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Original article

The Influence of Student Stress on Collaborative Efforts of International Publications: The Mediating Role of Student Reward and Psychological Capital

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Introduction. The international publication is now a requirement for graduate students. It is part of the strategy of higher education institutions to improve their quality and compete at the global level. Hence, their intention to develop academic networks and their level of acceptance at the international level. Accordingly, this study seeks to investigate the mediation role of reward and psychological capital on stress relations and student effort for international joint publications.

Materials and Methods. There are 421 master and doctoral students employed in this research. The data collected by questionnaire. The Structural Equation Modeling (SEM) is used to analyze the data.

Results. The results show that the reward and psychological capital mediate the effect of stress on the student effort for international joint publication. The overall analysis shows that stress does not affect the student effort for international joint publication. Hence the mediation analysis is necessary for explaining the evidence of the stress-effort relationship. The reward is found significantly mediated by the stress-effort relationship and stress-psychological relationship, and the psychological shows a significant effect on the reward-effort relationship. The model of this study represents the joint mediation effect of rewards and psychological capital on the stress-effort relationship in the satisfactorily model of compliance.

Discussion and Conclusion. This finding makes researchers develop the integrated behavioral model of stress-effort relationship by using various behavioral mechanisms in order to extend student achievement on international publication.

Keywords: international joint publication, student effort, stress load, reward, psychological capital

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Оригинальная статья

Влияние студенческого стресса на совместные усилия в сфере международных публикаций: посредническая роль студенческого вознаграждения и психологического капитала

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Введение. С целью улучшения качества образования в мировом масштабе вузы рекомендуют студентам уже на этапе обучения развивать свои академические связи и уровень признания в международном сообществе. Цель статьи – проанализировать посредническую роль вознаграждения и психологического капитала в стрессовых ситуациях и усилиях студентов для совместных публикаций в международных изданиях.
Материалы и методы. Для изучения проблемы было проведено анкетирование, в котором приняли участие 421 человек (293 – юноши, 128 – девушки). Для анализа полученных результатов использовалось моделирование структурным уравнением (SEM).
Результаты исследования. По итогам проведенного исследования было выявлено, что вознаграждение и психологический капитал нивелируют влияние стресса на усилия студентов по реализации совместных международных публикаций. Результаты общего анализа показали, что стресс не влияет на усилия обучающихся по подготовке совместной международной публикации. Анализ медиации необходим для приведения доказательств взаимосвязи стресса и усилий. Вознаграждение в значительной степени опосредованно отношениями стресса и усилий, перенапряжения и психологического отношения, а психологические данные свидетельствуют о значительном влиянии на взаимосвязь стресса и усилий. Данное исследование представляет собой совместное посредническое влияние вознаграждения и психологического капитала на соотношение стресса и усилий в удовлетворительной модели соответствия.
Обсуждение и заключение. Полученные результаты могут стимулировать исследователей разрабатывать интегрированную модель взаимосвязи стресса и усилий, используя различные поведенческие механизмы с целью повышения результативности студентов в международной публикационной активности.

Ключевые слова: международная совместная публикация, студенческие усилия, стрессовая нагрузка, вознаграждение, психологический капитал

Финансирование: данная работа была поддержана грантом Института исследований и общественных работ при Джокьякартском государственном университете.

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Авторы заявляют об отсутствии конфликта интересов.

Для цитирования: Влияние студенческого стресса на совместные усилия в сфере международных публикаций: посредническая роль студенческого вознаграждения и психологического капитала / С. Индартоно, Т. Махфуд, Сукиджо [и др.]. – DOI 10.15507/1991-9468.101.024.202004.561-575 // Интеграция образования. – 2020. – Т. 24, № 4. – С. 561–575.

Introduction

Today, academic writing and publishing in Higher Education Institutions (HEI) have become an essential aspect of the scientific community. The concept – publish or perish, which signals the importance of publishing research results, has also affected academe and universities. Hence, scholars increased their attention on the issues of publication [1–5]. However, to improve the quality of HEI, other scholars suggested increasing the number of joint publications with other countries [4]. The new premise of "publish or perish" describes their scientific productivity efforts [2].

The publications are an indicator of the research objective for the final goal of success that is required in obtaining research funding from the government[1]. It is also needed for the graduation of academic studies[2]. According to Dhillon, Ibrahim, and Selamat, the productivity of academic publications is believed to be the most influenced by personal, environmental, and behavioral factors [6]. Although there have been many studies discussing the quality of papers, the review of the issues of effort on academics to carry out international joint publications is lost in mind [7; 8].

