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Psychometric validation of the Existence, Relatedness, and Growth (ERG) scale for Indonesian generation Z employees

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Abstract

Background:

The Existence, Relatedness, and Growth (ERG) theory provides a framework for understanding employee motivation. However, the psychometric properties of the ERG scale have not been thoroughly examined within the context of Indonesian Generation Z employees, and key theoretical debates regarding the simultaneity of needs and frustration-regression mechanisms remain unexplored in relation to expected measurement structures.

Methods:

A cross-sectional survey was conducted among 751 Indonesian Generation Z employees (born between 1997 and 2008) recruited through professional networks, social media platforms, and organizational contacts across multiple industries. The ERG scale was translated and culturally adapted using forward-backward translation procedures and cognitive interviews with Gen Z employees. This study employs the Item Response Theory (IRT) framework, specifically Rasch analysis, to validate the instrument's psychometric properties. Confirmatory Factor Analysis (CFA), network analysis, and Rasch modeling were used to examine factorial validity, reliability, convergent and discriminant validity, and measurement invariance across gender.

Results:

CFA confirmed the theoretically-derived five-factor structure (differentiating Existence into Pay and Fringe Benefits, Relatedness into Superiors and Peers, alongside Growth) with excellent fit indices (CFI = 0.994, TLI = 0.993, RMSEA = 0.069). Network analysis revealed clear clustering of items according to theoretical domains. Rasch analysis, grounded in Item Response Theory, indicated that the items fit well and were reliable, with item difficulties concentrated at or below 0 logits, indicating optimal measurement precision for low to moderate levels of need satisfaction while suggesting potential ceiling effects for highly satisfied individuals. Measurement invariance was established across gender groups. Convergent and discriminant validity were demonstrated through theoretically meaningful correlations with job satisfaction (r = 0.418–0.700) and self-esteem (r = 0.047–0.179), with all correlations below r = 0.85 supporting discriminant validity.

Conclusions:

The Indonesian version of the ERG scale is a valid and reliable instrument for assessing motivational needs among Generation Z employees. The scale demonstrates particular utility for identifying specific need deficits in low to moderate satisfaction ranges and can inform targeted organizational strategies for employee engagement and retention.

Keywords: ERG theory, psychometric validation, Generation Z, Indonesia, employee motivation, measurement invariance

Introduction

The escalating turnover rate among Generation Z (Gen Z) employees presents a significant challenge for organizations globally, with Indonesia experiencing particularly high rates (1,2). Up to 60% of young Indonesian professionals reportedly consider resignation within their initial two years of employment, a trend attributed mainly to Gen Z's distinct work attitudes, career expectations, and values (3–6). Unlike preceding generations, Gen Z often prioritizes immediate needs and gratification over long-term career trajectories, contributing to shorter job tenures and heightened workforce instability (4). For Indonesian organizations, this phenomenon not only compromises productivity and inflates recruitment costs but also underscores an urgent need for evidence-based, generation-specific retention strategies grounded in validated measurement instruments that capture the multifaceted nature of Gen Z motivation (7–10).

Understanding employee turnover has evolved significantly. Early frameworks, such as Taylor's scientific management and the Hawthorne studies, emphasized task efficiency and relational factors like job satisfaction (11). Herzberg's Two-Factor Theory distinguished between intrinsic motivators (e.g., achievement) and extrinsic hygiene factors (e.g., salary) (12,13). Mobley's (14) turnover model integrates psychological and organizational aspects, including satisfaction, commitment, and external opportunities. More contemporary approaches highlight employee engagement, talent development, and strategic workforce planning in response to global and technological shifts (15). However, the evolving workforce expectations, particularly among Gen Z in non-Western contexts such as Indonesia, necessitate reevaluating these models to capture their unique motivations and behaviors. Critically, existing motivational frameworks often fail to account for the simultaneous operation of multiple needs and the dynamic processes through which unmet needs influence employee behavior, gaps that Alderfer's ERG theory directly addresses.

Theoretical Framework: Alderfer's ERG Theory and Its Relevance to Generation Z

Alderfer's Existence, Relatedness, and Growth (ERG) theory provides a particularly pertinent framework for understanding Gen Z's turnover behavior and represents a significant theoretical advancement over hierarchical need models. This theory posits three core human needs: Existence (basic material needs, such as salary and job security), Relatedness (interpersonal relationships with supervisors and peers), and Growth (personal development and career advancement) (16). Unlike Maslow's hierarchical model, which assumes the sequential satisfaction of needs, ERG theory proposes that multiple needs can operate simultaneously, and individuals may pursue different need categories concurrently, depending on their circumstances (16,17). This simultaneity principle is particularly relevant for understanding Gen Z employees, who often seek immediate fulfillment across multiple domains rather than following a sequential progression.

A key theoretical contribution of ERG theory is the frustration-regression hypothesis, which posits that when higher-order needs (e.g., Growth) remain chronically unmet, individuals may regress to focusing on lower-order needs (e.g., Existence) that are more readily attainable (16,17). This mechanism is especially salient for Gen Z employees in Indonesia, who demonstrate a pronounced inclination toward immediate gratification and rapid career progression (4,7,8). When organizational environments fail to provide adequate growth opportunities, Gen Z employees may redirect their focus toward material compensation or interpersonal relationships or seek employment elsewhere. Understanding this dynamic is crucial for developing effective retention strategies that address the multifaceted nature of Gen Z motivation.

Furthermore, the ERG framework's flexibility in accommodating cultural variations makes it particularly suitable for the Indonesian context. In collectivistic societies like Indonesia, Relatedness needs may carry greater weight than in individualistic Western contexts, while economic development stages may influence the relative salience of Existence needs (18,19). For Indonesian Gen Z employees navigating a rapidly transforming labor market characterized by digital disruption and evolving work arrangements, the ERG framework provides a nuanced lens for understanding how these contextual factors shape motivational priorities.

Psychometric Validation Gap and Measurement Challenges

Despite its theoretical utility, the ERG scale lacks empirical psychometric validation, particularly in non-Western contexts such as Indonesia, and for Gen Z populations in emerging economies (7,8). The most widely cited ERG instrument was developed by Arnolds and Boshoff (20) in a South African

context, demonstrating a five-factor structure that differentiated Existence into Pay and Fringe Benefits subdimensions, and Relatedness into Superiors and Peers subdimensions, alongside a unified Growth dimension. While this instrument has shown acceptable reliability (α = 0.65 to α = 0.89), its psychometric properties have not been systematically examined using contemporary advanced techniques such as network analysis and Rasch modeling, nor has it been validated for Gen Z populations in Southeast Asian contexts.

This measurement gap is problematic for several reasons. First, the original ERG scale was developed and validated primarily in Western or Western-influenced organizational contexts, raising questions about cross-cultural equivalence and measurement invariance (21,22). Second, generational differences in work values, communication styles, and career expectations suggest that measurement instruments validated for earlier generations may not function equivalently for Gen Z employees (4–6). Third, the absence of a comprehensive psychometric evaluation using multiple analytical approaches limits our confidence in the construct validity and practical utility of existing ERG measures.

The measurement gap is particularly critical for Generation Z employees, who exhibit distinct characteristics that may affect scale functioning. Unlike previous generations, Gen Z demonstrates: (1) higher expectations for immediate feedback and rapid career progression, potentially affecting how Growth items are interpreted; (2) different conceptualizations of work-life balance and job security, which may influence Existence need assessments; and (3) technology-mediated communication preferences that reshape Relatedness need fulfillment, particularly in peer and supervisor relationships (4–6). These generational differences suggest that measurement instruments validated for earlier cohorts may not capture the unique motivational profiles of Gen Z employees, necessitating generation-specific validation.

To address these gaps, this study employs a multi-method psychometric validation approach grounded in Item Response Theory (IRT), integrating Confirmatory Factor Analysis (CFA), network analysis, and Rasch modeling. This comprehensive strategy allows for rigorous examination of the ERG scale's factorial structure, internal consistency, convergent and discriminant validity, measurement invariance, and item-level functioning across demographic subgroups.

