Psychometric Adaptation of the Flourishing Scale in Organizations with High Reliability: Empirical Evidence from Mining Employees in Indonesia

Sekar Saffina Dzaluliyyah Ardianto[1], Olievia Prabandini Mulyana[2]
Psychology Study Program, Faculty of Psychology, Universitas Negeri Surabaya, Indonesia[1]
Psychology Study Program, Faculty of Psychology, Universitas Negeri Surabaya, Indonesia[2]
Email : sekar.22049@mhs.unesa.ac.id[1], olieviaprabandini@unesa.ac.id[2]
Correspondent Author: Olievia Prabandini Mulyana, olieviaprabandini@unesa.ac.id
Doi: 10.31316/g-couns.v10i03.9163

Abstract

The mining industry represents a high-risk work environment standardized psychometric instruments for measuring flourishing among Indonesian mining workers are currently limited. This study aims to examine the construct validity and reliability of the Flourishing Scale, adapted from the PERMA model (Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment), among mining employees in Indonesia. Quantitative data from 262 employees, obtained through purposive sampling, were analyzed using Confirmatory Factor Analysis (CFA) with the assistance of JASP software, while internal reliability was estimated using Cronbach's Alpha coefficient. The results indicated that the measurement model provided a very good fit to the empirical data, with CFI = 0.992, TLI = 0.990, and RMSEA = 0.025. All items yielded significant factor loadings, supported by high internal consistency (α = 0.859). As the first psychometric adaptation for this specific population in Indonesia, this study offers a significant original contribution to occupational psychology. The findings provide a robust, evidence-based instrument for Occupational Health and Safety (OHS) programs to enhance psychological well-being, mitigate human-factor risks, and support operational sustainability.

Keywords: confirmatory factor analysis, flourishing, mining employees, construct validity, psychological well-being

Article info
Received January 2026, Revised February 2026, Accepted February 2026, Published March 2026

How to Cite:
Ardianto, S. S. D., & Mulyana, O. P. (2026). Psychometric Adaptation of the Flourishing Scale in Organizations with High Reliability: Empirical Evidence from Mining Employees in Indonesia. G-Couns: Jurnal Bimbingan Dan Konseling, 10 (03), July, 2078-2091. https://doi.org/10.31316/g-couns.v10i03.9163

Available online at https://journal.upy.ac.id/index.php/bk/index

Published by: Guidance and Counseling Study Program
Faculty of Teacher Training and Education
Universitas PGRI Yogyakarta

INTRODUCTION

The mining sector plays a crucial role in Indonesia's economic development; however, it is widely recognized as a work environment characterized by high physical demands and substantial occupational risks. Employees in this sector are exposed to challenging conditions, including irregular shift schedules, prolonged separation from family due to remote work, and heightened safety hazards that may lead to serious or fatal accidents. National occupational safety reports consistently indicate that work-related accidents remain a persistent concern within the mining industry. These conditions highlight the urgent need for comprehensive evaluation efforts that extend beyond technical and operational aspects and instead address employees' psychological well-being as a critical human factor (Risqiyah et al., 2025; Yiğit & Çakmak, 2024).

From a positive psychology perspective, employee well-being is not sufficiently captured by job satisfaction alone. Instead, it is more comprehensively understood through the concept of flourishing, which represents an optimal state of psychosocial functioning encompassing positive emotions, meaningful life experiences, engagement, and supportive social relationships (Seligman, 2011; Nur'aini & Mulyana, 2024). Employees who achieve a flourishing state have been shown to demonstrate better job performance, lower turnover intentions, and higher compliance with safety procedures compared to those who are merely satisfied with their jobs (Fabricio et al., 2022). Therefore, measuring the level of flourishing serves as a strategic tool for organizations to mitigate the risk of human error arising from suboptimal psychological conditions (Willen, 2022). One prominent framework for conceptualizing flourishing is the PERMA model, which outlines five core dimensions: Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment. This model has been widely implemented across diverse research settings, including education, organizational contexts, and mental health studies.

Although conceptually robust, existing measures of well-being often fail to adequately capture the psychological realities of blue-collar workers in high-risk industries. Mining environments are typically shaped by strong masculinity norms, hierarchical structures, and extreme physical and safety demands, which influence how workers interpret and express their mental states. Recent studies have shown that under such conditions, well- being is more strongly reflected in functional social bonds, shared responsibility, and collective meaning-making than in individual emotional pleasure (Fu et al., 2022; Heimann et al., 2023). Consequently, instruments developed for general or white-collar populations may lack sensitivity when applied to workers in extractive industries.

