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iujourna14@iu.edu.sa

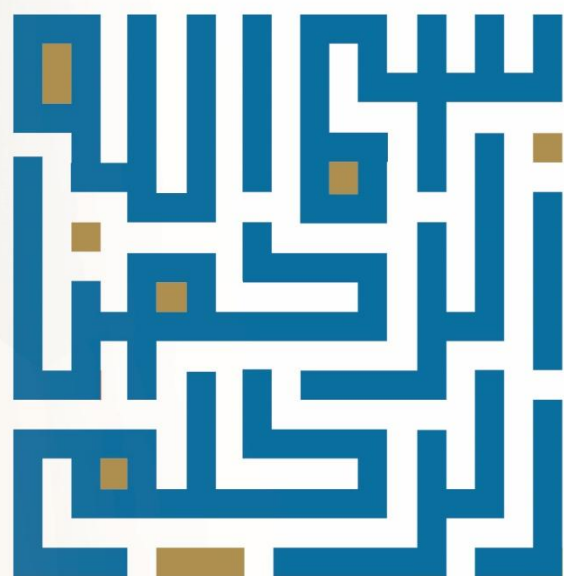




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البحوث المنشورة في المجلة
تعبر عن آراء الباحثين ولا تعبر
بالضرورة عن رأي المجلة

جميع حقوق الطبع محفوظة
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قواعد وضوابط النشر في المجلة

أن يتسم البحث بالأصالة والجدية والابتكار والإضافة المعرفية في التخصص.

لم يسبق للباحث نشر بحثه.

أن لا يكون مستلماً من أطروحة الدكتوراه أو الماجستير سواء بنظام الرسالة أو المشروع البحثي أو المقررات.

أن يلتزم الباحث بالأمانة العلمية.

أن تراعى فيه منهجية البحث العلمي وقواعده.

أن لا تتجاوز نسبة الاقتباس في البحوث التربوية (25%)، وفي غيرها من التخصصات الاجتماعية لا تتجاوز (40%).

أن لا يتجاوز مجموع كلمات البحث (12000) كلمة بما في ذلك الملخصين العربي والإنجليزي وقائمة المراجع.

لا يحق للباحث إعادة نشر بحثه المقبول للنشر في المجلة إلا بعد إذن كتابي من رئيس هيئة تحرير المجلة.

أسلوب التوثيق المعتمد في المجلة هو نظام جمعية علم النفس الأمريكية (APA) الإصدار السابع، وفي الدراسات التاريخية نظام شيكاغو.

أن يشمل البحث على : صفحة عنوان البحث، ومستخلص باللغتين العربية والإنجليزية، ومقدمة، وطلب البحث، وخاتمة تتضمن النتائج والتوصيات، وثبت المصادر والمراجع، والملاحق اللازمة مثل: أدوات البحث، والموافقات للتطبيق على العينات وغيرها؛ إن وجدت.

أن يلتزم الباحث بترجمة المصادر العربية إلى اللغة الإنجليزية.

يرسل الباحث بحثه إلى المجلة إلكترونياً ، بصيغة (WORD) وبصيغة (PDF) ويرفق تعهداً خطياً بأن البحث لم يسبق نشره ، وأنه غير مقدم للنشر، ولن يقدم للنشر في جهة أخرى حتى تنتهي إجراءات تحكيمه في المجلة.

المجلة لا تفرض رسوما للنشر.



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د : رجاء بن عتيق المعيلي الحربي

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Self-Determination Theory and Motivation in Learning: A Meta-Analysis

نظرية التحديد الذاتي والتحفيز في التعلم: التحليل البعدي

إعداد

د. بسمة بنت علي أبوغرارة

أستاذ المناهج وطرق تدريس اللغة الإنجليزية المشارك
قسم المناهج وطرق التدريس وتقنيات التعليم – كلية التربية
جامعة طيبة

Dr. Basmah Ali Abu-ghararah

Associate Professor of English Language Curriculum and
Methods

Department of Curricula, Teaching Methods and Educational
Technologies - College of Education -Taibah University

