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How Do Self-Efficacy and Social Support Help International Students in Denmark Manage Stress and Foster Creativity?

Sri Yusriani[1*], Kabul Wahyu Utomo[2], Shine Pintor Siolemba Patiro[3], Hendrian[4]
[1]Human Resource Management Department, Universiti Sains Malaysia, Penang, Malaysia
[2,3,4]Management Department, Universitas Terbuka, Tangerang Selatan, Banten, Indonesia
Email: sriysarahlistener@gmail.com[1], kabulwahyu@ecampus.ut.ac.id[2],
shinepintor@ecampus.ut.ac.id[3], ian@ecampus.ut.ac.id[4]

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Abstract:

The study examined the dynamic interactions between challenge stressors, social support, self-efficacy, and creativity among international students in Denmark, a population that is vulnerable to academic and work stress. This research aims to understand how protective factors can mitigate stress and drive innovation in a complex global education environment. Using a quantitative approach, data were collected through a survey of more than 400 international students at Danish higher education institutions. The data were analyzed using Structural Equation Modeling (SEM) to test hypothetical relationships. Key findings suggest that stressors, challenges, and social support significantly improve self-efficacy. Furthermore, self-efficacy, challenge stressors, and social support directly contribute positively to creativity. Crucially, self-efficacy has been shown to mediate the relationship between challenge stressors and creativity, as well as between social support and creativity. These results underscore the importance of self-efficacy as a key mechanism that converts pressure and support into creative outcomes. The theoretical implication is the integration of psychological constructs in education management. At the same time, these findings suggest strategies for universities to create an environment that supports student well-being and creativity.

Keywords: *Self-Efficacy; Challenge Stressors; Social Support; Creativity; Academic Stress*

Abstrak:

Studi ini mengkaji interaksi dinamis antara stresor tantangan, dukungan sosial, efikasi diri, dan kreativitas di kalangan mahasiswa internasional di Denmark, sebuah populasi yang rentan terhadap tekanan akademik dan pekerjaan. Penelitian ini bertujuan untuk memahami bagaimana faktor-faktor pelindung dapat memitigasi stres dan mendorong inovasi dalam lingkungan pendidikan global yang kompleks. Menggunakan pendekatan kuantitatif, data dikumpulkan melalui survei dari lebih dari 400 mahasiswa internasional di institusi pendidikan tinggi Denmark. Data dianalisis menggunakan *Structural Equation Modeling* (SEM) untuk menguji hubungan hipotesis. Temuan utama menunjukkan bahwa stresor tantangan dan dukungan sosial secara signifikan meningkatkan efikasi diri. Lebih lanjut, efikasi diri, stresor tantangan, dan dukungan sosial secara langsung berkontribusi positif terhadap kreativitas. Secara krusial, efikasi diri terbukti memediasi hubungan antara stresor tantangan dan kreativitas, serta antara dukungan sosial dan kreativitas. Hasil ini menggarisbawahi pentingnya efikasi diri sebagai mekanisme kunci yang mengubah tekanan dan dukungan menjadi hasil kreatif. Implikasi teoritisnya adalah integrasi konstruk psikologis dalam manajemen pendidikan, sementara secara

praktis, temuan ini menyarankan strategi bagi universitas untuk menciptakan lingkungan yang mendukung kesejahteraan dan kreativitas mahasiswa.
Kata Kunci: *Efikasi Diri; Challenge Stressors; Dukungan Sosial; Kreativitas; Stres Akademik*

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INTRODUCTION

Mental health issues among college students have become a growing global concern, with data showing a significant upward trend in academic stress levels (Högberg, 2021; Li et al., 2021; Salimi et al., 2023). International students, in particular, often face the double pressure of academic demands and adapting to the new work environment, which substantially contributes to high levels of stress (Domínguez et al., 2022; Gyasi-Gyamerah et al., 2024; Ueno et al., 2025). Recent data (Figure 1) even reveals differences in stress levels by gender among students aged 16–24, underscoring the need for targeted support. This phenomenon highlights the urgency of understanding the protective factors that can help students manage stress while also boosting their creative capacity in the context of an increasingly competitive global education.

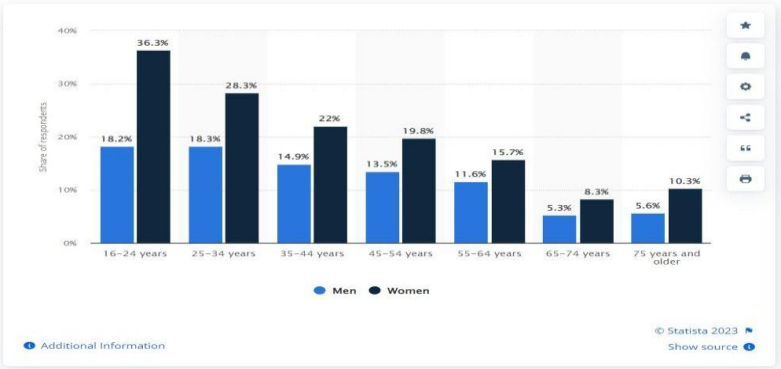

Figure 1. Gender-Based Academic and Work-Related Stress Among International Students.

