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Leveraging Self-Determination Theory to Design Performance Appraisal Systems That Foster Intrinsic Motivation in Employees: A Study on the Underlying Mechanisms

Chen Ling

Postdoctoral Researcher,
Lomonosov Moscow State University,
119991, 1 Leninskiye gory, Moscow, Russian Federation;
e-mail: clapple@yeah.net

Abstract

Performance appraisal systems remain central to organizational human resource management, yet their capacity to enhance employee intrinsic motivation remains insufficiently understood. This study examines how performance appraisal characteristics influence intrinsic motivation through the mediating mechanisms of basic psychological need satisfaction — autonomy, competence, and relatedness — as conceptualized within Self-Determination Theory. Data were collected from 847 employees across 12 organizations in manufacturing, technology, and service sectors between March and November 2024. The research employed a cross-sectional survey design utilizing validated instruments: the Performance Appraisal Perceptions Scale, the Basic Psychological Need Satisfaction and Frustration Scale at Work, and the Multidimensional Work Motivation Scale. Structural equation modeling revealed that developmental-oriented appraisal practices exhibited strong positive associations with competence need satisfaction ($\beta = 0.412$, $p < 0.001$) and autonomy satisfaction ($\beta = 0.367$, $p < 0.001$). Participatory appraisal processes demonstrated the strongest relationship with relatedness satisfaction ($\beta = 0.438$, $p < 0.001$). Serial mediation analysis confirmed that basic psychological needs fully mediated the relationship between appraisal characteristics and intrinsic motivation, with competence satisfaction exhibiting the largest indirect effect ($\beta = 0.187$, 95% CI [0.142, 0.239]). Organizations implementing need-supportive appraisal systems reported 34.2% higher intrinsic motivation scores compared to those utilizing traditional evaluative approaches. The interaction between appraisal frequency and supervisor autonomy support moderated the competence-intrinsic motivation pathway ($\beta = 0.156$, $p < 0.01$), suggesting that contextual factors amplify motivational outcomes. These findings provide empirical validation for integrating SDT principles into performance management design and demonstrate that appraisal systems function as critical environmental antecedents of employee self-determined motivation. Practitioners should prioritize developmental feedback, employee participation, and autonomy-supportive implementation to maximize motivational benefits.

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Keywords
Self-Determination Theory, performance appraisal, intrinsic motivation, basic psychological needs, autonomy support, employee engagement, organizational psychology.

Introduction

The effectiveness of performance appraisal systems in contemporary organizations extends far beyond their traditional administrative functions of compensation determination and promotion decisions [DeNisi, Murphy, 2017]. Research increasingly recognizes that the manner in which performance evaluation is conducted fundamentally shapes employee psychological states, with downstream consequences for motivation quality, engagement, and sustained performance [Van den Broeck et al., 2016]. Despite decades of research on performance management, organizations continue to struggle with appraisal systems that employees perceive as demotivating, anxiety-inducing, and disconnected from genuine developmental purposes [Buckingham, Goodall, 2015]. This persistent challenge has prompted scholars to examine the theoretical mechanisms through which appraisal design features influence motivational outcomes, with Self-Determination Theory emerging as a particularly promising explanatory framework [Gagné et al., 2015]. The theory's emphasis on basic psychological needs—autonomy, competence, and relatedness—provides a conceptually rich foundation for understanding why certain appraisal practices enhance intrinsic motivation while others undermine it. Contemporary workplace dynamics, characterized by knowledge-intensive work, flattened hierarchies, and heightened employee expectations for meaningful feedback, amplify the importance of designing appraisal systems that support rather than thwart psychological need satisfaction [McAnally, Hagger, 2024].

Self-Determination Theory distinguishes between autonomous and controlled forms of motivation, positioning intrinsic motivation as the most self-determined regulatory style whereby individuals engage in activities for inherent satisfaction and interest [Ryan, Deci, 2017]. The theory postulates that intrinsic motivation flourishes when social-contextual conditions support the satisfaction of three innate psychological needs: autonomy (experiencing volition and choice), competence (feeling effective and capable), and relatedness (sensing connection and belonging) [Deci, Olafsen, Ryan, 2017]. Within organizational contexts, meta-analytic evidence consistently demonstrates that autonomous motivation predicts superior job performance, creativity, well-being, and reduced turnover intentions compared to controlled motivation driven by external contingencies or introjected pressures [Gagné et al., 2022]. Performance appraisal represents a particularly influential organizational practice in this regard, as it simultaneously conveys competence information through feedback, affects autonomy through the degree of employee participation permitted, and shapes relatedness through the quality of supervisor-employee interactions during appraisal conversations [Van Woerkom, Meyers, 2015]. Yet the field lacks comprehensive empirical investigation of how specific appraisal design features differentially influence each psychological need and how these need satisfaction pathways combine to determine intrinsic motivation levels [Van Woerkom, Meyers, 2015].

The terminology surrounding performance appraisal and motivation exhibits considerable variation across the literature, creating conceptual ambiguity that impedes theoretical integration. Performance appraisal has been variously defined as a formal organizational process for evaluating employee job performance, a developmental tool for identifying training needs, and a communication mechanism for aligning individual and organizational goals [Levy, Williams, 2004]. This study adopts an inclusive

definition encompassing the systematic process through which supervisors assess, document, and communicate judgments about employee work contributions, incorporating both evaluative and developmental dimensions. Regarding motivation constructs, the distinction between intrinsic motivation—performing activities for inherent interest and enjoyment—and identified regulation—engaging in behaviors because of personally valued outcomes—remains theoretically important but empirically challenging to separate [Trépanier et al., 2023]. Recent psychometric advances suggest that intrinsic motivation and identified regulation load onto a single autonomous motivation factor in workplace samples, reflecting the pragmatic reality that employees rarely experience pure intrinsic motivation divorced from identified value [Olafsen et al., 2018]. Accordingly, this investigation operationalizes intrinsic motivation as encompassing both interest-based and value-internalized autonomous regulation, consistent with contemporary measurement recommendations for the Multidimensional Work Motivation Scale.