Email: babu_ghararah@taibahu.edu.sa

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Abstract

This meta-analysis investigated the relationship between self-determination theory (SDT) and motivation and engagement among students in Teaching English to Speakers of Other Languages (TESOL) and English as a foreign language (EFL) programmes. A systematic review of quantitative and mixed-methods studies published between 2010 and 2024 was conducted, focusing on the associations between the core SDT elements of autonomy, competence, and relatedness, and student motivation/engagement. Database searches using defined search terms and Boolean combinations yielded a final set of studies after applying pre-defined inclusion/exclusion criteria. Meta-analyses using beta coefficients revealed significant positive associations between autonomy, competence, and relatedness, and motivation/engagement. While the association between competence and motivation/engagement showed no significant heterogeneity, moderate heterogeneity was observed for autonomy, and substantial heterogeneity for relatedness, suggesting potential moderating factors influencing these relationships. These findings underscore the importance of fostering autonomy, competence, and relatedness in TESOL/EFL learning environments to enhance student motivation and engagement.

Keywords: meta-analysis, motivation, autonomy, competence, relatedness

المستخلص

كشفت هذه الدراسة العلاقة بين نظرية التحديد الذاتي والتحفيز لدى طلبة برامج تدريس اللغة الإنجليزية للناطقين بغيرها وبرامج تعليم اللغة الإنجليزية كلغة أجنبية من خلال التحليل البعدي لنتائج الدراسات من عام ٢٠١٠ حتى ٢٠٢٤، مع التركيز على الارتباطات بين العناصر الأساسية لنظرية التحديد الذاتي - المتمثلة في الاستقلالية والكفاءة والترابط - ومستويات التحفيز والمشاركة لدى الطلبة. وقد أستخدم البحث في قواعد البيانات مصطلحات بحثية محددة وتركيبات منطقية، إلى مجموعة نهائية من الدراسات بعد تطبيق معايير الإدراج والاستبعاد المحددة سلفاً.

وقد كشفت التحليل البعدي باستخدام معاملات بيتا، عن وجود ارتباطات إيجابية ذات دلالة إحصائية بين عناصر الاستقلالية والكفاءة والترابط من جهة، والتحفيز والمشاركة من جهة أخرى. وفي حين لم يُظهر الارتباط بين الكفاءة والتحفيز/المشاركة تبايناً ذا دلالة إحصائية، فقد لوحظ تباين متوسط فيما يخص الاستقلالية وتباين ملحوظ فيما يتعلق بالترابط، مما يشير إلى احتمال وجود عوامل وسيطة تؤثر في هذه العلاقات. وتؤكد هذه النتائج على أهمية تعزيز عناصر الاستقلالية والكفاءة والترابط في بيئات تعليم اللغة الإنجليزية للناطقين بغيرها وتعليمها كلغة أجنبية، وذلك بهدف تحسين مستويات التحفيز والمشاركة لدى الدارسين.

الكلمات المفتاحية: التحليل البعدي، التحفيز، الاستقلالية، الكفاءة، الترابط.

Introduction.

In view of the considerable advances in educational research and the significant rise in publications, there is now a better understanding of the varied factors that can influence students' motivations to learn, as well as their performance and attainment (Zawacki-Richter & Naidu, 2016). This understanding is particularly relevant in the context of Teaching English to Speakers of Other Languages (TESOL) and English as a Foreign Language (EFL) programs, where student motivation plays a crucial role in language acquisition. Self-determination theory (SDT), which emphasizes the roles of competence, relatedness, and autonomy, offers a valuable framework for investigating student motivation in these learning environments. According to SDT, competence refers to feeling effective and capable, relatedness involves a sense of belonging and connection, and autonomy signifies feeling in control of one's learning (Deci & Ryan, 1985). These three needs are essential for fostering intrinsic motivation, which is characterized by inherent enjoyment and interest in the activity itself (Ryan & Deci, 2000). Such evidence-based understanding has informed teaching strategies and related guidelines, promoting meaningful improvements in educational outcomes across diverse student groups (Dekker & Meeter, 2022). This meta-analysis Investigates the relationship between SDT and student motivation in TESOL/EFL contexts, aiming to synthesize existing research and provide a comprehensive overview of the impact of competence, relatedness, and autonomy on language learners' motivation.