In this context, the PERMA model provides a theoretically comprehensive framework for conceptualizing flourishing by integrating emotional, relational, and meaning-based components of well-being. However, most PERMA-based instruments have been validated primarily in student, office-based, or general populations, with limited attention to employees in hazardous, male-dominated occupations (Fabricio et al., 2022). This raises concerns about whether the PERMA structure, particularly the dimensions of Relationships and Meaning, operate similarly among mining employees, whose psychological functioning is closely tied to teamwork, risk-sharing, and occupational identity. Instruments that are valid for general populations may not necessarily be accurate when administered to blue-collar workers in the mining industry, whose work culture is characterized by masculine norms, high physical demands,

exposure to safety risks, and sustained operational pressure. These contextual factors may influence how individuals interpret, experience, and report their psychological well-being (Fu et al., 2022). Consequently, the construct of psychological well-being, including flourishing, may manifest differently among mining workers compared to employees in office-based or professional sectors.

To date, the absence of a standardized and psychometrically tested flourishing instrument specifically designed for the Indonesian mining context remains a major barrier to systematically mapping employees' mental health conditions in this sector. The lack of appropriate measurement tools not only hampers the development of empirical research but also complicates the design of evidence-based interventions integrated into Occupational Health and Safety (OHS) systems within high-risk industries (Heimann et al., 2023). Therefore, examining the validity and reliability of a flourishing instrument within the mining workforce constitutes a crucial step toward bridging this research gap while strengthening occupational safety and health practices.

A critical review of the literature indicates that, to date, no studies have reported the adaptation and psychometric validation of a PERMA-based Flourishing Scale specifically for the mining worker population in Indonesia. This research gap poses a significant challenge, as the absence of contextually valid instruments limits organizations' ability to accurately identify psychological risks and design effective interventions. Based on these gaps, this study aims to examine the construct validity and internal reliability of a modified PERMA-based Flourishing Scale among mining employees in Indonesia using Confirmatory Factor Analysis (CFA). It is hypothesized that the five- dimensional PERMA measurement model will demonstrate an excellent level of fit with the empirical data. Theoretically, this study is expected to extend empirical support for the universality of the PERMA model within high-risk industrial contexts in developing countries. In practice, the findings are expected to provide HR (Human Resources) and OHS (Occupational Health and Safety) practitioners with a valid and reliable instrument for early detection of employees' psychological well-being, thereby supporting evidence-based interventions aimed at reducing human error and promoting safer, more productive work environments.

METHOD

This research adopted a quantitative, non-experimental design to evaluate the psychometric performance of a flourishing measurement instrument, with a specific emphasis on construct validity and internal consistency. The quantitative approach was chosen to enable empirical examination of the instrument's factor structure and reliability through statistical analysis. The participants comprised 262 employees employed in mining companies, representing occupational groups operating in high-risk work settings.

Table 1.
Demographic Characteristics of the Sample (n=262)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	244	93.1%
	Female	18	6.9%
Age	20 – 30 years	147	56.1%
	31 – 40 years	91	34.7%
	> 40 years	24	9.2%
Position	Operational (Blue-collar)	179	58.3%
	Staff/Management	83	31.7%
Length of Service	1 – 5 years	197	75.2%
	>5 years	65	24.8%

Participants were selected using purposive sampling techniques based on the following inclusion criteria: (1) employment status as either permanent or contract workers, and (2) having a minimum length of service of one year. The minimum length-of-service criterion was set to ensure participants had adequate exposure to the organizational culture, work systems, and operational demands characteristic of the mining environment, thereby enabling them to provide informed, representative, and meaningful responses to the measurement items.

The number of participants in this study fulfilled the sample adequacy requirement for Confirmatory Factor Analysis (CFA). Referring to the guidelines proposed by Hair et al. (2019), CFA requires a sample size of approximately 5-10 participants per estimated item or, alternatively, no fewer than 200 respondents to achieve stable parameter estimation. Accordingly, the sample size employed in this research was considered adequate to support measurement model evaluation and to ensure reliable assessment of the instrument's psychometric properties.

The instrument used in this study was a modified version of the Flourishing Scale developed by Novianti and Mulyana (2025), which is grounded in Seligman's (2011) PERMA model (Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment). Modifications were made to the wording of the items to ensure relevance to the linguistic context and working conditions of the mining industry, without altering the constructs' original meaning.

