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MOTIVATION AND WELL-BEING OF EARLY CAREER RESEARCHERS IN CROATIA: PRELIMINARY FINDINGS

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Abstract

Early career researchers (ECRs) often work under conditions of high pressure and job insecurity. In such environments, not only the level but also the quality of motivation for work can play a crucial role in sustaining work engagement, productivity, and work-related well-being. Drawing on the self-determination theory, the present study examines how different types of work motivation are associated with work engagement and burnout among Croatian ECRs. The study represents findings from the first wave of the longitudinal *Well-Being and Mental Health of Early Career Researchers in Croatia* (ECR-WELL) project, conducted between March and June 2025. The sample included 531 doctoral candidates and postdoctoral researchers working in with Croatian universities and research institutes. Participants completed an online questionnaire assessing their work motivation (Multidimensional Work Motivation Scale), well-being and emotional experiences at work (such as measures of work engagement and burnout), as well as sociodemographic variables. The analyses included confirmatory factor analysis of the MAWS, followed by structural equation modelling to test associations between different types of work motivation and well-being, while controlling for age and gender. The results showed support for the hypothesized six-factor structure of work motivation and showed that intrinsic motivation was the strongest positive predictor of work engagement and a robust protective factor against burnout, whereas amotivation was consistently associated with lower engagement and higher burnout. Identified regulation was positively related to engagement but showed no significant association with burnout. In contrast, controlled forms of motivation (introjected and external regulation) were not uniquely associated with either engagement or burnout when all motivational regulations were considered simultaneously. Overall, the model explained a substantial proportion of variance in work engagement and a meaningful proportion of variance in burnout. These findings suggest that, despite challenging structural conditions, many Croatian ECRs remain engaged when their work is experienced as intrinsically meaningful. The results show the importance of academic environments that support autonomy, competence, and meaningful engagement. By following this cohort longitudinally, the ECR-WELL project will be able to examine how motivational orientations evolve over time and how they predict future trajectories of well-being, engagement, and retention in academia.

Keywords: *Early career researchers, motivation, well-being, engagement, burnout.*

1. Introduction

The early stages of a scientific career are often associated with curiosity, enthusiasm, and a strong desire to contribute to the existing (de Lourdes Machado-Taylor et al., 2016). However, early career researchers (ECRs, doctoral candidates and postdoctoral researchers) also often experience intense professional demands, heavy workloads, and strong publication pressure (Boone et al., 2022; Zhang et al., 2022; Kismihók et al., 2022), as well as fixed-term contracts, blurred work–life boundaries, and limited control over career trajectories (Levecque et al., 2017; Hazell et al., 2020; Nicholls et al., 2022; Van der Weijden, & Teelken, 2023). These structural conditions place ECRs at elevated risk for impaired well-being, including reduced work engagement and increased burnout (Jackman et al., 2021; Boone et al., 2022; Di Giacomo et al., 2024).

Thus, understanding the associations between ECRs' motivational processes and their work engagement and burnout is important for identifying psychological resources and risk factors that support sustainable academic careers. In this context, the self-determination theory (SDT) provides a well-established framework for examining the quality of motivation in relation to well-being (van den Broeck, et al, 2021; Gagné et al., 2015; Gagné et al., 2022). SDT distinguishes between autonomous forms of motivation—such as intrinsic motivation and identified regulation—and controlled forms of motivation, including introjected and external regulation, as well as amotivation (van den Broeck, et al, 2021). Across occupational contexts, autonomous motivation has been consistently linked to higher engagement, vitality, and psychological well-being, whereas amotivation is associated with exhaustion, disengagement, and poorer mental health outcomes (Sinniah et al., 2022; Gagné et al., 2025; van den Broeck, et al, 2021). Although SDT has been widely applied in organizational and work psychology research, empirical evidence on motivational quality and well-being among ECRs remains somewhat limited. Academic work represents a particularly relevant context for examining motivational processes, as it often combines high intrinsic interest with strong external pressures related to evaluation, publication, and funding (Signoret et al., 2019; Van der Weijden & Teelken, 2023). Moreover, relatively few studies have simultaneously modelled multiple types of motivation while accounting for their interrelations when predicting both positive and negative indicators of well-being, such as engagement and burnout.

Hence, the present study aims to gain more insights into these matters by examining how different types of work motivation relate to work engagement and burnout among ECRs. First, the study validates the multidimensional structure of work motivation and then tests the unique associations of autonomous, controlled, and amotivated forms of motivation with engagement and burnout, while controlling for age and gender. By focusing on motivational quality rather than motivation strength alone, this study aims to clarify which forms of motivation function as key psychological resources and which represent risk factors in the early stages of academic careers.

