ORIGINAL ARTICLE
UDC: 159.98::615.1
DOI: https://doi.org/10.2298/VSP260330032J

Development and preliminary psychometric evaluation of the Psychological Safety Perception scale: an observational study among community pharmacists

Razvoj i preliminarna psihometrijska procena Skale percepcije psihološke bezbednosti: opservaciona studija među farmaceutima u javnim apotekama

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Abstract

Background/Aim. Measuring psychological safety in the workplace is essential for creating an environment where individuals feel safe expressing themselves, thereby promoting optimal patient care. The aim of the study was to develop a reliable and concise scale with preliminary psychometric properties to measure psychological safety in community pharmacies. **Methods.** After scale development through content and face validity, a cross-sectional study was conducted in which data were collected from 216 community pharmacists. A test-retest component was subsequently performed on 32 pharmacists at baseline and after three months to assess the temporal stability of the scale. Exploratory factor analysis (EFA), confirmatory factor analysis (CFA), the Wilcoxon signed-rank test, and Spearman's correlation coefficient (ϱ) were used to evaluate the scale's reliability, construct validity, and stability. **Results.** The scale was developed through multiple iterations: Version 1 (32 items), Version 2 (26 items), and Version 3 (15 items), all of which demonstrated high content and face validity (indices > 0.80) and internal consistency (Cronbach's alpha = 0.92). Version 4 (10 items) was established through CFA, which suggested excluding certain items, resulting in excellent reliability (Cronbach's alpha = 0.89) and fit parameters: $\chi^2(35) = 65.81$; $p < 0.001$; goodness of fit index – GFI = 0.94; comparative fit index – CFI = 0.97; Tucker-Lewis index – TLI = 0.96; root mean square error of approximation – RMSEA = 0.064; standardized root mean square residual – SRMR = 0.040. During psychometric evaluation, EFA revealed a one-factor structure, with the primary component explaining nearly 50% of the variance. The Wilcoxon signed-rank test indicated no significant difference in mean scores between baseline [mean = 50.72, standard deviation (SD) = 12.93] and retest after three months (mean = 50.69, SD = 12.59). Additionally, Spearman's correlation coefficients showed strong correlations between baseline and three-month scores ($\varrho = 0.994$; $p < 0.001$). **Conclusion.** The findings indicate promising preliminary psychometric properties, supporting the use of the developed scale to assess psychological safety perceptions in community pharmacies. However, further validation, including criterion, convergent, and discriminant validity testing, is required.

Keywords:
data interpretation, statistical; pharmacies; pharmacists; psychological safety; surveys and questionnaires.

Apstrakt

Uvod/Cilj. Merenje psihološke bezbednosti na radnom mestu od ključnog je značaja za stvaranje okruženja u kojem se pojedinci osećaju sigurno da izraze svoje mišljenje, što unapređuje optimalnu negu pacijenata. Cilj rada bio je razvoj pouzdane i sažete skale sa preliminarnim psihometrijskim svojstvima za merenje psihološke bezbednosti u apotekama. **Metode.** Nakon razvoja skale procenom validnosti sadržaja i procenom pojavne (*face*) validnosti, sprovedena je studija preseka u kojoj su prikupljeni podaci od 216 farmaceuta zaposlenih u apotekama. Postupak test-retest je potom sproveden kod 32 farmaceuta na početku ispitivanja i posle tri meseca, da bi se procenila stabilnost skale tokom vremena. Za procenu pouzdanosti, konstruktivne validnosti i stabilnosti, korišćene su eksploratorna faktorska analiza (*exploratory factor analysis* – EFA), konfirmatorna faktorska analiza (*confirmatory factor analysis* – CFA), Wilcoxon-ov test ranga i Spearman-ov koeficijent korelacije (ϱ). **Rezultati.** Skala je razvijana kroz mnogobrojne revizije verzija 1 (32 stavke), verzija 2 (26 stavki) i verzija 3 (15 stavki), pri čemu su sve pokazale visoku validnost sadržaja i pojavnu validnost (indeksi > 0,80) i internu konzistentnost

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(Cronbach-ov koeficijent alfa = 0,92). Verzija 4 (10 stavki) uspostavljena je putem CFA, na osnovu koje je predloženo isključivanje određenih stavki, čime su postignuti odlična pouzdanost (Cronbach-ov koeficijent alfa = 0,89) i parametri uklapanja: $\chi^2(35) = 65,81$; $p < 0,001$; *goodness of fit index* – GFI = 0,94; *comparative fit index* – CFI = 0,97; *Tucker-Lewis index* – TLI = 0,96; *root mean square error of approximation* – RMSEA = 0,064; *standardized root mean squared residual* – SRMR = 0,040. Tokom psihometrijske procene, EFA je pokazala jednofaktorsku strukturu, pri čemu je primarna komponenta objašnjavala skoro 50% varijanse. Wilcoxon-ovim testom rangova nije pokazana značajna razlika između prosečnih rezultata na početku [srednja vrednost = 50,72, standardna devijacija (SD) = 12,93] i posle tri meseca (srednja vrednost = 50,69, SD = 12,59). Pored toga, koeficijentom Spearman-ove korelacije pokazana je jaka povezanost između početnih i tromesečnih rezultata ($\varrho = 0,994$; $p < 0,001$). **Zaključak.** Rezultati ukazuju na obećavajuća preliminarna psihometrijska svojstva, što podržava korišćenje razvijene skale za procenu percepcije psihološke bezbednosti u javnim apotekama. Međutim, neophodna je dodatna validacija, uključujući testiranje kriterijumske, konvergentne i diskriminativne validnosti.

Ključne reči:
statistička analiza podataka; apoteka; farmaceuti; bezbednost, psihološka; ankete i upitnici.

Introduction

Psychological safety (PS) is a state where individuals or groups feel secure, supported [1], and free to express thoughts and feelings without fear of judgment or punishment [2, 3]. It is essential for mental health, productivity, and fostering positive relationships and collaboration within communities [4, 5]. This sense of security and freedom from fear [3] is foundational for individual well-being and productivity [6], and is crucial for building strong, collaborative environments in communities and organizations [3, 6].

PS is vital for organizational success, especially in healthcare teams [1]. It is crucial in the pharmaceutical sector [5], particularly for community pharmacists under high-pressure situations affecting patient care [7, 8]. Integrating interdisciplinary perspectives and innovative methodologies enhances our understanding of PS [1] within this sector. Using mixed-methods approaches, which combine quantitative data with qualitative interviews, researchers gain comprehensive insights into the complex dynamics in community pharmacies [5]. This approach explores how regulatory demands, commercial pressures, and interpersonal relationships impact PS, providing holistic data essential for developing effective interventions tailored to community pharmacists' unique challenges [5].

