, $z = 11.38$, $p < .001$, $\beta = .58$), task performance ($B = .23$, $z = 7.13$, $p < .001$, $\beta = .47$), and contextual performance ($B = .18$, $z = 7.44$, $p < .001$, $\beta = .44$). Work engagement and job crafting completely mediated the effect of psychological safety on contextual performance ($B = 1.03$, $z = 9.24$, $p < .001$, $\beta = 1.22$) and on task performance ($B = 1.05$, $z = 8.47$, $p < .001$, $\beta = 1.10$), but the effect on creative performance was fully mediated only by work engagement ($B = 1.08$, $z = 9.04$, $p < .001$, $\beta = 1.17$).

Discussion

The present research had two objectives. First of all, we investigated the relationship between psychological safety and three types of performance: task performance, contextual performance, and creative performance. Secondly, we tested the serial mediation effect of work engagement and job crafting in the relationship between psychological safety and the three types of performance. Psychological safety was positively associated with contextual performance and job crafting. This finding is in line with the theoretical assumptions and the previous studies indicating positive links between psychological safety and performance (Frazier et al., 2017) and job crafting (Lee, 2022; Plomp et al., 2019). Similar results were also obtained by the practitioners from Google's People Analytics Unit; in their analysis, psychological safety was the most important factor in predicting the performance of the

teams (Bergmann & Schaeppi, 2016). Contrary to our expectations and previous findings, psychological safety was not related with task and creative performance. Previous reviews on psychological safety indicated that its effects are conditioned by certain factors. The links between psychological safety and its outcomes are weaker in an uncertainty-avoidance culture, but this moderating effect was not found for citizenship behaviors (Frazier et al., 2017). Therefore, the lack of relationships with task and creative performance in this study may be due to the sample consisting of employees from a single company that could have a culture based on uncertainty avoidance.

In line with previous meta-analytical findings (Christian, Garza, & Slaughter, 2011; Rudolph et al., 2017), work engagement was positively related with job crafting and all three forms of performance and job crafting was associated with task, contextual, and creative performance. Work engagement and job crafting mediated the links between psychological safety and performance. This result is in accordance with a previous study, in which job crafting was a mediator in the relationship between psychological safety and performance (Lee, 2022). The mediating effects identified in the present study contribute to a deeper understanding of how psychological safety leads to positive consequences for organizations. Most previous studies highlighted as explanatory mechanisms only variables related to learning: individual learning behaviors (e.g., offering and seeking feedback, discussing errors, suggesting new ideas) (Edmondson, 1999), exploratory learning, exploitative learning (Kostopoulos & Bozionelos, 2011), and team learning behaviors (Kim et al., 2020). Therefore, the current research highlights additional explanations for the positive effects of psychological safety.

Theoretical and Practical Implications

In their literature review, Newman and colleagues (2017) argued that future studies should use the COR theory (2001) to provide a more in-depth understanding of the mechanisms through which psychological

safety influences workplace outcomes. They suggested that this theoretical framework can explain how workplace resources lead to the emergence of a climate of safety and how psychological safety positively influences performance and well-being at work. The current study contributes to the development of theory in the field by following these suggestions and offering an explanatory mechanism in the relationship between psychological safety and three types of performance (task, contextual, and creative). Based on COR theory (Hobfoll, 1989) and the JD-R model (Bakker, 2015), we argued that psychological safety is an important resource in the workplace. When employees feel that they are working in a safe environment, they will be more engaged in work and will seek to create more resources through job crafting. Finally, the resources accumulated through job crafting behaviors will be used by employees to have a higher performance. Previous studies also support the mediating role of engagement and job crafting in the psychological safety-performance relationship (Idris et al., 2015; Lee, 2022). Identifying this motivational process is a step forward in understanding the mediating mechanisms that explain the relationship between psychological safety and performance.

From a practical perspective, by implementing strategies to foster psychological safety, organizations can reap numerous benefits, including increased employees' work engagement and a higher frequency of job crafting behaviors, ultimately leading to enhanced performance. Kolbe and colleagues (2020) recommended a series of explicit strategies (e.g., transparency, clarifying expectations, inviting feedback, offering support, paraphrasing) and implicit strategies (e.g., confidentiality, positive regard, empathy, listening, circular seating) for improving psychological safety at work. Managers can learn to use these strategies in training programs delivered by practitioners from the field of industrial-organizational psychology. By providing a supportive and secure environment, organizations can promote psychological safety, enabling their employees to effectively allocate and protect their resources, leading to improved job

performance and overall organizational success. At the organizational level, an organizational culture based on psychological safety can be promoted, in order to increase work engagement and stimulate job crafting behaviors. At the managerial level, leadership development programs can include specific recommendations for increasing psychological safety among teams. At the individual level, psychoeducational interventions can be carried out to raise awareness of the importance of psychological safety and to encourage the improvement of the workplace climate.