Theoretical Justification: Item Response Theory and Rasch Analysis

This study is grounded in Item Response Theory (IRT). This sophisticated psychometric framework models the relationship between individuals' latent

traits (ability or need levels) and their responses to test items (23,24). Unlike Classical Test Theory, which assumes that measurement error is uniform across all ability levels, IRT provides item-level analysis that accounts for how item difficulty and discrimination parameters vary across the latent trait continuum. The Rasch model, a specific application of IRT, is particularly suited for validating the ERG scale because it: (1) provides objective, sample-independent item calibrations; (2) enables detection of differential item functioning across groups; (3) assesses the fit between observed data and the hypothesized measurement model; and (4) produces interval-level measurement of both item difficulty and person ability (23–26).

Critically, this study maintains a consistent theoretical framework by employing Rasch analysis within the IRT paradigm, rather than combining it with Exploratory Factor Analysis (EFA). While EFA and IRT represent fundamentally different psychometric approaches, EFA is grounded in Classical Test Theory and assumes latent factors with continuous distributions. In contrast, IRT models item response probabilities as a function of latent traits, the ERG scale has a well-established theoretical foundation (Alderfer's ERG theory) and prior empirical support for its five-factor structure (Arnolds & Boshoff, (20)). Therefore, this study does not employ EFA. Instead, we proceed directly to Confirmatory Factor Analysis (CFA) to test whether the theoretically-derived five-factor structure fits the Indonesian Gen Z data, followed by Rasch analysis to evaluate item-level functioning within the IRT framework. This approach is consistent with best practices for validating established instruments in new populations and cultural contexts (27,28).

The decision to employ Rasch analysis separately for each of the five subdimensions (rather than a single unidimensional Rasch model) is theoretically and methodologically justified by several considerations: (1) ERG theory explicitly conceptualizes each subdimension as measuring distinct content domains (e.g., monetary compensation vs. interpersonal relationships) that would violate unidimensionality assumptions if analyzed together; (2) separate analyses enable precise evaluation of item functioning within each specific need domain, allowing for detection of differential item functioning and assessment of measurement precision at the subdimensional level; and (3) this approach provides actionable insights for organizational interventions by identifying which specific need areas require attention (25,26,29). This methodology honors both the theoretical structure of ERG theory and the methodological requirements of IRT/Rasch analysis.

Advanced Psychometric Techniques for Comprehensive Validation

CFA remains foundational for validating measurement models, ensuring observed variables accurately reflect underlying latent constructs. It rigorously tests theoretical models, assesses convergent and discriminant validity, accounts for measurement error, and facilitates model comparison (30). Furthermore, CFA enables testing for measurement invariance across groups or time points, making it suitable for longitudinal and multigroup studies (21,31,32). These capabilities render CFA indispensable for enhancing the reliability and applicability of measurement instruments, particularly when adapting them to the cultural and generational nuances of Indonesian Gen Z employees.

Given that the ERG scale has a well-established theoretical foundation and prior empirical support for its five-factor structure, this study proceeds directly to CFA to confirm whether this structure generalizes to the Indonesian Gen Z context. This approach is consistent with best practices for validating established instruments in new populations (27,28)

Network analysis offers a novel and complementary approach to construct validation, focusing on the direct relationships between items within a measurement tool. Unlike CFA, which assumes a latent factor structure, network analysis visualizes items as interconnected nodes, allowing researchers to explore complex interdependencies and identify central items that significantly influence the overall construct. This method uncovers item redundancies, biases, and dynamic relationships, offering a more nuanced understanding of item functioning within Indonesian settings (33–35). Network analysis is particularly valuable in psychological and behavioral research, where constructs are often multifaceted and interdependent.

The Rasch model, grounded in Item Response Theory, further strengthens construct validation by evaluating how accurately a measurement instrument reflects its intended latent construct. It assesses the fit between observed data and the hypothesized measurement structure, ensuring consistent item functioning. The Rasch model also detects Differential Item Functioning (DIF), identifying potential biases in how different groups interpret or respond to items, thereby ensuring fairness and accuracy. By focusing on item difficulty and person ability parameters, the Rasch model enhances the validity and reliability of measurement instruments across diverse groups, including those based on gender and cultural subgroups in Indonesia (26).

Research Objectives and Hypotheses

This study represents the first comprehensive empirical validation of the ERG scale among Gen Z employees in Indonesia using a combined approach of CFA, network analysis, and Rasch analysis within the Item Response

Theory framework. Based on the theoretical framework and prior empirical evidence, we propose the following hypotheses:

H1: The ERG scale will demonstrate a five-factor structure (Existence-Pay, Existence-Fringe Benefits, Relatedness-Superiors, Relatedness-Peers, and Growth) among Indonesian Gen Z employees, consistent with Arnolds and Boshoff's (20) findings, reflecting the conceptual differentiation of Existence and Relatedness needs into meaningful subdimensions.

H2: The ERG scale will demonstrate configural, metric, and scalar measurement invariance across gender groups, indicating that the construct is measured equivalently for male and female Indonesian Gen Z employees.

H3: The ERG scale will show no significant Differential Item Functioning (DIF) across gender groups, ensuring fairness in measurement.

H4: The ERG scale will demonstrate adequate convergent validity through moderate-to-strong positive correlations with theoretically related constructs (job satisfaction and self-esteem) and adequate discriminant validity through correlations that are not excessively high, indicating that ERG dimensions capture distinct aspects of employee motivation.

By integrating these advanced psychometric techniques within a consistent Item Response Theory framework, this study offers a novel and comprehensive validation of the ERG scale within the Indonesian context. The findings are expected to contribute to the theoretical refinement of ERG theory and provide actionable insights for practitioners and policymakers in designing evidence-based retention strategies tailored to the unique aspirations and motivations of Gen Z employees in Indonesia.

Methods
Participants and Sampling Strategy

The study employed a convenience sampling approach with quota targets to ensure adequate representation across demographic characteristics. Participants were recruited through: (1) professional networking platforms (LinkedIn); (2) social media channels (Instagram, Twitter/X); and (3) direct organizational contacts across multiple industries, including technology, finance, retail, healthcare, and manufacturing.

Recruitment materials clearly specified inclusion criteria: (1) born between 1997 and 2008 (Generation Z), (2) currently employed in a formal work setting, and (3) a minimum of one year of continuous work experience. The initial target sample was 500 participants, based on a power analysis for CFA with 20 items and 5 factors (30,36) however, we obtained 751 valid

responses, exceeding our minimum requirement and ensuring robust statistical power.

The final sample comprised 751 Indonesian Generation Z employees (born between 1997 and 2008) with at least one year of work experience. The sample was predominantly female (544, 72.4%) and consisted of single individuals (690, 91.9%). Participant ages ranged from 23 to 26 years, with the largest concentrations at 25 years (n = 145, 19.3%), 24 years (n = 142, 18.9%), and 26 years (n = 121, 16.1%). Work tenure varied, with 34% (n = 255) having one year of experience, 28.9% (n = 217) with two years, and 20.4% (n = 153) with three years. Geographically, the majority of participants resided in Java (504, 67.1%), followed by Sumatra (92, 12.2%), Sulawesi (82, 10.9%), Kalimantan (41, 5.5%), Bali and West Nusa Tenggara (29, 3.9%), and Papua (3, 0.4%).

Measures

Existence, Relatedness, and Growth (ERG) Scale. The 20-item ERG Scale (20) was used to assess employee needs. This instrument, grounded in Alderfer's ERG theory, utilizes a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). While conceptually based on three broad dimensions (Existence, Relatedness, Growth), the scale operationalizes these through five distinct sub-dimensions: Existence-Pay (4 items), Existence-Fringe Benefits (4 items), Relatedness-Superiors (4 items), Relatedness-Peers (4 items), and Growth (4 items). Example items include "I get enough money from my job to live comfortably" (Existence-Pay) and "I always get the feeling of learning new things from my work" (Growth). Previous studies have reported acceptable internal consistency for this scale (α = 0.65 to α = 0.89). The scale was translated into Indonesian using a forward-backward translation procedure by two independent bilingual experts, with discrepancies resolved through consensus discussion. Cultural adaptation was conducted through cognitive interviews with 5 Gen Z employees to ensure item comprehension and relevance.