While team-level surveys are common for assessing PS, comprehensive measures are needed in healthcare [1]. Healthcare organizations can use staff surveys [2] and observational frameworks [2, 3], despite concerns about staff burden [4]. Although measuring its direct impact on healthcare outcomes is challenging [2, 3], indicators like the willingness to voice concerns can show progress [3, 4]. Long-term evaluation through surveys and ongoing assessment is crucial for fostering cultural change [2–4]. Developing a reliable scale for PS in complex settings, like pharmacies, is essential for maintaining quality care. Pharmacists' decisions directly affect patient health, so their well-being is vital. A tailored scale can identify factors influencing their sense of safety, enabling targeted interventions to enhance performance and well-being [5]. Existing tools [1, 6, 9] may provide a basic understanding but often lack relevance to the pharmaceutical environment, which faces unique regulatory, ethical, and commercial pressures [9]. These tools are often too lengthy for the fast-paced nature of pharmacy work [10]. A new, concise, and tailored instrument is essential for community pharmacists to accurately capture the nuances of PS within healthcare systems. Transitioning from traditional measurement methods to contemporary approaches underscores the need for specialized instruments with validated structures [9, 10]. This will enable practical integration into daily operations, providing a robust framework for evaluation across various teams and departments [10].

The aim of this study was to create a concise self-report scale for measuring PS among community pharmacists, designed for easy administration in a fast-paced environment. Unlike traditional metrics, this scale captures pharmacists' nuanced experiences, providing a comprehensive understanding of PS in community pharmacies. It serves both research and organizational assessment purposes, enhancing understanding and management of PS.

Methods

This observational study employed a cross-sectional design with a three-month test-retest component to assess the temporal stability of the instrument. The initial survey was used for psychometric evaluation of the PS scale. STROBE (Strengthening the Reporting of Observational studies in Epidemiology) checklist [11] documents the cross-sectional aspects, particularly in the scale development and psychometric evaluation phase (Supplementary Table 1).

The research spanned from December 2022 to July 2023, encompassing three distinct phases (Figure 1). The time gap between data collection and publication reflects the multi-stage nature of psychometric scale development, including iterative analyses, factor analytic procedures, and manuscript refinement to ensure methodological rigor of the final instrument.

Scale development phase

The development of the PS scale for community pharmacists was a detailed process based on Amy

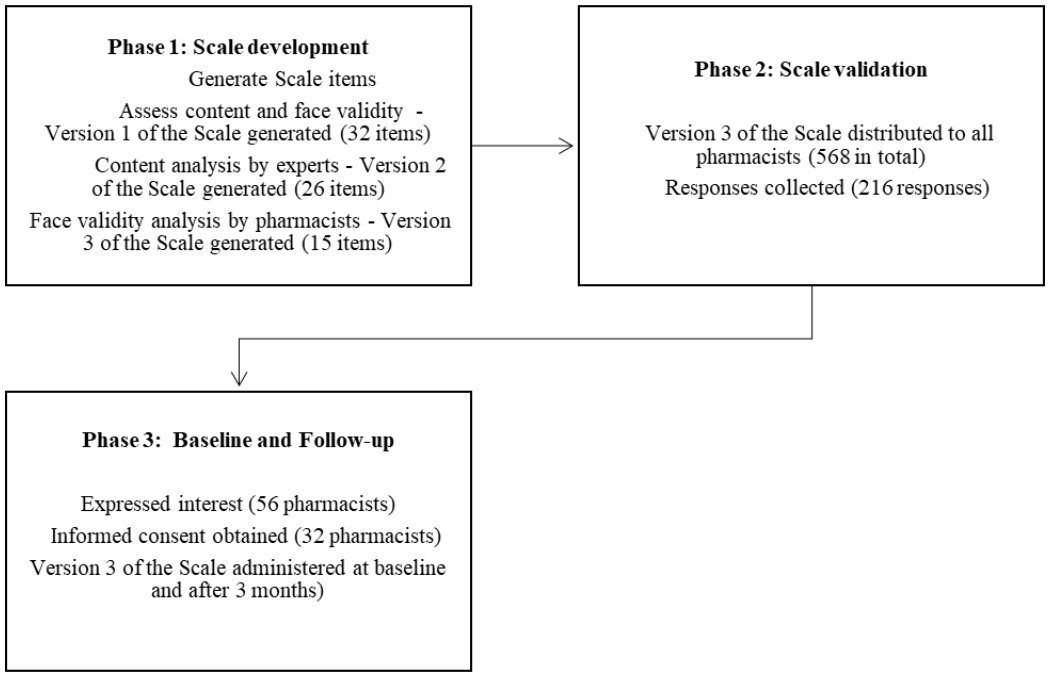

Fig. 1 – Overview of research phases and development process of the Psychological Safety Perception scale.

Edmondson's framework, which emphasizes an environment where individuals feel safe to take interpersonal risks, express ideas, ask questions, voice concerns [12], and admit mistakes without fear of repercussions [13]. Items were selected for their relevance to key theoretical constructs and empirical evidence, and were tailored to daily challenges faced by pharmacists.

To validate content, a panel of six experts (two psychologists, two pharmacists, one psychometric expert, and one faculty professor) was assembled. Experts, selected based on at least 10 years of experience and prior involvement in developing psychological measures, used a 4-point scale to rate each item's relevance. The Content Validity Index (CVI) was calculated, with an Item-Level CVI below 0.80 resulting in item rejection [14].

Face validity was assessed using the Item-Level Face Validity Index (I-FVI), where ten pharmacists with at least 5 years of experience rated each item's clarity on a 4-point scale. Pharmacists with this level of experience were selected to ensure a deeper understanding of the scale's constructs, as less experienced pharmacists might lack this insight. Items with an I-FVI below 0.80 were revised or removed [15], ensuring that only clear and relevant items remained, thereby improving the scale's reliability and practicality. Pilot testing involved ten community pharmacists who completed the initial scale. Feedback from structured interviews and surveys improved item clarity, response format, and instructions, ensuring the scale effectively measures PS. The original surveys were conducted in Serbian, and the questionnaire was translated into English by a bilingual expert using a back-translation method to maintain clarity for English-speaking participants. This preserved the instrument's accuracy, and its validity and reliability in both languages were assessed through pre-testing to enhance applicability in diverse settings. The scale evolved from Version 1 to Version 3 through validation phases, including a cross-sectional study and re-administration at baseline and after 3 months. At the time of data collection, Version 3 was considered reliable and valid for the study. Confirmatory factor analysis (CFA), described later in the text, suggested removing certain items to improve model fit, resulting in Version 4 with ten items, enhancing the scale's psychometric properties and practicality for measuring PS among community pharmacists.

Psychometric evaluation phase

In the psychometric evaluation phase, Version 3 of the Psychological Safety Perception (PSP) scale was used, a 5-point Likert scale with 15 items across five domains: leadership support, trust/respect, organizational/structural support, team support, and interpersonal risk-taking.