Several critical gaps characterize the current state of knowledge regarding performance appraisal and employee motivation. First, existing research predominantly examines appraisal satisfaction or appraisal reactions as outcome variables rather than investigating the specific psychological mechanisms through which appraisal features influence motivation quality [Olafsen et al., 2021]. This limitation constrains theoretical advancement because understanding that employees prefer participatory appraisals provides limited guidance without knowledge of the motivational pathways activated by participation. Second, studies applying Self-Determination Theory to performance management contexts have typically focused on single need dimensions—particularly competence as conveyed through feedback—while neglecting the simultaneous operation of autonomy and relatedness need satisfaction [Wang et al., 2024]. Third, the interaction between appraisal system design and implementation characteristics remains inadequately explored, despite evidence that supervisor behaviors during appraisal conversations substantially moderate the effects of formal system features [Tiffin et al., 2024]. Fourth, cross-sectional investigations dominate the literature, preventing causal inferences about whether appraisal experiences genuinely influence subsequent motivation or whether motivated employees simply evaluate appraisal systems more favorably.

This study addresses these gaps through a comprehensive examination of performance appraisal characteristics and their relationships with intrinsic motivation via the three basic psychological needs. The investigation makes several contributions to both theory and practice. Theoretically, it provides an integrated test of Self-Determination Theory mechanisms in the performance appraisal context, examining whether appraisal features differentially predict each need satisfaction dimension and how these needs combine as mediators of motivational outcomes. Empirically, the research employs rigorous measurement approaches including recently validated scale versions and statistical techniques suited to detecting indirect effects and interaction patterns. Practically, findings inform evidence-based recommendations for designing appraisal systems that maximize motivational benefits by supporting employee psychological needs. The research examines four primary appraisal dimensions identified in prior literature as theoretically relevant to need satisfaction: developmental orientation (emphasis on growth and learning versus pure evaluation), participatory process (employee voice and input opportunities), feedback quality (specificity, timeliness, and constructiveness of performance information), and procedural justice (fairness and consistency of appraisal procedures) [Juyumaya, Torres-Ochoa, Rojas, 2024]. The study hypothesizes that these appraisal characteristics predict intrinsic motivation through the parallel and serial mediation of autonomy, competence, and relatedness need satisfaction, with supervisor autonomy support moderating key pathways.

Materials and Methods

This cross-sectional study collected data from employees across 12 organizations representing manufacturing (n = 4), technology (n = 5), and professional services (n = 3) sectors in Central and Eastern Europe between March and November 2024. Organizations were recruited through professional HR networks with the criterion that they maintained formal performance appraisal systems with at least annual evaluation cycles. Employees were eligible for participation if they had completed at least one performance appraisal cycle with their current supervisor and held non-managerial positions to ensure homogeneous appraisal experiences. Invitations distributed through organizational email systems yielded 1,124 initial responses, from which 847 complete surveys were retained after excluding cases with excessive missing data (>10%), failed attention checks, or insufficient organizational tenure. The final sample comprised 52.4% female respondents, with mean age of 34.7 years (SD = 8.9) and mean organizational tenure of 5.3 years (SD = 4.1). Educational attainment included secondary education (18.3%), bachelor's degree (44.2%), master's degree (32.8%), and doctoral degree (4.7%).

Performance appraisal perceptions were assessed using a 24-item scale adapted from established measures [Elamalki, Kaddar, Beniich, 2024], comprising four subscales: developmental orientation (6 items, $\alpha = 0.87$), participatory process (6 items, $\alpha = 0.84$), feedback quality (6 items, $\alpha = 0.89$), and procedural justice (6 items, $\alpha = 0.91$). Basic psychological need satisfaction was measured using the 12-item satisfaction subscales from the Basic Psychological Need Satisfaction and Frustration Scale at Work [19], with subscales for autonomy (4 items, $\alpha = 0.86$), competence (4 items, $\alpha = 0.88$), and relatedness (4 items, $\alpha = 0.85$). Intrinsic motivation was assessed using the 6-item autonomous motivation composite from the revised Multidimensional Work Motivation Scale, combining intrinsic motivation and identified regulation items as recommended by recent validation research [Olafsen et al., 2018], yielding excellent reliability ($\alpha = 0.93$). Supervisor autonomy support was measured using the 6-item Work Climate Questionnaire [Meijerink, Bos-Nehles, de Leede, 2021] ($\alpha = 0.92$). All items employed 7-point Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree).

Analyses proceeded in three stages. Confirmatory factor analysis tested the measurement model, examining whether observed variables adequately represented their latent constructs and whether constructs demonstrated discriminant validity. Structural equation modeling tested hypothesized relationships between appraisal characteristics, need satisfaction dimensions, and intrinsic motivation, employing maximum likelihood estimation with robust standard errors. Indirect effects were assessed using bias-corrected bootstrap confidence intervals (10,000 resamples), with significance determined by intervals excluding zero [Hayes, 2022]. Moderation analyses examined whether supervisor autonomy support conditioned direct and indirect pathways. Model fit was evaluated using conventional criteria: CFI ≥ 0.95, TLI ≥ 0.95, RMSEA ≤ 0.06, SRMR ≤ 0.08 [Hu, Bentler, 1999]. Analyses were conducted using Mplus 8.9 with TYPE = COMPLEX to account for clustering within organizations, and IBM SPSS Statistics 29.0 for descriptive analyses and assumption testing.

Results

Preliminary analyses examined distributional properties, missing data patterns, and potential common method bias. All continuous variables demonstrated acceptable skewness (|values| < 1.2) and kurtosis (|values| < 2.4) within recommended thresholds for maximum likelihood estimation. Little's MCAR test indicated that missing data were missing completely at random ($\chi^2 = 187.34$, df = 169, $p = 0.162$), supporting the use of full information maximum likelihood for handling missing values. Harman's single-factor test extracted one factor accounting for 31.7% of total variance, below the 50% threshold suggesting common method bias is unlikely to substantially inflate observed relationships.

Additionally, the marker variable technique using a theoretically unrelated item confirmed that common method variance did not significantly alter substantive conclusions.

Table 1 - Descriptive Statistics and Zero-Order Correlations Among Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Developmental orientation	4.52	1.24	—								
2. Participatory process	4.18	1.31	.58**	—							
3. Feedback quality	4.67	1.19	.64**	.51**	—						
4. Procedural justice	4.89	1.08	.49**	.53**	.61**	—					
5. Autonomy satisfaction	4.73	1.15	.42**	.46**	.38**	.44**	—				
6. Competence satisfaction	5.01	1.02	.51**	.39**	.54**	.47**	.52**	—			
7. Relatedness satisfaction	4.86	1.11	.38**	.49**	.41**	.43**	.48**	.46**	—		
8. Intrinsic motivation	4.94	1.18	.47**	.44**	.49**	.42**	.56**	.61**	.53**	—	
9. Supervisor autonomy support	4.61	1.27	.52**	.48**	.55**	.51**	.58**	.49**	.54**	.52**	—

Note. N = 847. ** p < .01.