The scale consists of multiple items rated on a 10-point Likert-type response format, ranging from 1 (Strongly Disagree) to 10 (Strongly Agree), allowing greater sensitivity to response variability. The adaptation process began with linguistic adjustment through translation and semantic review procedures to ensure conceptual equivalence between the original and adapted versions. Subsequently, content validity was evaluated through expert judgment involving specialists in psychometrics and occupational settings within the mining sector, to ensure that each item was culturally appropriate and aligned with the demands of mining work. The results of this evaluation were analyzed using Aiken's V index and demonstrated adequate content validity (Ramadhan et al., 2024).

Prior to the main data collection, a small-scale readability and face validity check

was conducted with five mining employees to ensure that all items were clear, understandable, and culturally appropriate for the mining context. Participants were asked to review each item and provide feedback on the clarity and relevance of the wording. The feedback indicated that the items were generally easy to understand, and no major revisions were required, although minor wording refinements were made to improve clarity.

The adaptation process strictly followed established psychometric guidelines. This included a double-translation procedure in which items were first translated into Indonesian and then back-translated into English by independent language experts to ensure conceptual equivalence. Furthermore, to validate the Flourishing Scale against external criteria, three additional measures were administered: the Subjective Happiness Scale (SHS) to assess convergent validity, and scales for Negative Emotion and Loneliness to establish discriminant validity. The reliability coefficients (Cronbach's Alpha) for these external measures in the current sample ranged from 0.78 to 0.88, indicating robust internal consistency for the correlation tests.

Data analysis in this study was performed using JASP statistical software. The analysis process began with descriptive statistics to summarize participants' characteristics, followed by preliminary tests to assess whether the data met the assumptions required for further analysis. To evaluate construct validity, Confirmatory Factor Analysis (CFA) was used to assess how well the hypothesized measurement model fit the observed empirical data.

The adequacy model was determined by examining several goodness-of-fit indicators, namely the Comparative Fit Index (CFI $\geq$ 0.95), Tucker–Lewis Index (TLI $\geq$ 0.95), Root Mean Square Error of Approximation (RMSEA $\leq$ 0.08), and Standardized Root Mean Square Residual (SRMR $\leq$ 0.08) (Hu & Bentler, 1999). In addition, convergent validity was evaluated through standardized factor loadings, with values of ($\lambda \geq 0.50$) considered indicative of adequate convergence and acceptable internal consistency among the measurement items.

Furthermore, construct validity was strengthened by analyzing both convergent and discriminant aspects. Convergent validity was further verified using Average Variance Extracted (AVE) and Composite Reliability (CR) for each dimension. Discriminant validity was examined using Pearson correlations between the PERMA dimensions and the external constructs of happiness, negative emotion, and loneliness. This comprehensive approach ensures that the instrument not only measures the intended flourishing construct but is also distinct from related yet theoretically different psychological states.

RESULTS AND DISCUSSION

Results

The statistical analysis results were used to assess the overall goodness-of-fit between the PERMA-based Flourishing Scale measurement model and the observed empirical data. Before conducting the measurement model test, descriptive statistical analysis was performed to provide an overview of the distribution of the research data. The following table presents the mean, standard deviation (SD), minimum and maximum values, as well as skewness and kurtosis values to ensure that the normality assumption is met.

Table 2.
Descriptive Statistics of PERMA Dimensions

	P	E	R	M	A
Mean	5.576	5.260	5.081	5.384	5.359
Std. Deviation	1.303	1.210	1.185	1.251	1.213
Skewness	0.003	-0.252	0.040	0.104	0.091
Std. Error of Skewness	0.150	0.150	0.150	0.150	0.150
Kurtosis	0.075	0.214	-0.190	-0.155	0.202
Std. Error of Kurtosis	0.300	0.300	0.300	0.300	0.300
Minimum	2.000	1.333	1.667	2.000	1.667
Maximum	9.000	8.333	9.000	9.333	8.667

The results of the descriptive statistical analysis show that the mean values for all PERMA dimensions are in the moderate-to-high range, ranging from 5.081 to 5.576. The Positive Emotions dimension has the highest mean value, while Relationships has the lowest, although the difference is relatively small. The standard deviation values, ranging from 1.185 to 1.303, indicate moderate, relatively homogeneous variation in respondents' answers. The fairly wide range of minimum and maximum values indicates that respondents made optimal use of the measurement scale, enabling the instrument to adequately distinguish levels of psychological well-being among respondents.