Rosenberg Self-Esteem Scale (RSES). Global self-esteem was measured using the 10-item RSES (37). Items are rated on a 4-point Likert scale (1 = strongly disagree, 4 = strongly agree). This unidimensional scale includes both positively and reverse-worded items (e.g., "I feel that I have several good qualities"; "I certainly feel useless at times"). The RSES has demonstrated robust psychometric properties in diverse populations, with typical internal consistency ranging from α = 0.77 to α = 0.88. This scale was included to assess convergent validity, as self-esteem is theoretically related to need satisfaction, particularly in the Growth and Relatedness domains (38,39).

The Minnesota Satisfaction Questionnaire (MSQ). Job satisfaction was assessed with the 20-item short form of the MSQ (40). This multidimensional instrument uses a 5-point Likert scale (1 = very dissatisfied, 5 = very satisfied) to evaluate intrinsic (e.g., achievement, recognition), extrinsic (e.g., compensation, supervision), and general work conditions. The MSQ has consistently shown strong psychometric properties, with general satisfaction reliability typically ranging from $\alpha = 0.80$ to $\alpha = 0.92$. This scale was included to assess convergent validity, as job satisfaction is theoretically and empirically linked to need fulfillment within the ERG framework (16,20).

Procedures

Data were collected over three months (March to May 2025) via an online survey platform (Google Forms). Ethical clearance was obtained from the Institutional Ethics Committee of a major public university in Indonesia (Ethics Approval Number: 2191/UN1/PS.1/SD/PT.01.04/2025). All participants provided informed consent, which detailed the study objectives, estimated duration, right to withdraw, potential consequences, factors influencing participation, anticipated benefits, confidentiality parameters, participation incentives, and contact information for inquiries. Participants were recruited through professional networks, social media platforms, and organizational contacts across multiple industries. Inclusion criteria were: (1) born between 1997 and 2008, (2) currently employed, and (3) with a minimum of one year of work experience. IDR 5,000 as compensation was provided for participation.

Data Analysis

The psychometric validation of the ERG scale in the Indonesian context employed a multi-pronged analytical approach grounded in Item Response Theory:

Confirmatory Factor Analysis (CFA). CFA was conducted using JASP 0.19.3.0 software on the full sample (N = 751) to evaluate the theoretically-derived five-factor structure of the ERG scale. The DWLS (Diagonally Weighted Least Squares) estimator was selected because it does not assume multivariate normality and is particularly suitable for ordinal Likert-scale data, providing more accurate parameter estimates and standard errors than maximum likelihood estimation for non-normal distributions (41). Standard fit indices, including Comparative Fit Index (CFI ≥ 0.95), Tucker-Lewis Index (TLI ≥ 0.95), Root Mean Square Error of Approximation (RMSEA ≤ 0.08), and Standardized Root Mean Square Residual (SRMR ≤ 0.08), were used following established guidelines (30,36,41). Multiple competing models were

tested: (1) a five-factor correlated model, (2) a three-factor model (collapsing subdimensions), and (3) a second-order model with three higher-order factors. Model comparison was conducted using chi-square difference tests and fit index comparisons.

Network Analysis. Network analysis was performed using JASP 0.19.3.0 software on the full sample (N = 751) to examine item interconnections and identify central nodes. Standard network metrics, including node strength, closeness centrality, betweenness centrality, and expected influence, were employed to understand item relationships and detect potential redundancies within the ERG construct (42). Network stability was assessed using bootstrap procedures (1000 iterations), and edge weight accuracy was evaluated through 95% confidence intervals. Networks were estimated using the graphical LASSO method with the Extended Bayesian Information Criterion (EBIC) for regularization. Separate networks were constructed for: (1) ERG scale alone, (2) ERG scale with RSES, and (3) ERG scale with MSQ, to examine construct relationships and provide evidence for convergent validity.

Rasch Model Analysis - Item Response Theory Framework. Rasch model analysis was implemented using Jamovi 2.4.11 software on the full sample (N = 751) to evaluate item functioning and detect potential biases across demographic subgroups within the Item Response Theory framework. Standard Rasch parameters included item difficulty estimates (δ), person ability measures (θ), infit and outfit statistics (acceptable range: 0.6–1.4), and separation reliability indices for both items and persons (25,26). The estimator used was Conditional Maximum Likelihood (CML), with 1000 bootstrap samples generated to obtain stable parameter estimates and confidence intervals (25).

Differential Item Functioning (DIF) Analysis - Rationale for Gender Grouping and IRT Framework. Differential Item Functioning (DIF) analysis examined measurement invariance across gender groups, with DIF contrast thresholds set at ±0.64 logits for meaningful differences. Gender was selected as the grouping variable for DIF analysis based on several theoretical and empirical considerations. First, prior research indicates significant gender differences in work values, career expectations, and motivational priorities among Gen Z employees, with women often placing greater emphasis on work-life balance and relational aspects of work. At the same time, men may prioritize compensation and advancement opportunities (4,5,43). Second, gender socialization processes in Indonesia, influenced by both traditional cultural norms and modernization trends, may shape how male and female employees interpret and respond to items, particularly in

the Relatedness dimensions involving supervisor and peer relationships (18,19). Third, ensuring measurement invariance and the absence of DIF across gender is critical for fair assessment in diverse workforces and for enabling valid between-group comparisons in organizational research and practice (21,32). By examining DIF across gender, we ensure that observed score differences reflect actual differences in need satisfaction rather than measurement bias.

Rasch Analyses by Subdimension - Theoretical and Methodological Justification. Rasch analyses were conducted separately for each of the five subdimensions based on strong theoretical and methodological justifications: (1) ERG theory explicitly conceptualizes each subdimension as measuring distinct content domains (e.g., monetary compensation vs. interpersonal relationships) that would violate unidimensionality assumptions if analyzed together; (2) separate analyses enable precise evaluation of item functioning within each specific need domain, allowing for detection of differential item functioning and assessment of measurement precision at the subdimensional level; and (3) this approach provides actionable insights for organizational interventions by identifying which specific need areas require attention (26,29,44). This methodology is consistent with both the theoretical structure of ERG theory and the methodological requirements of Item Response Theory.

Convergent and Discriminant Validity Analysis. To assess convergent and discriminant validity, Pearson correlation coefficients were calculated between ERG subscales and theoretically related constructs (RSES and MSQ subscales). Based on ERG theory and prior empirical research (16,20,38,39), we expected: (1) moderate-to-strong positive correlations ($r = 0.40$–0.70) between ERG dimensions and conceptually related MSQ dimensions (e.g., ERG Existence-Pay with MSQ Extrinsic Satisfaction, ERG Growth with MSQ Intrinsic Satisfaction), supporting convergent validity; (2) moderate positive correlations ($r = 0.30$–0.50) between ERG Relatedness and Growth dimensions with RSES, reflecting the role of interpersonal relationships and personal development in self-esteem; and (3) correlations below $r = 0.85$ to demonstrate that ERG dimensions capture distinct constructs (discriminant validity). Correlation magnitudes were interpreted using Cohen's guidelines (45): small ($r = 0.10$–0.29), medium ($r = 0.30$–0.49), and large ($r \geq 0.50$).

Integrating these advanced psychometric techniques within a consistent Item Response Theory framework offers a comprehensive and rigorous validation of the ERG scale in the Indonesian context, addressing existing literature gaps and providing a robust measurement tool for researchers and practitioners.