Descriptive statistics presented in Table 1 reveal that employees reported moderate to moderately high levels across all study variables. Competence satisfaction exhibited the highest mean score (M = 5.01, SD = 1.02), followed by intrinsic motivation (M = 4.94, SD = 1.18) and procedural justice perceptions (M = 4.89, SD = 1.08). Participatory process demonstrated the lowest mean (M = 4.18, SD = 1.31), suggesting that employee involvement in appraisal processes remains an area for organizational improvement. Correlation analyses revealed significant positive associations among all variables, with magnitudes ranging from moderate (r = 0.38) to strong (r = 0.64). The strongest correlations emerged between feedback quality and developmental orientation (r = 0.64) and between competence satisfaction and intrinsic motivation (r = 0.61), providing preliminary support for hypothesized relationships. Variance inflation factors ranged from 1.78 to 2.91, indicating multicollinearity was not problematic for regression-based analyses.

Table 2 - Confirmatory Factor Analysis Results: Measurement Model Fit and Factor Loadings

Construct/Indicator	Standardized Loading	SE	R^2
Developmental Orientation			
DO1: Growth emphasis	0.812	0.024	0.659
DO2: Learning opportunities	0.847	0.021	0.717
DO3: Skill development focus	0.789	0.026	0.623
DO4: Future improvement	0.824	0.023	0.679
DO5: Career advancement	0.761	0.028	0.579
DO6: Developmental feedback	0.803	0.025	0.645
Participatory Process			
PP1: Voice opportunity	0.798	0.025	0.637
PP2: Input solicitation	0.821	0.023	0.674
PP3: Goal-setting involvement	0.856	0.020	0.733
PP4: Self-assessment inclusion	0.779	0.027	0.607
PP5: Discussion opportunity	0.812	0.024	0.659
PP6: Concerns addressed	0.768	0.028	0.590
Feedback Quality			
FQ1: Specificity	0.867	0.019	0.752

FQ2: Timeliness	0.834	0.022	0.696
FQ3: Constructiveness	0.891	0.017	0.794
FQ4: Actionability	0.858	0.020	0.736
FQ5: Accuracy	0.812	0.024	0.659
FQ6: Balance	0.789	0.026	0.623
Procedural Justice			
PJ1: Consistency	0.878	0.018	0.771
PJ2: Bias suppression	0.901	0.016	0.812
PJ3: Accuracy of information	0.864	0.019	0.746
PJ4: Correctability	0.823	0.023	0.677
PJ5: Representativeness	0.856	0.020	0.733
PJ6: Ethicality	0.889	0.017	0.790
Model Fit Statistics			
χ^2(df)	892.47 (480)		
CFI	0.962		
TLI	0.957		
RMSEA [90% CI]	0.032 [0.028, 0.036]		
SRMR	0.038		

Note. All standardized loadings significant at $p < .001$.

The confirmatory factor analysis results displayed in Table 2 demonstrate that the hypothesized measurement model provided excellent fit to the data. The chi-square statistic was significant (χ^2 = 892.47, df = 480, $p < 0.001$), as expected with large sample sizes, but practical fit indices uniformly exceeded conventional thresholds (CFI = 0.962, TLI = 0.957, RMSEA = 0.032, SRMR = 0.038). Standardized factor loadings ranged from 0.761 to 0.901, all substantially exceeding the 0.70 minimum threshold recommended for adequate indicator reliability. The R^2 values indicated that latent constructs explained between 57.9% and 81.2% of variance in observed indicators, demonstrating strong measurement properties. Composite reliability coefficients ranged from 0.91 to 0.94 across constructs, exceeding the 0.70 criterion for internal consistency. Average variance extracted values (range: 0.64 to 0.72) exceeded 0.50 for all constructs, confirming convergent validity. Discriminant validity was supported by AVE values exceeding squared inter-construct correlations for all pairs, satisfying the Fornell-Larcker criterion.

Table 3 - Structural Model Results: Direct Effects of Appraisal Characteristics on Need Satisfaction

Predictor	Outcome	β	SE	95% CI	p
Developmental orientation	Autonomy satisfaction	0.367	0.048	[0.273, 0.461]	< .001
Developmental orientation	Competence satisfaction	0.412	0.044	[0.326, 0.498]	< .001
Developmental orientation	Relatedness satisfaction	0.284	0.052	[0.182, 0.386]	< .001
Participatory process	Autonomy satisfaction	0.389	0.046	[0.299, 0.479]	< .001
Participatory process	Competence satisfaction	0.267	0.051	[0.167, 0.367]	< .001
Participatory process	Relatedness satisfaction	0.438	0.043	[0.354, 0.522]	< .001
Feedback quality	Autonomy satisfaction	0.198	0.054	[0.092, 0.304]	< .001
Feedback quality	Competence satisfaction	0.387	0.045	[0.299, 0.475]	< .001
Feedback quality	Relatedness satisfaction	0.312	0.049	[0.216, 0.408]	< .001
Procedural justice	Autonomy satisfaction	0.324	0.050	[0.226, 0.422]	< .001
Procedural justice	Competence satisfaction	0.298	0.051	[0.198, 0.398]	< .001
Procedural justice	Relatedness satisfaction	0.341	0.048	[0.247, 0.435]	< .001

Note. β = standardized coefficient; CI = confidence interval. Model fit: $\chi^2(512) = 978.34$, CFI = 0.958, TLI = 0.953, RMSEA = 0.033, SRMR = 0.041.

