Academic Self-Efficacy and Its Effect on Academic Engagement: Meta-Analysis

Siti Fatimah
Universitas Negeri Malang, Indonesia, *siti.fatimah.2001139@students.um.ac.id*

Fulgentius Danardana Murwani
Universitas Negeri Malang, Indonesia, *f.danardana.fe@um.ac.id*

Ika Andrini Farida
Universitas Negeri Malang, Indonesia, *ika.andrini.fppsi@um.ac.id*

Imanuel Hitipeuw
Universitas Negeri Malang, Malang, Indonesia, *imanuel.hitipeuw.fip@um.ac.id*

Previous scholars have explored the effect of self-efficacy on academic engagement. Self-efficacy positively affects academic engagement. However, it is not known whether the impact of self-efficacy on academic engagement differs significantly depending on potential moderator variables. The study aimed to meta-analyse correlational studies on self-efficacy and academic engagement between 2015 and 2022. Meta-analysis was used to examine correlation studies on the effect of self-efficacy on academic engagement. The meta-analysis calculated 68 effect sizes for the 24 studies. In accordance with the PRISMA guidelines, this investigation was conducted in various phases, including problem identification, data collection, screening, evaluation, and extraction. The information was obtained from peer-reviewed journals indexed in databases such as Scopus, EBSCOhost, ProQuest, and Eric searching for articles published in the field. Data analysis was performed using JASP. The study found that the random effects model and the effect size were significant, with a moderate average effect size (d=0.54). The results also indicate that the effects of self-efficacy on academic engagement vary significantly depending on geographical regions. The results have pedagogical implications since they suggest that increasing the academic engagement of learners requires increasing academic self-efficacy and noticing the geographical regions of learners.

Keywords: self-efficacy, academic engagement, meta-analysis, academic self-efficacy

INTRODUCTION

Over the past few decades, researchers have increasingly focused on studying the effects of academic engagement (AE) on students' success. Numerous studies have associated

AE with academic achievement (Casuso-Holgado et al., 2013; Martin et al., 2016; Tomás et al., 2020; Yoon, 2015; Spedding et al., 2017). Previous studies suggest that student engagement predicts academic success (Hodge et al., 2017). Engagement promotes academic achievement and reduces risky behaviour problems (Li et al., 2020). It enhances positive well-being (Serrano & Andreu, 2016; Khun-Inkeeree et al., 2020) and correlates to positive personal variables such as positive emotions (Oriol et al., 2016). And it has lasting effects on subjective well-being, academic variables, and other positive social outcomes (Broadbent & Poon, 2015; Chen et al., 2020). Risky behaviour problems are less common than problems of lack of school interest. Students who already have much to do with their academic performance can move on to the next level.

Among the findings, AE was found in various studies to have an essential relationship with academic self-efficacy (SE). Previous studies have reported that teacher support is associated with SE and AE (Jang et al., 2016). Motivation for parental autonomy significantly affected AE through SE (Moè et al., 2018). SE is positively related to all vigorous, commitment, and absorption engagement aspects. (Pérez-Fuentes et al., 2019). Diversity, self-efficacy, and engagement are connected (Zhen et al., 2019). Previous studies have also revealed that self-efficacy, intrinsic motivation, and class atmosphere substantially impact academic engagement in higher education (Wei et al., 2019). Previous researchers, such as Gonzales-Macavilca & Nolberto-Quispe (2019), have shown the association between SE and behaviour, the psychological capital to moderate the relationship between the academic press and AE (Fati et al., 2019). Students with a positive teacher academic press have an increased AE as mediators in SE and resilience. The previous study found that teacher autonomy support is related to student engagement through SE and academic emotions (Li et al., 2020). The SE of self-regulation in learning regarding achievement goals affects AE (Putarek & Pavlin-Bernardi, 2020).

The findings on SE are also supported by Robayo-Tamayo et al. (2020), reporting that academic support mediates the effect of SE on AE. The result revealed that SE affects social presence and directly affects learning engagement (Doo & Bonk, 2020). SE influences AE, and autonomous motivation reflects this on peers and AE (Hopkins et al., 2020). Meanwhile, Azila-Gbettor et al. (2021) report that SE and attitudes influence students' statistics engagement. The results of other studies also show that students with high SE and positive behaviour towards statistics can help students engage in their learning at a high level and improve their performance in statistics courses (Gopal et al., 2018). SE is positively associated with AE (Kuo et al., 2021). SE is a factor that influences both emotional and cognitive engagement (Kuo et al., 2021).

The findings of these researchers demonstrate that SE and AE are strongly correlated. However, it is unclear whether SE influences AE when associated with potential moderator variables such as educational level, geographic region, and developmental stage. Therefore, it is crucial to study the effects of potential moderator variables on the impact of SE on AE. This meta-analysis study aims to determine the influence of SE on AE based on potential moderator variables. Our meta-analysis examines how SE affects AE based on moderator variables such as level of education, geographical region, and

stage of development. We offer a systematic review and synthesis of the findings of relevant studies. In particular, our meta-analysis aims to answer the following two research questions:

1.   To what extent does academic SE affect AE?
2.   How do possible moderator variables (level of education, geographical regions and developmental stage) moderate the effect of SE on AE?

Literature Review

Theoretical view of academic engagement

Academic engagement (AE) represents the psychological efforts and investments of a student in learning, mastering skills, and completing schoolwork (Newmann & Lamborn, 1992). It encompasses the time, effort and participation of students in academic activities that contribute to knowledge development and achievement of educational goals (Alrashidi et al., 2016; McClenney, 2006). AE includes students' behavioural intensity, emotional quality, and personal efforts in learning activities (Reeve & Lee, 2014).

AE is characterised by positive motivation, satisfaction and commitment to educational achievement (Spedding et al., 2017). It is linked to enthusiasm and happiness for studies (Tuominen-Soini & Salmela-Aro, 2014) and a positive state of mind marked by vigour, dedication, and absorption (Schaufeli et al., 2002). AE is a persistent emotional state positively associated with academic achievement and remains relatively stable over time (Ketonen et al., 2019; Salanova et al., 2010).

In this study, student AE is defined as a satisfying state of mind characterised by vigour, commitment, and absorption, aligning with Schaufeli et al.'s concept of (2002), which closely relates to work engagement (Tuominen-Soini & Salmela-Aro, 2014).

Self-Efficacy perspectives

Self-efficacy is derived from social cognitive theory and refers to a person's belief in their ability to complete tasks or perform jobs (Cansoy et al., 2018; Bandura, 1997a). This belief is based on achieving goals and can influence how people feel, motivate themselves, think, and behave (Doo & Bonk, 2020; Zander et al., 2018). In other words, when faced with adversity, self-efficacy can impact the choice of activities, struggles, efforts, and performance.

People with high self-efficacy tend to perform actions they believe they can do and feel confident in their abilities in a particular activity or situation and in various activities and situations (Bandura, 1997b; Zander et al., 2018). On the other hand, people with low self-efficacy tend to choose low-difficulty tasks and have limited confidence in their abilities, often limiting themselves to specific activities and situations. They are easily shaken by failures and experiences that weaken them. However, they tend not to give up easily, work hard, and are tenacious in increasing their efforts despite various obstacles (strength; Bandura, 1997b).

Academic self-efficacy is a subset that characterises a person's confidence in their ability to succeed in a particular educational setting (Liu et al., 2020). It refers to a person's

self-perception or confidence in performing activities at a predetermined level despite academic difficulties (Honicke & Broadbent, 2016; Zander et al., 2018). Students with excellent academic self-efficacy are confident in planning and executing the necessary steps to achieve their educational goals (Bandura, 1997b). Academic self-efficacy implies confidence in their ability to perform academic tasks at a specified level or achieve a specific academic goal. Therefore, in this study, academic self-efficacy refers to a student's confidence in their ability to organise and perform the necessary actions to achieve specific results in the academic field.

Self-Efficacy and academic engagement

Academic engagement (AE) is influenced by various factors, including self-efficacy (SE) (Chen et al., 2021; Mesurado et al., 2016a; Oriol-Granado et al., 2017; Yang et al., 2021; Vidić, 2021). Students with high academic SE tend to feel confident in completing tasks of varying difficulty, not just those considered easy. In addition, they have strong expectations that motivate them to persevere in accomplishing academic tasks despite various difficulties. Abu-Hilal & Al-Abed (2019) state that SE significantly predicts student engagement. In a study by Pérez-Fuentes et al. (2019), SE was positively correlated with vigour, dedication and absorption, further supported by Hopkins et al. (2020), who showed that SE positively influences AE. Kuo et al. (2021) also found that SE contributes to cognitive and emotional engagement.