Reverse-coded items were omitted for clarity. Respondents rated their agreement from 1 to 5, categorized into low, moderate, and high perceptions based on empirical evidence and theoretical considerations. Cut-off points for these categories were determined from normative data and percentile ranks, supporting nuanced analysis [1, 10]. A questionnaire was electronically administered alongside the scale to gather socio-demographic data, including gender, marital status, age, work experience, education level, and job title. This approach efficiently reached a broader sample of community pharmacists dispersed geographically. Leveraging a secure online platform, measures like automatic checks for incomplete responses and validation rules were employed to ensure data accuracy. Encryption and restricted access protocols were also implemented to maintain confidentiality. To enhance data quality and reduce the risk of careless or random responding, the questionnaire included mandatory item completion, and participants were

required to respond sequentially to all items before submission, preventing skipping of questions.

All pharmacists in the active employee database were invited to participate in the study *via* an electronically distributed scale accessible for 2 months. By completing the scale, pharmacists electronically consented to participate. Active employees were then approached again with a clear explanation of the study's purpose. Interested individuals provided their contact information for further discussions and to sign informed consent forms. Special attention was given to practical considerations, ensuring ease of use and high response rates without disrupting daily operations. The scale aligns with the specific challenges and pressures of pharmacy work, making it a valuable tool for both research and practical application. No financial incentives were offered. Instead, the study's importance for enhancing corporate culture was emphasized.

Baseline and follow-up phase

The study assessed the scale's temporal stability and measurement consistency by administering it twice: at baseline and 3 months later. This procedure was crucial for evaluating the test-retest reliability of the scale, ensuring it consistently measures PS over time. The same participants completed the scale under similar conditions in both sessions to control external variables. This approach verified the scale's reliability in capturing both stable traits and temporary states of PS, ensuring that observed changes reflected actual variations rather than measurement errors or external influences. All participants who entered the test-retest phase completed both measurement points, with no dropouts or refusals reported between baseline and follow-up.

As a result of the psychometric evaluation phase and the baseline and follow-up phase, Version 4 of the scale was developed.

Sample size determination and participants

A priori power analysis was conducted using G*Power (version 3.1.9.4) to determine the minimum required sample size for the Wilcoxon signed-rank test. The analysis assumed an effect size of 0.50, an alpha level of 0.05, and a statistical power of 0.80. The results indicated that a minimum of 21 participants was required. A *post hoc* analysis based on the achieved sample size (n = 32) demonstrated an actual statistical power of 0.85, confirming adequate sensitivity of the study to detect meaningful effects.

Participants for the cross-sectional study were recruited strategically through collaborations with community pharmacies and utilizing the database of all active employees, ensuring variability in the sample. Eligibility criteria included being licensed pharmacists employed in community pharmacies who voluntarily agreed to participate. Measures were implemented to minimize attrition, including regular communication and automated reminders. Ethical rigor was maintained through clear informed consent procedures, including pre-consent sessions and confidentiality measures. The research was conducted within a large healthcare institution comprising 400 community pharmacies distributed across 16 areas, encompassing both urban and rural settings nationwide.

The data essential for contextualizing the research findings and understanding the representativeness of the sample are shown in Supplementary Table 2.

Statistical analysis

For assessing internal consistency and reliability, the Cronbach's alpha coefficient was calculated. In reliability analysis, Cronbach's alpha values above 0.7 are typically acceptable for basic research, while values of 0.8 or higher are preferred for clinical or decision-making contexts [16]. To mitigate potential biases and enhance scale reliability, thorough item analysis and pilot testing were conducted to refine the measurement tool. Additionally, the use of systematic recruitment procedures ensured a broad representation of the target demographic, reducing the risk of selection bias. No missing data was observed for any variable of interest as the questionnaire required mandatory responses, preventing respondents from proceeding to the next question without providing an answer to the preceding one. Although non-parametric tests were applied for inferential analysis, descriptive statistics are reported as mean (M) and standard deviation (SD) to maintain consistency with previous psychometric validation studies [3] and to facilitate comparability of results. Potential confounding variables include years of work experience, level of education, marital status, and job position expressed in type of work.

The distribution of PS scores was evaluated for normality using two tests: Kolmogorov-Smirnov and Shapiro-Wilk. Both tests indicated statistically significant deviations from normal distribution ($p < 0.05$), which justified the use of non-parametric statistical methods. Additionally, due to the non-normal distribution of data resulting from the nature of the PS phenomenon, statistical methods such as the Wilcoxon signed-rank test and Spearman's correlation test were employed. Exploratory factor analysis (EFA) was conducted to identify factor structure based on observed data patterns. To confirm and validate the identified factor structure, CFA was used. Version 3 was subjected to CFA to assess its fit, determining whether it required modification and whether the transition to Version 4 was warranted.

Data analysis was performed using IBM SPSS 29.0.1 at a 95% confidence level. The factor structure of the scale was tested using CFA in IBM SPSS AMOS 22.0.

Ethical approval

Ethical approval was obtained from institutional review boards, ensuring compliance with ethical guidelines and prioritizing participant welfare. This clearance was granted by the Ethics Committee of the Healthcare Institution, as

indicated by decision No. 12/2022 of the Pharmacy Institution Ethics Committee (from December, 2022).

Results

In the second phase, 216 (38%) out of 568 pharmacists responded to the survey, reflecting effective engagement and the study's relevance. However, in the third phase, the response rate dropped to 9.9%, with only 32 pharmacists completing the scale at both baseline and after 3 months, resulting in a final participation rate of 5.6%. The decline was likely due to the long-term follow-up commitment and a lack of financial incentives. Additionally, 57% of the participants who responded to the survey cited time constraints as a concern. The decreasing participation rates underscore the challenges of engaging community pharmacists in research, which are likely due to factors such as workload, time constraints, or a perceived lack of value in participating. While a low participation rate may limit the generalizability of the findings, the study still provides valuable insights by employing rigorous methodological procedures. These results offer a meaningful understanding of PS among those who participated, ensuring that the data collected remains relevant despite the reduced sample size.

Sample 1 consisted of 216 pharmacists aged 20–69 years (M = 39.35, SD = 10.05), with service ranging from 0.5 to 38 years (M = 13.78, SD = 9.56). Sample 2 involved 32 pharmacists aged 20–55 years (M = 36.97, SD = 9.35), with service ranging from 0.5 to 32 years (M = 11.64, SD = 8.96). A detailed representation of the Sample 1 and Sample 2 is provided in Supplementary Tables 3 and 4.

Scale development

Available literature analysis yielded 32 items (Version 1), categorized into five domains: leadership support, trust/respect, organizational/structural support, team support, and interpersonal risk-taking. Version 1 of the scale, comprising 32 items, underwent content analysis. Items with a CVI below 0.8 were excluded (one item from leadership support, one from trust/respect, two from organizational/structural support, one from team support, and one from interpersonal risk-taking), resulting in Version 2 of the scale, which contained 26 items. Version 2 underwent face validity analysis. Items with a face validity index below 0.8 were excluded (two from leadership support, two from trust/respect, three from organizational/structural support, two from team support, and two from interpersonal risk-taking), leading to the creation of Version 3 of the scale, which comprised 15 items containing one item from leadership support, three from trust/respect, three from organizational/structural support, six from team support, and two from interpersonal risk-taking. Version 3 of the scale demonstrates high internal reliability with a Cronbach's alpha of 0.92.