Research Problem.

There is uncertainty about the relationship between self-determination theory and the motivation and engagement of students in TESOL programmes EFL courses. This review aims to address this gap by Critically the existing literature. This evaluation is necessary to improve understanding of the factors influencing motivation and engagement in this specific student group. The findings could have significant implications for teaching practices, guidelines, and policies, ultimately aiming to explore the associations between self-determination theory elements (including competence, autonomy, and relatedness) and the motivation and engagement levels of students undertaking TESOL programmes or EFL courses.

Research Question.

The core question being asked in this work (devised using the population, exposure, and outcomes [PEO] framework) is summarised as follows: What is the nature of the relationship between self-determination theory and the motivation and engagement of students learning English as a foreign language?

Table 1. Formulation of research question

PEO	
Population	Students learning English as a foreign language
Exposure	Self-determination components
Outcomes	Engagement and motivation

Literature Review.

The theory of self-determination has several key assumptions and limitations that warrant consideration when applying it to TESOL contexts. These include the assumption that behaviour is primarily driven by growth and learning needs, and that mastery development is central to self-development and intrinsic motivation. This focus may not fully account for the complex interplay between intrinsic and extrinsic factors that influence autonomous motivation in language learning (Lopez-Garrido, 2023). While SDT primarily emphasizes intrinsic motivation, it's important to recognize that motivation exists in multiple forms: intrinsic (autonomous), identified, introjected, and external/extrinsic. The application of SDT principles can potentially influence all these motivation types in language learning contexts, though its effects may be most pronounced on intrinsic motivation (Ryan & Deci, 2018).

The standards set out for TESOL programmes by the TESOL International Association emphasize using creativity and intuition to support students' motivation and engagement levels (TESOL International Association, 2024). This emphasis is vital given the considerable challenges in learning a foreign language. Research has demonstrated that self-determination's three core components predict student motivation and engagement in learning, with fulfillment of competence, autonomy, and relatedness encouraging increases in motivation and engagement and, in turn, academic performance (Skinner & Chi, 2021).

In a study that used structured equation modelling, Raufelder et al. (2016) explored the influence of self-determination upon the four motivation types in a cohort of 1,099 adolescents. Self-determination was measured using a perceived scale, based on responses to previously validated items, and, thus, providing a reliable measure of this theoretical construct, while engagement was assessed in terms of its behavioral (participation and effort) and emotional (interest, belonging, and attitudes to learning) components. The results of the correlation analysis showed that significant associations existed between self-determination competence, autonomy, and relatedness with both the behavioral and emotional components of school engagement (all $p < 0.01$). The significance of these relationships persisted within the structured equation model and with autonomy exerting the strongest

influence upon behavioral engagement, while competence had the strongest effect upon emotional engagement. Relatedness incurred a stronger effect upon emotional engagement than behavioural engagement. However, the model was only able to explain 23% of the variance in behavioural engagement and 24% of the variance in emotional engagement. This suggests that various other factors (aside from self-determination) influence behavioral and emotional engagement in adolescents. While these findings are highly valuable and insightful, the evidence does not reflect the predictive influences of self-determination upon engagement and motivation in students specifically enrolled in TESOL programmes. This is because the cohort was based on adolescents in secondary schools in Germany and, thus, the majority were not learning English as a second language. In addition, the limited age group of adolescents included impairs generalizability to older student groups.