Denmark has become an increasingly attractive destination for international students and workers over the past decade, especially in major cities such as Aarhus, Copenhagen, Billund, and Vejle (Horan et al., 2020; Dragin-Jensen & Lenholdt, 2021; Ebejer, 2021; Hybel & Mulalic, 2022). However, adapting to this new environment is often accompanied by significant challenges, including heavy academic workloads, adjustment to different educational systems, and cultural and language barriers (Ching et al., 2021; Elena et al., 2021; Gong et al., 2021). In this context, self-efficacy, as an individual's belief in his or her ability to succeed (Creely et al., 2021; Orakcı et al., 2023; Puozzo & Audrin, 2021), and social support, which provides a support network from peers, faculty, and family (Butler et al., 2022; McLean et al., 2023; Warshawski, 2022), emerged as a crucial factor. In addition, creativity, defined as the ability to generate new and relevant ideas (Green et al., 2024; Huang et al., 2022; Mehmood et al., 2021), is recognized as an essential 21st-century skill.

Various quantitative studies have consistently examined the complex relationship between challenge stressors, social support, self-efficacy, and creativity. Empirical evidence broadly supports the significant positive influence of challenge stressors on self-efficacy (Du et al., 2023; Rai et al., 2022; Souto et al., 2022). This suggests that when individuals face challenging obstacles and overcome them, their confidence in their ability to succeed increases. Correspondingly, existing research also corroborates the positive relationship between social support and self-efficacy, indicating that strong social networks contribute to an individual's confidence in their abilities (Shi et al., 2025; Xu et al., 2024; Zhang & Qian, 2024). Furthermore, a direct relationship has been established between self-efficacy and creativity. Some research in this domain consistently shows that higher levels of self-efficacy correlate with increased creative output, suggesting that a strong belief in one's capability encourages innovative thinking and problem-solving (Jia et al., 2021; McLean et al., 2023; Tseng et al., 2022). In addition to self-efficacy, statistical analyses from various other research sources also confirm the positive impact of challenge stressors on creativity, suggesting that constructive challenges can directly stimulate innovative behaviors (Ching et al., 2021; Creely et al., 2021; Orakcı et al., 2023). In parallel, a positive relationship between social support and creativity has also been observed, highlighting the role of a supportive environment in fostering creative expression.

Although the existing literature has identified individual relationships between stressors, social support, self-efficacy, and creativity, there is a significant gap in the quantitative understanding of the dynamic interactions between these constructs, particularly among international students in Denmark. Existing studies tend to isolate these variables, failing to capture the complexity of mediation relationships within a unified framework. For example, the quantitative mediation of self-efficacy in the influence of challenge stressors and social support on creativity has not been explored in depth in this demographic context. These gaps hinder the development of effective, evidence-based interventions to improve student well-being and innovation. Therefore, this study aims to address this gap by building and testing a comprehensive structural model that quantitatively measures and validates the direct and indirect relationships between these variables.

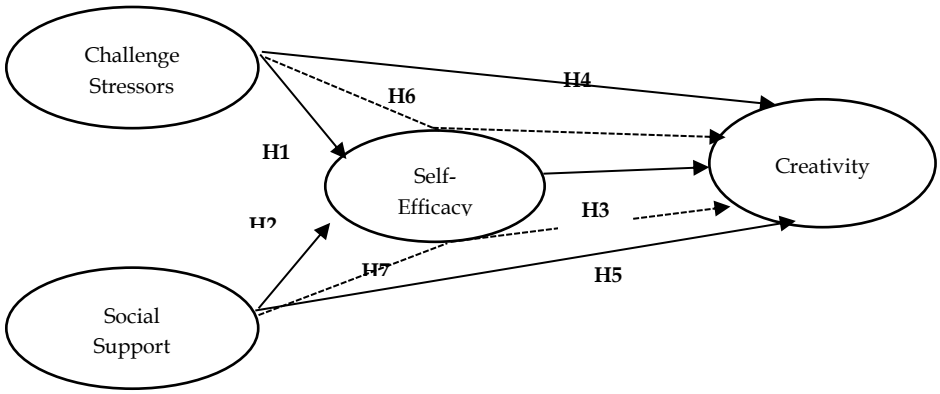

Figure 2. Conceptual Framework

This research makes a significant contribution by integrating construct challenge stressors, social support, self-efficacy, and creativity into a comprehensive Structural Equation Modeling (SEM) model. In contrast to previous studies, which often analyzed these relationships separately, the SEM approach enables the simultaneous testing of the entire network of causal relationships, including the role of self-efficacy mediation, thereby providing a more nuanced statistical understanding. Primary data were collected from more than 400 international students in Denmark, a population that is underrepresented in integrated quantitative research on this topic, adding unique empirical value. A significant contribution lies in providing measurable evidence on how psychosocial factors interact in a complex manner to influence student creativity, thereby enriching educational management theories and providing a solid basis for specific, practical interventions.