Judging from the data distribution, all variables have skewness and kurtosis values within the range of ±2, indicating that the data are close to normal. A skewness value close to zero indicates a relatively symmetrical data distribution, while a low kurtosis value indicates no extreme deviations in the distribution. Thus, the research data meet the assumption of normality descriptively and are declared feasible for further analysis using Confirmatory Factor Analysis (CFA) within the Structural Equation Modeling (SEM) framework.

The evaluation of model fit relied on several widely applied goodness-of-fit indices in structural equation modeling, including the chi-square statistic, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). These fit indices were considered concurrently, as each index demonstrates varying levels of sensitivity to sample size and model complexity, thereby enabling a more comprehensive and balanced evaluation of the adequacy of the proposed measurement model (Hu & Bentler, 1999).

Table 3.
Goodness-of-Fit Indices (CFA)

Index	Value
Chi Square	2737.334
CFI	0.992
TLI	0.990
RMSEA	0.025

The evaluation of the measurement model indicates that the empirical data demonstrate excellent fit with the theoretical PERMA model. The results of the CFA revealed highly satisfactory goodness-of-fit indices, as indicated by a chi-square value of 2737.334 with statistical significance ($p < .001$), CFI = 0.992, TLI = 0.990, and RMSEA = 0.025, all of which fall within the recommended thresholds for acceptable model fit. All items exhibited standardized factor loadings (λ) above 0.50 and were statistically significant, indicating that convergent validity was achieved across all dimensions of the Flourishing Scale. The results of the CFA model estimation are shown visually in Figure 1. This model illustrates the relationship between each item and its latent dimension (factor loading) and the correlations between dimensions in the PERMA model. In addition, the internal reliability of the instrument was high, with a Cronbach's alpha coefficient of 0.859. These findings confirm that the PERMA construct, as a multidimensional model of well-being, is empirically supported in the present study.

After establishing an adequate level of model fit, further analysis itsexamined standardized factor loadings to evaluate the convergent validity of each item within the respective dimension of the Flourishing Scale. This examination aimed to assess the extent to which each indicator was strongly associated with its underlying latent construct and to ensure that the items consistently measured the same dimension. Standardized factor loadings served as the primary criterion for evaluating the strength of the relationships between indicators and their latent constructs, where higher values indicate more representative and meaningful contributions of the indicators to the measured dimension.

Table 4.
Standardized Factor Loadings

Dimension	Item	Factor Loading (λ)
Positive Emotions	P1	0.744
	P2	0.738
	P3	0.727
Engagement	E1	0.692
	E2	0.784
	E3	0.610
Relationships	R1	0.712
	R2	0.739
	R3	0.757
Meaning	M1	0.750
	M2	0.678
	M3	0.840
Accomplishment	A1	0.801
	A2	0.692
	A3	0.741

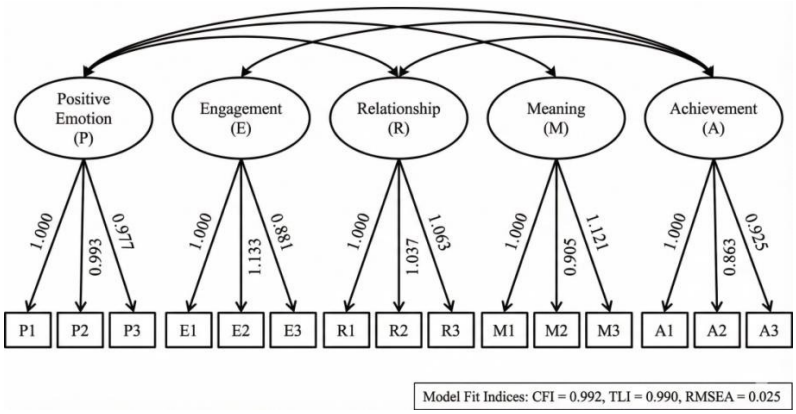

Figure 1. CFA Measurement Model for PERMA-based Flourishing Scale

The CFA results indicated that all PERMA items loaded adequately on their respective latent dimensions, with standardized factor loadings ranging from 0.61 to 0.84, exceeding the recommended minimum threshold of 0.50. All factor loadings were statistically significant ($p < .001$), confirming adequate convergent validity for each PERMA dimension. The inter-factor correlations among Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment indicated that the dimensions are conceptually related yet empirically distinct. This pattern supports the multidimensional structure of the PERMA model, in which different components of flourishing are interconnected but not redundant.