Results

Descriptive Statistics

Table 1 presents the descriptive statistics for the 20 items of the ERG Scale. Item mean scores ranged from 2.96 to 4.13, with standard deviations between 0.87 and 1.26. Skewness values (ranging from -1.13 to 0.004) and kurtosis values (ranging from -1.07 to 1.40) indicated that all items were approximately normally distributed, with skewness values between ±2.0 and kurtosis values between ±7.0 considered acceptable for parametric analyses (46).

These descriptive patterns reveal several theoretically meaningful findings. First, Indonesian Gen Z employees report relatively higher satisfaction with relational (M = 3.41-4.13) and growth aspects (M = 3.69-4.13) compared to material compensation (M = 2.96-3.80). This pattern aligns with Gen Z's documented prioritization of meaningful work, development opportunities, and positive workplace relationships over traditional extrinsic rewards (4,7,8).

Second, the lowest mean scores were observed for Existence-Fringe Benefits items (M = 2.96-3.05), suggesting that Indonesian organizations may be underinvesting in comprehensive benefits packages for Gen Z employees. This finding has important implications for retention strategies, as unmet Existential needs may trigger the frustration-regression mechanism proposed by ERG theory (16).

Third, the relatively low standard deviations for Growth items (SD = 0.87-1.03) compared to Existence items (SD = 1.10-1.26) suggest greater consensus among Gen Z employees regarding growth opportunities. At the same time, perceptions of compensation adequacy vary more widely across individuals and organizations.

Table 1. Properties of items from the 20-item ERG Scale

Item		Mean	SD	Skewness	Kurtosis
Alderfer existence (pay)					
ALPY 1	I get enough money from my job to live comfortably	3.257	1.096	-0.407	-0.505
ALPY 2	My pay is adequate to provide for the basic things in life	3.796	1.018	-0.867	0.401
ALPY 3	Considering the work required the pay is what it should be	3.269	1.167	-0.263	-0.835

ALPY 4	Compared to the rates for similar work here my pay is good	3.386	1.117	-0.389	-0.565
Alderfer existence (fringe benefits)					
ALFB 1	Our fringe benefits cover many of the areas they should	3.047	1.226	-0.067	-0.990
ALFB 2	The fringe benefit programme here gives nearly all the security I want	2.957	1.258	0.004	-1.073
ALFB 3	Compared to other places, our fringe benefits are excellent	2.983	1.190	-0.052	-0.827
ALFB 4	The fringe benefit programme here is adequate	3.023	1.189	-0.130	-0.888
Alderfer relatedness (superiors)					
ALRS 1	My boss encourages people to make suggestion s	3.635	1.089	-0.672	-0.147
ALRS 2	My boss takes account of my wishes and desires	3.406	1.099	-0.420	-0.468
ALRS 3	My boss keeps me informed about what is happening in the company	3.634	1.052	-0.638	-0.223
ALRS 4	My boss lets me know when I could improve my performance	3.766	1.010	-0.827	0.342
Alderfer relatedness (peers)					
ALRP 1	I can count on my co-workers to give me a hand when I need it	3.775	0.980	-0.754	0.233
ALRP 2	My co-workers will speak out in my favour if justified	3.921	0.901	-0.954	1.169
ALRP 3	I can tell my co-workers honestly how I feel	3.509	1.109	-0.484	-0.468
ALRP 4	My co-workers welcome opinions different from their own	3.790	0.975	-0.807	0.525
Alderfer growth					
ALGR 1	I always get the feeling of learning new things from my work	4.019	0.926	-1.126	1.404
ALGR 2	My job requires that a person use a wide range of abilities	4.134	0.871	-0.931	0.711

ALGR 3	My job requires making one or more important decision(s) every day	3.691	1.030	-0.601	-0.078
ALGR 4	I have the opportunity to do challenging things at work	3.784	1.017	-0.749	0.174

Confirmatory Factor Analysis

CFA was conducted on the full sample (N = 751) to evaluate the theoretically-derived five-factor structure of the ERG scale. As shown in Table 2, the fit indices indicated excellent model fit for the five-factor correlated model: CFI = 0.994, TLI = 0.993, RMSEA = 0.069 (90% CI: 0.064–0.074), and SRMR = 0.052. The second-order model with three higher-order factors (Existence, Relatedness, Growth) demonstrated acceptable but inferior fit compared to the five-factor correlated model: CFI = 0.987, TLI = 0.984, RMSEA = 0.106 (90% CI: 0.101–0.111), SRMR = 0.080. Internal consistency was satisfactory across all five factors, with Cronbach's alpha and McDonald's omega coefficients ranging from 0.766 to 0.942. These results provide robust support for H1, confirming the factorial validity and high reliability of the five-factor model of the ERG Scale in the Indonesian Gen Z context. The superior fit of the five-factor correlated model over alternative structures indicates that the subdimensional differentiation of Existence and Relatedness needs is empirically justified and theoretically meaningful.

Table 2. Confirmatory Factor Analysis: Model Comparison and Fit Indices for the ERG Scale (N = 751)

Model	CFI	TLI	RMSEA (90% CI)	SRMR
5-factors correlated	0.994	0.993	0.069 (0.064 – 0.074)	0.052
Second-order	0.987	0.984	0.106 (0.101 – 0.111)	0.080

Note: CFI=comparative fit index; TLI=Tucker-Lewis index; RMSEA=root mean square residual of approximation; SRMR=standardized root mean square error

Internal Consistency and Descriptive Statistics (Full Sample, N = 751)

N	Female	Male	Age: Mean (SD)	α	ω
751	544 (72.3%)	207 (27.5%)	24.4 (2.19)	0.850/0.941/0.850 /0.876/0.766	0.851/0.942/0.853 /0.874/0.774

Note: α = Cronbach's α; ω = McDonald's ω

Measurement Invariance

Measurement invariance of the five-factor ERG Scale across gender groups was assessed on the full sample (N = 751) through a series of increasingly restrictive models (configural, metric, and scalar). As detailed in Table 3, all models demonstrated excellent fit indices (configural: CFI = 0.995, RMSEA = 0.068, SRMR = 0.057; metric: CFI = 0.994, RMSEA = 0.071, SRMR = 0.059; scalar: CFI = 0.995, RMSEA = 0.061, SRMR = 0.057). Changes in fit indices between models were minimal (ΔCFI = 0.001, ΔRMSEA = -0.010, ΔSRMR = -0.002 for the scalar model). These changes fell well within commonly accepted thresholds for invariance (i.e., |ΔCFI| ≤ 0.01, |ΔRMSEA| ≤ 0.015, and |ΔSRMR| ≤ 0.01 for metric and ≤ 0.015 for scalar invariance) (24,44). Negative values for ΔCFI, ΔRMSEA, or ΔSRMR do not indicate problematic fit; instead, they suggest that model fit did not deteriorate and may have improved with additional constraints. These findings provide strong support for H2, demonstrating that the ERG Scale exhibits configural, metric, and scalar invariance across genders. This means that male and female Indonesian Gen Z employees interpret the items similarly (configural), attribute the same meaning to the latent constructs (metric), and use the response scale equivalently (scalar), enabling valid mean-level comparisons across gender groups (21,32).

Table 3. Measurement Invariance of the 20-item ERG Scale in Five-Factor Structure Across Genders (N = 751)

	CFI	RSMEA	SRMR	ΔCFI	ΔRSMEA	ΔSRMR
Across Genders						
Configural invariance	0.995	0.068	0.057			
Metric (weak) invariance	0.994	0.071	0.059	-0.001	0.003	0.002
Scalar (strong) invariance	0.995	0.061	0.057	0.001	-0.010	-0.002

Note: CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual. All Δ values are well within acceptable thresholds for establishing invariance (|ΔCFI| ≤ 0.01, |ΔRMSEA| ≤ 0.015, |ΔSRMR| ≤ 0.01 for metric and ≤ 0.015 for scalar).