Several studies have shown that SE, intrinsic motivation, and classroom atmosphere significantly affect AE of higher education students (Wei et al., 2019). Similarly, Gopal et al. (2018); Sánchez-Rosas et al. (2023) found that students with SE and a positive attitude towards courses have a significant effect on engagement in students. Therefore, it is essential to consider SE when designing interventions to improve academic engagement among students.

METHOD

Data Search Strategy and Study Selection

This meta-analysis focuses on quantitative studies indicating a correlation between SE and academic engagement. The researchers searched for various electronic reference databases such as Scopus, EBSCOhost, ProQuest, and Eric, searching for articles published in the field. Search terms (self-efficacy and academic engagement) are used as keywords. The initial search yielded 2.102 studies. Scopus has 401 studies, and EBSCOhost 572. And 557 papers by ProQuest and 572 articles by Eric (see Figure 1). In addition to conducting electronic investigations, we review the titles and abstracts of identified studies and the reference lists of related literature reviews. The research results publication date is limited to 2015-2022.

Inclusion and Exclusion Rules

A database search found 2.102 studies. The 368 relevant studies are the result of the initial screening. The selected studies must meet the criteria, including participants based on education level, sufficient statistical information to calculate effect size, and correlational research methodology, the studies were conducted between 2015-2022, and have a relationship with SE or academic commitment. Three hundred and sixty-

eight studies were abandoned, while 79 were kept for additional investigation and encoding. The meta-analysis analysed 24 studies, as shown in Figure 1.
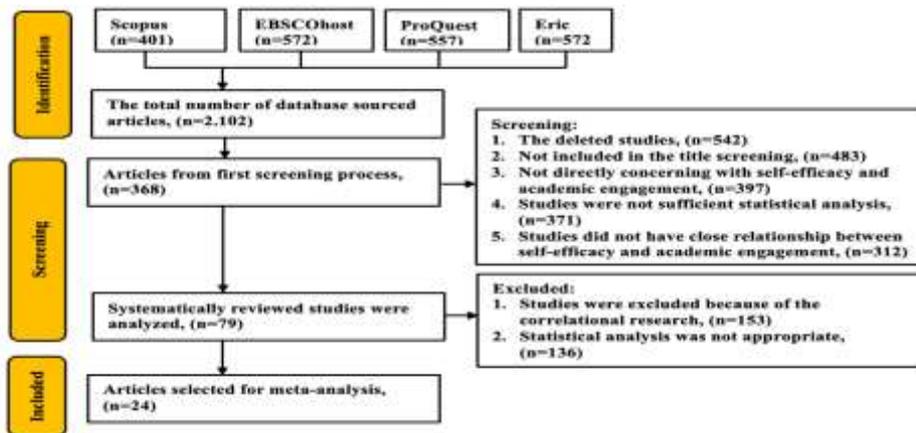

Figure 1
The PRISMA guidelines for the literature search

Data Evaluation

Twenty-four studies produced sixty-eight effect sizes. The characteristics of the code include information on participants: level of education, geographical regions, and design of the developmental stage. Statistics include the sample size (N), average effect size (d), and standard error (se) presented in Table 1.

Table 1
A summary of research design, statistics, and key characteristics from relevant studies

Studies	N	d	se	Level of Education	Geographical Regions	Developmental Stage
Abu-Hilal (2019a1)	900	0.87	0.03	SS	WA	EA
Abu-Hilal (2019a2)	900	1.95	0.03	SS	WA	EA
Abu-Hilal (2019a3)	900	1.95	0.03	SS	WA	EA
Azila-Gbettor et al (2021a1)	512	1.00	0.04	CLG	AF	LA
Azila-Gbettor et al (2021a2)	512	0.86	0.04	CLG	AF	LA
Buric & Macuka (2017a1)	941	0.97	0.03	OTR	SEE	LA
Buric & Macuka (2017a2)	941	0.47	0.03	OTR	SEE	LA
Buric & Macuka (2017a3)	941	0.47	0.03	OTR	SEE	LA
Chen et al. (2021)	519	0.50	0.04	OTR	EA	CHD
Chhajern (2018a1)	406	0.60	0.05	OTR	EA	LA
Chhajern (2018a2)	406	0.71	0.05	OTR	UAE	LA
Chhajern (2018a3)	406	0.65	0.05	EPY	OT	LA
Doo & Bonk (2020)	390	0.72	0.05	CLG	OT	LA
Gopal et al 2018a1)	293	0.55	0.06	CLG	EA	LA
Gopal et al 2018a2)	293	0.45	0.06	CLG	SA	LA
Gopal et al 2018a3)	293	0.50	0.06	CLG	SA	LA
Gopal et al. 2018a4)	293	0.59	0.06	CLG	SA	LAC
Hong et al. (2021a1)	332	0.60	0.05	SHS	SA	EA
Hong et al. (2021a2)	332	0.81	0.06	SHS	SA	EA
Hopkins (2020a1)	547	0.31	0.04	CLG	OT	LAC
Hopkins (2020a2)	547	0.34	0.04	CLG	OT	LAC

Kuo et al. (2021a1)	665	0.59	0.04	CLG	EA	LAC
Kuo et al. (2021a2)	665	0.69	0.04	CLG	EA	LAC
Kuo et al. (2021a3)	665	0.62	0.04	CLG	EA	LAC
Kuo et al. (2021a4)	665	0.58	0.04	CLG	EA	LAC
Kuo et al. (2021a5)	665	0.63	0.04	CLG	EA	LAC
Kuo et al. (2021a6)	665	0.65	0.04	CLG	EA	LAC
Mesurado (2015a1)	347	0.63	0.05	CLG	SA	LAC
Mesurado (2015a2)	347	0.62	0.05	CLG	SA	LAC
Mesurado (2015a3)	347	0.51	0.05	CLG	SA	LAC
Muallifah et al (2020)	236	0.51	0.07	SHS	SA	EA
Nese Ozkal (2019a1)	651	0.62	0.04	SS	SE	EA
Nese Ozkal (2019a2)	651	0.66	0.04	SS	SE	EA
Olivier et al (2018a1)	225	0.27	0.07	SS	NA	CHD
Olivier et al (2018a2)	241	0.19	0.06	ES	NA	CHD
Olivier et al (2018a3)	188	0.08	0.07	ES	NA	CHD
Olivier e .al (2018b1)	225	0.68	0.07	ES	NA	CHD
Olivier et al (2018b2)	241	0.54	0.06	ES	NA	CHD
Olivier et al (2018b3)	188	0.48	0.07	ES	NA	CHD
Olivier et al (2018c1)	225	0.24	0.07	ES	NA	CHD
Olivier et al (2018c2)	241	0.24	0.06	ES	NA	CHD
Olivier et al (2018c3)	188	0.35	0.07	ES	NA	CHD
Olivier et al (2018d1)	225	0.20	0.07	ES	NA	CHD
Olivier et al (2018d2)	241	0.52	0.06	ES	NA	CHD
Olivier et al (2018d3)	188	0.79	0.07	ES	NA	CHD
Olivier et al (2018e1)	225	0.60	0.07	ES	NA	CHD
Olivier et al (2018e2)	241	0.16	0.06	ES	NA	CHD
Olivier et al (2018e3)	188	0.31	0.07	ES	NA	CHD
Olivier et al (2018f1)	225	0.33	0.07	ES	NA	CHD
Olivier et al (2018f2)	241	0.46	0.06	ES	NA	CHD
Olivier et al (2018f3)	188	0.60	0.07	ES	NA	CHD
Pérez-Fuentes et al (2018a1)	1777	0.56	0.02	OTR	SE	LA
Pérez-Fuentes et.al (2018a2)	1777	0.48	0.02	OTR	SE	LA
Pérez-Fuentes et al (2018a3)	1777	0.40	0.02	OTR	SE	LA
Putarek & Bernardić (2019a1)	283	0.74	0.06	SS	SEE	EA
Putarek & Bernardić (2019a2)	283	0.55	0.06	SS	SEE	EA
Putarek & Bernardić (2019a3)	283	0.19	0.06	SS	SEE	EA
Rai at all (2020)	107	0.42	0.10	OTR	SA	LA
Shao & Kang (2022)	280	0.42	0.06	JHS	SA	EA
Tamayoa et al. (2020a1)	94	0.37	0.10	CLG	SE	LAC
Tamayoa et al. (2020a2)	94	0.45	0.10	CLG	SE	LAC
Tomas et al (2019a1)	614	0.24	0.04	SS	NA	LAC
Tomas et al (2019a2)	614	0.26	0.04	SS	NA	EA
Tomas et al (2019a3)	614	0.21	0.04	SS	NA	EA
Tomislava Vidić (2021)	597	0.21	0.04	ES	SEE	CHD
Wang (2019)	85	0.59	0.11	CLG	EA	Not Specific
Wei L et al. (2020)	658	0.26	0.04	JHS	EA	EA
Yang et al. (2021)	1294	0.26	0.03	JHS	EA	EA