Empirically, academic writing, and publishing issues for academics encounter several obstacles, including situational and personal barriers [4]. However, the particular aspect is argued to be the most critical role in determining individual behavior[3]. For example, graduate students face difficulties in finding good ideas [9], writing and language skills, understanding of publication processes, and their personality [10–12]. The feelings of inadequacy, low self-confidence, fear of rejection, or lack of knowledge of the writing process, funding, time for research and publications, research and publication of experience are also found as obstacles for academics [13; 14].

Building on this extensive data, it can be understood that personal factors are a determinant for graduate students to increase the quantity and quality of research collaboration with writers from other countries. Previous studies revealed that the proximal sets of influences (e.g., student stress, reward, and psychological capital) factors have more predictive power on individual behavioral outcomes (e.g., effort) [15]. The Cognitive Load Theory includes mental load (ML), mental effort (ME), and performance (PE) [10]. Accordingly, the study by Sweller, Ayres, and Kalyuga revealed that mental load correlates positively with mental effort[4].

The previous study concluded that the study of student stress (mental load), reward, psychological capital, was significant factors on students' effort. However, there is limited information on the logic of students' effort on publication. Scholars [16] argue that the effects of stimuli on behavior are mediated by various transformation processes internal to the organism. Therefore, a study is needed to explore the joint mediation effects that focus on the most proximal situational and personal influences on the effort of postgraduate students to carry out international joint publications. Scholars explain that the importance of personality dimensions on student efforts include mental load (student stress) [17], and psychological capital which includes self-efficacy, optimism, hope, and resilience [18; 19]. However, rewards [20] are believed to be the most critical determinant of an external factor. Thus, the purpose of this study is to develop and investigate the relationship model between student stress, reward, psychological capital, and effort of postgraduate students in conducting international joint publications.

Literature Review

The Nature of the Model of Students' Stress and Effort Relationship on Publication Assignments. Publishing papers from research results is an essential aspect of research productivity[5] [21–23] and become a global requirement in the scientific field. The worldwide requirement and those academic policies are believed to be stressors to endorse academics to increase their effort to anticipate the term of "publish or perish". Theoretically, individual with work stress needs an additional effort to prevent the achievement of their performance [24]. The students are likely to show their efforts to accomplish their assignments are influenced by positive attitudes, efforts' expectations,

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and performance expectations [25]. The students with higher academic stress need better self-efficacy in their efforts to reach more academic success. They who believe in having more substantial competencies on his/her self-perception tend to show a better effort to reach his/her goals [26].

Empirically student stress is found to be indicated on the positive relation on effort [27; 28]. The students with strong motivation were less affected by academic and stressful policies. Guaranteed levels of stress will create opportunities for students to practice and consolidate their skills. It was found that students meet the high challenge of academic stress which will exert their effort as an educational experience, although it can lead to temporary unpleasant experiences. Hence, students' aim on international joint publication is related to the level of their academic stress.

Study 1: Role of Mediation Reward on Relationship between Student Stress and Effort. The reward on education being the significant traits of pedagogy, maximizes student utility for pure self-interest, and essential to influence how students evaluate their achievements [29–31]. It may be used to encourage people to make specific efforts [20]. Theoretically, according to Job Demand-Resources theory, the beneficial aspects of a particular work are the valuable resources needed by one [32]. For example, studies conducted by Huang and Shen [33] reveal that research productivity is primarily determined by funding. Individual behavior is determined mainly by the value of prospective rewards for the amount of effort needed to achieve it [34]. The issues of academic collaboration lead to the benefit of each party to increase trust, mutuality, and reciprocity among them, that in turn, related to the level of effort shown [35]. Higher requirements and activities of academic collaboration are often felt like a heavy workload.