The main objective of this quantitative research is to empirically investigate the interrelationship between challenge stressors, social support, self-efficacy, and creativity among international students in the context of Danish higher education. This study specifically aims to: (H1) Challenge stressors positively influence self-efficacy; (H2) Social support positively influences self-efficacy; (H3) Self-efficacy positively influences creativity; (H4) Challenge stressors positively influence creativity; (H5) Social support positively influences creativity; (H6) Self-efficacy mediates the relationship between challenge stressors and creativity; (H7) Self-efficacy mediates the impact of social support on creativity. Through the collection of survey data from over 400 participants and analysis using Structural Equation Modeling (SEM), this study aims to provide robust statistical evidence to validate a comprehensive theoretical model, offering measurable insights into the contribution of psychosocial factors to the well-being and creative abilities of students in a global academic environment.d achieving institutional goals. Studies by Suryawan and Salsabilla (2022) confirmed that high work motivation has a positive influence on teacher performance and dedication. Likewise, Wambrauw (2022) highlighted that fair and transparent reward management improves job satisfaction and teacher loyalty, which are key components of HR development. However, these studies generally examined these variables separately or focused only on one or two factors, without considering the interaction and synergistic relationship between communication, motivation, and reward management. This fragmented approach limits the understanding of how these factors jointly influence HRD in educational settings, especially in madrasahs, where cultural and religious aspects play a significant role in shaping organizational dynamics.

In addition, most existing research has been conducted in general educational institutions or business organizations, with minimal attention given to madrasahs, which are Islamic educational institutions with distinctive characteristics. Studies such as those by Prasetyo and Arianto (2025) have begun to explore the combined influence of several factors in general school contexts, but research applying a holistic and integrative model in madrasah settings remains scarce. Moreover, existing studies rarely consider the influence of local cultural and social contexts, which are essential in shaping HR management practices, particularly in regions like the Riau Islands Province. The lack of contextualized

research creates a knowledge gap that limits the applicability of existing HRD models in madrasahs, especially in addressing real challenges faced by educators and school leaders in these institutions. Therefore, comprehensive research that integrates communication systems, work motivation, and reward management in the context of madrasahs is needed to fill this gap and provide practical recommendations that are culturally relevant and aligned with Islamic values.

This study offers a novel contribution by simultaneously investigating the relationship between communication systems, work motivation, and reward management in influencing human resource development in Madrasah Aliyah. Unlike previous research that only partially explored these variables, this study integrates the three into a comprehensive model tailored to the specific context of madrasahs in the Riau Islands Province. The novelty also lies in the local focus, as studies on HR development in State Madrasah Aliyah within this region remain very limited. The Riau Islands Province presents unique socio-cultural, geographic, and managerial challenges that differentiate it from other regions in Indonesia. Furthermore, this study incorporates Islamic values as an integral part of the HRD model, responding to the need for an approach that not only emphasizes professionalism and competence but also the development of educators' religious and moral character. The results of this research are expected to enrich academic discourse and provide practical solutions for enhancing HR management in Islamic educational institutions, particularly in madrasahs with similar characteristics.

Based on the research gaps and practical challenges described above, this study aims to investigate how communication systems, work motivation, and reward management simultaneously impact human resource development in Madrasah Aliyah schools in the Riau Islands Province. The research focuses on the interaction between these three factors and their collective impact on the development of professional, competent, and Islamic-value-oriented educators. The argument proposed is that effective HR development cannot rely solely on improving one factor in isolation; Instead, it requires an integrated approach where communication, motivation, and rewards work synergistically. Additionally, this research argues that contextual factors, such as local culture and religious values, play a crucial role in shaping the dynamics of HR development in madrasas. By addressing these factors comprehensively, this study aims to provide a more comprehensive understanding of how to optimize HR management in Islamic educational settings, thereby contributing to both academic development and practical improvements.

The hypotheses proposed in this study, which will be tested for their validity, are: 1) a direct relationship between the communication system (X1) and HR development (Y). 2) a direct relationship between work motivation (X2) and HR development (Y). 3) a direct relationship between reward management (X3) and HR development (Y). 4) a simultaneous direct relationship between the communication system (X1), work motivation (X2), reward management (X3), and HR development (Y). This hypothesis is expected to provide empirical evidence to support the proposed argument that the combined management of these three factors is essential for improving the quality of human resources in madrasas.

Furthermore, the study contributes to policy development and practical strategies for strengthening HR management in Islamic educational institutions, particularly in regions with unique cultural and organizational challenges such as the Riau Islands Province.