Note: 'Elementary School: ES, Secondary School: SS, Junior High School: JHS, Senior High School: SHS, College: CLG, Other: OTR, Employee: EPY, East Asia: EA, Southeast Asia: SA, West Asia, WA, Africa: AF, North America: NA, Southern Europe: SE, South-Eastern Europe: SEE, United Arabs Emirates: UEA'.

Coding Process

In this comprehensive meta-analysis, all studies that met the eligibility criteria were organised according to various characteristics, such as details of the participants, such as the level of education, geographical regions, and the developmental stage. Furthermore, essential statistics were collected to determine the sample size (N), effect size (d), and

standard error (se) for this extensive analysis. Table 1 provides a summary of each investigation's findings.

Moderators

Meta-analysis techniques are appropriate for assessing any confounding factors that may have influenced the conclusions of previous studies. Three potential moderator variables, such as educational level, geographic regions, and developmental stage, were identified, as shown in Table 1.

Extraction and Calculation of Effect Sizes

The researchers extracted 68 effect sizes from the remaining 24 studies. After we obtained the original correlation coefficient r between SE and AE, we then converted all correlations to Fisher's Z score Fisher. We used Fisher's Z score to do all of the analysis. The average effect size results and their confidence intervals are converted back to the correlation coefficient.

Coding and Effect Size Reliabilities

To determine the level of intercoder reliability, three authors independently coded all 68 effect sizes derived from 24 studies and three moderators at least twice each. The Pearson correlation was applied to investigate the effect size's dependability. The agreement served as a basis for determining the trustworthiness of the various other essential factors. Any contradictions were discussed until they resolved. The magnitude of the first effect and the reliability of the moderator code are presented in Table 2.

Table 2
Inter-coder reliability

	n	r	Level of education	Geographical regions	Developmental stage
Reliability	1.000	1	0.998	0.999	1.000

Data Analysis

Researchers adopt a meta-analysis design to combine the results of various quantitative studies that indicate a correlation between self-efficacy (SE) and academic engagement. This design enables researchers to assess the overall strength of the relationship and explore potential moderators. It is a rigorous and systematic approach to synthesising existing research. Given that varied research methods and sample characteristics would have affected the actual correlation between students' SE and AE, we used random-effects models as the methodological basis for synthesis. Pearson's correlation coefficient is the metric we aim for regarding the effect size. We adjusted Pearson's r scale to Fisher's z scale to normalise the sampling distribution. After obtaining all effect sizes based on each study's precision, we calculated the usual mean correlation and the 95 % confidence interval. The Cochran Q test and the I^2 statistic were used to examine the heterogeneity of effect sizes.

Applications for Meta-Analysis

The analysis of potential moderators for the effect of SE on AE was carried out using Excel and JASP software. JASP is compatible with various data formats, enabling

efficient and accurate analysis of quantitative data. Researchers use this software to calculate Q statistics that include QB (that is, Q values to test between-group differences) and QW (that is, Q values to stay within group variability). The researchers used confidence interval plots (CI) and plot funnels to analyse the effect size and possible publication bias.

Publication Bias

The researchers used plot funnels and safe trimming and fill methods to evaluate publication bias. If there is no publication bias and the effects originate from a finite population, they will be dispersed proportionally and form the appearance of a downward funnel. In a funnel plot, the trim-and-fill approach estimates the number of definitive studies from a meta-analysis and changes the mean proportionately. Egger's test examines the asymmetry of the funnel plot. More detailed studies appear at the top of the funnel plot, whereas smaller, less detailed studies show at the bottom.

Moderator Analysis

The researchers looked at three variables that could change the effect size: level of education, geographical regions, and developmental stage. All of these were grouped into categories. Moderator analyses were performed based on the correlation between SE and AE. In moderator analyses, researchers looked to see if the size of the effects changed depending on the possible moderators. After calculating the summary effect size and the confidence interval, use the transformed values. The value has been changed to the original correlation matrix, allowing the results to be effectively understood.

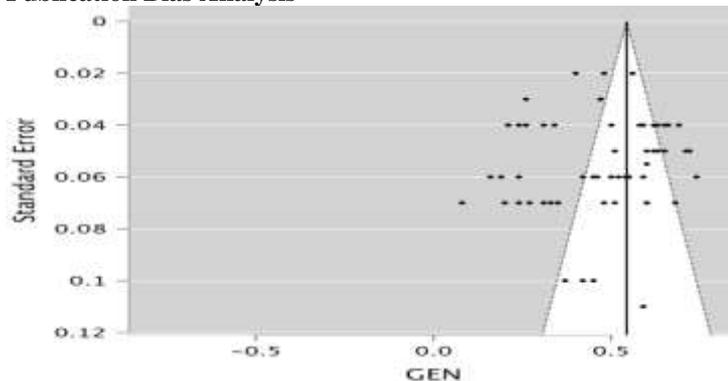**FINDINGS**

Publication Bias Analysis

Figure 2
Funnel plots for effect sizes

The funnel plot shows 24 selected studies submitted to a symmetrically distributed meta-analysis. The funnel plot reveals more positive than negative effects and many significant effects. Figure 2 shows no indication of funnel plot asymmetry.
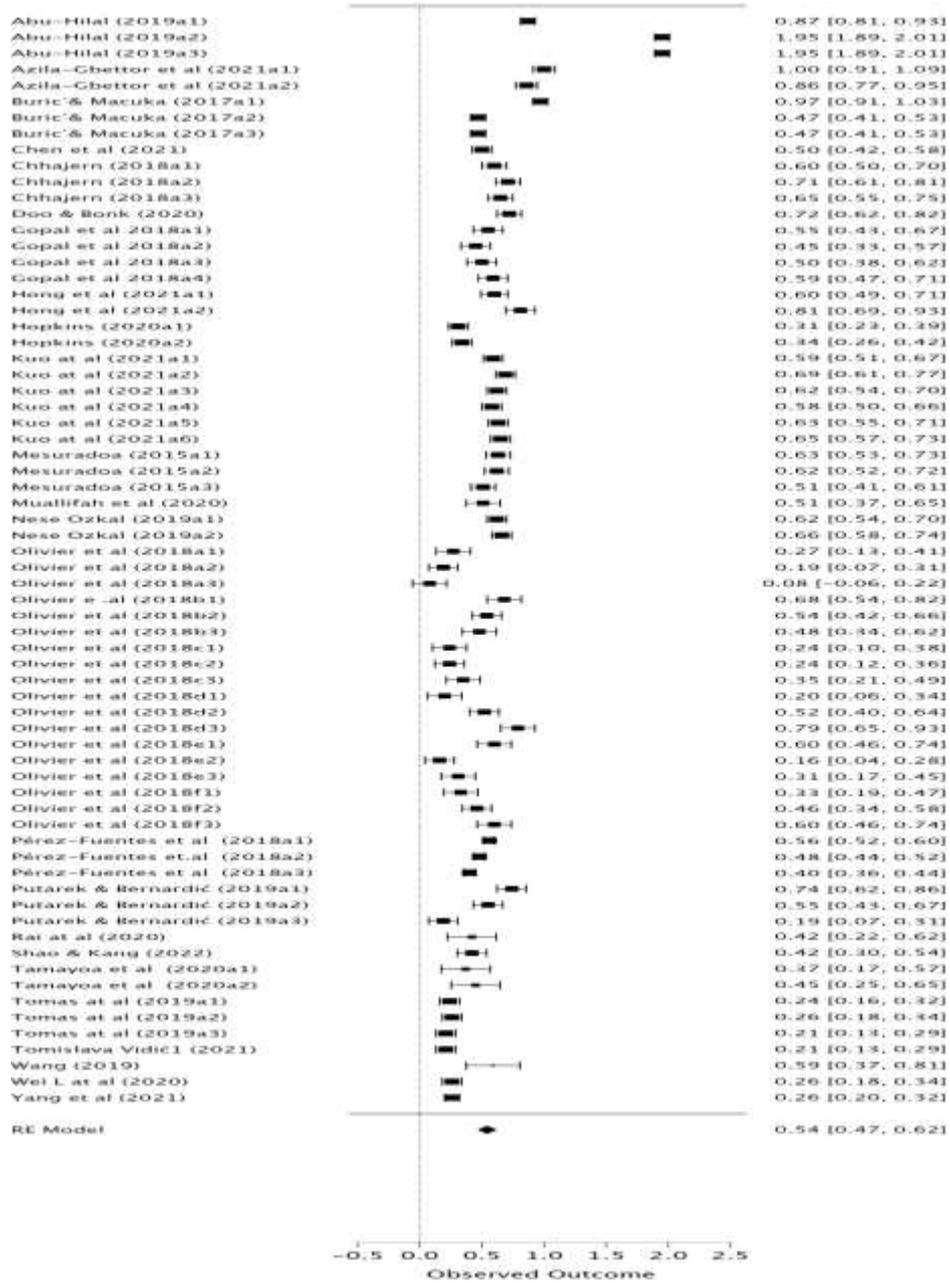
Figure 3
The confidence interval plot of effect sizes