Through the psychometric evaluation process, Version 4 of the scale was created, demonstrating high internal reliability with a Cronbach's alpha of 0.89, indicating satisfactory internal consistency.

The scale development process progressed through four sequential versions, incorporating item revision and psychometric evaluation procedures (Table 1).

Additional details are shown in Supplementary Tables 5 and 6. Both the socio-demographic questionnaire and PSP scale are provided in Serbian and English to ensure transparency, methodological rigor, and international comparability.

Psychometric evaluation

The Kolmogorov-Smirnov test resulted in a statistic of 0.077 with 216 degrees of freedom, leading to a significance level of 0.003. Similarly, the Shapiro-Wilk test produced a statistic of 0.983 with 216 degrees of freedom, yielding a significance level of 0.010. Both Kolmogorov-Smirnov and Shapiro-Wilk tests revealed statistically significant deviations from a normal distribution in PS scores ($p < 0.05$), indicating non-normality of the data and supporting the use of non-parametric statistical methods. Although the data were not normally distributed, descriptive statistics are presented as M and SD to ensure comparability with previously published psychometric studies [3], while inferential analyses were conducted using non-parametric tests [11]. EFA of the 15-item scale revealed the underlying factor structure of PS in community pharmacies, with high communalities (> 0.5) indicating strong item representation. A loading cut-off of 0.40 was applied, and items were retained if their primary loadings exceeded secondary loadings by at least 0.20. The high communalities confirm strong item-factor associations, supporting the observed factor structure of the scale. These results were interpreted in conjunction with CFA to determine the most appropriate factor solution. The first component explains nearly 50% of the total variance, while subsequent components explain less, suggesting the critical importance of the first component in understanding the data structure (Table 2). Rotation of the components did

Table 1

Evolution of Psychological Safety Perception (PSP) scale items – Versions 1 to 4

Domains	PSP scale			
	Version 1	Version 2	Version 3	Version 4
Leadership support	4	3	1	1
Trust/respect	6	5	3	3
Organizational/structural support	8	6	3	2
Team support	9	8	6	3
Interpersonal risk-taking	5	4	2	1
Total number of items	32	26	15	10

Note: **Numbers represent the total number of items included in each version of the scale for the corresponding domain. Version 4 represents the final refined 10-item scale derived from psychometric evaluation.**

not significantly change this relationship, suggesting that the first component could be used as the primary indicator, while the contribution of other components is less pronounced and should be interpreted with caution.

Principal component analysis was utilized as a statistical technique to identify patterns in data and reduce its dimensionality. Using the Varimax method with Kaiser normalization in principal component analysis and rotation, each original variable demonstrated distinct associations with the derived components. Variable 1 displayed a strong association with the first component (coefficient: 0.740), moderate with the second (0.608), and weak with the third (0.287). Variable 2 was notably associated with the third component (0.873), and less so with the first and second components (0.060 and -0.485, respectively). Variable 3 was significantly associated with the second component (0.628), and less so with the first and third components (-0.670 and 0.395, respectively).

First CFA analysis, conducted on Version 3 of the instrument with 15 items, yielded average to poor fit indices: $\chi^2(90) = 351.74$; $p < 0.001$; goodness of fit index (GFI) = 0.82; comparative fit index (CFI) = 0.86; Tucker-Lewis index (TLI) = 0.84; root mean square error of approximation (RMSEA) = 0.116; standardized root mean square residual (SRMR) = 0.067. Based on the analysis of the standardized residual covariances and modification indices from the first CFA, an additional five items were excluded from the scale. One item from the organizational/structural support domain, three items from the team support domain, and one item from the interpersonal risk-taking domain were excluded. The second CFA, conducted on the 10-item scale, exhibited excellent fit parameters: $\chi^2(35) = 65.81$; $p < 0.001$; GFI = 0.94; CFI = 0.97; TLI = 0.96; RMSEA = 0.064; SRMR = 0.040, indicating an improved model fit after item refinement. These adjustments make it clearer that the decision to exclude items was based on the analysis of residual covariances and modification indices from the first CFA. Additionally, it separates the descriptions of the two CFAs for better readability. In this manner, the final Version 4 of the scale with 10 items was obtained. Item loadings are presented, indicating their relative contribution to the latent construct within the proposed model (Table 3).

Table 2

Variant contribution analysis

Component (EFA solution, 15-item scale)	Initial eigenvalues			Rotation sums of squared loadings			
	total	% of variance	cumulative %	total	% of variance	total	% of variance
1	7.491	49.938	49.938	7.491	49.938	4.600	30.666
2	1.277	8.515	58.452	1.277	8.515	3.508	23.384
3	1.102	7.347	65.799	1.102	7.347	1.762	11.750
4	0.879	5.859	71.658				
5	0.690	4.601	76.258				
6	0.556	3.704	79.963				
7	0.526	3.504	83.466				
8	0.467	3.111	86.577				
9	0.391	2.604	89.180				
10	0.364	2.427	91.607				
11	0.324	2.158	93.766				
12	0.303	2.019	95.785				
13	0.250	1.664	97.448				
14	0.205	1.364	98.812				
15	0.178	1.188	100.000				

***Note*: Initial eigenvalues indicate variance explained before rotation. Rotation sums of squared loadings show the variance explained after rotation. Analysis was conducted on a 15-item scale.**
Rotated sums of squared loadings are reported only for the three retained factors, as only these factors were extracted in the final exploratory factor analysis (EFA) solution.

Table 3

Factor loadings

Item	RW (unstandardized)	SE	Critical ratio	*p*-value	RW (standardized)
PS1	0.86	0.072	11.944	< 0.001	0.73
PS2	0.46	0.104	4.385	< 0.001	0.30
PS3	0.85	0.080	10.622	< 0.001	0.67
PS4	0.92	0.068	13.433	< 0.001	0.80
PS5	0.87	0.080	10.923	< 0.001	0.68
PS6	0.47	0.065	7.266	< 0.001	0.49
PS9	0.71	0.070	10.167	< 0.001	0.64
PS10	0.97	0.064	15.182	< 0.001	0.87
PS13	1.00	0.064	14.162	< 0.002	0.82
PS14	0.95	0.071	13.315	< 0.001	0.79

RW – regression weight; SE – standard error; PS – item of the Psychological Safety Perception (PSP) scale, Version 4.