2. Method

2.1. Participants

A total of 531 early career researchers working in Croatian academic institutions (i.e., universities and research institutes) participated in the first wave of data collection. In this sample, 182 (35.8%) participants indicated male gender, 326 (64.2%) female, and 23 (4.3%) did not report their gender. Participants' age ranged from 24 to 55 years (M = 31.58, SD = 5.50).

Most participants were doctoral candidates employed as research assistants (N=387; 73.2%), and 142 participants (26.8%) were postdoctoral researchers. On average, participants reported M = 4.06 years of experience working in science (SD = 3.72). Large majority of the participants (95.1%) had fixed-term work contracts, whereas only 4.9% held permanent positions.

ECRs in the sample worked in various major scientific fields, with most participants being employed within the Social (25.5%) and Technical Sciences (23.0%), followed by Natural Sciences (16.6%), Humanities (13.0%), Biomedical and Health Sciences (9.2%), Biotechnical Sciences (9.1%). The least participants reported working within Interdisciplinary Sciences (3.2%), and Arts (0.4%). Most participants were employed in Zagreb (64.7%), reported working mostly at public universities, primarily at the University of Zagreb (38.2%).

2.2. Procedure

Data was collected as a part of a larger project "Well-being and Mental Health of Early Career Researchers in Croatia: A Longitudinal Study", a four-year research project funded by the Croatian Science Foundation (grant number: IP-2022-10-3567). The Ethics Committee of the Institute of Social Sciences Ivo Pilar provided Ethics approval for the study. Data for the first wave of the ECR-WELL project's longitudinal study were collected between March 17 and June 24, 2025, using an online self-report questionnaire administered via LimeSurvey. We distributed the invitation to join the study on early career researchers' (ECRs, i.e., doctoral candidates and postdoctoral researchers) well-being and mental health through different channels, mostly using institutional mailing information publicly presented on websites of universities and research institutes in Croatia. The questionnaire included detailed informed consent and, after that, measures of well-being, mental health, and work conditions and experiences, as well as questions on sociodemographic and employment characteristics.

2.3. Measures

Work motivation. ECRs' reported their motivation for work using the Croatian translation of the Motivation at Work Scale (MAWS; Gagne´ et al., 2010). This scale includes 12 items that reflect four types of motivation as conceptualized by Deci and Ryan (1985), that range from most to least autonomous (i.e., intrinsic, identified regulation, introjected, external regulation, amotivation). Participants report for each statement to what degree they correspond to one of the reasons for which they are putting effort into their job, using a 7-point scale ranging from 1 (''does not correspond at all'') to 7 (''corresponds very strongly'').

Work Engagement. The Utrecht Work Engagement Scale (UWES-9; Schaufeli et al., 2002) assesses vigor, dedication, and absorption. Respondents rated items such as "My job inspires me" on a 7-point scale. In line with previous findings, the UWES demonstrated high reliability (Cronbach α= .92).

Burnout. We used the exhaustion subscale of the Oldenburg Burnout Inventory (OLBI; Demerouti et al., 2001) consisting of 8-items assessing feelings of emptiness, a strong need for rest, and a state of physical exhaustion, on a 1 to 7 Likert type response scale. Example item is "After my work, I usually feel worn out and weary". The exhaustion scale showed high reliability within our sample (Cronbach α= .85).

3. Results & discussion

3.1. Confirmatory factor analysis

A confirmatory factor analysis (CFA) was conducted to examine the factorial validity of the six-factor structure of the MAWS, comprising intrinsic motivation, identified regulation, introjected regulation, external regulation–social, external regulation–material, and amotivation. The model specified each item to load on its theoretically proposed latent factor, with latent factors allowed to correlate. The initial CFA showed suboptimal model fit. Inspection of modification indices indicated a theoretically plausible residual covariance between two introjected regulation items, which share highly similar content and wording. Allowing this single correlated residual resulted in a substantial improvement in model fit. The final model demonstrated acceptable to good fit to the data, $\chi^2(136) = 483.96$, $p < .001$, CFI = .94, TLI = .93, RMSEA = .07, 90% CI [.06, .08], and SRMR = .07. All items loaded significantly on their intended factors ($p < .001$). Standardized factor loadings were generally strong for intrinsic motivation, identified regulation, and amotivation, and moderate to strong for external and introjected regulation factors. The pattern of correlations among latent factors was consistent with self-determination theory. Intrinsic motivation and identified regulation were strongly positively correlated, whereas amotivation was negatively associated with more autonomous forms of motivation and largely unrelated to external regulation. Adjacent forms of regulation along the motivational continuum showed stronger associations than more distant forms, supporting the theoretical ordering proposed by self-determination theory. Overall, the results provide support for the six-factor structure of the MAWS in the present sample.