Overall Effect Size

Figure 2 shows the adjusted mean and variance homogeneity tests for the 68 different effect sizes. Due to the large variety of impact sizes, the researchers continue with a comprehensive random-effects model. The average effect size was moderate (d=0.54). These findings established the period within which 95 % of the total population effects could occur. It ranged from 0.47 to 0.62, demonstrating that SE affects academic engagement.

Weighted mean of effect sizes

The total weighted mean and homogeneity tests for the 68 independent effect sizes are shown in Table 3. Due to the variety in effect sizes, we began with an overall random-effects model. The overall mean effect size was substantial (d = 0.54). This was used to predict the range whereby 95% of all population effects could assume normality. This interval ranged from 0.47 to 0.62, demonstrating that SE and AE significantly impact.

Table 3
Weighted mean of effect sizes for the effect of SE on AE based on moderator variables

	k	d	se	95% CI LL	95% CI UL	z	GB	df
All Studies								
Level of Education							1376.40	5
Elementary School	18	0.387	0.048	0.293	0.48	8.123		
Secondary School	13	0.743	0.162	0.425	1.061	4.577		
Junior High School	3	0.333	0.078	0.181	0.485	4.289		
Senior High School	2	0.704	0.105	0.498	0.909	6.702		
College	21	0.588	0.036	0.517	0.659	16.291		
Others	10	0.56	0.055	0.453	0.668	10.211		
Geographical Regions							3690.46***	8
Southeast Asia	9	0.581	0.035	0.513	0.649	16.682		
East Asia	11	0.545	0.046	0.454	0.636	11.745		
West Asia	4	1.371	0.336	0.711	2.03	4.075		
South Asia	2	0.657	0.23	0.206	1.108	2.858		
Southern Europe	7	0.517	0.041	0.436	0.598	12.559		
South-eastern Europe	7	0.515	0.105	0.309	0.721	4.9		
North America	21	0.367	0.042	0.285	0.449	8.807		
Africa	2	0.929	0.076	0.792	1.086	13.269		
Others	4	0.503	0.105	0.297	0.709	4.79		
Developmental Stage							675.88	3
Childhood	20	0.387	0.047	0.302	0.472	8.909		
Early adolescence	17	0.654	0.13	0.398	0.909	5.019		
Late adolescence	17	0.553	0.03	0.494	0.612	18.424		
Late Adulthood	13	0.624	0.057	0.512	0.736	10.919		

Moderator Variable Analysis

Researchers examined the six potential effect size moderators. Only the source of the research and the type of test were significant modifiers according to the ANOVA-like mixed effects model with moderators (Table 4). Table 4 shows the weighted average effect size for the relationship of self-efficacy and academic engagement between different moderator variables.

Table 4
The results of moderator analyses with QB and QW

Moderators	n	d	se	95% CI LL	95% CI UL	GB	GW	I²
Level of Education						1376.40	4305.15	
Elementary School	18	0.39	0.05	0.29	0.48		165.78	90.12 %
Secondary School	13	0.74	0.16	0.43	1.06		3559.95	99.50 %
Junior High School	3	0.33	0.08	0.18	0.49		11.41	89.50 %
Senior High School	2	0.70	0.11	0.50	0.91		6.657	84.98 %
College	21	0.59	0.04	0.52	0.66		271.01	91.34 %
Others	10	0.56	0.06	0.45	0.67		290.35	97.05 %
Geographical Regions						3690.46***	1991.09	
Southeast Asia	9	0.58	0.04	0.51	0.65		25.89	70.07 %
East Asia	11	0.55	0.05	0.45	0.64		168.32	92.20 %
West Asia	4	1.37	0.34	0.71	2.03		1140.57	99.75 %
South Asia	2	0.66	0.23	0.21	1.11		15.55	93.57 %
Southern Europe	7	0.52	0.04	0.44	0.60		61.94	91.39 %
South-eastern Europe	7	0.52	0.11	0.31	0.72		328.32	97.99 %
North America	21	0.37	0.04	0.29	0.45		180.52	90.14 %
Africa	2	0.93	0.08	0.79	1.09		5.50	81.82 %
Others	4	0.50	0.11	0.30	0.71		64.48	95.50 %
Developmental Stage						675.88	5005.67	
Childhood	20	0.39	0.05	0.30	0.47		177.92	89.90 %
Early adolescence	17	0.65	0.13	0.40	0.91		4268.92	99.40 %
Late adolescence	17	0.55	0.03	0.49	0.61		114.16	84.77 %
Late Adulthood	13	0.62	0.06	0.51	0.74		444.67	97.52 %

Level of Education

The context of the educational level predictor included six categories: elementary, secondary, junior high, senior high, college, and others. As shown in Table 4, studies conducted in the context of educational level such as elementary school (d=0.39, se=0.05), secondary school (d=0.74, se=0.16), junior high school, (d=0.33, se=0.17), senior high school (d=0.70, se=0.11), college (d=0.59, se=0.04), and others (d=0.56, se=0.4) were found to have significantly measurable effect sizes. Secondary school and senior high school had strong positive effects. The college and others had a moderate positive effect size. Only elementary and junior high schools showed a weak effect size. Heterogeneity for the subgroup of education level (QB = 1376.40, p > 0.05) did not indicate statistically significant differences between the groups. In other words, the level of education was not a moderator that could explain all the population variance in effect size.

The context of geographical regions

The context of geographical regions predictor included eight categories: Southeast Asia, East Asia, West Asia, South Asia, Southern Europe, South-eastern Europe, North America, Africa, and others. As shown in Table 4, studies carried out in the context of geographical regions such as Southeast Asia (d=0.58, se=0.04), East Asia (d=0.55, se=0.05), West Asia, (d=1.37, se=0.34), South Asia (d=0.66, se=0.23), Southern Europe (d=0.52, se=0.04), South-eastern (d=0.52, se=0.11), North America (d=0.37, se=0.04),

Africa (d=0.93, se=0.08) were found significantly quantifiable effect sizes. Table 4, the context of geographical regions had a moderate positive effect. The heterogeneity of the subgroup in the context of geographical regions (QB = 3690.46, p < 0.001) indicated a statistically significant difference. The context of geographical regions was a moderator that could explain all the population variance in effect size.