Limitations and Future Directions

This study has a series of limitations. First, being cross-sectional, this research captures data at a single point in time, therefore it is not possible to establish causal relationships between variables. Future longitudinal studies can provide a more comprehensive understanding of how variables change over time and of causal relationships. Secondly, the data were collected through self-report questionnaires, so the study has a number of vulnerabilities (e.g., common method bias, desirability bias). By using multiple sources of data collection in future studies, researchers can avoid these vulnerabilities. Thirdly, the current study was based on the assumption of linearity in the relationship between the studied variables. However, in a recent research, the relationship between psychological safety and performance was curvilinear; a moderate level of psychological safety was associated with the highest performance (Eldor et al., 2023). Future studies could explore the curvilinear relationship between psychological safety and the three types of performance in order to highlight the possible negative consequences of 'too much' psychological safety. Also, the low internal consistency for the measurements of the two variables (i.e., psychological safety and absorption) could represent a vulnerability of the study by raising concerns regarding the reliability of these measurements. Finally, the effect of psychological safety on performance can be moderated by different variables. Therefore, future studies could test the moderating role of different variables in the

relationship between psychological safety and the three types of performance.

References

- Aust, F., & Barth, M. (2022). papaja: Prepare reproducible APA journal articles with R Markdown. <https://github.com/crsh/papaja>
- Bae, K.-S. (2023). sasLM: 'SAS' linear model. <https://CRAN.R-project.org/package=sasLM>
- Bakker, A. B. (2011). An evidence-based model of work engagement. *Current Directions in Psychological Science*, 20(4), 265-269. <https://doi.org/10.1177/0963721411414534>
- Bakker, A. B. (2015). A job demands-resources approach to public service motivation. *Public Administration Review*, 75(5), 723-732. <https://doi.org/10.1111/puar.12388>
- Barth, M. (2022). tinylab: Lightweight variable labels. <https://cran.r-project.org/package=tinylab>
- Bergmann, B., & Schaeppi, J. (2016, July 12). A data-driven approach to group creativity. *Harvard Business Review*. <https://hbr.org/2016/07/a-data-driven-approach-to-group-creativity>
- Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology*, 64(1), 89-136. <https://doi.org/10.1111/j.1744-6570.2010.01203.x>
- Edmondson, A. (1999). Psychological Safety and Learning Behavior in Work Teams. *Administrative Science Quarterly*, 44(2), 350-383. <https://doi.org/10.2307/2666999>
- Eldor, L., Hodor, M., & Cappelli, P. (2023). The limits of psychological safety: Nonlinear relationships with performance. *Organizational Behavior and Human Decision Processes*, 177, 104255. <https://doi.org/10.1016/j.obhdp.2023.104255>
- Frazier, M. L., Fainshmidt, S., Klinger, R. L., Pezeshkan, A., & Vracheva, V. (2017). Psychological Safety: A Meta-Analytic Review and Extension. *Personnel Psychology*, 70(1), 113-165. <https://doi.org/10.1111/peps.12183>
- Genz, A., & Bretz, F. (2009). *Computation of multivariate normal and t probabilities*. Springer-Verlag.
- Gohel, D., & Skintzos, P. (2023). Flextable: Functions for tabular reporting. <https://CRAN.R-project.org/package=flextable>
- Goodman, S. A., & Svyantek, D. J. (1999). Person and Contextual Performance: Do Shared Values Matter. *Journal of Vocational Behavior*, 55(2), 254-275. <https://doi.org/10.1006/jvbe.1998.1682>
- Harrell Jr, F. E. (2023). Hmisc: Harrell miscellaneous. <https://CRAN.R-project.org/package=Hmisc>
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, 513-524. <https://doi.org/10.1037/0003-066X.44.3.513>
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology an International Review*, 50, 337-421. <https://doi.org/10.1111/1464-0597.00062>
- Kark, R., & Carmeli, A. (2009). Alive and creating: The mediating role of vitality and aliveness in the relationship between psychological safety and creative work involvement. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 30(6), 785-804. <https://doi.org/10.1002/job.571>
- Kessel, M., Kratzer, J., & Schultz, C. (2012). Psychological safety, knowledge sharing, and creative performance in healthcare teams. *Creativity and Innovation Management*, 21(2), 147-157. <https://doi.org/10.1111/j.1467-8691.2012.00635.x>
- Kim, S., Lee, H., & Connerton, T. P. (2020). How Psychological Safety Affects Team Performance: Mediating Role of Efficacy and Learning Behavior. *Frontiers in Psychology*, 11, 1581-1581. <https://doi.org/10.3389/fpsyg.2020.01581>
- Kolbe, M., Eppich, W., Rudolph, J., Meguerdichian, M., Catena, H., Cripps, A., ... & Cheng, A. (2020). Managing psychological safety in debriefings: a dynamic balancing act. *BMJ simulation & technology enhanced learning*, 6(3), 164-171. <https://doi.org/10.1136/bmjstel-2019-000470>
- Koopmans, L., Bernaards, C. M., Hildebrandt, V. H., Schaufeli, W. B., De Vet, H. C., & Van Der Beek, A. J. (2011). Conceptual frameworks of individual work performance: A systematic review. *Journal of Occupational and Environmental Medicine*, 53(8), 856-866. <https://doi.org/10.1097/JOM.0b013e318226a763>
- Kostopoulos, K. C., & Bozionelos, N. (2011). Team Exploratory and Exploitative Learning: Psychological Safety, Task Conflict, and Team Performance. *Group & Organization Management*, 36(3), 385-415. <https://doi.org/10.1177/1059601111405985>
- Idris, M. A., Dollard, M. F., & Tuckey, M. R. (2015). Psychosocial safety climate as a management tool for employee engagement and performance: A multilevel analysis. *International Journal of Stress Management*, 22(2), 183-206. <https://doi.org/10.1037/a0038986>
- Lee, J. Y. (2022). How does psychological safety foster employee performance? A serial multiple mediation of job crafting and thriving. *International Journal of Organization Theory & Behavior*, 25(3/4), 98-112. <https://doi.org/10.1108/IJOTB-12-2021-0239>
- Mardia, K. V. (1970). Measures of Multivariate Skewness and Kurtosis with Applications. *Biometrika*, 57(3), 519-530. <https://doi.org/10.2307/2334770>
- Newman, A., Donohue, R., & Eva, N. (2017). Psychological safety: A systematic review of the literature. *Human Resource Management Review*, 27(3), 521-535. <http://dx.doi.org/10.1016/j.hrmr.2017.01.001>
- Oldham, G. R., & Cummings, A. (1996). Employee Creativity: Personal and Contextual Factors at Work. *The Academy of Management Journal*, 39(3), 607-634. <https://doi.org/10.2307/256657>
- Oprea, B., & Ștefan, M. (2015). Scala pentru modificarea postului: Adaptare la limba română [Job Crafting Scale: Romanian Adaptation]. *Psihologia Resurselor Umane*, 13, 39-52.
- Peterson, B.G., & Carl, P. (2020). PerformanceAnalytics: Econometric tools for performance and risk analysis. <https://CRAN.R-project.org/package=PerformanceAnalytics>