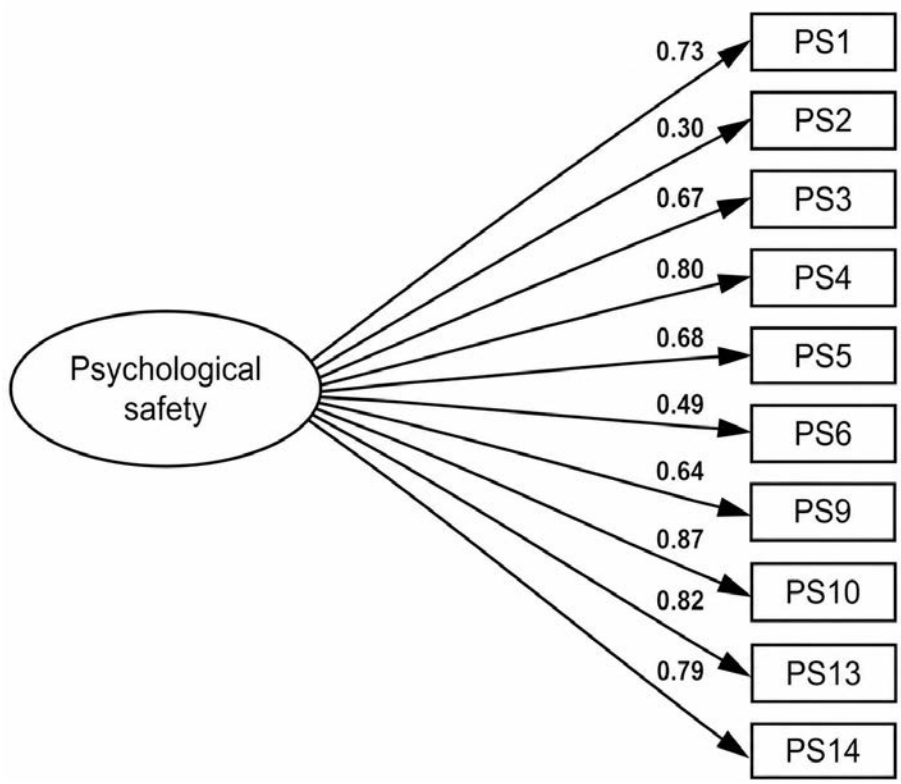

Fig. 2 – Factor loadings.
PS – item of the Psychological Safety Perception scale, Version 4.
***Note*: Factor loadings were obtained using confirmatory factor analysis.**

The relationships between the observed variables and the underlying factors are illustrated, providing a clear depiction of the model's fit and the strength of the associations (Figure 2).

Baseline and follow-up

The Wilcoxon signed-rank test was conducted to compare scores on the PSP scale between baseline and retest, 3 months later, and indicated no statistically significant difference between the two time points (Z = -0.372, p = 0.710), suggesting stability in PS perception over the 3-month period. For the Wilcoxon signed-rank test, an *a priori* power analysis was conducted. The parameters set for this analysis included an effect size of 0.50, a power of 0.80, and an alpha error probability of 0.05. The assumed effect size (r = 0.50) was based on conventional benchmarks for medium effects in behavioral research [17, 18] and on previously reported effect sizes in studies examining PS in healthcare settings [5, 6, 10]. The results indicated that a minimum of 21 participants was required to power the study adequately, given these parameters. The parameters used for the power analysis have been explicitly defined, including effect size, significance level (α), statistical power, and the specific non-parametric test (Wilcoxon signed-rank test) used as the basis for the *a priori* and *post hoc* power calculations, ensuring transparency and reproducibility of the analysis. With 32 participants included in this phase of the study, the sample size was more than sufficient. A *post hoc* analysis of the same group of 32 participants revealed an effective test power of 0.85. This elevated power level, exceeding the initially targeted 0.80, indicates adequate statistical sensitivity of the test. These findings demonstrate that the sample size met the requirements for the planned analyses, supporting the reliability of the statistical testing procedure. Descriptive statistics are reported as M and SD to ensure consistency with established psychometric reporting practices, while inferential analyses were conducted using non-parametric methods due to deviation from normality. Initial PS scores ranged from 24 to 75 (M = 50.72, SD = 12.93), and retest scores after 3 months ranged from 25 to 73 (M = 50.69, SD = 12.59). These consistent scores across testing sessions suggest temporal stability of the measured construct, supporting the test-retest reliability of the developed scale. The PS perception levels remained stable between tests, with 68.8% (n = 22) of participants consistently scoring high, 21.9% (n = 7) moderate, and 9.4% (n = 3) low. Additionally, Spearman's ρ correlation coefficients reveal strong positive correlations between PS score at baseline and after 3 months (ρ = 0.994, p < 0.001), indicating high test-retest consistency and reinforcing the temporal stability of the measurement instrument.

Discussion

The expert review and psychometric evaluation process provides evidence supporting the quality of the concise PSP scale for community pharmacists. Through iterative revisions, content validity was established based on expert feedback, resulting in a streamlined 15-item version. EFA

and CFA support the identification of a predominantly one-factor structure, thus emphasizing teamwork's role, and demonstrate acceptable model fit and internal consistency. CFA further refined the scale into a 10-item version, enhancing its precision. This process provides a preliminary measurement tool for studying PS in community pharmacies. The identified domains–leadership support, trust/respect, organizational/structural support, team support, and interpersonal risk-taking–were used as an initial conceptual framework during item development, but the empirical results suggest that PS may be better represented as a more unified construct in this sample. By assessing pharmacists' perceptions within these areas, organizations can pinpoint gaps or challenges that may impact PS. This targeted approach enables the development of tailored strategies, such as enhancing leadership training, fostering trust-building initiatives, or improving team collaboration, ultimately promoting a healthier work environment and better patient outcomes.

The study emphasizes the importance of reducing item redundancy in PS scales, as supported by prior research. For instance, a study involving 497 employees initially used a 70-item scale, which was refined to a shorter version of 30 items and five factors through factor analysis [3]. This underscores the effectiveness of concise scales for assessing PS in pharmacy settings. Another study focusing on posttraumatic stress disorder confirmed the three-factor structure of the Neuroception of PS scale, demonstrating good validity and reliability with fewer than 30 items. These findings reinforce the value of streamlined scales in accurately evaluating PS [19].

Building on prior research guided by Kahn's definition of PS, which focused on examining PS in the workplace, valuable insights were gained. This study underscored the significance of using a scale with a limited number of items, as it demonstrated that even with only 21 items, a comprehensive assessment of PS can be achieved. Additionally, the study employed CFA to validate the Protect, Support, Encourage, Include – PSEI model, confirming its applicability and robustness in understanding PS dynamics [20]. This research contributes to the broader understanding of PS by emphasizing the effectiveness of a concise measurement approach and providing empirical support in workplace contexts.