Structural model results examining direct effects between appraisal characteristics and basic psychological need satisfaction appear in Table 3. The findings reveal differentiated patterns consistent with theoretical expectations regarding the psychological functions served by different appraisal features. Developmental orientation demonstrated the strongest association with competence satisfaction ($\beta = 0.412$, $p < 0.001$), supporting the premise that growth-focused appraisal practices directly convey competence-relevant information and create mastery experiences. The relationship between developmental orientation and autonomy satisfaction was also substantial ($\beta = 0.367$, $p < 0.001$), reflecting that developmental approaches implicitly grant employees agency over their professional growth trajectories. Participatory process exhibited the strongest effect on relatedness satisfaction ($\beta = 0.438$, $p < 0.001$) among all predictor-outcome combinations, confirming that employee voice opportunities strengthen the supervisor-subordinate relationship and foster perceptions of being valued. Participatory process also substantially predicted autonomy satisfaction ($\beta = 0.389$, $p < 0.001$), consistent with the autonomy-supportive nature of soliciting and incorporating employee input. Feedback quality demonstrated its strongest association with competence satisfaction ($\beta = 0.387$, $p < 0.001$), as specific, timely, and constructive feedback directly informs employees about their effectiveness and capabilities. Procedural justice predicted all three need satisfaction dimensions with relatively equivalent magnitude (β range: 0.298–0.341), suggesting that fair appraisal procedures contribute broadly to psychological need fulfillment.

Table 4 - Indirect Effects: Basic Psychological Needs as Mediators of Appraisal-Motivation Relationships

Path	Indirect Effect (β)	SE	95% Bootstrap CI	Proportion Mediated
Via Autonomy Satisfaction				
DO → AUT → IM	0.132	0.024	[0.087, 0.181]	28.1%
PP → AUT → IM	0.140	0.023	[0.097, 0.188]	31.8%
FQ → AUT → IM	0.071	0.021	[0.032, 0.114]	14.5%
PJ → AUT → IM	0.117	0.023	[0.074, 0.164]	27.9%
Via Competence Satisfaction				
DO → COMP → IM	0.187	0.025	[0.142, 0.239]	39.8%
PP → COMP → IM	0.121	0.024	[0.076, 0.170]	27.5%
FQ → COMP → IM	0.176	0.024	[0.131, 0.225]	35.9%
PJ → COMP → IM	0.135	0.025	[0.089, 0.186]	32.1%
Via Relatedness Satisfaction				
DO → REL → IM	0.098	0.021	[0.059, 0.142]	20.9%
PP → REL → IM	0.151	0.024	[0.106, 0.200]	34.3%
FQ → REL → IM	0.108	0.022	[0.067, 0.153]	22.0%
PJ → REL → IM	0.118	0.022	[0.077, 0.164]	28.1%
Total Indirect Effects				
Developmental orientation	0.417	0.034	[0.352, 0.485]	88.8%
Participatory process	0.412	0.033	[0.349, 0.478]	93.6%
Feedback quality	0.355	0.032	[0.294, 0.419]	72.4%
Procedural justice	0.370	0.033	[0.307, 0.436]	88.1%

Note. DO = developmental orientation; PP = participatory process; FQ = feedback quality; PJ = procedural justice; AUT = autonomy satisfaction; COMP = competence satisfaction; REL = relatedness satisfaction; IM = intrinsic motivation. All indirect effects significant as 95% CI excludes zero.

The indirect effect analyses presented in Table 4 provide strong support for the mediating role of basic psychological needs in the appraisal-motivation relationship. All 12 specific indirect effects (four appraisal dimensions × three needs) were statistically significant, with 95% bootstrap confidence

intervals excluding zero. The competence satisfaction pathway exhibited the largest indirect effects across appraisal dimensions, with the developmental orientation to competence to intrinsic motivation path (β = 0.187) representing the single strongest specific indirect effect. This pattern underscores that competence information conveyed through appraisal constitutes a particularly potent motivational mechanism. The total indirect effects through all three needs ranged from β = 0.355 (feedback quality) to β = 0.417 (developmental orientation), indicating that between 72.4% and 93.6% of the total appraisal-motivation relationship operated through need satisfaction mechanisms. Participatory process exhibited the highest proportion of variance explained through mediation (93.6%), suggesting that the motivational benefits of employee involvement operate almost entirely through psychological need fulfillment rather than direct effects. These mediation proportions substantially exceed conventional benchmarks for meaningful indirect effects, providing compelling evidence for the theoretical model.

Table 5 - Need Satisfaction Effects on Intrinsic Motivation: Direct Paths and Interaction Terms

Path	β	SE	95% CI	p
Direct Effects on Intrinsic Motivation				
Autonomy satisfaction → IM	0.361	0.038	[0.287, 0.435]	< .001
Competence satisfaction → IM	0.454	0.035	[0.386, 0.522]	< .001
Relatedness satisfaction → IM	0.346	0.039	[0.270, 0.422]	< .001
Interaction Effects				
AUT × SAS → IM	0.089	0.032	[0.026, 0.152]	.006
COMP × SAS → IM	0.156	0.030	[0.097, 0.215]	< .001
REL × SAS → IM	0.072	0.033	[0.008, 0.137]	.028
Model R^2 for Intrinsic Motivation				
Need satisfaction main effects only	0.512			
With interaction terms	0.547			
ΔR^2 from interactions	0.035			< .001

Note. SAS = supervisor autonomy support. IM = intrinsic motivation. AUT = autonomy satisfaction; COMP = competence satisfaction; REL = relatedness satisfaction.

Table 5 displays the effects of need satisfaction dimensions on intrinsic motivation along with moderation analyses. All three basic psychological needs significantly predicted intrinsic motivation, with competence satisfaction exhibiting the largest effect (β = 0.454, p < 0.001), followed by autonomy satisfaction (β = 0.361, p < 0.001) and relatedness satisfaction (β = 0.346, p < 0.001). Collectively, the three need satisfaction dimensions accounted for 51.2% of variance in intrinsic motivation, representing a large effect by conventional standards. The moderation analyses revealed that supervisor autonomy support strengthened all three need-motivation pathways, with the competence × supervisor autonomy support interaction exhibiting the largest effect (β = 0.156, p < 0.001). This interaction indicates that competence satisfaction more strongly predicts intrinsic motivation when employees perceive high supervisor autonomy support, suggesting that the informational value of competence experiences is amplified in autonomy-supportive climates. The inclusion of interaction terms explained an additional 3.5% of variance in intrinsic motivation (ΔR^2 = 0.035, p < 0.001), a statistically significant though modest increment that nonetheless demonstrates the conditioning role of supervisor behaviors.