Developmental stage

The predictor of developmental stages included four categories: childhood, early adolescence, late adolescence, and late adulthood. Table 4, studies carried out with respect to developmental stage categories such as childhood (d=0.39, se=0.05), early adolescence (d=0.65, se=0.13), late adolescence (d=0.55, se=0.03), late adulthood (d=0.62, se=0.06) were found to have no significant quantifiable effect sizes. As shown in Table 4, early adolescence, late adolescence, and late adulthood employees had a moderate positive effect. Only childhood had low positive effects. The heterogeneity for the subgroup of level of education (QB = 74.81, p > 0.05) did not indicate statistically significant differences between the developmental stage groups. It was not a moderator that could explain all of the population variance in the effect size.

DISCUSSION

In the discussion section, it is essential to explain the relationship between self-efficacy, engagement, and various factors that influence academic engagement. Previous studies have found that self-efficacy plays an important role in predicting student engagement (Azila-Gbettor et al., 2021; Chang & Chien, 2015; Olivier et al., 2019). Furthermore, the impact of self-efficacy on work engagement has been explored in different contexts, such as team work (Burić & Macuka, 2018), nursing (Pérez-Fuentes et al., 2019), and the power sector (Rai et al., 2022).

Several mediating factors have been identified in the relationship between self-efficacy and engagement. For example, teacher-student relationships and proactive personality have been found to mediate the link between self-efficacy and academic engagement (Chen et al., 2021; Li et al., 2020). Furthermore, academic emotions and self-regulation have been shown to influence engagement in learning contexts (Doo & Bonk, 2020; Putarek & Pavlin-Bernardi, 2020).

The role of self-efficacy in relation to other variables, such as locus of control and social presence, has been investigated in studies like Hopkins et al. (2020) and Kuo et al. (2021). Furthermore, research has explored the connection between self-efficacy and academic performance in various educational settings, including mathematics (Abu-Hilal & Al Abed, 2019a; Ozkal, 2019) and statistics (Gopal et al., 2018).

Some studies have also examined the influence of external factors on the relationship between self-efficacy and engagement, such as the role of school climate (Pali & Hitipeuw, 2020; Vidi, 2021), academic support (Robayo-Tamayo et al., 2020), and parent-child relationships (Shao & Kang, 2022). The impact of emotional support from teachers on academic performance has been found to be mediated by self-efficacy and engagement in mathematics (Yang et al., 2021). A comprehensive understanding of the

interaction between self-efficacy, engagement, and various factors is crucial to enhance academic performance in various educational contexts. This discussion highlights the importance of fostering self-efficacy and engagement, as well as addressing potential mediating factors and external influences, in order to promote student success.

The researchers performed a moderator analysis to see whether the association between SE and AE is influenced by education level, geographical region, and developmental stage. The correlation did not differ significantly between the level of education and the context of the developmental stage. However, in geographical context regions, the correlation is significantly different. Geographical regions moderate the relationship between SE and academic engagement.

The first results imply that education levels do not moderate the association between SE and academic engagement. However, the correlation between SE and AE is stronger in secondary and high schools than in elementary schools. This finding is thought to be because students at the high school level have a mastery experience and the experience of seeing the success of others (vicarious experiences) is higher than that of students at the elementary school level. This is in line with the opinion (Bandura, 1997b; Gebauer et al., 2019), which states that SE is influenced by the experience of success, the experience of others, verbal/social persuasion, and emotional and physiological states. So, it can be understood that the relationship between SE and AE in junior high school and high school students is greater than at the elementary school level.

The most interesting results of the first study are that the link between the SE and the university level is weaker or not as strong as at the high school level. Ideally, subjects at the college level should have the most robust relationship compared to subjects at other levels of education because they have experience of success and experience of seeing the success of others higher than subjects at the high school level. These findings suggest that past experiences do not automatically affect self-efficacy. Or, in other words, successful experiences do not always affect SE and academic engagement. Previous studies have shown that academic SE is based not only on past experiences but also on personal resources, such as expectations and perceptions about the availability of external resources, such as social support (Ben-Naim et al., 2017; Brouwer et al., 2016). The findings (Jang et al., 2016) show that teacher support is related to academic SE and engagement. The previous study revealed that parental autonomy motivation significantly affects AE through SE (Moè et al., 2018; Pérez-Fuentes et al.,2019). Li et al. (2020) found that teacher autonomy support is related to student engagement through self-efficacy.

The most significant sources of mastery experience are the individual's experiences and evaluations of the success or failure of a particular task or action (Gebauer et al., 2019). Furthermore, often obtained easily, success will generally not affect the increase in self-efficacy. However, only the success obtained through various obstacles is tremendous and is a self-champion success that can affect the improvement of self-efficacy. SE will also not have much effect if the observed model does not have similarities or differences. Some actions or behaviours may differ from those observed (Olsson et al., 2016). Another reason why subjects at the college level have a lower level of SE than

subjects at the high school level is probably because the demands and challenges in higher education are more numerous and heavier than the demands and challenges at the high school level. For example, subjects in universities taking strata 1, generally aged 18-25 years from a developmental perspective, can be categorised as an emerging adulthood phase (Arnett, 2000). Emerging adulthood is neither a developmental stage nor an early adulthood (Squires et al., 2018). Emerging adulthood is the stage of life that undergoes the most dynamic and complex changes on a personal, social, emotional, neuroanatomical, and developmental level (Wood et al., 2017a). Therefore, this phase can be a very positive development phase for making choices and explorations, as well as a challenge with the requirements of a more excellent educational and social role. Even for Wood, it is said that the success of conquering challenges in the emerging adulthood phase will have a significant effect throughout the development span of adulthood (Wood et al., 2017b). This condition can affect the affective and physiological needs of subjects at the college level. This is due to physiological and affective states that can affect SE caused by stress, emotions, mood, pain, and fatigue (Sharma & Nasa, 2014).

In addition to the reasons mentioned above, subjects at the secondary school education level are likely to receive more support from parents than subjects at the college level. This is supported by findings showing that families with parents involved in their children's educational activities can guide and facilitate mastery experiences and improve the academic SE of their children (Schunk & Mullen, 2012; Olivier et al., 2019). The involvement of parents in children's educational or academic activities will generally decrease with the increasing level of their education. According to this, parents can foster their children's academic SE by serving as role models and offering persuasive support. Additionally, the role of the teacher or teacher is a factor that affects academic self-efficacy. According to research results, Banfield (2009), the negative behaviour of teachers in the classroom affects students' SE negatively.

The second finding, geographic regions, was found to moderate the relationship between SE and academic engagement. This indicates cultural disparities in the relationship between self-efficacy, academic engagement, and other variables. These findings support previously reached Salanova et al. (2005), which showed that Spanish students indicated better levels of SE and strength in AE than Belgian students. The findings of Mesurado et al. (2016b) showed that Argentine students have higher SE and AE scores than Filipino students. In addition, it supports the results of Zusho et al. (2005) and Eaton & Dembo (1997), which show differences in SE in Asian and American students, where Asian students have higher collective self-efficacy. In comparison, American students have higher individual self-efficacy. This is because the individual cultures that make up the belief system can change from culture to culture Klassen (2004) and the existence of mutual influences of regions and genders on SE belief (Ismayilova & M. Klassen, 2019)

These findings are in line with the opinion (Bandura, 1994), which states that although SE comes from four primary sources Britner & Pajares (2006) and Dilekli & Tezci (2020), these four primary sources of SE vary across cultures (Bandura, 2002). SE

might differ from country to country and culture to culture. Therefore, it can be said that the role of regions as moderators of the relationship between SE and AE is due to cultural differences in this study. Traditionally, culture is classified as individualistic and collectivist. Collectivist cultures generally emphasise the needs, values, goals, perspectives, and social welfare of groups (collectivism).

In contrast, individualistic societies promote personal goals, attitudes, and values, not group members (individualism). Individualistic societies focus more on individuals and nuclear families, whereas collectivistic cultures emphasise hierarchies (Levine et al., 2001). Children in collectivist cultural systems get feedback on how performance in their group and on their performance, whereas in individualist systems, children only get feedback on their performance. There are different academic SE based on race and ethnicity (American and non-American such as Latino, Asian American, and African American) (Wang & Castaeda-Sound, 2008). This difference in academic SE occurs due to differences in perceptions of the support of parents and friends. Those who feel that they have the support of parents and friends have better academic SE obtained from the subjects of American students. In contrast, those who perceive that parents and friends provide less support will have a low academic SE obtained from non-American student subjects.