Insights from traditional survey methods highlight the need for a practical approach to measure PS effectively. One proposal emphasizes this issue, which is particularly important in healthcare systems where assessment complexities are significant. By devising a composite measure that combines observation and adapted surveys, specifically tailored for healthcare settings, the authors aimed not only to enhance the validity and reliability of measurements but also to provide a more nuanced understanding of PS dynamics within healthcare teams [1]. Additionally, the research by O'Donovan et al. [21] significantly contributes to the existing literature by introducing a systematic approach to developing observational measures that complement traditional survey methods for assessing PS. Their methodology, which incorporates insights from healthcare professionals and aligns with existing PS and healthcare literature, offers a solid foundation for gauging and enhancing PS within healthcare teams [9, 21]. Contemporary research on PS indicates that when measuring, a focused approach is necessary in relation to the setting because numerous factors influence the assessment of PS [22–24]. A focused approach was also confirmed in research with healthcare professionals, highlighting the interaction of numerous variables on the perception of PS, which indicates the importance of selecting precisely those factors that are important for healthcare organizations [25]. The methodological approach applied in this study is consistent with established practices in scale development within pharmacy and healthcare research, where similar psychometric procedures have been widely used [5, 26, 27]. An adequate perception of PS that is consistent with the setting and environment can only lead to cultivating a supportive team culture, thus reinforcing the findings of previous studies [24]. This emphasizes the critical role of teamwork in creating an environment conducive to learning, collaboration, and efficiency [28, 29], which, in the case of healthcare systems, also contributes to the quality of the provided health care [25].

The decision to develop the PSP scale specifically for community pharmacists is supported by the distinctive characteristics of pharmacy practice, which include high levels of patient interaction, time pressure, and interprofessional collaboration within complex healthcare systems. Recent literature highlights that PS is a key determinant of team performance, communication quality, and patient safety in healthcare environments, particularly in settings where professionals operate under high workload demands and frequent decision-making responsibilities [22, 30–32]. In community pharmacy practice, these conditions are especially pronounced, as pharmacists play a critical role in medication safety, patient counseling, and coordination with other healthcare providers [33, 34]. Moreover, recent empirical evidence in pharmacy settings has demonstrated that organizational and behavioral interventions can significantly influence PS perceptions among pharmacists, further emphasizing the relevance of context-specific measurement tools [35, 36]. Accordingly, the development of a pharmacy-specific scale enables more precise assessment of PS within this professional group and contributes to a better understanding of psychosocial dynamics in community pharmacy environments.

Limitations of the study

This study has several limitations that should be acknowledged when interpreting the findings. The gender distribution in the sample, with a predominance of female participants and only one male participant, reflects the actual workforce composition in community pharmacy practice; however, it limits the ability to perform meaningful gender-based comparisons and restricts the generalizability of demographic subgroup analyses. The geographic specificity

of the sample, limited to community pharmacists in Serbia, may restrict the generalizability of the results to other healthcare systems and professional contexts. In addition, the use of self-reported measures may introduce response biases, including social desirability and common method variance.

Although the scale demonstrated satisfactory psychometric properties, several methodological constraints should be considered. Criterion validity was not assessed, as no external measures or outcome variables (e.g., established PS instruments, burnout, or turnover intention) were included. Similarly, convergent and discriminant validity were not examined, limiting conclusions regarding the construct specificity of the scale. As a result, it cannot be ruled out that the scale may partially reflect broader constructs such as general workplace well-being, job satisfaction, or perceived organizational climate rather than PS specifically.

Furthermore, EFA and CFA were conducted on the same sample, which may have inflated model fit indices and limited the confirmatory strength of the findings. Although the scale was theoretically conceptualized as a five-domain instrument, factor-analytic results indicated a unidimensional structure, suggesting that PS may be represented as a global construct in this sample. However, this interpretation requires further validation in independent studies. The relatively small sample size may also limit the stability of parameter estimates and the robustness of factor-analytic results, particularly in the context of CFA conducted on the same sample. Although the sample size was sufficient for the planned analyses based on the *a priori* power calculations, replication in larger and independent samples is recommended to further confirm the stability of the observed factor structure.

This pilot study involved a relatively small sample size, which may limit statistical power and the stability of parameter estimates. In addition, although the 3-month interval for test-retest reliability was selected based on prior research, alternative or longer intervals may provide additional evidence regarding temporal stability.

Conclusion

The scale development process comprised three phases, involving item generation and psychometric evaluation. Expert evaluation and analysis led to the creation of a refined 10-item scale, demonstrating acceptable internal consistency and model fit. Exploratory factor analysis revealed the underlying structure of psychological safety dimensions within the community pharmacy sector, which was confirmed by confirmatory factor analysis. Results indicated that the first component explained a significant portion of variance, highlighting its pivotal role in data interpretation. Additionally, using the Varimax method with Kaiser normalization, distinct associations between original variables and derived components were identified. Furthermore, the Wilcoxon signed-rank test showed no significant difference in psychological safety scores between baseline and retest, affirming stability over 3 months. Importantly, Spearman's ρ correlation coefficients indicated strong positive correlations between psychological safety scores at baseline and after 3 months, indicating consistency in responses.

The study's scale development and repeated measures design offer practical insights for enhancing psychological safety in community pharmacies. The findings underscore the importance of tailored interventions to foster a supportive workplace environment and highlight the critical role of psychological safety in promoting well-being and quality care.

Finally, future research should validate the scale in larger and more diverse samples, including different healthcare settings and professional groups, examine its predictive validity in relation to relevant organizational and patient-related outcomes, and incorporate qualitative methodologies to further refine the understanding of psychological safety in community pharmacy practice. Continued research is essential to strengthen the evidence base and support the development of a psychologically safe pharmacy workforce.

Acknowledgement

Heartfelt appreciation is extended to the participating pharmacists for their invaluable contributions to this study, reflecting their commitment to professional development and the progression of pharmacy practice.

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Received on March 30, 2026
Revised on April 29, 2026
Accepted on May 13, 2026
Online First June 2026

Supplementary Table 1

STROBE statement – checklist of items that should be included in reports of cross-sectional studies

Items	Recommendation
Title and abstract	a) Indicate the study's design with a commonly used term in the title or the abstract. b) Provide in the abstract an informative and balanced summary of what was done and what was found.
Introduction	
background/rationale	Explain the scientific background and rationale for the investigation being reported.
objectives	State specific objectives, including any prespecified hypotheses.
Methods	
study design	Present key elements of the study design early in the paper.
setting	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection.
participants	a) Give the eligibility criteria, and the sources and methods of selection of participants.
variables	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable.
data sources/measurement*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe the comparability of assessment methods if there is more than one group.
bias	Describe any efforts to address potential sources of bias.
study size	Explain how the study size was arrived at.
quantitative variables	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why.
statistical methods	a) Describe all statistical methods, including those used to control for confounding. b) Describe any methods used to examine subgroups and interactions. c) Explain how missing data were addressed. d) If applicable, describe analytical methods taking account of the sampling strategy. e) Describe any sensitivity analyses.
Results	
participants*	a) Report numbers of individuals at each stage of study – e.g., numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analyzed. b) Give reasons for non-participation at each stage. c) Consider the use of a flow diagram.
descriptive data*	a) Give characteristics of study participants (e.g., demographic, clinical, social) and information on exposures and potential confounders. b) Indicate the number of participants with missing data for each variable of interest.
outcome data*	Report the number of outcome events or summary measures.
main results	a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g., 95% confidence interval). Make clear which confounders were adjusted for and why they were included. b) Report category boundaries when continuous variables were categorized. c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period.
other analyses	Report other analyses done – e.g., analyses of subgroups and interactions, and sensitivity analyses.