RESEARCH METHOD

The research was conducted in Denmark, focusing on international students spread across cities such as Aarhus, Copenhagen, Billund, and Vejle. The choice of this location was based on a significant increase in the number of international students and workers in Denmark over the past decade, who often face adaptation challenges and the double pressures of academic and professional environments. The study population consisted of 12,100 international students in Danish higher education, with a sample of more than 400 respondents who were members of a peer-based learning community. This study adopts a quantitative survey method with a deductive approach (Barroga et al., 2023; Dunwoodie et al., 2023; Shaalan et al., 2022). This approach is particularly suitable for testing pre-formulated hypotheses, derived from existing theories of self-efficacy, social support, stress, and creativity. Using surveys, researchers can collect data at scale, enabling the identification of statistical relationships between variables and the generalization of findings to a broader population. The demographic distribution of respondents selected and used in this study is as shown in Figure 1.

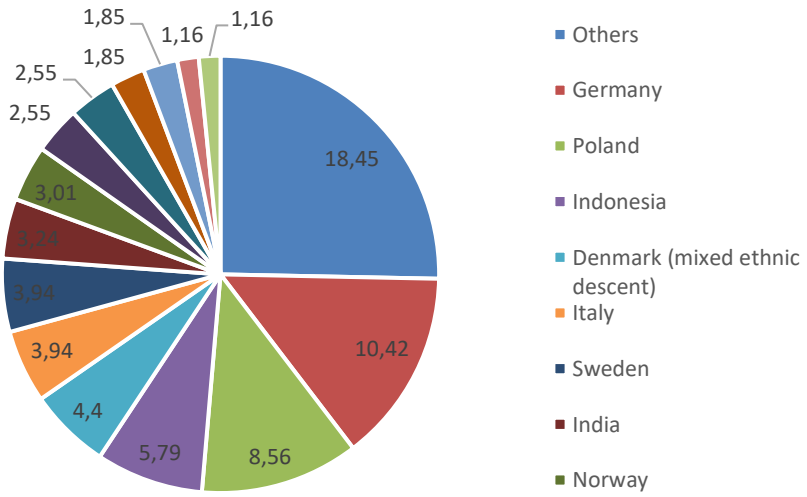

Figure 3. Demographics of Respondent Distribution

Data collection was carried out through a Likert scale-based questionnaire distributed from May to December 2023. This method was chosen because of its efficiency in collecting standardized responses from large samples, which is crucial for quantitative analysis. Purposive sampling techniques were employed to ensure that the selected respondents were international students relevant to the research objectives, specifically those who were active in a friendship-based learning community and faced academic and work-related stress (Alam, 2021;

Baltes & Ralph, 2022; Zickar & Keith, 2023). The type of data collected is numerical, derived from Likert scale responses (e.g., 1 = strongly disagree to 5 = strongly agree), allowing for measurements of perceptions, attitudes, and behaviors related to stressors, challenges, social support, self-efficacy, and creativity. This quantitative data is particularly relevant for testing hypothetical relationships and identifying the statistical patterns underlying the phenomenon being studied.

The collected data was analyzed using Structural Equation Modeling (SEM) with AMOS software, an advanced multivariate statistical approach to test complex relationships between latent variables (Lin et al., 2025; Rehman et al., 2024; Yousefi et al., 2025). The analysis process begins with the evaluation of the measurement model to ensure convergent validity (through factor loading, Average Variance Extracted/AVE, and communality) and discriminant validity (ensuring that the square root of AVE is greater than the inter-construct correlation), as well as reliability (using Composite Reliability and Cronbach's Alpha). Once the measurement model is confirmed, the analysis proceeds to the evaluation of the structural model, where the path coefficient, Critical Ratio (CR) value, and p-value are used to test the significance of the hypothesis relationship. Additionally, goodness-of-fit indices (such as CMIN/DF, GFI, RMSEA, AGFI, and CFI) are evaluated to ensure that the overall model aligns with the empirical data. This SEM approach allows simultaneous testing of the entire network of relationships, providing robust validation of the proposed theoretical model (Al-Adwan et al., 2021; Magno et al., 2024).

RESULT AND DISCUSSION

Result

Measurement Model

The measurement model was assessed for validity and reliability using an iterative algorithm. This process involves evaluating key parameters, such as convergent validity, which ensures that the items in a construct are strongly correlated and measure the same concept, and discriminant validity, which confirms the uniqueness of each construct from other constructs. Additionally, composite reliability and Cronbach's alpha are used to evaluate the instrument's internal consistency. The guidelines for this test, which are based on recognized methodology, are outlined in detail in Table 1.