3.2. ECR's motivation and well-being associations: Structural equation modelling

A structural equation model (SEM) was estimated to examine associations between different types of work motivation and well-being indicators (work engagement and burnout), while controlling for age and gender. The model incorporated the six-factor measurement model of the MAWS, with one theoretically justified correlated residual between two introjected regulation items. Work engagement and burnout were included as observed outcome variables. The model showed good overall fit to the data, $\chi^2(200) = 573.90$, $p < .001$, CFI = .93, TLI = .91, RMSEA = .06, 90% CI [.06, .07], SRMR = .07, indicating that the proposed model adequately represented the observed covariance structure. Results showed that the intrinsic motivation was the strongest positive predictor of work engagement ($\beta = .52$, $p < .001$). Identified regulation was also positively associated with engagement, with a smaller effect size ($\beta = .16$, $p = .004$). In contrast, amotivation was negatively related to engagement ($\beta = -.26$, $p < .001$). Introjected regulation and both forms of external regulation were not significantly associated with engagement when all motivational regulations were included simultaneously in the model. Regarding burnout, intrinsic motivation was negatively associated with burnout ($\beta = -.34$, $p < .001$), indicating a protective effect, whereas amotivation was positively associated with burnout ($\beta = .25$, $p < .001$). Identified, introjected, and external forms of motivation were not significantly related to burnout. Overall, the model explained a substantial proportion of variance in work engagement ($R^2 = .69$) and a meaningful proportion of variance in burnout ($R^2 = .24$).

4. Discussion

Building upon the SDT, the present study examined how different types of work motivation are associated with work engagement and burnout among early career researchers (ECRs). The findings demonstrate a clear and theoretically coherent motivational pattern, highlighting autonomous motivation, and intrinsic motivation in particular, as an essential resource, while identifying amotivation as a key risk factor for ECR well-being.

Intrinsic motivation was the strongest predictor of work engagement and simultaneously a robust protective factor against burnout. This dual role is consistent with SDT, which emphasizes that engaging in work out of genuine interest and enjoyment supports sustained energy, persistence, and psychological well-being, particularly in demanding and uncertain contexts such as academia (Gagné et al., 2015; Gagné et al., 2022; van den Broeck et al., 2021). Given the high workload and performance pressure characteristic of early academic careers, intrinsic motivation may be especially important for maintaining engagement without going towards exhaustion (Levecque et al., 2017; Nicholls et al., 2022). Identified regulation was positively associated with work engagement but not with burnout. This suggests that perceiving academic work as personally meaningful or aligned with long-term goals may foster involvement and dedication yet may not be sufficient to buffer against exhaustion when structural demands accumulate. This finding aligns with previous work showing that autonomous-but-instrumental motivation can support performance and engagement, while offering limited protection against chronic strain (Signoret et al., 2019; Van der Weijden & Teelken, 2023; van den Broeck et al, 2021).

In contrast, amotivation consistently predicted lower engagement and higher burnout. Amotivation reflects a lack of perceived purpose, competence, or agency at work and has been repeatedly linked to poorer mental health outcomes (van den Broeck et al, 2021). Among ECRs, elevated amotivation may signal deeper contextual problems, such as prolonged job insecurity, unclear career prospects, or misalignment between personal values and academic work (Kismihók et al., 2022; Jackman et al., 2021). The strong associations observed here suggest that amotivation may function as a warning indicator of deteriorating ECRs' well-being. Introjected regulation and both forms of external regulation were not uniquely associated with either engagement or burnout once all motivational types were considered simultaneously. This finding supports SDT-based research indicating that controlled forms of motivation tend to have weaker and more inconsistent relationships with well-being, particularly when autonomous motivation is accounted for (Gagné et al., 2015; Sinniah et al., 2022). From a practical perspective, this implies that increasing external incentives or performance pressure alone is unlikely to improve ECR well-being unless accompanied by conditions that support autonomy and intrinsic motivation.

5. Conclusions

Overall, these findings underscore that ECR well-being is shaped less by how motivated individuals are, and more by why they are motivated. Institutional efforts to support early career researchers should therefore prioritize work environments that foster autonomy, competence, and meaningful engagement, while addressing sources of amotivation through improved mentoring, career clarity, and perceived control over work and career trajectories.

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