Supplementary Table 1 (continued)

Items	Recommendation
Discussion	
key results	Summarize key results with reference to study objectives.
limitations	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both the direction and magnitude of any potential bias.
interpretation	Give a cautious overall interpretation of results, considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence.
generalizability	Discuss the generalizability (external validity) of the study results.
Other information	
funding	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based.

STROBE – Strengthening the Reporting of Observational Studies in Epidemiology.
***Note*: *Give information separately for exposed and unexposed groups. An explanation and elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the websites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.**

Supplementary Table 2

Distribution of community pharmacies by area and setting

Pharmacy	Area																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Urban	16	21	15	17	20	22	15	14	10	15	5	15	13	10	15	7	230
Rural	14	12	10	10	10	8	10	6	15	10	15	10	7	10	10	13	170
Total	30	33	25	27	30	30	25	20	25	25	20	25	20	20	25	20	400

***Note*: Total pharmacies, urban pharmacies, and rural pharmacies are given as the total number of community pharmacies in each area, the number of pharmacies located in urban settings, and the number of pharmacies located in rural settings, respectively.**

Supplementary Table 3

Descriptive statistics of Sample 1 (n = 216) and Sample 2 (n = 32)

Variable	Min–Max	Mean ± SD
Sample 1		
age	20–69	39.35 ± 10.05
years of service	0.5–38	13.78 ± 9.56
psychological safety score	24–75	53.69 ± 11.18
Sample 2		
age	20–55	36.97 ± 9.35
years of service	0.5–32	11.64 ± 8.96
psychological safety test score	24–75	50.72 ± 12.93
psychological safety retest score	25–73	50.69 ± 12.59

n – number; Min – minimum; Max – maximum; SD – standard deviation.

Supplementary Table 4

Demographic characteristics of Sample 1 (n = 216) and Sample 2 (n = 32)

Variable	Sample 1	Sample 2
Gender		
female	204 (94.4)	31 (96.9)
male	10 (4.6)	1 (3.1)
I do not want to make a statement	2 (0.9)	
Marital status		
single	56 (25.9)	10 (31.3)
married	149 (69.0)	20 (62.5)
divorced	9 (4.2)	2 (6.3)
widower/widow	2 (0.9)	

Supplementary Table 4 (continued)

Variable	Sample 1	Sample 2
Degree of professional education		
bachelor	64 (29.6)	12 (37.5)
master	143 (66.2)	18 (56.3)
PhD	9 (4.2)	2 (6.3)
Specialist studies		
yes	22 (10.2)	1 (3.1)
no	194 (89.8)	31 (96.9)
Job position		
pharmacist	127 (58.8)	22 (68.8)
pharmacy manager	89 (41.2)	10 (31.3)
Psychological safety perception level		
low	6 (2.8)	
moderate	47 (21.8)	
high	163 (75.5)	
Psychological safety perception level test		
low		3 (9.4)
moderate		7 (21.9)
high		22 (68.8)
Psychological safety perception level retest		
low		3 (9.4)
moderate		7 (21.9)
high		22 (68.8)

n – number; PhD – Doctor of Philosophy.
Values are presented as numbers (percentages).
***Note*: Blank cells indicate that the variable was not assessed in the respective sample (Sample 1 or Sample 2) as analyses were performed on different subsamples depending on the study phase.**

Supplementary Table 5

All versions of the Psychological Safety Perception (PSP) scale

PSP Version 1

No.	Items	Domains
1	In the team, my abilities and talents are greatly appreciated.	Leadership support
2	My superiors regularly show interest in my opinions and ideas.	Leadership support
3	I feel supported by my leadership when I express concerns or uncertainties.	Leadership support
4	Leaders in my team actively seek feedback from employees to improve the work environment.	Leadership support
5	Seeking assistance from my colleagues is a straightforward process.	Trust/respect
6	I feel empowered to make errors in the workplace without worrying about facing consequences from my colleagues.	Trust/respect
7	None of my colleagues would intentionally behave in a manner that diminishes my contributions.	Trust/respect
8	I trust my colleagues to support me when needed.	Trust/respect
9	I feel respected by my peers and supervisors in the workplace.	Trust/respect
10	There is a high level of mutual trust among team members, which fosters collaboration and open communication.	Trust/respect
11	I am driven to propose innovative ideas to enhance team performance.	Organizational/structural support
12	I am well aware of the requirements of my role in the workplace.	Organizational/structural support
13	My organization provides adequate resources and support for professional development.	Organizational/structural support
14	There are clear channels for reporting concerns or issues within the organization.	Organizational/structural support
15	Organizational policies promote fairness and transparency in decision-making processes.	Organizational/structural support
16	There is effective communication of organizational goals and priorities to all employees.	Organizational/structural support
17	Structural systems within the organization enable efficient workflow and task completion.	Organizational/structural support
18	We have the capability to address challenges and difficult topics in the workplace.	Organizational/structural support

19	The team I am engaged with recognizes and respects my creative capabilities.	Team support
20	My colleagues demonstrate a professional openness to diverse perspectives.	Team support
21	My ideas and suggestions receive support from my colleagues.	Team support
22	My colleagues consistently share relevant work-related information.	Team support
23	My colleagues accept diversity and never exclude others for their differences.	Team support
24	Collaborating with my peers ensures that my distinctive skills and talents are recognized and effectively utilized.	Team support
25	Team members collaborate effectively to achieve common goals.	Team support
26	There is a strong sense of camaraderie and mutual support among team members.	Team support
27	Team meetings provide opportunities for open discussion and problem-solving.	Team support
28	I feel comfortable expressing dissenting opinions or challenging ideas within my team.	Interpersonal risk-taking
29	There is an atmosphere where constructive feedback is encouraged and appreciated.	Interpersonal risk-taking
30	I am confident in sharing my concerns or admitting mistakes without fear of negative consequences.	Interpersonal risk-taking
31	In my professional environment, I feel at liberty to express my authentic self.	Interpersonal risk-taking
32	I feel secure taking work-related risks as they are encouraged in my team.	Interpersonal risk-taking