Empirically, the study found that rewards support an excellent spirit and foster perception of responsibility and the importance of a student's contribution to success. It is also found that mediate the training, goal setting on various outcomes [36–40]. The hidden power of -even- the small rewards able to increase the students' autonomous motivation to learn [41; 42]. With rewards, the requirement to be innovative, independent, have the freedom to determine their learning methods to generate the ability of creative decision making, independent, and independence can be achieved more effectively. However, others found that students are actively engaged in exploring, learning about, and in intimate relation with their relevant universe, would not need external motivation in terms of reward and punishment [43]. It is related to the cognitive motivation theory that argues one with sufficient internal motivation tends to reject external motivation. Accordingly, it is argued that the higher stressor of academic collaboration work will require the additional benefit/reward to lead a better effort to reach a higher level of publication quality. Thus, the hypothesis proposed is:

Hypothesis 1: The reward mediates the effect of student stress on their effort for international joint publication

Study 2: The mediating role of Psychological Capital on Student Stress and Effort. Scholars found many results of stress-effort relationships [44–49]. They mostly indicated that stress has a reverse effect on smb's efforts. Few of them argue that stress is useful to increase effort at work. However, psychological studies affirm that there are a reverse U shape curve of stress and other behaviors and or attitudes. Whereas others indicate, the stress-effort has no significant effect. The academic pressure on graduate students to publish their research brings up the mental burden for students. Scholars found that the strong academic requirement to reach better writing performance and publication promotes the various form of work-stress [11; 50; 51]. However, there are very few found that students failed to be graduated at the graduate level. The contribution of the quality of supervision, insufficient self-discipline of students, too regulated activity on students, and the future is perceived as simple by students, has been often indicated as the main reason for the failure of graduate students [52; 53]. Accordingly, it suggests that the improvement of a load of study can be followed by postgraduate students to reach their learning requirements. However, the

way graduate students can overcome the challenge of the increase of the learning outcomes has not been well identified.

Theoretically, stress at academic workable to be explained by the Cognitive Load Theory (CLT). Stress is an individual cognitive capacity that is built from multidimensional constructs to do the tasks, to learn, or to solve the problems[6]. It can be measured by the mental load (ML), mental effort (ME), and performance attributes [8]. The ML is the cognitive capacity needed to process task complexity, while ME as the cognitive ability invested by an individual while working on a task [17]. Thus, the interaction of those three attributes is indicated to be significant to encourage students' productivity of writing and publication. The explanation of the stress-effort of student publication is likely to be defined by the psychological readiness quality of student. Hence, the psychological capital (PsyCap) is needed to measure the students' effort on academic publication performance. The PsyCap is a condition of positive individual psychological development which is characterized by four indicators: having confidence (efficacy) to take and place the effort needed to succeed in a challenging task; making positive attribution (optimism) about success now and in the future; diligent towards the goal, and if necessary, directing back to the target (hope) to succeed; and when hit by problems and difficulties, maintaining and bouncing back and even surpassing (resilience) to achieve success [18; 19]. Those indicators are predicted to weaken the role of stress on the students' intention to finish their study [19; 54–57].

Empirically, PsyCap is found to mediate the relationship between work stress and psychological well-being (PWB). It does not provide a significant adverse effect of work stress on PWB. The efficacy, hope, resilience, and optimism mediate the stress and PWB [58]. Previous studies revealed that developing individual PsyCap can help one deal with stress in the workplace [59], whereas others showed that student stress is related to PsyCap [60]. There was a significant positive relationship between PsyCap and desired employee attitudes (job satisfaction, organizational commitment, psychological well-being), desired employee behavior (citizenship), and various measures of performance (self, supervisor evaluation, and objectives) [18; 57; 61–63]. Thus, it is believed that the positive PsyCap may increase the effect of students' stress on their effort for international joint publication. Accordingly, the hypothesis proposed is:

Hypothesis 2: The Psychological Capital mediates the effect of student stress on their effort for international joint publication

Study 3: Simultaneous Role of Reward & Psychological Capital on the Relationship between Student Stress and Effort. The student with high stress on their daily academic work will need the external source of motivation to change and or compensate their self-efficacy, optimism, hope, and resilience to increasing their effort to reach the challenge achievement of study. Thus, the graduate students who are loaded by heavy academic stress on international joint publications need to be rewarded for changing their attitude that, in turn, they have a better effort to achieve their publication requirement. The stressor is argued to be diminished by sufficient academic rewards to change students' psychological capital to escalate the students' attempts to reach better achievement. Theoretically, adopting the concept of Cultural Intelligent motivation, the student's desire and ability, able to reach cognitive competencies and its benefits and rewards [40]. They, with high academic stressors, try to gather the benefits and rewards. The reinforcement and self-efficacy motivation theory is employed to explain the phenomenon of this student stress and effort relationship. The reinforcement is related to a social-cognitive approach that engages emotion, motivation, and learning and associated with goal-driven motivators and those sensitive to reward [64; 65]. However, scholars argue that learning based on reinforcement is unstable [66]. Hence, a self-efficacy approach is needed to determine whether coping behavior will begin, how much effort will be spent, and how