The third finding is that stages of development do not moderate the relationship between SE and academic engagement. These findings contradict the results of Gärtner & Hertel (2020), which show that the age of workers moderates SE with efforts in teams to perform unfamiliar or new tasks. However, there is no moderation effect on familiar tasks, which is consistent with our assumption that more substantial situational demands (Meyer et al., 2010; Mischel, 1999). These findings support the role of subjective age moderators in the relationship, while they do not support the position of SE moderators. These findings underscore that workers who actively manage their perceptions of personal age can age successfully in the workplace (Meyer et al., 2010)

CONCLUSIONS

The results indicated that the mean impact size value was a high impact level. SE had a significant impact on academic engagement. The effect of SE on AE differs depending on the potential moderator variables. The results showed that educational levels have different effects. Studies in primary, secondary, and college revealed significant quantifiable impacts. Colleges and others have a medium positive effect. Only elementary and junior high schools showed weak effects. The level of education is not a moderator that can explain all variants of the population in different measures of impact. The effect of SE on AE differs significantly according to geographical regions. The predictor of geographical regions of context included eight categories: Southeast Asia, East Asia, West Asia, South Asia, Southern Europe, South-East Europe, North America, Africa, and others. Studies conducted in the context of geographical regions were found to have significantly quantifiable effect sizes. The context of geographical regions had a moderate positive effect. The context of geographical regions was a moderator that could explain all the population variance in the different effect sizes. The developmental stages included four categories: childhood, early adolescence, late adolescence, and late

adulthood have different effect sizes. The developmental stage, such as childhood, early adolescence, late adolescence, and late adulthood, does not have significantly quantifiable effect sizes. Early adolescence, late adolescence, and late adulthood employees had a moderate positive effect. Childhood had low positive effects. The developmental stage did not indicate a statistically significant difference. The developmental stage was not a moderator that could explain the entire population in effect size. Addressing weak effects in elementary and junior high schools to improve the impact of SE on AE at these educational levels, educators can incorporate self-efficacy building activities into the curriculum, such as goal setting, self-assessment, and feedback. Furthermore, creating a supportive learning environment that encourages autonomy and resilience will promote a stronger sense of self-efficacy among younger students.

RECOMMENDATIONS

Expand the scope of potential moderator variables: Further research should explore additional moderator variables, such as socioeconomic status, parental participation, or school climate, to gain a more comprehensive understanding of the relationship between SE and AE.

Longitudinal studies: Longitudinal research designs could provide valuable information on the causal relationship between SE and AE, as well as the long-term impact of interventions on self-efficacy and academic engagement.

LIMITATIONS

Causality: The present study cannot establish causal relationships between SE and AE due to its nature. Future research should employ experimental designs to better understand causality.

Generalisability: The study findings may not be generalisable to other populations or contexts due to inherent biases or limitations in the sample.

REFERENCES

Abu-Hilal, M. M., & Al Abed, A. S. (2019). Relations among engagement, self-efficacy, and anxiety in mathematics among Omani students. *Electronic Journal of Research in Educational Psychology*, *17*(48), 241–266. https://doi.org/10.25115/ejrep.v17i48.2182

Alrashidi, O., Phan, H. P., & Ngu, B. H. (2016). Academic Engagement: An Overview of Its Definitions, Dimensions, and Major Conceptualisations. *International Education Studies*, *9*(12), 41. https://doi.org/10.5539/ies.v9n12p41

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469–480. https://doi.org/10.1037/0003-066X.55.5.469

Arnett, J. J. (2015). College Students as Emerging Adults: The Developmental Implications of the College Context. *Emerging Adulthood*, *4*(3), 219–222. https://doi.org/10.1177/2167696815587422

Azila-Gbettor, E. M., Mensah, C., Abiemo, M. K., & Bokor, M. (2021). Predicting student engagement from self-efficacy and autonomous motivation: A cross-sectional study. *Cogent Education*, *8*(1). https://doi.org/10.1080/2331186X.2021.1942638

Bandura, A. (1994). *Self-efficacy*. 71–81.

Bandura, A. (1997a). *Self-efficacy: The Exercise of Control*. Freeman.

Bandura, A. (1997b). *Self-efficacy: The Exercise of Control*. Freeman.

Bandura, A. (2002). Social cognitive theory in cultural context. *Applied Psychology: An International Review*, *5*, 269–290. https://doi.org/10.1111/1464-0597.00092

Banfield, S. R. (2009). How Do College/University Teacher Misbehaviors Influence Student Cognitive Learning, Academic Self-Efficacy, Motivation, and Curiosity? *Dissertation Abstracts International Section A: Humanities and Social Sciences*.

Ben-Naim, S., Laslo-Roth, R., Einav, M., Biran, H., & Margalit, M. (2017). Academic self-efficacy, sense of coherence, hope and tiredness among college students with learning disabilities. *European Journal of Special Needs Education*, *32*(1), 18–34. https://doi.org/10.1080/08856257.2016.1254973

Britner, S. L., & Pajares, F. (2006). Sources of science self-efficacy beliefs of middle school students. *Journal of Research in Science Teaching*, *43*(5), 485-449. https://doi.org/10.1002/tea.20131

Broadbent, J., & Poon, W. L. (2015). Self-regulated learning strategies & academic achievement in online higher education learning environments: A systematic review. *Internet and Higher Education*, *27*(September), 1–13. https://doi.org/10.1016/j.iheduc.2015.04.007

Brouwer, J., Jansen, E., Flache, A., & Hofman, A. (2016). The impact of social capital on self-efficacy and study success among first-year university students. *Learning and Individual Differences*, *52*, 109–118. https://doi.org/10.1016/j.lindif.2016.09.016

Burić, I., & Macuka, I. (2018). Self-Efficacy, Emotions and Work Engagement Among Teachers: A Two Wave Cross-Lagged Analysis. *Journal of Happiness Studies*, *19*(7), 1917–1933. https://doi.org/10.1007/s10902-017-9903-9. https://doi.org/10.1007/s10902-017-9903-9

Cansoy, R., Polatcan, M., & Parlar, H. (2018). Research on Teacher Self-efficacy in Turkey: 2000-2017. *World Journal of Education*, *8*(4), 133. https://doi.org/10.5430/wje.v8n4p133

Casuso-Holgado, M. J., Cuesta-Vargas, A. I., Moreno-Morales, N., Labajos-Manzanares, M. T., Barón-López, F. J., & Vega-Cuesta, M. (2013). The association

between academic engagement and achievement in health sciences students. *BMC Medical Education*, *13*(1). https://doi.org/10.1186/1472-6920-13-33

Chang, D.-F., & Chien, W.-C. (2015). *Determining the Relationship between Academic Self-efficacy and Student Engagement by Meta-analysis*. https://doi.org/10.2991/ermm-15.2015.37

Chen, J., Huebner, E. S., & Tian, L. (2020). Longitudinal relations between hope and academic achievement in elementary school students: Behavioral engagement as a mediator. *Learning and Individual Differences*, *78*(January 2019), 101824. https://doi.org/10.1016/j.lindif.2020.101824

Chen, P., Bao, C., & Gao, Q. (2021). Proactive Personality and Academic Engagement: The Mediating Effects of Teacher-Student Relationships and Academic Self-Efficacy. *Frontiers in Psychology*, *12*(June), 1–8. https://doi.org/10.3389/fpsyg.2021.652994

Chhajer, R., Rose, E. L., & Joseph, T. (2018). Role of Self-efficacy, Optimism and Job Engagement in Positive Change: Evidence from the Middle East. *Vikalpa*, *43*(4), 222–235. https://doi.org/10.1177/0256090918819396

Dilekli, Y., & Tezci, E. (2020). A cross-cultural study: Teachers' self-efficacy beliefs for teaching thinking skills. *Thinking Skills and Creativity*, *35*, 100624. https://doi.org/10.1016/j.tsc.2019.100624

Doo, M. Y., & Bonk, C. J. (2020). The effects of self-efficacy, self-regulation and social presence on learning engagement in a large university class using flipped Learning. *Journal of Computer Assisted Learning*, *36*(6), 997–1010. https://doi.org/10.1111/jcal.12455

Eaton, M. J., & Dembo, M. H. (1997). Differences in the motivation beliefs of Asian American and non- Asian students. *Journal of Educational Psychology*, *89*, 443–440. https://doi.org/10.1037/0022-0663.89.3.433