In another study, also conducted among a student group that not representative to reflect those undertaking TESOL, Núñez and León (2019) aimed to identify the determinants of engagement in the classroom using self-determination theory. The authors only assessed the autonomy component of self-determination theory upon engagement, therefore offering only limited insight into the variable relationship. Such autonomy was measured using a validated scale, the Basic Psychological Needs Satisfaction Scale, thus mitigating the risk of measurement bias. In terms of engagement, four elements were assessed including agentic, behavioural, emotional, and cognitive engagement, also using a previously validated instrument. The results, again using structured equation modelling, showed that autonomy was a significant predictor of all four types of engagement, positively influencing emotional engagement the most, followed by agentic, behavioural, and cognitive engagement types. In addition, the authors found that autonomy support was significantly predictive of autonomy in students, thus demonstrating how self-determination can be supported and optimized to enhance engagement in the learning process. The study was affected by attrition bias, however, posing quality issues that impede confidence in the outcomes reported. However, the value of autonomy support and autonomy in optimizing engagement has also been supported by Skinner et al. (2008). Here, the cited authors found that emotional and behavioral engagement were significantly affected by autonomy and that increases in autonomy not only improved engagement but also reduced disaffection of learning. In this work, autonomy among students imparted a greater influence upon behavioral engagement than did autonomy support. Again, however, the other elements of self-determination theory were not explored, and the cohort was limited to students undertaking varied subjects in secondary schools, impeding generalizability to the TESOL context. Other studies

conducted outside of the TESOL context have further supported the inter-relationship between self-determination components and engagement and motivation among varied student groups (Jang et al., 2016; Lan & Hew, 2020; Noels et al., 2016).

Motivation, as conceptualized through self-determination, has even been found to increase engagement with moderate to high intensity exercise within adults, suggesting that conforming to theory can lead to meaningful actions (Standage et al., 2008; Teixeira et al., 2012). Interestingly, a positive and stronger relationship between self-determination and exercise motivation was identified in regard to intrinsic/autonomous types of motivation, although lesser influences upon external and introjected motivation were observed (Teixeira et al., 2012). Thus, in the context of TESOL, self-determination may largely promote increases in intrinsic motivation, but it could also enhance introjected (to avoid guilt related to a lack of engagement/learning/attainment), extrinsic (driven by potential academic reward), and, potentially, identified (a need to learn/achieve) motivations.

Methods.

Research Design.

This study employs a systematic meta-analytic approach to examine the relationship between SDT and student motivation in TESOL/EFL contexts. The meta-analytic design allows for a comprehensive synthesis of existing quantitative and mixed-methods research findings, providing statistical integration of results across multiple studies.

Data Collection.

The search for literature of relevance to the research gap was undertaken using a range of online electronic databases, providing extensive coverage of journals focusing on research within education and teaching English as a second language (TESOL). The specific databases searched included the Education Resources Information Centre (ERIC), the British Education Index (BEI), the Australian Education Index (AEI), and Journal Storage (JSTOR). These core databases were selected for the previously noted reasons and for representing the most frequently used databases within educational reviews (University of Manchester, 2022). Searching for relevant papers across varied information sources was vital to reducing the risk of searching bias, a type of bias that can emerge when one or more relevant studies is precluded from the synthesis of review research (Aveyard, 2023). However, as database searching can never be implied to be completely reliable, additional searching techniques were employed to further minimise the risk of searching bias. First, a search for any relevant

papers was conducted via a key-term search using Google Scholar. This search engine is markedly powerful in containing an abundance of links to academic and scholarly literature, as well as grey literature and, thereby, potentially retrieving studies precluded from the journals indexed in the core database set (Haddaway et al., 2015). Second, a process of citation screening with snowballing was used to elicit any other relevant papers that could have been missed by either of the searching approaches. This technique has been previously used to capture pertinent articles for specific review problems and, thus, was useful in this work (Choong et al., 2014). Articles subject to citation screening were those that informed the background section of this work and all papers that met the eligibility criteria and were included in the synthesis .