Table 5.
Convergent Validity and Construct Reliability

Construct	AVE	CR	Decision
P (Positive Emotions)	0.520	0.78	Valid Convergence
E (Engagement)	0.489	0.74	Valid Convergence
R (Relationships)	0.542	0.78	Valid Convergence
M (Meaning)	0.576	0.80	Valid Convergence
A (Accomplishment)	0.557	0.79	Valid Convergence

The convergent validity test results show that all PERMA constructs have a Composite Reliability (CR) value above 0.70, indicating good internal consistency. Most constructs also have an Average Variance Extracted (AVE)≥ 0.50, indicating that they explain more than half of the variance in their indicators. Although the Engagement construct has an AVE value slightly below 0.50, convergent validity is still acceptable due to its adequate CR value, in line with the recommendation that constructs with CR ≥ 0.70 can still be considered to have good convergent validity even if the AVE value is marginal. Thus, all PERMA constructs in this study are declared to meet the criteria for convergent validity.

Subsequently, reliability testing was conducted to assess the internal consistency of the instrument across each dimension and for the overall Flourishing Scale. This reliability analysis aimed to assess the extent to which items within a given dimension are interrelated and consistently represent the same latent construct. Thus, the reliability results provide empirical evidence of the instrument's ability to produce stable, trustworthy measurements when applied to the study population, particularly for assessing psychological well-being (Umar & Nisa, 2020).

Table 6.
Reliability Test Results

Variable	Coefficient α
P	0.850
E	0.720
R	0.757
M	0.778
A	0.777
Total	0.859

The reliability analysis indicated that the Cronbach's alpha coefficients for each dimension ranged from good to very good levels, with an overall scale reliability of 0.859. These findings suggest that the items within each dimension demonstrate adequate internal consistency and are meaningfully interrelated in measuring the same latent construct. The obtained reliability values indicate that the instrument produces stable, dependable scores at both the dimensional and overall scale levels. Therefore, the flourishing instrument used in this study can be considered reliable for assessing the psychological well-being of mining employees within the present research context (Ramadhan et al., 2024).

In addition to construct validity and internal reliability testing through CFA, correlation analysis was conducted to evaluate the relationships between the PERMA dimensions and related psychological constructs as supplementary evidence of construct validity. This analysis aimed to assess the consistency and conceptual appropriateness of the relationships among the measured constructs. By examining the pattern of correlations between the PERMA dimensions and theoretically related psychological variables, the analysis provides empirical insight into the instrument's ability to distinguish between conceptually convergent and divergent constructs. Therefore, the correlation results serve as complementary evidence supporting the construct validity of the Flourishing Scale employed in this study. Pearson's correlation coefficient was used to examine the relationships between the PERMA dimensions and the associated psychological constructs.

Table 7.
Correlation Matrix between PERMA Dimensions and Related Constructs

Dimensions	Happiness	Negative Emotion	Loneliness
Positive Emotions	-0.095	0.619	0.041
Engagement	-0.004	0.202	-0.011
Relationships	-0.032	0.317	0.122
Meaning	0.021	0.383	-0.061
Accomplishment	0.096	0.188	-0.034

The observed positive correlation between PERMA-based flourishing and negative emotion does not indicate psychological distress or impaired well-being. Rather, it suggests that flourishing does not necessarily equate to comfort or the absence of stress (Butler & Kern, 2016). This finding aligns with perspectives suggesting that flourishing individuals may still experience negative emotions while maintaining high overall well-being (Davidson, 2021). In a high-risk, high-pressure work environment such as mining, flourishing is more accurately reflected in psychological resilience and effective functioning under adversity than merely in the presence of positive feelings (Tsai & Morissette, 2022; Blasco-Belled et al., 2018).

The weak correlations between flourishing and hedonic indicators such as happiness and loneliness further reinforce the view that flourishing represents a broader, more enduring construct than momentary pleasure or the absence of social isolation. This pattern is also evident at the dimensional level, where Accomplishment shows only weak associations with happiness, negative emotion, and loneliness, suggesting that a sense of achievement among mining employees operates relatively independently from transient emotional states. Prior research indicates that hedonic well-being (e.g., happiness and life satisfaction) alone does not fully capture the complexity of flourishing (VanderWeele, 2017). True flourishing encompasses eudaimonic components such as meaning in life and optimal psychological functioning in addition to hedonic enjoyment (Schotanus-Dijkstra et al., 2016). Accordingly, the limited associations with happiness and loneliness underscore that flourishing involves sustained psychological resources, meaningful relationships, and long- term personal growth beyond transient emotional states or social comfort.