Fati, M., Ahmed, U., Umrani, W. A., & Zaman, F. (2019). Academic press and student engagement: Can academic psychological capital intervene? test of a mediated model on business graduates. *International Journal of Higher Education*, *8*(3), 134–147. https://doi.org/10.5430/ijhe.v8n3p134

Gärtner, L. U. A., & Hertel, G. (2020). Age as moderator of the relationship between self-efficacy and effort in occupational teams. *Work, Aging and Retirement*, *6*(2), 118–129. https://doi.org/10.1093/workar/waz024

Gebauer, M. M., McElvany, N., Bos, W., Köller, O., & Schöber, C. (2019). Determinants of academic self-efficacy in different socialization contexts: investigating the relationship between students' academic self-efficacy and its sources in different contexts. *Social Psychology of Education*, *23*(2), 339–358. https://doi.org/10.1007/s11218-019-09535-0

Gonzales-Macavilca, M., & Nolberto-Quispe, L. (2019). Engagement and Academic Self-efficacy in Engineering Students of a Public University in Lima-Peru. A Correlational Study. *Proceedings of the 2019 International Symposium on Engineering Accreditation and Education, ICACIT 2019*, 1–4. https://doi.org/10.1109/ICACIT46824.2019.9130232

Gopal, K., Salim, N. R., & Ayub, A. F. M. (2018). Influence of self-efficacy and attitudes towards statistics on undergraduates' statistics engagement in a Malaysian public university. *Journal of Physics: Conference Series*, *1132*(1). https://doi.org/10.1088/1742-6596/1132/1/012042

Hodge, B., Wright, B., & Bennett, P. (2017). The Role of Grit in Determining Engagement and Academic Outcomes for University Students. *Research in Higher Education*, *59*(4), 448–460. https://doi.org/10.1007/s11162-017-9474-y

Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review*, *17*, 63–84. https://doi.org/10.1016/j.edurev.2015.11.0022

Hopkins, C., Ferrell, O. C., Ferrell, L., Hopkins, K., & Merkle, A. C. (2020). Self-Efficacy, Locus of Control and Engagement as Determinants of Grades in a Principles of Marketing Class. *Marketing Education Review*, *30*(4), 236–251. https://doi.org/10.1080/10528008.2020.1837634

Ismayilova, K., & M.Klassen, R. (2019). Research and teaching self-efficacy of university faculty: Relations with job satisfaction. *International Journal of Educational Research*, *98*, 55–66. https://doi.org/10.1016/j.ijer.2019.08.012

Jang, H., Kim, E. J., & Reeve, J. (2016). Why students become more engaged or more disengaged during the semester: A self-determination theory dual-process model. *Learning and Instruction*, *43*, 27–38. https://doi.org/10.1016/j.learninstruc.2016.01.002

Ketonen, E. E., Malmberg, L. E., Salmela-Aro, K., Muukkonen, H., Tuominen, H., & Lonka, K. (2019). The role of study engagement in university students' daily experiences: A multilevel test of moderation. *Learning and Individual Differences*, *69*(October), 196–205. https://doi.org/10.1016/j.lindif.2018.11.001

Khun-Inkeeree, H., Pimjan, L., & Adelaja, A. A. (2020). Moderating Effect of Thai Teachers' Perspective on the Relationship between Teaching Perspectives, Students' Engagement. *International Journal of Instruction*, *14*(1), 631–646. https://doi.org/10.29333/iji.2021.14138a

Klassen, R. M. (2004). Optimism and realism: A review of self-efficacy from a cross-cultural perspective. *International Journal of Psychology*, *39*(3), 205–230. https://doi.org/10.1080/00207590344000330

Kuo, T. M., Tsai, C. C., & Wang, J. C. (2021). Linking web-based learning self-efficacy and learning engagement in MOOCs: The role of online academic hardiness. *Internet*

and Higher Education, *51*(May 2018), 100819. https://doi.org/10.1016/j.iheduc.2021.100819

Levine, R. V., Norenzayan, A., & Philbrick, K. (2001). Cross-cultural differences in helping strangers. *Journal of Cross-Cultural Psychology*, *32*(5), 543–560. https://doi.org/10.1177/0022022101032005002

Li, W., Gao, W., & Sha, J. (2020). Perceived Teacher Autonomy Support and School Engagement of Tibetan Students in Elementary and Middle Schools: Mediating Effect of Self-Efficacy and Academic Emotions. *Frontiers in Psychology*, *11*(January), 1–9. https://doi.org/10.3389/fpsyg.2020.00050

Liu, G., Cheng, G., Hu, J., Pan, Y., & Zhao, S. (2020). Academic Self-Efficacy and Postgraduate Procrastination: A Moderated Mediation Model. *Frontiers in Psychology*, *11*(July), 1–9. https://doi.org/10.3389/fpsyg.2020.01752

Martin, A. J., Collie, R. J., Mok, M. M. C., & Mcinerney, D. M. (2016). Personal best (PB) goal structure, individual PB goals, engagement, and achievement: A study of Chinese- and English-speaking background students in Australian schools. *British Journal of Educational Psychology*, *86*(1), 75–91. https://doi.org/10.1111/bjep.12092

McClenney, K. (2006). Benchmarking effective educational practice. *New Directions for Community Colleges*, *134*, 47–55. https://doi.org/10.1002/cc.236

Mesurado, B., Cristina Richaud, M., & José Mateo, N. (2016a). Engagement, flow, self-efficacy, and Eustress of University Students: A cross-national comparison between the Philippines and Argentina. *Journal of Psychology: Interdisciplinary and Applied*, *150*(3), 281–299. https://doi.org/10.1080/00223980.2015.1024595

Meyer, R. D., Dalal, R. S., & Hermida, R. (2010). A Review and synthesis of situational strength in the organizational sciences. *Journal of Management*, *36*(1), 121–140. https://doi.org/10.1177/0149206309349309

Mischel, W. (1999). Implications of person–situation interaction: Getting over the field's borderline personality disorder. *European Journal of Personality*, *13*, 455–461. https://doi.org/10.1002/(SICI)1099-0984(199909/10)13:5<455::AID-PER357>3.0.CO;2-5

Moè, A., Katz, I., & Alesi, M. (2018). Scaffolding for motivation by parents, and child homework motivations and emotions: Effects of a training programme. *British Journal of Educational Psychology*, *88*(2), 323–344. https://doi.org/10.1111/bjep.12216

Mualifah, Pali, M., & Hitipeuw, I. (2020). The Role of School Climate and Self-efficacy on Student Engagement in a Junior High School in Malang: a aliefaha@gmail. In *International Journal of Innovation, Creativity and Change. www.ijicc.net Special Edition: Safe Communities*. www.ijicc.net

Newmann, F. M., Wehlage, G. G., & Lamborn, S. D. (1992). *The significance and sources of student engagement* (S. engagement and achievement in A. secondary schools In F. M. Newmann (Ed.), Ed.). Teachers College Press.

Olivier, E., Archambault, I., De Clercq, M., & Galand, B. (2019). Student Self-Efficacy, Classroom Engagement, and Academic Achievement: Comparing Three Theoretical Frameworks. *Journal of Youth and Adolescence*, *48*(2), 326–340. https://doi.org/10.1007/s10964-018-0952-0

Olsson, A., McMahon, K., Papenberg, G., Zaki, J., Bolger, N., & Ochsner, K. N. (2016). Vicarious Fear Learning Depends on Empathic Appraisals and Trait Empathy. *Psychological Science*, *27*(1), 25–33. https://doi.org/10.1177/0956797615604124

Oriol, X., Amutio, A., Mendoza, M., Da Costa, S., & Miranda, R. (2016). Emotional creativity as predictor of intrinsic motivation and academic engagement in university students: The mediating role of positive emotions. *Frontiers in Psychology*, *7*(AUG), 1–9. https://doi.org/10.3389/fpsyg.2016.01243

Oriol-Granado, X., Mendoza-Lira, M., Covarrubias-Apablaza, C. G., & Molina-López, V. (2017). Positive emotions, autonomy support and academic performance of university students: The mediating role of academic engagement and self-efficacy. Journal of Psychodidactics. *Journal of Psychodidactics*, *22*(1), 45–53. https://doi.org/doi:10.1387/RevPsicodidact.14280