Table 6 - Comparison of Motivation Outcomes by Appraisal System Orientation

Appraisal System Type	n	Intrinsic Motivation	Autonomy Satisfaction	Competence Satisfaction	Relatedness Satisfaction
Traditional evaluative	298	4.21 (1.22)	4.12 (1.18)	4.43 (1.08)	4.28 (1.14)

Appraisal System Type	n	Intrinsic Motivation	Autonomy Satisfaction	Competence Satisfaction	Relatedness Satisfaction
Mixed approach	312	4.89 (1.09)	4.71 (1.07)	4.98 (0.94)	4.82 (1.02)
Need-supportive developmental	237	5.65 (0.98)	5.42 (0.96)	5.71 (0.87)	5.54 (0.91)
ANOVA Results					
F(2, 844)		98.47***	87.23***	104.56***	91.78***
η^2		0.189	0.171	0.199	0.179
Post-hoc Comparisons (Tukey HSD)					
Traditional vs. Mixed		d = 0.59***	d = 0.52***	d = 0.54***	d = 0.50***
Traditional vs. Need-supportive		d = 1.31***	d = 1.21***	d = 1.31***	d = 1.23***
Mixed vs. Need-supportive		d = 0.73***	d = 0.70***	d = 0.81***	d = 0.75***

Note. *** p < .001. Cohen's d effect sizes calculated using pooled standard deviations. Appraisal system classification based on organizational HR policy review and employee perception cluster analysis.

Comparative analyses examining motivation outcomes across appraisal system types reveal substantial differences (Table 6). Organizations were classified into three categories based on combined evidence from HR policy documentation and employee perception cluster analysis: traditional evaluative systems emphasizing ratings and administrative decisions (n = 298), mixed approaches incorporating both evaluative and developmental elements (n = 312), and need-supportive developmental systems prioritizing growth, participation, and autonomy support (n = 237). One-way ANOVA demonstrated significant differences across all dependent variables with large effect sizes (η^2 range: 0.171–0.199). Employees in need-supportive systems reported intrinsic motivation scores 34.2% higher than those in traditional evaluative systems (M = 5.65 vs. M = 4.21). The pattern of differences was consistent across all need satisfaction dimensions, with competence satisfaction showing the largest between-group variation (η^2 = 0.199). Post-hoc comparisons confirmed that each successive appraisal system category demonstrated significantly higher scores, with effect sizes ranging from medium (d = 0.50–0.59 for traditional vs. mixed) to large (d = 1.21–1.31 for traditional vs. need-supportive). These findings provide compelling practical evidence for the motivational superiority of need-supportive appraisal designs.

Table 7 - Appraisal Frequency and Timing Effects on Motivational Outcomes

Appraisal Frequency	n	Intrinsic Motivation	Competence Satisfaction	Perceived Feedback Utility
		M (SD)	M (SD)	M (SD)
Annual only	287	4.48 (1.21)	4.56 (1.09)	4.12 (1.24)
Semi-annual	298	4.92 (1.14)	5.01 (0.98)	4.78 (1.11)
Quarterly	178	5.24 (1.02)	5.32 (0.91)	5.21 (0.97)
Continuous/ongoing	84	5.67 (0.89)	5.74 (0.82)	5.89 (0.84)
Linear Trend Analysis				
β (frequency → outcome)		0.312***	0.298***	0.387***
Curvilinear Test				
Quadratic β		-0.041 (ns)	-0.038 (ns)	-0.029 (ns)

Note. *** p < .001. ns = not significant. Continuous/ongoing refers to organizations with regular informal check-ins supplementing formal reviews.

Appraisal frequency demonstrated systematic positive associations with motivational outcomes as displayed in Table 7. Employees experiencing continuous or ongoing appraisal processes (regular

informal check-ins supplementing formal reviews) reported the highest intrinsic motivation (M = 5.67), competence satisfaction (M = 5.74), and perceived feedback utility (M = 5.89). Linear trend analysis confirmed significant positive relationships between appraisal frequency and all three outcomes (β range: 0.298–0.387, all $p < 0.001$). Notably, tests for curvilinear relationships were non-significant, indicating no evidence that excessive appraisal frequency diminishes motivational benefits within the observed range. The perceived feedback utility variable, assessing the extent to which employees view appraisal information as relevant and actionable, exhibited the strongest association with frequency (β = 0.387), suggesting that more frequent evaluation cycles enhance the informational value employees extract from appraisal processes. These findings challenge concerns that frequent appraisals may overwhelm employees or create excessive monitoring perceptions, at least when implemented appropriately.

Table 8 - Demographic and Organizational Moderators of Key Relationships

Moderator	Path Moderated	Interaction β	SE	p	Pattern
Employee Tenure					
Low (≤2 years)	COMP → IM	0.512	0.048	< .001	Stronger
High (>5 years)	COMP → IM	0.387	0.042	< .001	Weaker
Tenure × COMP → IM		-0.089	0.034	.009	
Organization Size					
Small (<100 employees)	PP → REL	0.521	0.056	< .001	Stronger
Large (>500 employees)	PP → REL	0.378	0.044	< .001	Weaker
Size × PP → REL		-0.102	0.039	.009	
Industry Sector					
Technology	FQ → COMP	0.456	0.051	< .001	Stronger
Manufacturing	FQ → COMP	0.324	0.049	< .001	Weaker
Services	FQ → COMP	0.391	0.047	< .001	Moderate
Industry × FQ → COMP		—	—	.014	Sig. diff
Education Level					
Bachelor's or below	AUT → IM	0.318	0.044	< .001	Weaker
Master's or above	AUT → IM	0.412	0.046	< .001	Stronger
Education × AUT → IM		0.078	0.035	.026	

Note. PP = participatory process; FQ = feedback quality; COMP = competence satisfaction; AUT = autonomy satisfaction; REL = relatedness satisfaction; IM = intrinsic motivation.

Exploratory moderation analyses (Table 8) identified several boundary conditions qualifying the generalizability of primary findings. Employee tenure moderated the competence satisfaction to intrinsic motivation relationship (interaction $\beta = -0.089$, $p = .009$), such that newer employees exhibited stronger motivational responses to competence satisfaction than more experienced employees. This pattern suggests that competence feedback may be particularly impactful during early career stages when employees are establishing their professional identity and self-efficacy. Organization size moderated the participatory process to relatedness satisfaction pathway (interaction $\beta = -0.102$, $p = .009$), with stronger effects in smaller organizations where participatory opportunities may signal more personalized consideration. Industry sector significantly influenced the feedback quality to competence satisfaction relationship (omnibus test $p = .014$), with technology sector employees showing stronger associations, possibly reflecting knowledge work contexts where feedback directly informs skill development. Education level moderated the autonomy satisfaction to intrinsic motivation path (interaction $\beta = 0.078$, $p = .026$), indicating that more highly educated employees derived greater motivational benefit from autonomy experiences, consistent with research on knowledge worker

motivation.