[6] Sweller J., Ayres P., Kalyuga S. Cognitive Load Theory.

long it will be sustained in difficulties and unpleasant experiences [67]. Based on the Self-based Model [68], stress experiences as trigger events encourages the individual's internal and external subtle changes that, in turn, facilitate personal growth and development. Thus, the stressful student will tend to change their behavioral subtlety to grow by the appropriated academic rewards. The mismatch rewards on students generate student burnout rather than the student's show their self-efficacy and resilience on the study as the result from the long-term and unresolvable stress [69].

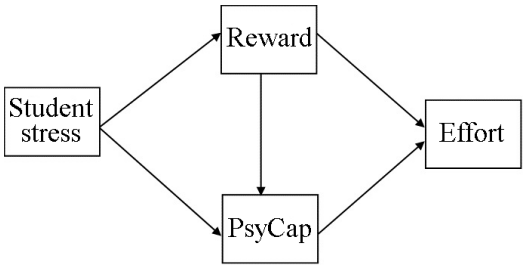
Empirically, scholars show that rewards and psychological capital potentially mediate the model of behavioral study. The reward shows a role in stressful and efforts relationship, whereas PsyCap is found to be a good mediator for the relationship between stress and student effort on learning [18; 32; 34; 61; 62; 70]. The individual perceptions of rewards play a role in fostering various behaviors to reach inevitable consequences. However, it depended on the nature of rewards, and the context of it's offered. Hence, reward mediates on the enhancement of risk-taking effort.

Nevertheless, someone who is more oriented toward the rewards tends to show negative peer relationships, which may result in aggressive behavior [71]. Accordingly, the nature of their psychological circumstance is needed. Scholars found that PsyCap is potentially mediate the stress and meaning of life [72]. The role of mediators of PsyCap is to increase the perception of being essential and worthwhile and to increase the adjustment of their goal and the beliefs of capabilities and utilize a more significant effort towards goal achievement. Thus, it is believed that these two constructs create a joint mediating role in the relationship between student stress and their efforts to carry out international scientific publications. Students who rewarded in their academic work will promote better self-efficacy, optimism, hope, and resilience that, in turn increase their effort gaining join international publications. Accordingly, the hypothesis can be set as follows:

Hypothesis 3: The reward mediates the effect of student stress on their psychological capital for international joint publication

Hypothesis 4: The reward & Psychological Capital mediates the effect of Student stress on their effort for international joint publication, simultaneously.

Research Conceptual Framework. Many studies examined the importance of effort in improving performance. The effort is considered to be an essential aspect of increasing one's capacity [7; 8]. The effort is influenced by several important factors which include student stress/mental load [17], rewards [20], and psychological capital [18; 19; 26; 73]. The model in Figure 1 presents direct effects and mediation between research variables (student stress, reward, psychological capital, and effort). Referring to the previous study, the higher role of reward and psychological capital increases the significance of the relationship between stress and effort for students to collaborate with international publications [20; 58]. The focus of this study is to examine the relationship between student stress, reward, psychological capital, and effort, and investigate the role of reward and psychological capital on the relationship between student stress and effort for students.



F i g. 1. The conceptual model

Materials and Methods

Participant. This study surveyed graduate students who are obligated to make international scientific publications. Random online questionnaires were distributed to postgraduate students in Indonesia. There are 421 questionnaires from the 600-distributed sent to be analyzed. The respondents are 293 (70%) male and 128 (30%) female students.

Instrument. The Effort Questionnaire from Krell (2017) is used to develop the instruments of student effort for international publication. Whereas Student reward and stress are measured by developing the Effort-Reward Imbalance (ERI) Questionnaire from Siegrist et al. Further construct of Psychological Capital is a design based on Psychological Capital (PsyCap) Questionnaire (PCQ) [18]. The five-point Likert scale (strongly disagree to agree strongly) is used.

Results

Validities and Reliabilities of Instruments. A Cronbach's person correlation and alpha test were employed to analyze the instruments' validity and reliability. The confirmatory factor analysis shows that all items in table 1 show valid values (.272** ~ .798**). Table 2 shows that the correlation among the construct indicates that the variable of stress, reward, psychological capital, and effort is different from each other that represents the construct validity with *r* value is less than .85. In contrast, those instruments are reliable, with the value of Cronbach is higher than .65 [74].