Table 1. Validity Test Parameters in the SEM Measurement Model

Validity Test	Parameter	*Rule of Thumb*
Convergence	Factor Loading	Greater than 0.7
	Average Variance Extracted (AVE)	Greater than 0.5
	Communality	Greater than 0.5
Discriminant	Discriminant Square Root of AVE and inter-variable correlations	Square Root of AVE > correlations among latent variables
	Factor Loading	Greater than 0.7 for a single variable

Building on the presentation in Table 1, this table outlines the key parameters and rules of thumb used to assess the convergent and discriminant

validity in the SEM measurement model. For convergent validity, this table specifies that Factor Loading, Average Variance Extracted (AVE), and Communality must be greater than 0.7, 0.5, and 0.5, respectively. These numbers indicate the degree to which the items in a construct are positively correlated and represent the same underlying construct. Meanwhile, for discriminant validity, the main rule is that the square root of AVE must be greater than the correlation between latent variables, and the Loading Factor for a single variable must be greater than 0.7. In this study, the validity and reliability of the instrument were thoroughly tested. Discriminant validity is assessed by ensuring that factor loadings meet the recommended threshold, indicating that each indicator strongly represents its corresponding construct. In addition, the square root of the Average Variance Extracted (AVE) for each construct should exceed the correlation between its constructs, confirming discriminant validity. Table 2 summarizes the comparison of AVE, reliability coefficients, representative factor loading, and AVE.

Table 2. Summary of Validity and Reliability Measures

Construct	AVE	Cronbach's Alpha	Composite Reliability	Sample Loadings	√AVE > Correlations
Challenge Stress	0.578	0.601	0.751	CS2 = 0.75, CS3 = 0.72	√0.76 > all inter-construct values
Social Support	0.594	0.647	0.746	SS2 = 0.63, SS3 = 0.79	√0.77 > all inter-construct values
Self-Efficacy	0.526	0.750	0.814	SE2 = 0.78, SE3 = 0.83	√0.72 > all inter-construct values
Creativity	0.615	0.646	0.803	K1 = 0.81, K2 = 0.77	√0.78 > all inter-construct values

Based on Table 2, it is evident that all *Average Variance Extracted* (AVE) values for each construct consistently exceed the 0.5 threshold, confirming good convergent validity. This indicates that the measurement items effectively represent the intended latent construct. Additionally, Cronbach's alpha and Composite Reliability values indicate strong internal consistency. Although some of Cronbach's Alpha values are slightly below 0.7, Composite Reliability, which is preferred for accuracy, exceeds 0.6 for all constructs. This confirms that the measurements used are stable and reliable, providing a solid basis for interpreting the results of subsequent analyses.

Structural Model

Structural models are comprehensively evaluated using Structural Equation Modeling (SEM), a powerful multivariate statistical technique to test causal relationships between latent variables. This evaluation process involves an in-depth analysis of the path coefficient, which represents the strength and direction of the relationship between constructs, as well as the Critical Ratio (CR) value to determine the statistical significance of the relationship. This significance is crucial for validating whether the relationships observed in the data align with the theoretical assumptions outlined in the research hypothesis. The results of the structural model evaluation are presented visually in Figure 2 and detailed numerically in Table 3, providing a clear picture of how the constructs in this study interact with each other and validating the hypotheses proposed based on strong theoretical foundations.

Table 3. Significance Test Results for Each Inter-Variable Relationship Along with Its Indicators

			Estimate	S.E.	CR.	P	Label
SelfEff	<---	SosPort	.158	.049	3.240	.001	par_14
SelfEff	<---	ChaSsors	.777	.138	5.634	***	par_15
Creativity	<---	ChaSsors	.694	.112	6.224	***	par_16
Creativity	<---	SosPort	.179	.034	5.261	***	par_17
Creativity	<---	SelfEff	.204	.035	5.819	***	par_18
CS1	<---	ChaSsors	1.000				
CS2	<---	ChaSsors	2.068	.279	7.425	***	par_1
CS3	<---	ChaSsors	1.734	.239	7.260	***	par_2
CS4	<---	ChaSsors	1.611	.203	7.918	***	par_3
SS4	<---	SosPort	1.000				
SS3	<---	SosPort	1.099	.089	12.340	***	par_4
SS2	<---	SosPort	.476	.075	6.323	***	par_5
SS1	<---	SosPort	.319	.047	6.804	***	par_6
SE1	<---	SelfEff	1.000				
SE2	<---	SelfEff	1.019	.045	22.630	***	par_7
SE3	<---	SelfEff	1.091	.046	23.508	***	par_8
SE4	<---	SelfEff	.736	.050	14.582	***	par_9
SE5	<---	SelfEff	.673	.049	13.836	***	par_10
K4	<---	Creativity	1.000				
K3	<---	Creativity	.887	.074	11.988	***	par_11
K2	<---	Creativity	1.306	.097	13.477	***	par_12
K1	<---	Creativity	1.498	.113	13.225	***	par_13