The structural equation model incorporating all hypothesized relationships demonstrated excellent fit to the observed data ($\chi^2 = 1{,}147.82$, df = 598, $p < 0.001$; CFI = 0.954; TLI = 0.949; RMSEA = 0.033 [90% CI: 0.029, 0.037]; SRMR = 0.042). The chi-square to degrees of freedom ratio (1.92) fell below the recommended 3.0 threshold indicating adequate fit despite the significant chi-square, which is expected with large samples. The model explained substantial variance in all endogenous variables: autonomy satisfaction ($R^2 = 0.47$), competence satisfaction ($R^2 = 0.54$), relatedness satisfaction ($R^2 = 0.51$), and intrinsic motivation ($R^2 = 0.63$). Comparison with alternative models supported the hypothesized mediation structure over direct-effects-only models ($\Delta\chi^2 = 287.34$, $\Delta df = 12$, $p < 0.001$) and partial mediation models including direct paths from appraisal characteristics to intrinsic motivation, where such paths proved non-significant when mediators were included, supporting full mediation. Model-implied correlations closely approximated observed correlations (mean absolute residual = 0.018), indicating the structural model accurately reproduced bivariate relationships.

Conclusion

This investigation provides comprehensive empirical support for the premise that performance appraisal systems influence employee intrinsic motivation through the satisfaction of basic psychological needs for autonomy, competence, and relatedness. The mediating mechanisms specified by Self-Determination Theory received robust confirmation, with 72.4% to 93.6% of appraisal-motivation relationships operating through need satisfaction pathways. Competence satisfaction emerged as the most potent mediator (indirect effects ranging from $\beta = 0.121$ to $\beta = 0.187$), followed by autonomy and relatedness satisfaction with comparable magnitudes. The 34.2% higher intrinsic motivation scores observed in need-supportive versus traditional evaluative systems translate to meaningful practical differences: employees in developmentally-oriented appraisal environments reported average intrinsic motivation of 5.65 compared to 4.21 in traditional systems on a 7-point scale, a difference of 1.44 scale points or 1.31 standard deviations.

Appraisal design features demonstrated differentiated relationships with specific psychological needs consistent with theoretical predictions. Developmental orientation most strongly predicted competence satisfaction ($\beta = 0.412$), participatory process most strongly predicted relatedness satisfaction ($\beta = 0.438$), and both developmental orientation and participatory process substantially predicted autonomy satisfaction ($\beta = 0.367$ and $\beta = 0.389$, respectively). These differential patterns inform targeted design recommendations: organizations seeking to enhance competence satisfaction should emphasize growth-focused feedback and learning opportunities, while those prioritizing relatedness should maximize employee voice and collaborative goal-setting. Procedural justice demonstrated uniformly positive associations across all needs ($\beta = 0.298$–0.341), confirming that fair procedures constitute a foundational element supporting psychological need fulfillment broadly. Appraisal frequency exhibited positive linear associations with motivational outcomes ($\beta = 0.312$ for intrinsic motivation), with no evidence of curvilinear diminishing returns, suggesting organizations can increase appraisal frequency without motivational costs when implementations maintain quality standards.

The moderating role of supervisor autonomy support substantially qualified the need-motivation relationships, particularly for competence satisfaction (interaction $\beta = 0.156$). This finding indicates that appraisal systems cannot operate independently of implementation quality—even well-designed systems yield suboptimal motivational outcomes when supervisors fail to adopt autonomy-supportive

interaction styles. The interaction pattern suggests multiplicative rather than merely additive effects: competence information conveyed through appraisal becomes more motivationally potent when embedded in autonomy-supportive supervisory relationships. Organizations implementing appraisal redesign should therefore invest simultaneously in supervisor training on autonomy-supportive behaviors to realize full motivational benefits. Employee tenure, organization size, industry sector, and education level emerged as boundary conditions, with newer employees, smaller organizations, technology sectors, and more educated employees generally showing stronger effects, highlighting the importance of contextual tailoring.

Limitations of this research include the cross-sectional design, which precludes definitive causal inference despite theoretical support for the hypothesized directional relationships. The reliance on self-report measures introduces potential common method variance, though multiple diagnostic tests suggested this threat was minimal. Single-organization samples within each sector limit claims about sector-wide generalizability, and the Central and Eastern European geographic focus may constrain applicability to other cultural contexts where autonomy or relatedness values differ. Future research should employ longitudinal designs capturing appraisal experiences and subsequent motivation trajectories, incorporate objective performance indicators alongside self-reported motivation, and examine cultural moderators of SDT mechanisms in appraisal contexts. Intervention studies experimentally manipulating appraisal design features would provide the strongest evidence for causal claims and inform implementation science. Integration with emerging continuous performance management technologies presents opportunities to examine real-time need satisfaction fluctuations and their motivational consequences.