T a b l e 1. **Item Validity of the instrument**

Variables (N)	Validity
Student stress	.450** ~ .798**
Reward	.449** ~ .706**
Psychological capital	.272** ~ .629**
Effort	.431** ~ .723**

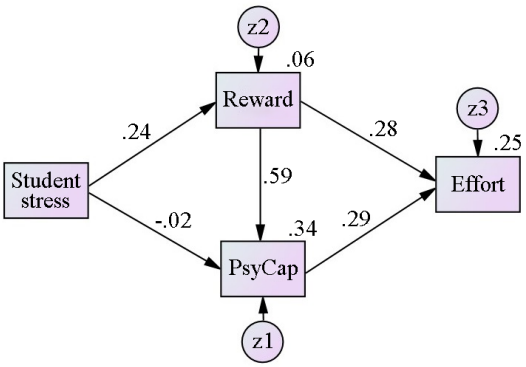
Note. ** = Significant (p = 0.01).

T a b l e 2. **Correlations among the variables (N = 421) and reliability of the instrument**

	Variabel	Mean	SD	1	2	3	4
1	Student stress	3.24	.57	**.657**			
2	Reward	3.51	.47	.239**	**.802**		
3	Psychological capital	3.40	.40	.125**	.585**	**.781**	
4	Effort	3.30	.52	.172**	.443**	.446**	**.651**

Note. ** = Correlation is significant at the 0.01 level (2-tailed). Reliability of the instrument is on the bold (Cronbach).

The Systematic and Hierarchical Analysis of the Model. Structural equation modelling (SEM) analysis is used to test the model of stress, reward, psychological capital, and effort for international scientific publications for graduate students. The results show that the model is statistically accepted (RMSEA = .068; CMIN / DF = 2.982; GFI = .997; AGFI = 965; CFI = .993) is satisfactorily accepted (see Figure 2) [75].



Note. Shi-Square = 2.982, Probabilitas = .084, GFI = .997, AGFI = .965, TLI = .963, CFI = .994, RMSEA = .068.

F i g. 2. Measurement model of student stress, reward, psychological capital, and effort for international publication

Table 3 shows that the results of SEM analysis indicate that student stress has a significant direct effect on student perceptions of reward (.239**) and simultaneously has an impact on psychological capital (.589**) and student effort (.276**). Meanwhile, student stress negatively affects psychological capital (-.016**). The reward has a significant effect on effort (.276), and psychological capital has a significant impact on the effort for international publications for graduate students (.285).

T a b l e 3. **Direct and indirect effect of student stress, reward, and psychological capital on students' effort to international publication**

			Direct	Indirect	Total
Student stress	→	Reward	0.239	0	0.239
Student stress	→	Psychological capital	-0.016	0.141	0.125
Reward	→	Psychological capital	0.589	0	0.589
Psychological capital	→	Publication Effort	0.285	0	0.285
Reward	→	Publication Effort	0.276	0.168	0.444

Discussion and Conclusion

The effort is the central aspect that encourages individuals to act and a potential predictor for increasing one's capacity. Thus, the role of student effort is vital to improve the performance of international publications. Recently, the necessity of international publications for graduate students has become a requirement and pressure in their studies. Those who fail in making international publications will be threatened not to pass their education. It is believed to be a pressure for students to complete their studies and increase their effort to collaborate with international publications. This pressure lays mental burdens on students in the form of stress to reach the target of international publications.

This study shows that the stress effect on effort is related to rewards and psychological capital, as well as the Social Learning Theory of Bandura[7], which indicates the stress-effort relationship is dependent on psychological capital and reward. The addition of psychological capital on the model able to clarify the effort of a student forms on the international joint publication. The result of the analysis shows that the stress of students has no significant direct effect on their effort. However, the indirect impact of stress on their effort found a significant result mediate by reward. Hence, the graduated students must be rewarded to increase their efforts, such as provide sufficient advisors on academic writing and publication. Based on the theory of equity, students who are rewarded sufficiently in academic works tend to release their psychological burdens such as stress to work harder, reaching their graduation requirements by evolving the international joint publication. Students take into consideration their stress to improve their effort on the global joint publication based on the rewards they receive. With enough rewards, students are encouraged to share their knowledge with others in the scheme of international journal publication [76].