- Plomp, J., Tims, M., Khapova, S. N., Jansen, P. G., & Bakker, A. B. (2019). Psychological safety, job crafting, and employability: A comparison between permanent and temporary workers. *Frontiers in psychology, 10*, 974. <https://doi.org/10.3389/fpsyg.2019.00974>
- R Core Team. (2022). R: A language and environment for statistical computing. R Foundation for Statistical Computing. <https://www.R-project.org/>
- Revelle, W. (2023). Psych: Procedures for psychological, psychometric, and personality research. Northwestern University. <https://CRAN.R-project.org/package=psych>
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software, 48*(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Rudolph, C. W., Katz, I. M., Lavigne, K. N., & Zacher, H. (2017). Job crafting: A meta-analysis of relationships with individual differences, job characteristics, and work outcomes. *Journal of Vocational Behavior, 102*, 112–138. <https://doi.org/10.1016/j.jvb.2017.05.008>
- Ryan, J. A., & Ulrich, J. M. (2023). Xts: eXtensible time series. <https://CRAN.R-project.org/package=xts>
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and psychological measurement, 66*(4), 701–716. <https://doi.org/10.1177/0013164405282471>
- Tierney, N., & Cook, D. (2023). Expanding tidy data principles to facilitate missing data exploration, visualization and assessment of imputations. *Journal of Statistical Software, 105*(7), 1–31. <https://doi.org/10.18637/jss.v105.i07>
- Tims, M., Bakker, A. B., & Derks, D. (2012). Development and validation of the job crafting scale. *Journal of Vocational Behavior, 80*(1), 173–186. <https://doi.org/10.1016/j.jvb.2011.05.009>
- Virgă, D., Zaborilă, C., Sulea, C., & Maricuțoiu, L. (2009). Adaptarea în limba română a Scalei Utrecht de măsurare a implicării în muncă: examinarea validității și a fidelității [Roumanian adaptation of Utrecht Work Engagement Scale: The examination of validity and reliability]. *Psihologia Resurselor Umane, 7*, 58–74.
- Wickham, H., & Bryan, J. (2023). Readxl: Read excel files. <https://CRAN.R-project.org/package=readxl>
- Wickham, H., François, R., Henry, L., Müller, K., & Vaughan, D. (2023). Dplyr: A grammar of data manipulation. <https://CRAN.R-project.org/package=dplyr>
- Zeileis, A., & Grothendieck, G. (2005). Zoo: S3 infrastructure for regular and irregular time series. *Journal of Statistical Software, 14*(6), 1–27. <https://doi.org/10.18637/jss.v014.i06>
- Zhu, H. (2021). kableExtra: Construct complex table with 'kable' and pipe syntax. <https://CRAN.R-project.org/package=kableExtra>