Discussion

The findings of this study provide strong empirical support for the applicability of the PERMA model as a multidimensional framework of psychological well-being among mining employees in Indonesia. The results confirm that the five core dimensions, Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment, demonstrate adequate psychometric stability when applied within a heavy-industry context characterized by high physical demands, safety risks, and intense work pressure. Theoretically, these findings challenge critical assumptions suggesting that the concept of flourishing, originally developed within Western, Educated, Industrialized, Rich, and Democratic (WEIRD) populations, may lack relevance for workers in extractive industries in developing countries. The excellent model fit indices indicate that fundamental psychological needs for optimal functioning and well-being are universal, transcending cultural boundaries, occupational types, and demographic characteristics of blue-collar workers (Nie et al., 2024). Consequently, this study not only extends the cross-

cultural validity of the PERMA model but also provides empirical justification for adopting a multidimensional framework for understanding mental health in high-risk industrial settings that have traditionally been examined primarily through stress- or fatigue-oriented perspectives (Yang et al., 2024).

Further analysis of the relative contributions of each dimension indicates that Relationships and Meaning are particularly salient determinants of flourishing among mining employees. This pattern can be interpreted in light of the distinctive characteristics of mining work culture, which is often masculine, hierarchical, and conducted in geographically isolated environments (Heimann et al., 2023). Within such contexts, overt emotional expression or personal affective reflection may receive limited social endorsement, as toughness, self-control, and physical endurance are more strongly valued as normative masculine traits. As a result, psychological well-being tends to be expressed not through individual affective states, but through strong functional relationships and solidarity among coworkers who collectively act as "guardians of safety" (Lomas, 2013). Social support in the workplace thus functions as a collective coping mechanism for managing occupational risks and pressures, reinforcing the prominence of the Relationships dimension as a key psychological resource.

At the same time, the salience of the Meaning dimension reflects the internalization of responsibility associated with the breadwinner role, whereby occupational risk is construed as a meaningful and honorable sacrifice for one's family (Kerksieck et al., 2019). Such meaning-making processes serve as adaptive psychological mechanisms that enable individuals to sustain subjective well-being under demanding and hazardous working conditions. This interpretation helps explain why meaning-oriented dimensions appear more prominent than hedonic aspects of well-being within this population, aligning with prior research emphasizing the centrality of purpose and value-based motivation in sustaining resilience under adversity (Martela & Sheldon, 2019).

The empirical evidence demonstrating the validity and reliability of the Flourishing Scale in the mining context carries important practical implications for human resource management and occupational health and safety (OHS) systems. Traditionally, OHS practices in the mining sector have focused predominantly on physical safety, procedural compliance, and technical risk assessments, while psychological well-being has received comparatively limited attention. However, psychological states such as languishing, characterized by low well-being without meeting criteria for mental disorder, may function as latent risk factors contributing to reduced vigilance, impaired judgment, and unsafe work behaviors (Pizarro & Fuenzalida, 2021). By integrating flourishing assessments into routine medical check-ups or psychological evaluations, organizations can identify early signs of declining well-being before they escalate into safety incidents or productivity losses (Liu et al., 2015). Such integration enables a strategic shift in OHS management from a reactive– curative approach toward a preventive and promotive model.

Beyond its practical relevance, the validated construct of the Flourishing Scale holds important strategic implications for mining organizations as high-reliability systems. In high-risk environments, system failures often stem not solely from technical deficiencies but also from latent psychological conditions that remain undetected (Carayon et al., 2015). Without contextually validated measures of psychological well-being, organizations risk relying on insensitive indicators that fail to capture early warning

signs of declining mental states among workers. Such undetected conditions may ultimately contribute to attentional lapses, poor decision-making, and increased accident probability (Lerman et al., 2012). Therefore, the availability of a validated flourishing instrument is critical not only for scientific measurement but also as a foundation for evidence-based decision-making in occupational safety management. The present findings underscore that accurate psychological assessment constitutes an integral component of operational reliability, collective safety, and the long- term sustainability of the mining industry (Amponsah-Tawiah et al., 2014).