Convergent and Discriminant Validity

Table 4 presents the correlations between ERG subscales and theoretically related constructs (RSES and MSQ). Results provide strong evidence for both convergent and discriminant validity. As hypothesized, ERG

Existence-Pay showed the strongest correlation with MSQ Extrinsic Satisfaction (r = 0.594, p < 0.001), while ERG Relatedness-Superiors demonstrated the highest overall correlation with MSQ General Satisfaction (r = 0.700, p < 0.001). ERG Existence-Fringe Benefits showed strong correlations with MSQ Extrinsic Satisfaction (r = 0.597, p < 0.001), and ERG Relatedness-Peers showed moderate correlations with MSQ General Satisfaction (r = 0.517, p < 0.001). Notably, ERG Growth showed moderate correlations with both MSQ Intrinsic (r = 0.452) and General Satisfaction (r = 0.418), supporting theoretical expectations that growth needs relate to intrinsic work characteristics.

Regarding self-esteem correlations, ERG Growth showed the strongest association with RSES (r = 0.179, p < 0.001), followed by ERG Relatedness-Peers (r = 0.154, p < 0.001), consistent with theoretical expectations that personal development and peer relationships contribute to self-esteem. Existence dimensions showed weaker correlations with self-esteem (Pay: r = 0.047, p = 0.05; Fringe Benefits: r = 0.087, p < 0.05), indicating that material needs are less directly related to self-evaluation.

Importantly, all correlations were below r = 0.85, indicating that ERG dimensions capture distinct aspects of employee motivation rather than redundantly measuring job satisfaction or self-esteem (discriminant validity). The pattern of correlations aligns with ERG theory: Existence needs relate most strongly to extrinsic work conditions, Relatedness needs connect to interpersonal aspects and general satisfaction, and Growth needs correspond to both intrinsic work characteristics and self-evaluation. These findings provide robust support for H4, demonstrating that the ERG scale possesses adequate convergent and discriminant validity in the Indonesian Gen Z context.

Table 4. Convergent and Discriminant Validity: Correlations Between ERG Subscales and Related Constructs (N = 751)

ERG Dimension	MSQ Intrinsic	MSQ Extrinsic	MSQ General	RSES
Existence-Pay	0.490***	0.594***	0.573***	0.047
Existence-Fringe Benefits	0.460***	0.597***	0.551***	0.087**
Relatedness-Superiors	0.625***	0.702***	0.700***	0.086**
Relatedness-Peers	0.484***	0.424***	0.517***	0.154***
Growth	0.452***	0.319***	0.418***	0.179***

Note: MSQ = Minnesota Satisfaction Questionnaire; RSES = Rosenberg Self-Esteem Scale. ***p < 0.001, **p < 0.05. Correlations in bold represent theoretically expected strongest associations supporting convergent validity. All correlations < 0.85 support discriminant validity.
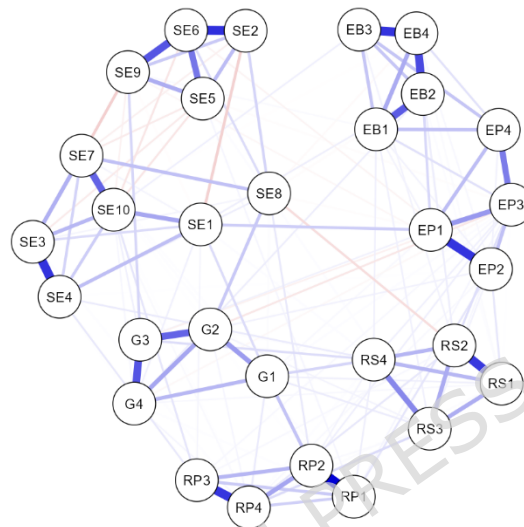
Network Analysis

The network analysis of the ERG scale with RSES, comprising 29 nodes and 99 non-zero edges, revealed a highly interconnected structure with a sparsity value of 0.756, indicating relatively low connectivity (higher sparsity values correspond to fewer connections). This moderate sparsity suggests that while items within dimensions are strongly interconnected, cross-dimensional connections are selective and theoretically meaningful rather than diffuse. This pattern supports the discriminant validity of the five subdimensions, as items do not exhibit indiscriminate associations across theoretical boundaries.

Items clustered into five distinct dimensions (G1-G4, RP1-RP4, RS1-RS4, EB1-EB4, EP1-EP4) representing the ERG construct, plus one separate dimension (SE1-SE10) representing the RSES construct, providing evidence of the scales' multidimensional nature and structural distinctiveness. These dimensions represent the complexity of the constructs, demonstrating high internal consistency within each cluster. The network visualization (Figure 1) highlights strong associations among items within each dimension, with noticeable connections such as SE6-SE2 and EP1-EP2, emphasizing the robustness of the ERG scale in delineating meaningful subcomponents.

The Self-Esteem scale (RSES), comprising 10 items (SE1-SE10), exhibited close associations among items while forming a distinct cluster separate from ERG dimensions, supporting discriminant validity. However, moderate bridge connections were observed between RSES and ERG dimensions related to Relatedness and Growth, consistent with theoretical expectations that interpersonal relationships and personal development contribute to self-esteem (38,39). This differentiation underscores the scales' sensitivity in capturing related but distinct psychological constructs.

The accuracy and stability of the estimation in the network analysis model were assessed using bootstrapped 95% confidence intervals (CIs) of the edge weights (1000 iterations). The estimated CIs for most of the edges were narrow, indicating high edge-weight accuracy. As shown in Figure 1 (network visualization) and (Centrality Plot), measures such as Betweenness, Closeness, Strength, and Expected Influence validate the internal structure of both scales, demonstrating their reliability and utility in measuring complex psychological constructs with nuanced dimensions. Centrality