References

1. Ahmed M., Islam M.N., Karim M.M., Akter S. (2024). Human resource management practices and employee engagement: The moderating effect of supervisory role. Cogent Business & Management, 11(1), Article 2318802. DOI: 10.1080/23311975.2024.2318802
2. Buckingham M., Goodall A. (2015). Reinventing performance management. Harvard Business Review, 93(4), 40-50.
3. Deci E.L., Olafsen A.H., Ryan R.M. (2017). Self-determination theory in work organizations: The state of a science. Annual Review of Organizational Psychology and Organizational Behavior, 4, 19-43. DOI: 10.1146/annurev-orgpsych-032516-113108
4. DeNisi A.S., Murphy K.R. (2017). Performance appraisal and performance management: 100 years of progress? Journal of Applied Psychology, 102(3), 421-433. DOI: 10.1037/apl0000085
5. Elamalki D., Kaddar A., Beniich N. (2024). Impact of motivation on the job performance of public sector employees: The case of Morocco. Future Business Journal, 10, Article 53. DOI: 10.1186/s43093-024-00342-4
6. Gagné M., Forest J., Vansteenkiste M., et al. (2015). The Multidimensional Work Motivation Scale: Validation evidence in seven languages and nine countries. European Journal of Work and Organizational Psychology, 24(2), 178-196. DOI: 10.1080/1359432X.2013.877892
7. Gagné M., Parker S.K., Griffin M.A., et al. (2022). Understanding and shaping the future of work with self-determination theory. Nature Reviews Psychology, 1, 378-392. DOI: 10.1038/s44159-022-00056-w
8. Hayes A.F. (2022). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach (3rd ed.). Guilford Press.
9. Hu L., Bentler P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling, 6(1), 1-55. DOI: 10.1080/10705519909540118
10. Juyumaya J., Torres-Ochoa C., Rojas G. (2024). Boosting job performance: The impact of autonomy, engagement and age. Revista de Gestão, 31(4), 397-414. DOI: 10.1108/REGE-09-2023-0108
11. Levy P.E., Williams J.R. (2004). The social context of performance appraisal: A review and framework for the future. Journal of Management, 30(6), 881-905. DOI: 10.1016/j.jm.2004.06.005
12. McAnally K., Hagger M.S. (2024). Self-Determination Theory and Workplace Outcomes: A Conceptual Review and Future Research Directions. Behavioral Sciences, 14(6), Article 428. DOI: 10.3390/bs14060428
13. Meijerink J., Bos-Nehles A., de Leede J. (2021). A meta-analysis of mediating mechanisms between employee reports of human resource management and employee performance. The International Journal of Human Resource

Management, 32(8), 1591-1636. DOI: 10.1080/09585192.2020.1810737
14. Olafsen A.H., Deci E.L., Halvari H. (2018). Basic psychological needs and work motivation: A longitudinal test of directionality. Motivation and Emotion, 42(2), 178-189. DOI: 10.1007/s11031-017-9646-2
15. Olafsen A.H., Niemiec C.P., Deci E.L., et al. (2021). The Basic Psychological Need Satisfaction and Need Frustration at Work Scale: A Validation Study. Frontiers in Psychology, 12, Article 697306. DOI: 10.3389/fpsyg.2021.697306
16. Ryan R.M., Deci E.L. (2017). Self-determination theory: Basic psychological needs in motivation, development, and wellness. Guilford Press.
17. Tiffin P.A., Cabrera R., Dexter-Smith S., Van den Broeck A. (2024). Capturing autonomy, competence, and relatedness at work: Further examining and validating an English language version of the work-related basic need satisfaction scale. Frontiers in Psychology, 15, Article 1304309. DOI: 10.3389/fpsyg.2024.1304309
18. Trépanier S.-G., Peterson C., Gagné M., et al. (2023). Revisiting the Multidimensional Work Motivation Scale (MWMS). European Journal of Work and Organizational Psychology, 32(2), 157-172. DOI: 10.1080/1359432X.2022.2116315
19. Van den Broeck A., Ferris D.L., Chang C.-H., Rosen C.C. (2016). A review of self-determination theory's basic psychological needs at work. Journal of Management, 42(5), 1195-1229. DOI: 10.1177/0149206316632058
20. Van Woerkom M., Kroon B. (2020). The Effect of Strengths-Based Performance Appraisal on Perceived Supervisor Support and the Motivation to Improve Performance. Frontiers in Psychology, 11, Article 1883. DOI: 10.3389/fpsyg.2020.01883
21. Van Woerkom M., Meyers M.C. (2015). Strengths-based performance appraisal and goal setting. Human Resource Management Review, 25(2), 195-209. DOI: 10.1016/j.hrmr.2014.09.004
22. Wang M., Guo T., Ni Y., et al. (2024). Detecting causal relationships between work motivation and job performance: A meta-analytic review of cross-lagged studies. Humanities and Social Sciences Communications, 11, Article 595. DOI: 10.1038/s41599-024-03038-w

Использование теории самодетерминации для проектирования систем оценки эффективности работы, способствующих развитию внутренней мотивации сотрудников: исследование механизмов

Чэнь Лин

Постдокторский исследователь,
Московский государственный университет им. М.В. Ломоносова,
119991, Российская Федерация, Москва, Ленинские горы, 1;
e-mail: clapple@yeah.net.

Аннотация

Системы оценки эффективности работы остаются центральным элементом управления человеческими ресурсами в организациях, однако их способность повышать внутреннюю мотивацию сотрудников остаётся недостаточно изученной. В данном исследовании рассматривается, как характеристики оценки эффективности работы влияют на внутреннюю мотивацию через посреднические механизмы удовлетворения базовых психологических потребностей — автономии, компетентности и связанности — в соответствии с концепцией теории самодетерминации. Данные были собраны от 847 сотрудников из 12 организаций в производственном, технологическом и сервисном секторах в период с марта по ноябрь 2024 года. В исследовании использовался дизайн поперечного среза с применением валидированных инструментов: шкалы восприятия оценки эффективности работы, шкалы удовлетворения и фрустрации базовых психологических потребностей на работе и многомерной шкалы трудовой мотивации. Моделирование структурными уравнениями показало, что практика оценки, ориентированная на развитие, демонстрирует сильные

положительные ассоциации с удовлетворением потребности в компетентности (β = 0,412, p < 0,001) и удовлетворением автономии (β = 0,367, p < 0,001). Партисипативные процессы оценки продемонстрировали наиболее сильную связь с удовлетворением связанности (β = 0,438, p < 0,001). Анализ последовательной медиации подтвердил, что базовые психологические потребности полностью опосредуют связь между характеристиками оценки и внутренней мотивацией, причём удовлетворение компетентности демонстрирует наибольший непрямой эффект (β = 0,187, 95% CI [0,142, 0,239]). Организации, внедряющие системы оценки, поддерживающие потребности, показали на 34,2% более высокие показатели внутренней мотивации по сравнению с организациями, использующими традиционные оценочные подходы. Взаимодействие между частотой оценки и поддержкой автономии со стороны руководителя модернировало путь «компетентность — внутренняя мотивация» (β = 0,156, p < 0,01), что позволяет предположить, что контекстуальные факторы усиливают мотивационные результаты. Эти выводы обеспечивают эмпирическую валидацию интеграции принципов теории самодетерминации в дизайн управления эффективностью и демонстрируют, что системы оценки функционируют как критические средовые антецеденты самоопределяемой мотивации сотрудников. Практикам следует отдавать приоритет развивающей обратной связи, участию сотрудников и реализации, поддерживающей автономию, для максимизации мотивационных преимуществ.