Ozkal, N. (2019). Relationships between self-efficacy beliefs, engagement and academic performance in math lessons. In *Cypriot Journal of Educational Sciences* (Vol. 14, Issue 2). https://doi.org/10.18844/cjes.v14i2.3766

Pérez-Fuentes, M. del C., Jurado, M. del M. M., Martín, A. B. B., Márquez, M. del M. S., Martínez, Á. M., & Linares, J. J. G. (2019). The mediating role of perceived stress in the relationship of self-efficacy and work engagement in nurses. *Journal of Clinical Medicine*, *8*(1), 4–15. https://doi.org/10.3390/jcm8010010

Putarek, V., & Pavlin-Bernardić, N. (2020). Correction to: The role of self-efficacy for self-regulated learning, achievement goals, and engagement in academic cheating (European Journal of Psychology of Education, (2020), 35, 3, (647-671), 10.1007/s10212-019-00443-7). *European Journal of Psychology of Education*, *35*(3), 673–674. https://doi.org/10.1007/s10212-019-00454-4

Rai, A., Patyal, V. S., & Maheshwari, S. (2022). The Mediating Role of Self-efficacy between Job Challenges and Work Engagement: Evidence from Indian Power Sector Employees. *Journal of Public Affairs*, *22*(3). https://doi.org/10.1002/pa.2494

Reeve, J., & Lee, W. (2014). Students' Classroom Engagement Produces Longitudinal Changes in Classroom Motivation. *Journal of Educational Psychology, 106*(2), 527–540. https://doi.org/10.1037/a0034934

Robayo-Tamayo, M., Blanco-Donoso, L. M., Román, F. J., Carmona-Cobo, I., Moreno-Jiménez, B., & Garrosa, E. (2020). Academic engagement: A diary study on the

mediating role of academic support. *Learning and Individual Differences*, *80*(April), 101887. https://doi.org/10.1016/j.lindif.2020.101887

Salanova, M., Breso, E., & Schaufeli, W. B. (2005). Hacia un modelo espiral de las creencias de eficacia en el estudio del burnout y del engagement [Towards a spiral model of efficacy beliefs on the burnout and engagement research]. *Ansiedad y Estres*, *11*, 215–231.

Salanova, M., Schaufeli, W., Martínez, I., & Bresó, E. (2010). How obstacles and facilitators predict academic performance: The mediating role of study burnout and engagement. *Anxiety, Stress and Coping*, *23*(1), 53–70. https://doi.org/10.1080/10615800802609965

Sánchez-Rosas, J., Dyzenchauz, M., Freiberg-Hoffmann, A., & Okinishi, M. (2023). Transformational Leadership and Collective Teacher Self-Efficacy: The Mediating Role of Satisfaction with Job Resources. *International Journal of Instruction*, *16*(1), 801–820. https://doi.org/10.29333/iji.2023.16145a

Schaufeli, W. B., Martínez, I. M., Pinto, A. M., Salanova, M., & Barker, A. B. (2002). Burnout and engagement in university students a cross-national study. *Journal of Cross-Cultural Psychology*, *33*(5), 464–481. https://doi.org/10.1177/0022022102033005003

Schunk, D. H., & Mullen, C. A. (2012). *Self-efcacy as an engaged learner* (A. L. In S. L. Christenson & H. of research on student engagement Rechly, & C. Wylie (Eds.), Eds.). Springer. https://doi.org/10.1007/978-1-4614-2018-7_10

Serrano, C., & Andreu, Y. (2016). Inteligencia emocional percibida, bienestar subjetivo, estrés percibido, engagement y rendimiento académico de adolescentes. *Revista de Psicodidactica*, *21*(2), 357–374. https://doi.org/10.1387/RevPsicodidact.14887

Shao, Y., & Kang, S. (2022). The Link Between Parent–Child Relationship and Learning Engagement Among Adolescents: The Chain Mediating Roles of Learning Motivation and Academic Self-Efficacy. *Frontiers in Education*, *7*. https://doi.org/10.3389/feduc.2022.854549

Sharma, H. L., & Nasa, G. (2014). Academic Self-Efficacy: a Reliable Predictor of Educational Performances. *British Journal of Education*, *2*(3), 57–64.

Spedding, J., Hawkes, A. J., & Burgess, M. (2017). Peer assisted study sessions and student performance: The role of academic engagement, student identity, and statistics self-efficacy. *Psychology Learning and Teaching*, *16*(1), 144–163. https://doi.org/10.1177/1475725716687166

Squires, M., Burnell, B., McCarty, C., & Schnackenberg, H. (2018). Emerging Adults: Perspectives of College Students with Disabilities. *Journal of Postsecondary Education and Disability*, *31*(2), 121–134.

Tomás, J. M., Gutiérrez, M., Georgieva, S., & Hernández, M. (2020). The effects of self-efficacy, hope, and engagement on the academic achievement of secondary

education in the Dominican Republic. *Psychology in the Schools*, *57*(2), 191–203. https://doi.org/10.1002/pits.22321

Tuominen-Soini, H., & Salmela-Aro, K. (2014). Schoolwork engagement and burnout among Finnish high school students and young adults: Profiles, progressions, and educational outcomes. *Developmental Psychology*, *50*(3), 649–662. https://doi.org/10.1037/a0033898

Vidić, T. (2021). Students' School Satisfaction: The Role of Classroom Climate, Self-efficacy, and Engagement. *International Journal of Cognitive Research in Science, Engineering and Education*, *9*(3), 347–357. https://doi.org/10.23947/2334-8496-2021-9-3-347-357

Wang, C.-C. D., & Castañeda-Sound, C. (2008). The Role of Generational Status, Self-Esteem, Academic Self-Efficacy, and Perceived Social Support in College Students' Psychological Well-Being. *Journal of College Counseling*, *11*(2), 101–118. https://doi.org/10.1002/j.2161-1882.2008.tb00028.x

Wei, Y., Wang, J., Yang, H., Wang, X., & Cheng, J. (2019). An investigation of academic self-efficacy, intrinsic motivation and connected classroom climate on college students' engagement in blended learning. *Proceedings - 2019 International Symposium on Educational Technology, ISET 2019*, *1*, 160–164. https://doi.org/10.1109/ISET.2019.00041

Wood, D., Crapnell, T., Lau, L., Bennet, A., Lotstein, D., Ferris, M., & Kuo, A. (2017a). Emerging Adulthood as a Critical Stage in the Life Cours. In *Handbook of Life Course Health Development* (pp. 1–664). https://doi.org/10.1007/978-3-319-47143-3

Wood, D., Crapnell, T., Lau, L., Bennet, A., Lotstein, D., Ferris, M., & Kuo, A. (2017b). Emerging Adulthood as a Critical Stage in the Life Cours. In *Handbook of Life Course Health Development* (pp. 1–664). https://doi.org/10.1007/978-3-319-47143-3

Yang, Y., Li, G., Su, Z., & Yuan, Y. (2021). Teacher's Emotional Support and Math Performance: The Chain Mediating Effect of Academic Self-Efficacy and Math Behavioral Engagement. *Frontiers in Psychology*, *12*(September), 1–10. https://doi.org/10.3389/fpsyg.2021.651608

Yoon, H. J. (2015). The Effects of Hope on Student Engagement, Academic Performance, and Vocational Identity. *The Canadian Journal of Career Development*, *14*(1).

Zander, L., Brouwer, J., Jansen, E., Crayen, C., & Hannover, B. (2018). Academic self-efficacy, growth mindsets, and university students' integration in academic and social support networks. *Learning and Individual Differences*, *62*(April 2017), 98–107. https://doi.org/10.1016/j.lindif.2018.01.012

Zhen, R., Liu, R. De, Ding, Y., Jiang, R., Jiang, S., & Hong, W. (2019). Gratitude and academic engagement among primary students: Examining a multiple mediating model. *Current Psychology*. https://doi.org/10.1007/s12144-019-00202-3

Zusho, A., Pintrich, P. R., & Cortina, K. S. (2005). Motives, goals, and adaptive patterns of performance in Asian American and Anglo American students. *Learning and Individual Differences*, *15*(2), 141–158. https://doi.org/10.1016/j.lindif.2004.11.003