stability coefficients (CS-coefficients) for strength, closeness, and betweenness were 0.75, 0.52, and 0.36, respectively, indicating that strength centrality is the most stable metric in this network and meets the recommended threshold of CS-coefficient > 0.50 for adequate stability. In contrast, closeness approaches acceptable levels, and betweenness shows lower but still interpretable stability (47).
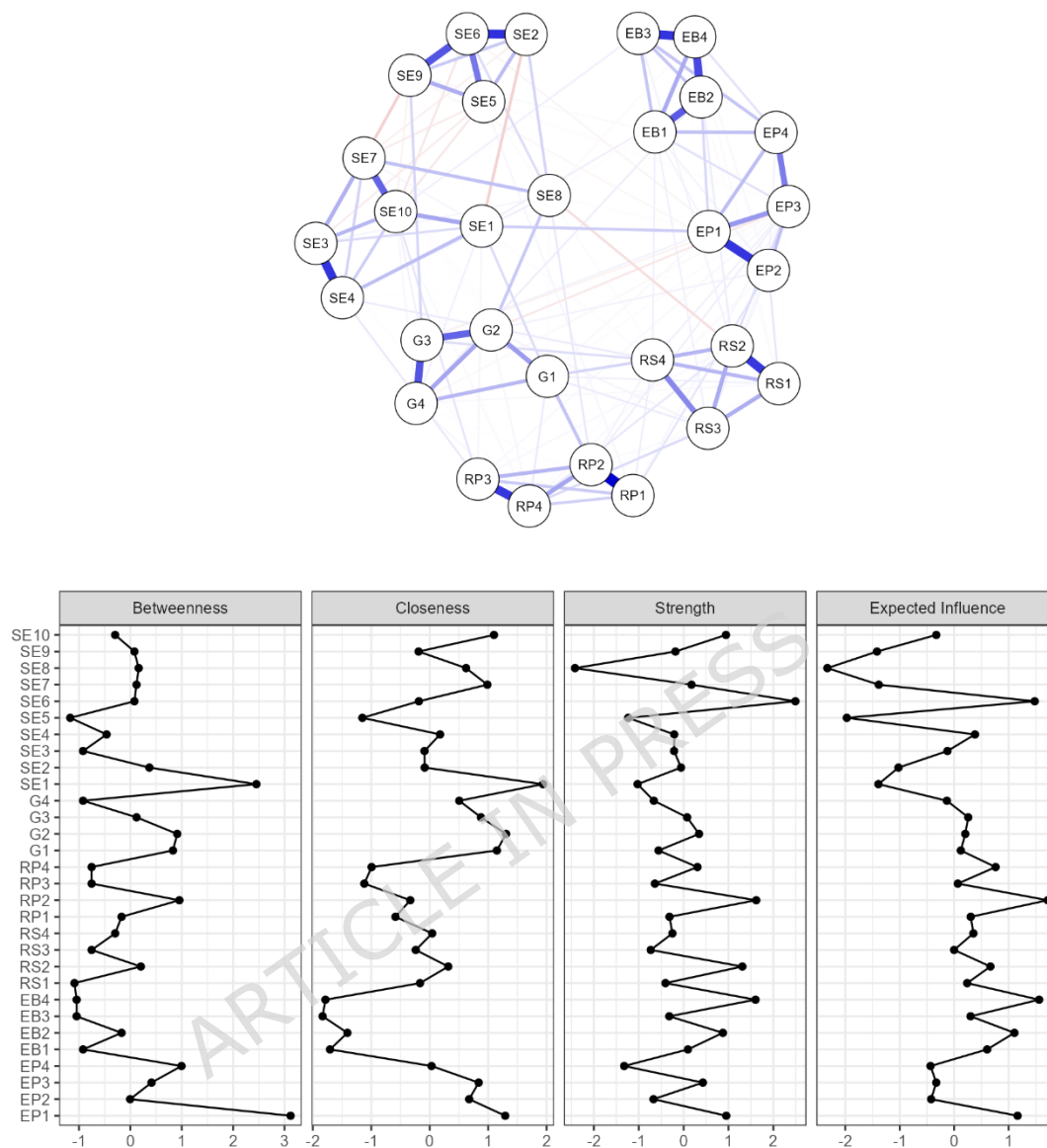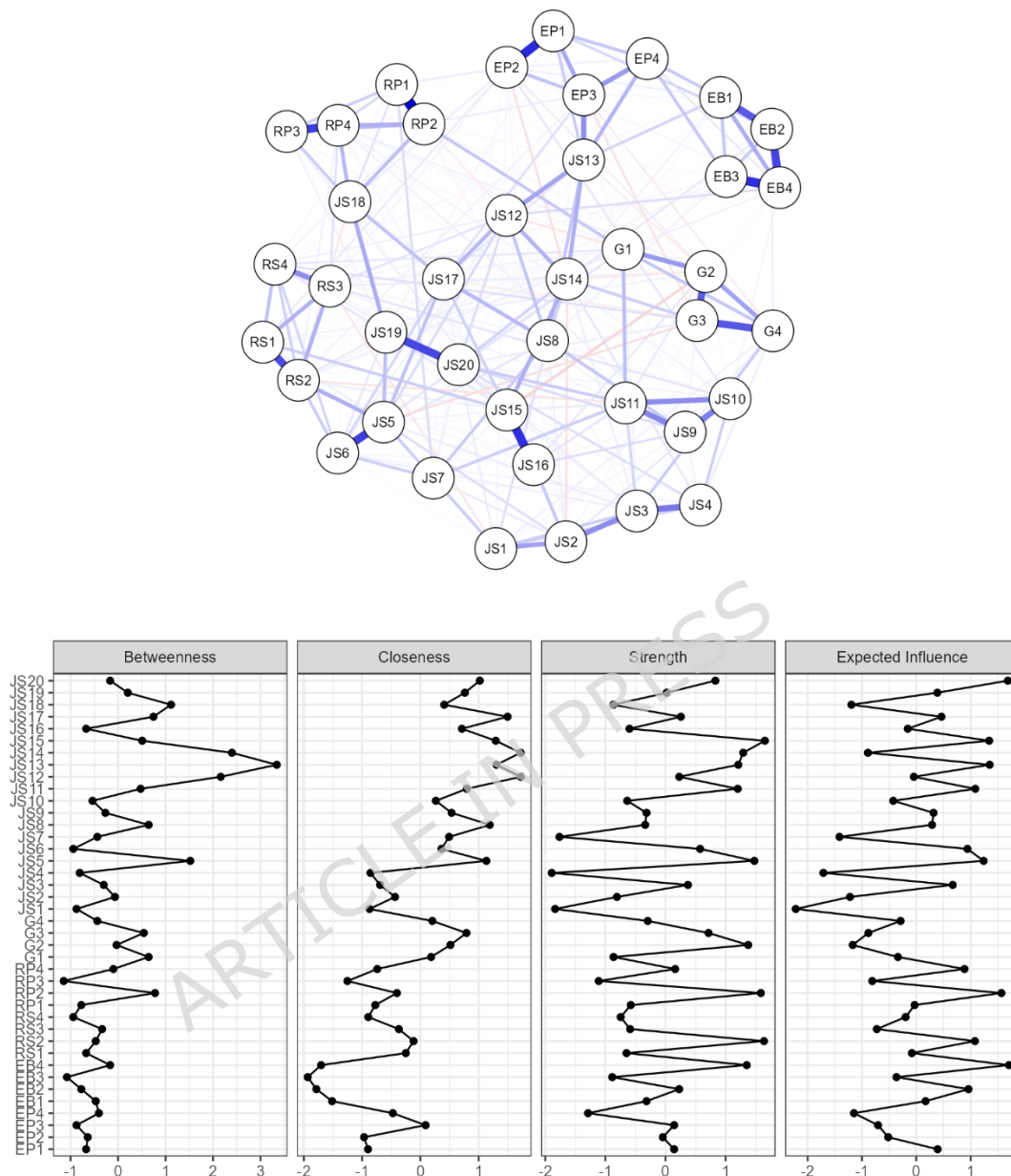
Figure 1. Network Analysis of ERG Scale and Self-Esteem Scale (RSES) (N = 751)

Note: Blue lines represent positive associations, while red lines depict negative associations. The thickness of the lines corresponds to the strength of the associations between items. G = Growth; RP = Relatedness-Peers; RS = Relatedness-Superiors; SE = Self-Esteem (RSES); EB = Existence-Fringe Benefits; EP = Existence-Pay. Bootstrap 95% CIs (1000 iterations) indicate high edge-weight accuracy. The distinct clustering of ERG dimensions and RSES supports discriminant validity, while the moderate bridge connections support convergent validity.

The network analysis of the ERG scale and MSQ revealed a highly interconnected structure, comprising 40 nodes and 281 non-zero edges, with a sparsity value of 0.640, indicating relatively higher connectivity compared to the ERG-RSES network (lower sparsity values correspond to more connections). This structure reflects the clustering of items into distinct dimensions, which aligns with the theoretical underpinnings of both constructs. For the ERG scale, dimensions such as Existence (EP1-EP4, EB1-EB4), Relatedness (RS1-RS4, RP1-RP4), and Growth (G1-G4) were clearly defined. In contrast, the Job Satisfaction Scale (JS1-JS20) exhibited strong internal associations across its items, reflecting the multifaceted nature of job satisfaction. The network visualization (Figure 2) highlights dense connectivity between items of both scales, with edges representing the strength of the relationships.

The analysis demonstrated theoretically meaningful overlap between the constructs measured by the ERG and Job Satisfaction scales, providing evidence for convergent validity. This interconnectedness suggests that dimensions within the ERG scale are closely linked to factors influencing job satisfaction, thereby reinforcing the theoretical premise that fulfilling existence, relatedness, and growth needs is critical to workplace satisfaction (16,20). Notable bridge connections, such as between JS13 (satisfaction with opportunities for advancement) and Growth items (G1-G4), and between JS17 (satisfaction with supervisor) and Relatedness-Superiors items (RS1-RS4), emphasize the theoretically expected interaction between fundamental human needs and job satisfaction. However, the distinct clustering of ERG and MSQ items, along with the absence of powerful connections (all edge weights < 0.70), supports discriminant validity by demonstrating that ERG dimensions capture unique aspects of employee motivation and need fulfillment beyond general job satisfaction.