Для цитирования в научных исследованиях

Чэнь Лин. Leveraging Self-Determination Theory to Design Performance Appraisal Systems That Foster Intrinsic Motivation in Employees: A Study on the Underlying Mechanisms // Экономика: вчера, сегодня, завтра. 2026. Том 16. № 3А. С. 820-834. DOI: 10.34670/AR.2026.94.72.044

Ключевые слова

Теория самодетерминации, оценка эффективности работы, внутренняя мотивация, базовые психологические потребности, поддержка автономии, вовлечённость сотрудников, организационная психология.

Библиография

1. Ahmed M., Islam M.N., Karim M.M., Akter S. Human resource management practices and employee engagement: The moderating effect of supervisory role // Cogent Business & Management. 2024. Vol. 11. No. 1. Article 2318802. DOI: 10.1080/23311975.2024.2318802.
2. Buckingham M., Goodall A. Reinventing performance management // Harvard Business Review. 2015. Vol. 93. No. 4. P. 40-50.
3. Deci E.L., Olafsen A.H., Ryan R.M. Self-determination theory in work organizations: The state of a science // Annual Review of Organizational Psychology and Organizational Behavior. 2017. Vol. 4. P. 19-43. DOI: 10.1146/annurev-orgpsych-032516-113108.
4. DeNisi A.S., Murphy K.R. Performance appraisal and performance management: 100 years of progress? // Journal of Applied Psychology. 2017. Vol. 102. No. 3. P. 421-433. DOI: 10.1037/apl0000085.
5. Elamalki D., Kaddar A., Beniich N. Impact of motivation on the job performance of public sector employees: The case of Morocco // Future Business Journal. 2024. Vol. 10. Article 53. DOI: 10.1186/s43093-024-00342-4.
6. Gagné M., Forest J., Vansteenkiste M., et al. The Multidimensional Work Motivation Scale: Validation evidence in seven languages and nine countries // European Journal of Work and Organizational Psychology. 2015. Vol. 24. No. 2. P. 178-196. DOI: 10.1080/1359432X.2013.877892.
7. Gagné M., Parker S.K., Griffin M.A., et al. Understanding and shaping the future of work with self-determination theory // Nature Reviews Psychology. 2022. Vol. 1. P. 378-392. DOI: 10.1038/s44159-022-00056-w.
8. Hayes A.F. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. 3rd

ed. New York: Guilford Press, 2022. 732 p. ISBN: 978-1-4625-4903-0.
9. Hu L., Bentler P.M. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives // Structural Equation Modeling. 1999. Vol. 6. No. 1. P. 1-55. DOI: 10.1080/10705519909540118.
10. Juyumaya J., Torres-Ochoa C., Rojas G. Boosting job performance: The impact of autonomy, engagement and age // Revista de Gestão. 2024. Vol. 31. No. 4. P. 397-414. DOI: 10.1108/REGE-09-2023-0108.
11. Levy P.E., Williams J.R. The social context of performance appraisal: A review and framework for the future // Journal of Management. 2004. Vol. 30. No. 6. P. 881-905. DOI: 10.1016/j.jm.2004.06.005.
12. McAnally K., Hagger M.S. Self-Determination Theory and Workplace Outcomes: A Conceptual Review and Future Research Directions // Behavioral Sciences. 2024. Vol. 14. No. 6. Article 428. DOI: 10.3390/bs14060428.
13. Meijerink J., Bos-Nehles A., de Leede J. A meta-analysis of mediating mechanisms between employee reports of human resource management and employee performance // The International Journal of Human Resource Management. 2021. Vol. 32. No. 8. P. 1591-1636. DOI: 10.1080/09585192.2020.1810737.
14. Olafsen A.H., Deci E.L., Halvari H. Basic psychological needs and work motivation: A longitudinal test of directionality // Motivation and Emotion. 2018. Vol. 42. No. 2. P. 178-189. DOI: 10.1007/s11031-017-9646-2.
15. Olafsen A.H., Niemiec C.P., Deci E.L., et al. The Basic Psychological Need Satisfaction and Need Frustration at Work Scale: A Validation Study // Frontiers in Psychology. 2021. Vol. 12. Article 697306. DOI: 10.3389/fpsyg.2021.697306.
16. Ryan R.M., Deci E.L. Self-determination theory: Basic psychological needs in motivation, development, and wellness. New York: Guilford Press, 2017. 756 p. ISBN: 978-1-4625-2876-9.
17. Tiffin P.A., Cabrera R., Dexter-Smith S., Van den Broeck A. Capturing autonomy, competence, and relatedness at work: Further examining and validating an English language version of the work-related basic need satisfaction scale // Frontiers in Psychology. 2024. Vol. 15. Article 1304309. DOI: 10.3389/fpsyg.2024.1304309.
18. Trépanier S.-G., Peterson C., Gagné M., et al. Revisiting the Multidimensional Work Motivation Scale (MWMS) // European Journal of Work and Organizational Psychology. 2023. Vol. 32. No. 2. P. 157-172. DOI: 10.1080/1359432X.2022.2116315.
19. Van den Broeck A., Ferris D.L., Chang C.-H., Rosen C.C. A review of self-determination theory's basic psychological needs at work // Journal of Management. 2016. Vol. 42. No. 5. P. 1195-1229. DOI: 10.1177/0149206316632058.
20. Van Woerkom M., Kroon B. The Effect of Strengths-Based Performance Appraisal on Perceived Supervisor Support and the Motivation to Improve Performance // Frontiers in Psychology. 2020. Vol. 11. Article 1883. DOI: 10.3389/fpsyg.2020.01883.
21. Van Woerkom M., Meyers M.C. Strengths-based performance appraisal and goal setting // Human Resource Management Review. 2015. Vol. 25. No. 2. P. 195-209. DOI: 10.1016/j.hrmr.2014.09.004.
22. Wang M., Guo T., Ni Y., et al. Detecting causal relationships between work motivation and job performance: A meta-analytic review of cross-lagged studies // Humanities and Social Sciences Communications. 2024. Vol. 11. Article 595. DOI: 10.1038/s41599-024-03038-w.