Despite its contributions, this study is not without limitations. The reliance on self-report measures may introduce social desirability bias, particularly within masculine work cultures that tend to discourage the expression of psychological vulnerability. Additionally, the cross-sectional design limits inferences regarding the temporal dynamics of employee well-being in relation to changes in workload, shift rotation, or safety incidents. Future research is therefore encouraged to integrate flourishing assessments with objective organizational indicators such as absenteeism records, accident rates, or occupational health data to strengthen criterion validity. Expanding the sample across different mining commodities and operational regions would also enhance the instrument's generalizability and contextual sensitivity within the diverse landscape of Indonesia's mining sector.

CONCLUSION

This study concludes that the Flourishing Scale demonstrates strong validity and reliability, thereby reinforcing evidence of the universality of the PERMA model in high-risk industrial worker populations. Theoretically, these findings highlight the contextuality of the 'Relationships' and 'Meaning' dimensions as crucial adaptive mechanisms for mine workers facing extreme work environment challenges. In practice, this scale is recommended for integration into OHS management systems as a diagnostic tool to assess employees' psychological conditions on a regular basis. The results of this study can also be used as a basis for HR and OHS practitioners in designing targeted interventions and organizing welfare training that supports operational safety. Furthermore, future research should conduct longitudinal testing and cross-validation with broader samples to assess the instrument's stability across diverse work dynamics. Finally, the development of specific assessment norms for Indonesian mine workers is urgently needed to provide a more accurate reference for mental health evaluation in the extractive industry.

ACKNOWLEDGMENTS

Declare none

REFERENCES

Amponsah-Tawiah, K., Leka, S., Jain, A., Hollis, D., & Cox, T. (2014). The impact of physical and psychosocial risks on employee well-being and quality of life: The case of the mining industry in Ghana. Safety Science, 65, 28–35. https://doi.org/10.1016/j.ssci.2013.12.002

Blasco-Belled, A., Rogoza, R., Torregrosa, M. S., & Alsinet, C. (2018). Emotional intelligence and flourishing: The mediating role of social support and resilience. Personality and Individual Differences, 135, 31–36.

https://doi.org/10.1016/j.paid.2018.06.006

Butler, J., & Kern, M. L. (2016). The PERMA-Profiler: A brief multidimensional measure of flourishing. International Journal of Wellbeing, 6(3), 1–48. https://doi.org/10.5502/ijw.v6i3.526

Carayon, P., Hancock, P., Leveson, N., Noy, I., Sznelwar, L., & Van Hootegem, G. (2015).

Advancing a sociotechnical systems approach to workplace safety–developing the conceptual framework. Ergonomics, 58(4), 548–564. https://doi.org/10.1080/00140139.2015.1015623

Davidson, R. J. (2021). Well-being is not the absence of negative emotions. Proceedings of the National Academy of Sciences, 118(51), e2114425118. https://doi.org/10.1073/pnas.2114425118

Fabricio, A., Kaczam, F., Obregon, S. L., de Almeida, D. M., Lopes, L. F. D., da Veiga, C. P., & da Silva, W. V. (2022). Quality of life: Flourishing in The Work Context.

Current Psychology, 41(10), 6987–7002. https://doi.org/10.1007/s12144-020-01203-3

Fu, A., Zhao, T., Gao, X., Li, X., Liu, X., & Liu, J. (2022). Association of psychological symptoms with job burnout and occupational stress among coal miners in Xinjiang, China: A cross-sectional study. Frontiers in Public Health, 10, 1049822. https://doi.org/10.3389/fpubh.2022.1049822

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2019). Multivariate data analysis (8th ed.). Cengage Learning.

Heimann, S., Johansson, K., & Franklin, W. T. (2023). Gender in industrial mine work and organizations. A review of an expanding research field. The Extractive Industries and Society, 16. https://doi.org/10.1016/j.exis.2023.101371

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling: A Multidisciplinary Journal, 6(1), 1–55. https://doi.org/10.1080/10705519909540118

Kerksieck, P., Bauer, G. F., & Brauchli, R. (2019). Personal and social resources at work: Reciprocal relations between crafting for social job resources, social support at work and psychological capital. Frontiers in Psychology, 10, 2632. https://doi.org/10.3389/fpsyg.2019.02632

Lerman, S. E., Eskin, E., Flower, D. J., George, E. C., Gerson, B., Hartenbaum, N., Hursh,