The accuracy and stability of the estimation in the network analysis model were assessed using bootstrapped 95% confidence intervals (CIs) of the edge weights (1000 iterations). Narrow CIs for most edges indicated high edge-weight accuracy. As shown in Figure 2 (network visualization) and (Centrality Plot), measures such as Betweenness, Closeness, Strength, and Expected Influence validate the internal structure of both scales, demonstrating their reliability and utility in measuring complex psychological constructs. Centrality stability coefficients for this network were 0.71 (strength), 0.48 (closeness), and 0.33 (betweenness), indicating that strength centrality demonstrates good stability (CS > 0.50), while closeness and betweenness show lower but still interpretable stability levels (42).

Figure 1. Network Analysis of ERG Scale and Job Satisfaction Scale (MSQ) (N = 751)

Note: Blue lines represent positive associations, whereas red lines depict negative associations. The thickness of the lines reflects the strength of the associations between items, providing a detailed visualization of the relational patterns across the scales. JS = Job Satisfaction (MSQ items); other abbreviations as in Figure 1. Bootstrap 95% CIs (1000 iterations) indicate high edge-weight accuracy. Theoretically meaningful bridge connections (e.g., Growth-JS13 [advancement opportunities], Relatedness-Superiors-JS17 [supervisor satisfaction], Existence-Pay-Extrinsic Satisfaction dimensions)

support convergent validity, while distinct clustering supports discriminant validity.

Rasch Model Analysis: Item Response Theory Framework

The Rasch model analysis, grounded in Item Response Theory, provided a comprehensive evaluation of the psychometric properties of the multidimensional ERG scale, assessing various aspects of employee need satisfaction: Existence-Pay (EP), Existence-Fringe Benefits (EB), Relatedness-Superiors (RS), Relatedness-Peers (RP), and Growth (G). Within the IRT framework, the Rasch model assesses how individuals' latent trait levels (need satisfaction) relate to the probability of endorsing each item, while accounting for item-specific difficulty parameters (23–26).

The analysis of the Existence-Pay (EP) and Existence-Fringe Benefits (EB) dimensions revealed several positive psychometric properties. EP and EB items exhibited a range of difficulties, with precise standard errors indicating high reliability in measurement. The delta-tau thresholds followed the expected increasing pattern across response categories, aligning with theoretical expectations. The person's reliability of 0.817 for EP and 0.894 for EB suggests that these scales are reliable in differentiating individuals based on their Existence needs. Item fit statistics were within acceptable ranges (infit and outfit MNSQ between 0.6 and 1.4), confirming that the items performed well and aligned with Rasch model assumptions. DIF analysis revealed no significant gender-based differential item functioning for any EP or EB items (all DIF contrasts < 0.64 logits), providing support for H3. These findings strongly support the fairness and validity of the Existence-Pay and Existence-Fringe Benefits dimension measurements, with no significant Differential Item Functioning detected between male and female participants.

Similarly, analyzing the Relatedness-Superiors (RS) and Relatedness-Peers (RP) dimensions demonstrated several positive psychometric properties. RS and RP items exhibited a range of difficulties, including precise parameter estimates and expected threshold patterns, indicating high reliability and validity. The person reliability of 0.806 for RS and 0.824 for RP suggests that these scales have good reliability in differentiating individuals based on their Relatedness-Superiors and Relatedness-Peers needs. Item fit statistics were within acceptable ranges, confirming that the items functioned as intended. DIF analysis showed no significant gender differences (all DIF contrasts < 0.64 logits), further supporting H3. These findings collectively support the fairness and validity of the Relatedness-

Superiors and Relatedness-Peers dimension measurements across gender groups.

The analysis of the Growth (G) dimension also revealed positive psychometric properties. G items exhibited a range of difficulties, precise parameter estimates, expected threshold patterns, and acceptable reliability (0.690) in differentiating individuals based on their Growth needs. Item fit statistics were within acceptable ranges, further confirming that the G items performed well and aligned with Rasch model assumptions. DIF analysis indicated no significant gender-based differential item functioning (all DIF contrasts < 0.64 logits), providing additional support for H3.

However, a critical finding across all dimensions is that item difficulties were concentrated at or below 0 logits (see Table 5), indicating optimal measurement precision for individuals with low to moderate levels of need satisfaction. This concentration of item difficulties at lower levels has several important implications. First, it indicates that the scale is optimally calibrated for identifying employees with unmet or partially met needs, precisely the population of most significant concern for turnover prevention. Second, it suggests limited discriminative power at higher satisfaction levels, which may be less problematic for organizational assessment purposes, as highly satisfied employees are less likely to require intervention. Third, this pattern may reflect the current state of Indonesian organizational practices, where Gen Z employees experience relatively low baseline need satisfaction, particularly in Existence domains (as evidenced by the descriptive statistics in Table 1).

However, for organizations seeking to differentiate among already-satisfied employees or to track improvements following successful interventions, the current item set may have limited utility. Future scale development should consider adding items with higher difficulty parameters (e.g., "My compensation package exceeds industry standards," "My organization provides exceptional opportunities for professional growth") to capture the full range of need satisfaction and prevent ceiling effects in high-performing organizations.

Supplementary materials, including the Wright map, person-item map, item infit, outfit plots, ICC plot, and DIF, provide additional illustrations of the distribution of respondent abilities, item difficulties, and individual item performance. Table 5 presents the detailed Rasch analysis results for each dimension.

Overall, the Rasch analysis, conducted within the Item Response Theory framework, provides strong evidence for the robust psychometric properties of the ERG scale. Each of the five dimensions exhibits a range of item

difficulties, precise parameter estimates, expected threshold patterns, and good reliability in distinguishing between respondents. Item fit statistics further confirm that the items function as intended within the Rasch framework, and the absence of significant DIF across gender provides strong support for H3, lending confidence in the scale's ability to measure and differentiate employees' need satisfaction levels fairly and accurately across the Existence, Relatedness, and Growth domains.

Table 5. Rasch Analysis Results for ERG Scales (N = 751)

Item	Difficulty	Person Reliability	Differential Item Functioning Male vs Female
Existence Pay			
EP1	-0.401		5.26
EP2	-1.548	0.817	3.88
EP3	-0.424		0.88
EP4	-0.659		0.01
Existence Benefits			
EB1	-0.084		1.37
EB2	0.161	0.894	0.51
EB3	0.091		0.01
EB4	-0.019		3.57
Relatedness Superiors			
RS1	-1.195		0.77
RS2	-0.704	0.806	1.19
RS3	-1.192		8.60
RS4	-1.495		3.84
Relatedness Peers			
RP1	-1.76		0.84
RP2	-2.19	0.824	0.63
RP3	-1.05		1.78
RP4	-1.80		1.21
Growth			
G1	-1.66		3.72
G2	-1.92	0.690	6.07
G3	-1.01		3.23
G4	-1.18		4.58

Discussion

This study used a multimethod analytical approach to provide a comprehensive psychometric validation of the Existence, Relatedness, and Growth (ERG) scale for Indonesian Generation Z employees. Our findings provide robust evidence for the reliability, validity, and fairness of the ERG scale in this specific cultural and generational context, offering a valuable measurement tool for researchers and practitioners.

Theoretical Implications

This study makes several significant theoretical contributions to ERG theory and motivational psychology. First, the empirical support for a five-factor structure (rather than the original three-factor conceptualization) suggests that Alderfer's broad need categories may benefit from subdimensional differentiation, particularly in applied organizational contexts. The distinction between Pay and Fringe Benefits within Existence, and between Superiors and Peers within Relatedness, reflects meaningful psychological and behavioral differences that are obscured by higher-order aggregation.