Note: p Significant Value < 0.05; *** p Significant Value < 0.001

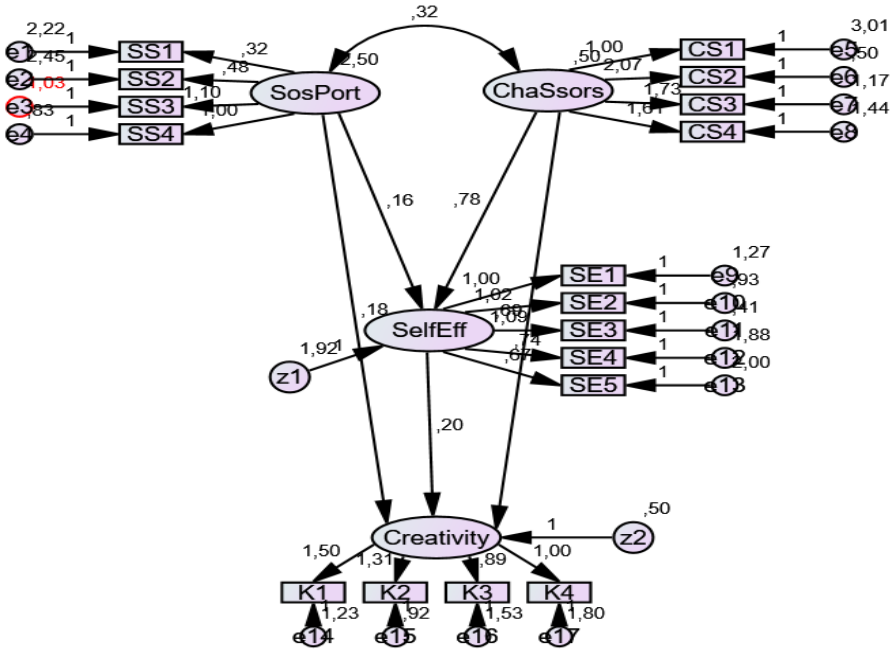

Figure 4. Research Structural Model

Sources: Data Processing Results, With SEM (AMOS) 2024

Figure 2 visually illustrates a conceptual framework with pathways connecting latent variables, including Social Support (SosPort), Challenge Stressors (ChaSsors), Self-Efficacy (SelfEff), and Creativity. The numbers on the path show the standard path coefficient, representing the force of influence. Meanwhile, Table 3 provides statistical details that support the visualization. The Estimate column indicates the strength of the relationship, CR is the critical value (t-calculus), and P indicates the level of significance. It is important to note that almost all direct relationships between the primary constructs exhibit very small P-values (0.001 or ***), indicating high CR values, which signify that all hypothesized paths are statistically significant. For example, the relationships between Challenge Stressors and Self-Efficacy (Estimate = 0.777) and Creativity (Estimate = 0.694) demonstrated a strong and significant influence. Similarly, Social Support has a significant effect on Self-Efficacy (Estimate = 0.158) and Creativity (Estimate = 0.179). Last but not least, Self-Efficacy also significantly affects Creativity (Estimate = 0.204). In addition, all the loading of indicators into their respective constructs is also significant (marked ***), confirming that they are valid and robust measures of their latent constructs. Overall, the results in Table 3 and Figure 2 provide strong empirical evidence to support the theoretical model proposed in this study.

Goodness of Fit Values for the Main Empirical Model

After confirming the validity and reliability of the measurement model and the significance of the relationship between variables, the next step is to evaluate the overall fit of the empirical model with the observed data. This section presents the results of the Goodness of Fit test, which is crucial for determining the extent to which the proposed theoretical model is consistent with the empirical data. This evaluation involves a series of different fit indexes, which collectively provide a comprehensive assessment of the model's quality. Ensuring a good model fit is fundamental to the validity of the conclusions drawn from SEM analysis, as it suggests that the constructed model can accurately represent the complex relationships between variables in the study population.

Table 4. Goodness of Fit Values for the Main Empirical Model

Model *goodness of fit* type	Model *goodness of fit* Index	Recommended Value	Result	Note
Absolute fit measures	*Chi-square statistic* (χ^2 or CMIN)	Small	618.336	Poor
	P	$\geq$ 0.05	0.222	Good
	GFI	$\geq$ 0.90	0.941	Good
	RMSEA	$\leq$ 0.08	0.079	Good
	Normed χ^2 (CMIN/DF)	2$\leq$Normed χ^2 $\leq$5	2.101	Good
Incremental fit measures	CFI	$\geq$ 0.94	0.896	Moderate
Parsimonious fit measures	AGFI	$\geq$ 0.90	0.913	Good

Sources: The data were analyzed using SEM (AMOS) 2024

Building on the presentation of Table 4, this table presents the *goodness-of-fit* values for the main empirical models, which are crucial indicators for evaluating the extent to which the proposed theoretical model aligns with the observed data. The results indicate that some absolute match indexes fall into the "Good" category. Although the Chi-square (CMIN) value of 618,336 looks high and is noted as "Poor", a P-value of 0.222 (> 0.05) indicates that the model does not differ significantly from the observed data, which is a sign of a "Good" fit. Furthermore, the GFI (0.941), RMSEA (0.079), and Normed χ^2 (CMIN/DF = 2.101) indices all met the recommended values, indicating a good model fit. For incremental match measures, a CFI of 0.896 is recorded as "Moderate", but is still considered within an acceptable range in an academic context. Finally, AGFI (0.913) as a parsimony measure also indicates a "Good" fit. Although there is a slight deviation in the CFI, most of the fit indices confirm that the structural model has a good fit with the empirical data, allowing it to be used to test the research hypothesis.