The search terms that were applied to ERIC, BEI, AEI, and JSTOR were developed in relation to the review aim and the constituent PEO elements. A summary of these terms is shown in Table 2. Prior to searching, a number of terms were translated into differing database operations in order to optimise the precision of literature retrieval, thereby enhancing the recall of relevant papers and reducing the recall of irrelevant papers (Pollock & Berge, 2018). Truncation syntax was used to promote searching of terms with variants. For example, education was truncated to educat* to enable searching for 'education', 'educated', 'educating', and 'educate'. A proportion of terms were mapped to topic headings or categories, which are journal-defined groups that encompass varied but related terms. This was performed as a default by each database and, therefore, the mapped terms are not depicted within Table 2. Finally, the terms were combined in an optional and mandatory way using the Boolean connectors OR/AND. The strategy using Boolean logic is shown in the overall search string in Table 2. As Google Scholar does not permit the use of search strategies similar to that devised herein, a number of key terms from the PEO criteria were used for searching purposes .

Table 2. Summary of search strategy

-	Population	Exposure	Outcomes
Applied search terms (*truncation)	1-Teaching English as a second language 2-TESOL 3-Teaching English as a foreign language 4-English educat*	5-Self-determination 6-Self-determination theory 7-SDT 8-Competence 9-Autonomy 10-Relatedness	11-Motivat* 12-Engage* 13-Commit* 14-Inspire* 15-Empower* 16-Concentr*

-	Population	Exposure	Outcomes
Boolean Combinations			
#1	1 OR 2 OR 3 OR 4		
#2	5 OR 6 OR 7 OR 8 OR 9 OR 10		
#3	11 OR 12 OR 13 OR 14 OR 15 OR 16		
FINAL	#1 AND #2 AND #3		

Selection Criteria.

After the capturing of records from database searching, a systematic process of selection was conducted to filter out irrelevant papers and to identify those eligible for inclusion in the synthesis. This involved the usual process of duplicate record removal, title/abstract screening, and full-text screening (Aveyard, 2023). For the latter two steps, a series of inclusion and exclusion criteria were devised to assist in informing decisions regarding student retention or discard. These criteria were based on identifying evidence specific to the review aims. A summary of the criteria is shown in Table 3, with each element justified as follows .

First, studies were restricted to a primary quantitative design, as this was necessary to capture numerical (largely objective) data regarding the influence of self-determination elements upon motivation and engagement to learn English. The quantitative elements of mixed-methods research were considered, although qualitative literature was excluded due to the inability to assess the influence of the exposure upon the noted outcomes (Busetto et al., 2020). In addition, pre-existing reviews on the topic were excluded, as were editorials and opinion pieces, as these evidence sources offered no value to the meta-analysis herein .

Second, evidence was limited by publication date, comprising the past 14 years, as this was deemed sufficient to gather evidence of relevance to current and ongoing TESOL practices and related guidelines and policies .

Third, papers were limited to the English language as the author did not have fluency in other languages and there were no means to attain professional translation of non-English studies. There were also no plausible means to conduct a non-English search for related literature .

Finally, studies were confined by the PEO elements of the review aim. The population had to comprise student learners of approved or acceptable TESOL programmes, in order to generate a focused understanding of the influence of the exposure upon the noted outcomes for this specific educational group. The exposure was defined as self-determination in accordance with accepted theory with the three core components including competence, autonomy, and relatedness (Wang et al., 2019). The outcomes

included motivation and engagement of the population and all related measures or assessments of these qualities, for example, empowerment and inspiration. Papers were not required to have been peer-reviewed due to the searching and consideration of grey literature in this work (Riley & Jones, 2016). There were also no restrictions upon geographic setting or study quality, as this research aimed to generate broadly generalisable findings and conduct its own critical appraisal of the informing evidence. The outcomes of the study selection process are described in the results .

Table 3. Summary of inclusion/exclusion criteria

Study Characteristics/ PEO	Inclusion Criteria	Exclusion Criteria
Research Design	Primary studies of a quantitative design and the quantitative elements of mixed-methods research	Qualitative data Secondary (literature) reviews Editorials
Publication Date	2010 to present	Before 2010
Language	English	Other languages
Population	Student learners on TESOL programmes	Students learning languages other than English or on non-TESOL courses
Exposure	Self-determination elements: competence, autonomy, and relatedness	Other qualities or traits not congruent with self-determination theory
Outcomes	Motivation and engagement of the defined population	Outcomes of little interest to the review aims

Data Extraction.