Second, the concentration of item difficulties at lower satisfaction levels provides indirect support for the frustration-regression hypothesis. If Gen Z employees in Indonesia are experiencing chronically unmet Growth needs (as suggested by turnover statistics), the scale's sensitivity to lower satisfaction ranges makes it particularly well-suited for detecting the conditions under which regression to lower-order needs might occur.

Third, the establishment of measurement invariance across gender, combined with the absence of DIF, suggests that ERG theory's core need categories transcend gender-based socialization patterns in Indonesia. This finding supports the universality of Existence, Relatedness, and Growth needs while acknowledging that the relative salience and satisfaction levels of these needs may vary across demographic groups.

Fourth, the network analysis revealed theoretically meaningful bridge connections between ERG dimensions and job satisfaction/self-esteem, providing evidence for the nomological network surrounding ERG constructs. The stronger connections between Relatedness-Superiors and job satisfaction (compared to other dimensions) highlight the critical role of supervisory relationships in Gen Z employee retention, a finding consistent with emerging research on Gen Z's expectations for supportive, coaching-oriented leadership (4,5).

The Confirmatory Factor Analysis (CFA) results strongly supported a five-factor structure of the ERG scale, demonstrating excellent model fit and high internal consistency. This finding extends the theoretical understanding of

Alderfer's ERG framework by providing empirical support for a more granular differentiation of needs within the Existence (Pay, Fringe Benefits) and Relatedness (Superiors, Peers) dimensions, alongside the overarching Growth dimension. The superior fit of the five-factor model over the second-order three-factor model suggests that Indonesian Gen Z employees conceptually distinguish between different types of existence and relatedness needs, supporting the practical utility of subdimensional assessment for organizational interventions. The establishment of measurement invariance across gender groups further underscores the scale's applicability and fairness for diverse employee populations in Indonesia, aligning with previous validations in other cultural settings (7,8,20). This consistency across genders is important for ensuring equitable assessment and intervention strategies.

The network analysis provided a complementary and novel perspective, revealing a highly interconnected structure with a clear delineation of these five theoretical dimensions. The dense within-dimension connections and distinct clustering of items highlight the scale's capacity to reflect the multifaceted nature of employee needs. This application of network analysis to ERG scale validation offers deeper insights into the complex interrelationships among need dimensions, reinforcing the theoretical underpinnings of Alderfer's framework (33,34,48). This consistency across genders is essential for ensuring equitable assessment and intervention strategies.

The network analysis provided a complementary and novel perspective, revealing a highly interconnected structure with a clear delineation of these five theoretical dimensions. The dense within-dimension connections and distinct clustering of items highlight the scale's capacity to reflect the multifaceted nature of employee needs. This application of network analysis to ERG scale validation offers more profound insights into the complex interrelationships among need dimensions, reinforcing the theoretical underpinnings of Alderfer's framework (42,49,50). The centrality metrics further validated the importance of individual items in defining the overall construct, providing a nuanced understanding beyond traditional factor analytic approaches.

The Rasch model analysis further strengthened the construct validation by evaluating the fit between observed data and the hypothesized measurement structure. The findings demonstrated a range of item difficulties, precise parameter estimates, and good reliability in differentiating individuals based on their levels of need satisfaction. Crucially, the absence of Differential Item Functioning (DIF) across gender groups reinforced the fairness and cultural

appropriateness of the ERG scale in the Indonesian context (44,51,52). This robust evidence of DIF absence is vital for ensuring that observed ERG scores between genders genuinely reflect differences in need satisfaction rather than measurement bias.

Practical Implications and Organizational Recommendations

The comprehensive psychometric validation of the ERG scale offers several important practical implications. First, it provides human resource professionals and organizational leaders in Indonesia with a robust and culturally relevant measurement tool to accurately assess the unique needs and motivations of their Generation Z workforce. The validated ERG scale enables organizations to conduct targeted needs assessments, identifying whether Gen Z turnover is driven by inadequate compensation (Existence-Pay), insufficient benefits (Existence-Fringe Benefits), poor supervisory relationships (Relatedness-Superiors), weak peer connections (Relatedness-Peers), or limited growth opportunities (Growth). This granular understanding enables precise intervention strategies rather than generic retention programs, allowing for more efficient resource allocation and targeted human resource management strategies (7–10).

Second, by demonstrating the reliability, validity, and fairness of the ERG scale in the Indonesian context, this study strengthens the cross-cultural applicability of Alderfer's theoretical framework. It sets the stage for further exploration of its relevance in diverse organizational and national settings, particularly within emerging economies and non-Western cultures (16,17). The validated scale can serve as a foundation for comparative studies, enabling a deeper understanding of the interplay between universal and culture-specific motivational drivers.

Finally, the multimethod approach employed in this study serves as a model for future psychometric research. Integrating advanced techniques such as CFA, network analysis, and Rasch modeling provides a comprehensive and rigorous validation framework. This methodological rigor ensures the development of highly reliable and culturally appropriate tools for organizational research and practice globally (21,30–34,48).

Limitations

Despite its significant contributions, this study has several limitations that warrant consideration for future research. First, the sample was predominantly female (72.4%), which may limit the generalizability of the findings to the broader Indonesian Gen Z population. While measurement invariance was established across gender groups, the unbalanced gender representation may affect the stability of parameter estimates and limit our

understanding of how the scale functions across more balanced gender distributions. Future research should aim for a more balanced gender representation to validate the ERG scale's measurement invariance and generalizability.

Second, the cross-sectional nature of the data precludes the examination of temporal stability and responsiveness of the ERG scale. Longitudinal studies are necessary to evaluate the scale's capacity to capture changes in employee needs over time, particularly in response to organizational and environmental shifts. Additionally, the concentration of item difficulties at lower levels (≤ 0 logits) suggests the scale may be less effective for assessing delighted employees, potentially limiting its utility in high-performing organizations or for tracking improvements following successful interventions. Future research should develop complementary items with higher difficulty parameters to ensure comprehensive measurement across the satisfaction spectrum.

Finally, the current study was limited to the Indonesian context. Extending the validation of the ERG scale to other Southeast Asian countries or diverse cultural settings would further strengthen the instrument's cross-cultural applicability and contribute to a broader understanding of employee needs and motivations in the global workforce. Future research could also explore the predictive validity of the validated ERG scale in relation to other key organizational outcomes beyond turnover intentions, such as job performance, engagement, and well-being.

Conclusion

This comprehensive psychometric validation of the Existence, Relatedness, and Growth (ERG) scale among Indonesian Generation Z employees represents a significant contribution to the literature. By employing a multimethod analytical approach, this study provides a robust, culturally-relevant measurement tool that demonstrates high reliability, validity, and fairness. The findings not only advance the theoretical understanding of Alderfer's ERG theory by confirming the utility of subdimensional differentiation but also offer actionable insights for designing evidence-based human resource management strategies tailored to the unique aspirations of Gen Z employees. The scale's particular strength in identifying need deficits in low to moderate satisfaction ranges make it especially valuable for organizations seeking to address retention challenges among this pivotal workforce segment. This research highlights the crucial importance of comprehending the complex nature of employee needs to cultivate a thriving and stable workforce in the global marketplace.

Abbreviations

CFA - Confirmatory Factor Analysis

CFI - Comparative Fit Index

CI - Confidence Interval

CML - Conditional Maximum Likelihood

CS - Centrality Stability

DIF - Differential Item Functioning

DWLS - Diagonally Weighted Least Squares

EBIC - Extended Bayesian Information Criterion

EFA - Exploratory Factor Analysis

ERG - Existence, Relatedness, and Growth

Gen Z - Generation Z

ICC - Item Characteristic Curve

IDR - Indonesian Rupiah

IRT - Item Response Theory

LASSO - Least Absolute Shrinkage and Selection Operator

MNSQ - Mean Square

MSQ - Minnesota Satisfaction Questionnaire

RMSEA - Root Mean Square Error of Approximation

RSES - Rosenberg Self-Esteem Scale

SRMR - Standardized Root Mean Square Residual

TLI - Tucker-Lewis Index

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