SEM Estimation and Hypothesis Testing Outcomes

After ascertaining the fit of the structural model, the next crucial step is to evaluate the estimated parameters and hypothesis test results. This section presents empirical findings that support or reject the hypothetical causal relationship between constructs, which is at the core of the goal of quantitative research. This analysis is based on the standard regression coefficient, Critical Ratio (CR) value, and significance level (p-value), which collectively determine the strength and direction of the observed relationship. These results provide concrete evidence regarding the mechanisms underlying the observed phenomena, contributing to a deeper understanding of how the variables in the model interact with one another.

Table 5. SEM Estimation Results and Hypothesis Testing

Research Hypotheses	Standardized Regression Coefficient Estimate	*Critical Ratio (CR) = t*	*p* value	Direction	Hypothesis Decision
H1: Challenge stressors influence self-efficacy	0.358	5.634	0.001	Positiv	Supported
H2: Social support influences self-efficacy	0.162	3.240	0.001	Positive	Supported
H3: Self-efficacy influences creativity	0.290	5.819	0.001	Positive	Supported
H4: Challenge stressors influence creativity	0.455	6.244	0.001	Positive	Supported
H5: Social support influences creativity	0.261	5.261	0.001	Positive	Supported
H6: Self-efficacy mediates the effect of challenge stressors on creativity	0.047	1.96	0.05	Positive, partial mediation	Supported

Research Hypotheses	Standardized Regression Coefficient Estimate	*Critical Ratio (CR) = t*	*p* value	Direction	Hypothesis Decision
H7: Self-efficacy mediates the effect of social support on creativity	0.012	1.96	0.05	Positive, partial mediation	Supported

Building on the presentation of Table 5, this table presents the results of Structural Equation Modeling (SEM) estimation and research hypothesis testing. The Standardized Regression Coefficient Estimate column indicates the strength and direction of the relationship between constructs, while the Critical Ratio (CR) and p-value determine the statistical significance. All the research hypotheses (H1 to H7) received strong empirical support, as indicated by a CR value exceeding 1.96 and a p-value consistently below 0.05, often below 0.001. Specifically, Hypotheses 1 to 5, which tested direct relationships (e.g., Challenge stressors affect self-efficacy, social support affects self-efficacy and creativity, as well as self-efficacy affecting creativity), all show positive and significant influences. This confirms that these variables do have a direct relationship that corresponds to the hypothetical direction. Furthermore, Hypotheses 6 and 7, which test the role of Self-Efficacy mediation in the relationship between challenge stressors and social support for creativity, were also stated to be supported with a status of "Positive, partial mediation." This implies that self-efficacy plays a crucial role as an intermediary mechanism in mediating the impact of challenging stress and social support on creativity.

This research makes a significant theoretical contribution by integrating psychological constructs, such as self-efficacy, creativity, and social support, with stress response theory in the domain of educational management. The presented comprehensive model describes how these psychosocial factors interact to support innovation and well-being in the global learning environment. This is particularly relevant for international student affairs and the development of cross-cultural education policies, as it provides a more nuanced understanding of the psychological dynamics that affect student success in a foreign environment.

In practical terms, these findings offer actionable strategies for education managers and university policymakers. Institutions are encouraged to: (1) Develop structured student mentorship and peer support programs, such as peer mentoring systems or facilitated study groups, to create a strong support network. (2) Embed pedagogy that enhances creativity into the curriculum, for example, through problem-based projects, case studies that encourage divergent thinking, or assignments that require innovative solutions. (3) Train academic staff to recognize and manage *challenging stressors* productively, helping students see pressure as an opportunity and not a threat. (4) Strengthen counseling and coaching units to strengthen students' self-efficacy and mental health resilience, providing adequate resources to help students develop effective coping strategies. This research confirms that effective education management must extend beyond academic delivery alone and encompass a comprehensive system of emotional, psychological, and social support to foster an inclusive, creative, and high-performing academic community.

Discussion

This study aims to investigate the interaction between self-efficacy and social support in mitigating academic stress and enhancing creativity among international students in Denmark. The background of this study is based on the increasing number of international students in Denmark, who often face double pressures from both academic and professional environments, which has the potential to trigger stress. Although informal communities such as Netexpat have provided support, the specific role of self-efficacy and social support in the context of creativity still requires further exploration in the existing literature. Therefore, this study fills the gap by presenting an integrated framework that analyzes the dynamic interactions between challenge stressors, social support, self-efficacy, and creativity, making a significant contribution to the understanding of education management in a global environment.