The data from the eligible papers was extracted using a series of steps in order to minimise the risk of extraction errors. This issue has been previously known to bias the outcomes of pooled meta-analyses and, therefore, rigour was adopted throughout (Mathes et al., 2017). First, the data was extracted in electronic form to permit the direct translation of data elements from the original texts into a central database. This avoided potential errors linked to the manual transcription of data. Second, extraction proformas were used to facilitate a standardised and systematic extraction process for each study. These were taken from the Cochrane Handbook of Systematic Reviews and adapted to accommodate the PEO nuances of this review (Higgins & Thomas, 2018b). Third, the extraction process was performed for each study in isolation to avoid the potential contamination of data across eligible papers within the database. Finally, the extraction steps were repeated for each study twice to help detect and resolve any incurred extraction errors. The key data elements for extraction included author(s), study title, design, population data (eligible participants, excluded subjects, key demographic and educational characteristics), methods of data collection

(measures of self-determination and motivation/engagement), mode of data analysis, and the key findings. A summary of the key data is shown within the literature matrix in the results .

Quality Assessment.

The methodological quality of eligible studies was assessed in relation to the design-specific frameworks published by the Critical Appraisal Skills Programme (CASP, 2024). This method of appraisal was chosen due to the author's familiarity with the process and in view of the frameworks containing sufficient items to elicit all important issues of internal (risk of biases) and external (generalisability) validity. Moreover, the CASP process allows appraisers to rate the overall quality of studies based on their judgements, as opposed to using scoring systems, which can often generate misleading information about the strengths and weaknesses of research evidence (Long et al., 2020). Overall, judgements of study quality were based on the number of desirable/undesirable responses to CASP items, while the generalisability was assessed based on sample size, cohort representativeness, and setting/context characteristics, as recommended by Burchett et al. (2020) .

Data Analysis.

The key findings were synthesised using two methods but with focus upon the pooling of data and statistical meta-analysis. The findings from each study were initially reported using a narrative approach, to enable critique and comparisons across papers. Following this, meta-analysis was performed where the pooling of data was possible using the recommended Review Manager software (Higgins & Thomas, 2018a). The data was analysed to elicit the overall strength of the association between self-determination elements and motivation/engagement to learn. In addition, quantitative information regarding the extent of inter-study heterogeneity was calculated, as this provided vital insight into the confidence and certainty of the pooled effects. The standard alpha of 0.05 was used to define statistical significance, and the analysis was described and presented in graphical form using a forest plot (Haidich, 2010) .

Results.

Study Selection.

A summary of the selection steps is shown in Figure 1. Of the 432 records retrieved from database searching, 46 duplicates were removed using EndNote referencing software. The remaining 386 articles were then subject to title/abstract filtering. This resulted in the exclusion of 351 articles, as these met the exclusion criteria previously described in the methods. The

remaining 35 articles were then full-text screened for eligibility. This led to the further exclusion of 27 studies due to the following reasons: 1) ineligible population—students who were not undertaking English as a second language ($n = 12$); 2) ineligible exposure—lack of measures of self-determination ($n = 10$); and 3) ineligible outcomes—lack of assessment of motivation/engagement ($n = 5$). Therefore, eight articles remained and have been included in the syntheses for meeting all inclusion criteria. No additional records meeting the inclusion criteria were captured through citation screening of the key term search of Google Scholar. The core database searching hits are shown in Appendices 1–4.