S. R., & Moore-Ede, M. (2012). Fatigue risk management in the workplace. Journal of Occupational and Environmental Medicine, 54(2), 231–258. https://doi.org/10.1097/JOM.0b013e318247a3b0

Liu, L., Wen, F., Xu, X., & Wang, L. (2015). Effective resources for improving mental health among Chinese underground coal miners: Perceived organizational support and psychological capital. Journal of Occupational Health, 57(1), 58–68. https://doi.org/10.1539/joh.14-0082-OA

Lomas, T. (2013). Critical positive masculinity. Masculinities & Social Change, 2(2), 167–193. https://doi.org/10.4471/mcs.2013.28

Martela, F., & Sheldon, K. M. (2019). Clarifying the concept of well-being: Psychological need satisfaction as the common core connecting eudaimonic and subjective well-being. Review of General Psychology, 23(4), 458–474. https://doi.org/10.1177/1089268019880886

Nie, Y.-Z., Zhang, X., Hong, N.-W., Zhou, C., Huang, Q.-Q., Cao, S.-Y., & Wang, C.

(2024). Psychometric validation of the PERMA-profiler for well-being in Chinese adults. Acta Psychologica, 246, 104248https://doi.org/10.1016/j.actpsy.2024.104248

Novianti, D. C., & Mulyana, O. P. (2025). Hubungan Kebermaknaan Kerja dan Flourishing pada Guru SMK X. Character Jurnal Penelitian Psikologi, 12(01), 202–214. https://doi.org/10.26740/cjpp.v12n1.p202-214

Nur'aini, N. A., & Mulyana, O. P. (2024). Flourishing: Development of a higher-level uses well-being scale and concept in positive psychology. Jurnal Psikologi Teori Dan Terapan, 15(02), 194–207. https://doi.org/10.26740/jptt.v15n02.p194-207

Pizarro, J. M., & Fuenzalida, F. A. (2021). Mental health in mine workers: a literature review. Industrial Health, 59(6), 343–370. https://doi.org/10.2486/indhealth.2020-0178

Ramadhan, M. F., Siroj, R. A., & Afgani, M. W. (2024). Validitas and reliabilitas. Journal on Education, 6(2), 10967–10975. https://doi.org/10.31004/joe.v6i2.4885

Risqiyah, L., Royanulloh, & Mawardi, I. (2025). The concept of Sa'ādah in the perspective of Sufism: An analysis of Imam Al-Ghazali's thoughts in Ihya Ulumuddin. Psikoislamika: Jurnal Psikologi Dan Psikologi Islam, 22(2). https://doi.org/10.18860/psikoislamika.v22i2.31905

Schotanus-Dijkstra, M., Drossaert, C. H., Pieterse, M. E., Walburg, J. A., & Bohlmeijer, E. T. (2016). Systematic review on the definition and operationalization of flourishing. Journal of Positive Psychology, 11(6), 545–564. https://doi.org/10.1080/17439760.2015.1137627

Seligman, M. E. P. (2011). Flourish: A visionary new understanding of happiness and well-being. Simon & Schuster.

Tsai, J., & Morissette, S. B. (2022). Psychological resilience in high-risk occupations: A review and application to frontline healthcare. Frontiers in Psychology, 13, 850663. https://doi.org/10.3389/fpsyg.2022.850663

Umar, J., & Nisa, Y. F. (2020). Uji Validitas Konstruk dengan CFA dan Pelaporannya. JP3I (Jurnal Pengukuran Psikologi dan Pendidikan Indonesia), 9(2 SE-Articles), 1–11. https://doi.org/10.15408/jp3i.v9i2.16964

VanderWeele, T. J. (2017). On the promotion of human flourishing. Proceedings of the National Academy of Sciences, 114(31), 8148–8156. https://doi.org/10.1073/pnas.1702996114

Willen, S. S. (2022). Flourishing and health in critical perspective: An invitation to interdisciplinary dialogue. SSM-Mental Health, 2, 100045. https://doi.org/10.1016/j.ssmmh.2021.100045

Yang, C., Chen, HT., Luo, KH. et al. The validation of Chinese version of workplace PERMA-profiler and the association between workplace well-being and fatigue. BMC Public Health 24, 720 (2024). https://doi.org/10.1186/s12889-024-18194-6

Yiğit, B., & Çakmak, B. Y. (2024). Discovering Psychological Well-Being: A Bibliometric Review. Journal of Happiness Studies, 25(5), 43. https://doi.org/10.1007/s10902-024- 00754-7