The results of the analysis show strong empirical support for all the proposed hypotheses, confirming that the proposed structural model has a good match with the data. Specifically, these findings confirm that *challenge stressors* significantly improve self-efficacy among international students in Danish higher education. These results are in line with previous research showing that stressors perceived as challenges, such as high academic workloads or tight deadlines, can motivate individuals to develop adaptive coping strategies and encourage personal development (Domínguez et al., 2022; Högberg, 2021; Salimi et al., 2023; Ueno et al., 2025). When students perceive this pressure as an opportunity to grow and learn, rather than as a threat, they are more likely to activate their internal resources, including self-efficacy, to overcome obstacles. In parallel, social support also has a significant positive effect on self-efficacy. The support received from peers, academic staff, and broader social networks, such as the international student community, substantially contributes to students' increased confidence in navigating academic and work pressures. These findings are consistent with the existing literature, which emphasizes the crucial role of social support in fostering an individual's confidence in their abilities (Elena et al., 2021; Gong et al., 2021; Hybel & Mulalic, 2022). For example, guidance from a mentor or encouragement from a study group can help strengthen students' confidence in their ability to succeed, even in the face of challenges.

Furthermore, the findings of this study support that self-efficacy directly increases creativity. Individuals with high self-efficacy tend to be more proactive in finding innovative solutions and are less likely to give up easily in the face of problems. This aligns with the assumption of the *Job Demands-Resources* (JD-R) model, where self-efficacy serves as a personal resource, enabling individuals to become more involved in creative problem-solving and innovation (Gong et al., 2021; Högberg, 2021; Li et al., 2021). For example, a student with high self-efficacy in writing essays will be more courageous to try new narrative approaches or unconventional arguments. Similarly, *challenge stressors* also show a direct positive impact on creativity. This is consistent with the Theory of Expectation and the Theory of Resource Conservation (Green et al., 2024; Mehmood et al., 2021; Souto et al., 2022), who argue that when stress is perceived as an overcomeable challenge, rather than a crippling obstacle, it can trigger increased creative engagement and

more inventive search for solutions.

Social support has also been shown to directly encourage creativity, mainly when students operate in an emotionally safe and academically encouraging environment. A supportive environment, where new ideas are welcomed and failures are viewed as part of the learning process, fosters intrinsic motivation and enables cognitive flexibility, which is essential for innovative thinking (Du et al., 2023; Puozzo & Audrin, 2021; Shi et al., 2025). For example, open and collaborative group discussions, where each member feels valued, can spark creative ideas that may not emerge in a more competitive or judgmental setting. One of the central findings of this study is the role of self-efficacy as a mediator in explaining how *challenge stressors* and social support influence creativity. This supports the view that an individual's psychological readiness and belief in their competence serve as important mechanisms. In other words, external pressure or social support does not automatically lead to creativity; instead, its impact is filtered and amplified through an individual's belief in their ability to overcome challenges and utilize existing support. Self-efficacy serves as a bridge, enabling students to transform pressure into productivity and support into innovation (Huang et al., 2022; McLean et al., 2023; Tseng et al., 2022).

In practical terms, these findings offer actionable strategies for education managers and university policymakers. Institutions are encouraged to: (1) Develop structured student mentorship and peer support programs, such as peer mentoring systems or facilitated study groups, to create a strong support network. (2) Embed pedagogy that enhances creativity into the curriculum, for example, through problem-based projects, case studies that encourage divergent thinking, or assignments that require innovative solutions. (3) Train academic staff to recognize and manage *challenging stressors* productively, helping students see pressure as an opportunity and not a threat. (4) Strengthen counseling and coaching units to strengthen students' self-efficacy and mental health resilience, providing adequate resources to help students develop effective coping strategies. This research confirms that effective education management must extend beyond academic delivery alone and encompass a comprehensive system of emotional, psychological, and social support to foster an inclusive, creative, and high-performing academic community.

CONCLUSION

This study examines the challenges that international students in Denmark face in balancing academic and work pressures while fostering creativity, a crucial issue in today's global education landscape. Empirical findings underscore the vital role of self-efficacy and social support. The results of the study consistently confirm that the stressors of challenge and social support significantly increase self-efficacy, which in turn positively affects creativity. Furthermore, self-efficacy has been shown to mediate the impact of both challenge stressors and social support on creativity, demonstrating how an individual's belief in their abilities is a crucial bridge in the process of adaptation and innovation. The implications of this study underscore the need for educational institutions to foster supportive academic environments, including mentorship programs and curricula that promote creativity, in order to equip students with resilience and innovative

thinking skills. Nonetheless, the study has limitations in its scope of stressor types and geographic regions, paving the way for future cross-cultural comparative research and the use of qualitative methods for a richer understanding.

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