The psychological capital has also found as a function of mediation between student stress and the effort on international joint publication. The students' psychology capital on international publications has a vital role in encouraging the efforts of international publications. Thus, students with better self-efficacy, optimism, hope, and resilience will perceive stress as a motivator to undertake the international joint publication. It seems that PsyCap plays a role in reducing the effect of student stressors on their efforts and enhance the desired employee attitudes, desired employee behavior, and performance as well as previous findings [58; 59; 62]. A student with high stress at academic workable to manage his/her effort on international joint publication if he/she believes that his/her ability can accomplish any tasks and to deal with any challenges in life [77; 78]. However, he/she tends to take adaption in the process of decision making, such as more calculated risks due to their confidence that they will successfully perform an effort on specific risky activities [77; 79]. Accordingly, the stress at academic work is counted and compared to his/her capability to decide the most appropriate way to reach the goal of an international joint publication.

The optimism of students conveys their psychological adaptation on transition and thus engaged in the process of making successful transitions [80]. Their positive expectancies are related to their mental health symptomatology as the coping mechanism to adapt to their academic stressor [81]. Thus, they who encounter stress at academic work use their optimism to develop their adaptation, restructure their cognitive frame of unfavorable events in a positive light, and promote greater use of engagement strategies to deal with their challenge engaging international joint publication [82]. Whereas, the students who have a better hope, is likely to set goals towards their future, calculate that there is a more than a fair chance of achieving the goal, and develop new ways to achieve the goals [83]. Thus, the existent of hope for a student on their academic stress convey them to build a strong sense of their identity and re-develop their setting of the goal on publication works [84]. To investigate the role of resilience, a previous study

[7] Bandura A. Social Learning Theory.

indicated that the students who are resilient able to regain balance and keep going despite adversity and find meaning amidst confusion and turmoil [85]. Hence, they use their previous experience in publication to stimulate finding various opportunities and obstacles to reach their international publication.

The joint mediation effect thereby shows that the rewardable to reduce the impact of student stress on their psychological capital. The appropriate rewards create the positive psychology capital of students to deal with their publication and graduation requirements. It may reduce the negative effect of stress on their self-efficacy, optimism, hope, and resilience to develop the international joint publication. Hence if one is rewarded without being empowered, there will result in lower performance. The student with better self-efficacy will be more inclined to translate perceived autonomy at work into desirable, innovative outcomes [86]. A performance-rewards gap must be avoided by the touch of physiological empowerment, such as self-efficacy, to serve as a proximal motivation factor [87; 88]. Thus, if the rewards offered are attractive, students who feel better self-efficacy are assumed to handle an increase in intrinsic motivation and, therefore, will be more motivated to perform well in their works even if those are difficult tasks.

The rewards and optimism are believed to explain significantly how stress influences the effort of students on international joint publication. The reward compensates for one work, whereas optimism is a requirement for coping with all stress forms that in turn, generate a high level of enthusiasm for shared values and objectives [89; 90]. Accordingly, they will show an optimal effort working on the international joint publication. The rewards and hope strengthen the stress-effort of student's relationship on international joint publication. Thus, it is plausible that students on academic stress able to focus on their publication achievement and may have more attention and commitment to achieve them by the international joint publication as a joint mediation effect of rewards and hope [91; 92]. The rewards to and resilience of students able to determine how the stress of student's related to the effort on international joint publication. Hence, the stressed students on their academic tasks can be minimized by sufficient rewards and thus can find a way to complete their publication work by increasing their writing effort [85]. The strong resilience of student was subsequently predictive of enjoyment and participation in academic activities by international joint publication activities.

This study has considered the joint moderation effect of rewards and psychological capital on the stress-effort relationship. The overall analysis shows that stress does not affect the student effort for international joint publication. Hence the mediation analysis is needed to explain the evidence of the stress-effort relationship. The reward is found significantly mediated by the stress-effort relationship and stress-psychological relationship, and the psychological shows a significant effect on the reward-effort relationship. The model of this study represents the joint mediation effect of rewards and psychological capital on the stress-effort relationship in the satisfactorily model of fit. This finding brings to bear researchers to develop the integrated behavioral model of stress-effort relationship by using the various behavioral mechanism on the case of student achievement on international publication. However, this study is a lack of investigating the teacher and its HEI environment on international publication. That construct is believed to contribute significantly to the model of the stress-effort relationship. The longitudinal study, as well as the length of time for the graduate student to complete their study, is exciting to be investigated. It is related to the stakeholder treatment for a graduate student to increase their motivations, skills, and supports to deal with "publish or perish."

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