PSP Version 2

No.	Items	Domains
1	In the team, my abilities and talents are greatly appreciated.	Leadership support
2	I feel supported by my leadership when I express concerns or uncertainties.	Leadership support
3	Leaders in my team actively seek feedback from employees to improve the work environment.	Leadership support
4	I feel respected by my peers and supervisors in the workplace.	Trust/respect
5	There is a high level of mutual trust among team members, which fosters collaboration and open communication.	Trust/respect
6	Seeking assistance from my colleagues is a straightforward process.	Trust/respect
7	None of my colleagues would intentionally behave in a manner that diminishes my contributions.	Trust/respect
8	I feel empowered to make errors in the workplace without worrying about facing consequences from my colleagues.	Trust/respect
9	I am well aware of the requirements of my role in the workplace.	Organizational/structural support
10	We have the capability to address challenges and difficult topics in the workplace.	Organizational/structural support
11	I am driven to propose innovative ideas to enhance team performance.	Organizational/structural support
12	My organization provides adequate resources and support for professional development.	Organizational/structural support
13	There is effective communication of organizational goals and priorities to all employees.	Organizational/structural support
14	Structural systems within the organization enable efficient workflow and task completion.	Organizational/structural support
15	The team I am engaged with recognizes and respects my creative capabilities.	Team support
16	My colleagues demonstrate a professional openness to diverse perspectives.	Team support
17	My ideas and suggestions receive support from my colleagues.	Team support
18	My colleagues consistently share relevant work-related information.	Team support
19	My colleagues accept diversity and never exclude others for their differences.	Team support
20	Collaborating with my peers ensures that my distinctive skills and talents are recognized and effectively utilized.	Team support
21	Team members collaborate effectively to achieve common goals.	Team support
22	Team meetings provide opportunities for open discussion and problem-solving.	Team support
23	I feel comfortable expressing dissenting opinions or challenging ideas within my team.	Interpersonal risk-taking

24	I am confident in sharing my concerns or admitting mistakes without fear of negative consequences.	Interpersonal risk-taking
25	I feel secure taking work-related risks as they are encouraged in my team.	Interpersonal risk-taking
26	In my professional environment, I feel at liberty to express my authentic self.	Interpersonal risk-taking

PSP Version 3

No.	Items	Domains
1	In the team, my abilities and talents are greatly appreciated.	Leadership support
2	I feel empowered to make errors in the workplace without worrying about facing consequences from my colleagues.	Trust/respect
3	None of my colleagues would intentionally behave in a manner that diminishes my contributions.	Trust/respect
4	Seeking assistance from my colleagues is a straightforward process.	Trust/respect
5	We have the capability to address challenges and difficult topics in the workplace.	Organizational/structural support
6	I am well aware of the requirements of my role in the workplace.	Organizational/structural support
7	I am driven to propose innovative ideas to enhance team performance.	Organizational/structural support
8	The team I am engaged with recognizes and respects my creative capabilities.	Team support
9	My colleagues demonstrate a professional openness to diverse perspectives.	Team support
10	My ideas and suggestions receive support from my colleagues.	Team support
11	My colleagues consistently share relevant work-related information.	Team support
12	My colleagues accept diversity and never exclude others for their differences.	Team support
13	Collaborating with my peers ensures that my distinctive skills and talents are recognized and effectively utilized.	Team support
14	In my professional environment, I feel at liberty to express my authentic self.	Interpersonal risk-taking
15	I feel secure taking work-related risks as they are encouraged in my team.	Interpersonal risk-taking

PSP Version 4

No.	Items	Domains
1	In the team, my strengths are greatly appreciated.	Leadership support
2	I feel empowered to make errors in the workplace without worrying about facing consequences from my colleagues.	Trust/respect
3	None of my colleagues would intentionally behave in a manner that diminishes my contributions.	Trust/respect
4	Seeking assistance from my colleagues is a straightforward process.	Trust/respect
5	We have the capability to address difficult situations in the workplace.	Organizational/structural support
6	I am well aware of the requirements of my role in the workplace.	Organizational/structural support
7	My colleagues demonstrate a professional openness to diverse perspectives.	Team support
8	When I suggest new ideas, my colleagues provide support.	Team support
9	Collaborating with my peers ensures that my qualities are valued.	Team support
10	In my professional environment, I feel at liberty to express my authentic self.	Interpersonal risk-taking

Supplementary Table 6

Serbian version (original)

Upitnik za prikupljanje osnovnih socio-demografskih karakteristika

1. **Pol:**
   a) muški
   b) ženski
   c) ne želim da se izjasnim
2. **Bračni status: _____**
3. **Starost: _____**
4. **Godine radnog iskustva: _____**
5. **Nivo obrazovanja:**
   a) osnovne akademske studije (*Bachelor*)
   b) master akademske studije
   c) specijalističke studije
   d) doktorske studije
6. **Radna pozicija (zanimanje) u organizaciji: _____**

Skala percepcije psihološke sigurnosti (PSP)

Molimo Vas da na pitanja odgovorite odabirom jednog od ponuđenih odgovora na skali od 1 do 5, gde 1 označava potpuno neslaganje, a 5 potpuno slaganje sa navedenom tvrdnjom. Molimo Vas da odgovorite na sva pitanja.

Br.	Stavka	Domen
1	U timu se moje snage visoko vrednuju.	Podrška liderstva
2	Osećam da mogu da napravim greške na radnom mestu bez straha od posledica od strane kolega.	Poverenje/poštovanje
3	Nijedan moj kolega ne bi namerno postupao na način koji umanjuje moj doprinos.	Poverenje/poštovanje
4	Traženje pomoći od kolega je jednostavno.	Poverenje/poštovanje
5	Sposoban/na sam da se nosim sa teškim situacijama na radnom mestu.	Organizaciona/strukturna podrška
6	Dobro sam upoznat/a sa zahtevima svoje radne uloge.	Organizaciona/strukturna podrška
7	Moje kolege pokazuju profesionalnu otvorenost prema različitim perspektivama.	Timska podrška
8	Kada predložim nove ideje, moje kolege pružaju podršku.	Timska podrška
9	Saradnja sa kolegama osigurava da se moji kvaliteti prepoznaju.	Timska podrška
10	U svom profesionalnom okruženju osećam slobodu da izrazim svoj autentični identitet.	Interpersonalno preuzimanje rizika

English version (translated)

Questionnaire for collecting basic socio-demographic characteristics

1. **Gender:**
   a) male
   b) female
   c) prefer not to disclose
2. **Marital Status: _____**
3. **Age: _____**
4. **Years of Work Experience: _____**
5. **Level of Education:**
   a) Bachelor's degree
   b) Master's degree
   c) Specialized study
   d) Doctorate degree
6. **Position (Job Title) in Your Organization: _____**

Psychological Safety Perception (PSP) scale

Please respond to the questions by selecting the desired answer from the 5 options provided, indicating the degree of agreement with the given statement, where 1 indicates complete disagreement, and 5 indicates complete agreement with the statement. Please answer all questions.

No.	Items	Domains
1	In the team, my strengths are greatly appreciated	Leadership support
2	I feel empowered to make errors in the workplace without worrying about facing consequences from my colleagues.	Trust/respect
3	None of my colleagues would intentionally behave in a manner that diminishes my contributions.	Trust/respect
4	Seeking assistance from my colleagues is a straightforward process.	Trust/respect
5	We have the capability to address difficult situations in the workplace.	Organizational/structural support
6	I am well aware of the requirements of my role in the workplace.	Organizational/structural support
7	My colleagues demonstrate a professional openness to diverse perspectives.	Team support
8	When I suggest new ideas, my colleagues provide support.	Team support
9	Collaborating with my peers ensures that my qualities are valued.	Team support
10	In my professional environment, I feel at liberty to express my authentic self.	Interpersonal risk-taking