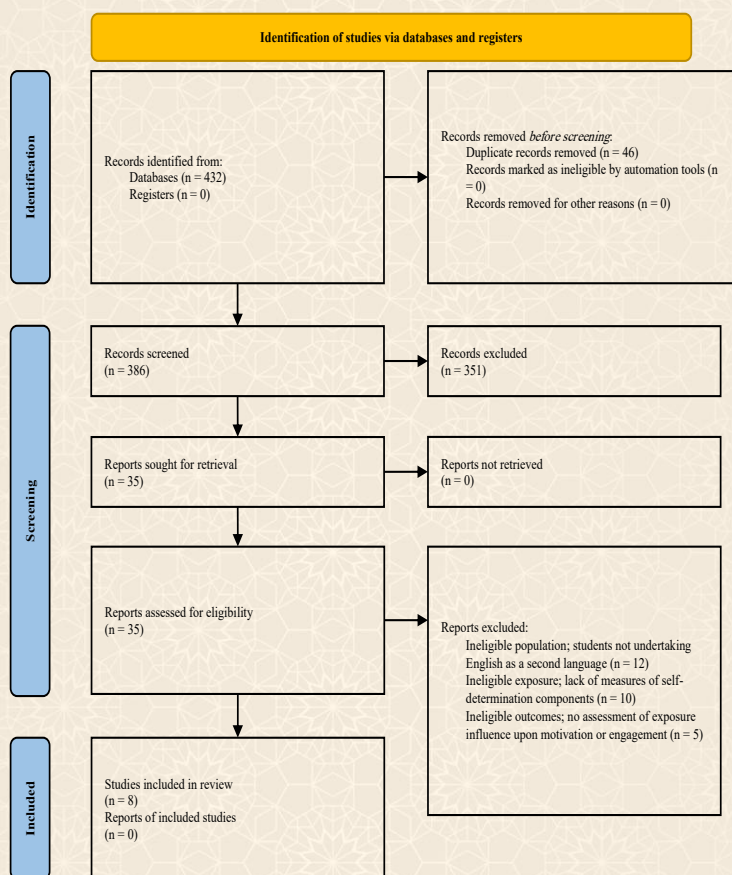


Figure 1. Summary of PRISMA filtering and study selection steps

Study Characteristics.

A summary of the key study characteristics is shown in Table 4. All studies explored the relationship between one or more of the three components of self-determination theory upon motivation and/or engagement in learning English as a second language. Therefore, all included studies were pertinent to answering the review question. The designs comprised five cross-sectional studies (Fathali, 2017; Jiang & Zhang, 2021; Oga-Baldwin et al., 2017; Wang et al., 2023; Zarfsaz & Hosseini, 2023), the quantitative components of two mixed-methods studies (Dincer & Yesilyurt, 2017; Dincer et al., 2019), and a quasi-experimental before-and-after study (Wang et al., 2015). The populations all comprised students undertaking English as a second language at the higher educational level, with the total sample size being 2,500 and varying from 48 (Wang et al., 2015) to 632 (Jiang & Zhang, 2021). The measures of self-determination were somewhat heterogenous, with the most frequently used instruments including the Basic Psychological Needs scale and the Activity Feelings State scale. Assessments of motivation and engagement were even more heterogenous, with the specific tools shown in Table 4.

Table 4. Summary of study characteristics

Authors (date)	Design	Subjects (Sample Size)	Measures of Self-Determination	Measures of Motivation/Engagement	Key Findings
Dincer and Yesilyurt (2017)	Mixed-methods study	Undergraduate EFL students at a Turkish university, mean age 19.9 years (n = 142)	Learning Self-Regulation Questionnaire (SRQ-L) Learning Climate Questionnaire (LCQ)	Classroom Engagement Scale (CES) Speaking Motivation Scale (SMS)	Students were mostly intrinsically motivated to speak English. Correlation showed a significant moderate relationship between intrinsic motivation and autonomy (0.46, $p < 0.01$).
Dincer et al. (2019)	Mixed-methods study	Undergraduate EFL students at a Turkish university (n = 412)	Activity Feelings State (AFS)	CES Ratings of course achievement (7-point scale)	Self-determination as a composite of autonomy (0.73), competence (0.83), and relatedness (0.49) positively and significantly predicted behavioural (0.64, $p < 0.001$), emotional (0.89, $p < 0.001$), and cognitive (0.67, $p < 0.001$) engagement. Emotional engagement was significantly

Authors (date)	Design	Subjects (Sample Size)	Measures of Self-Determination	Measures of Motivation/Engagement	Key Findings
					predictive of achievement (0.15, $p > 0.05$) and cognitive engagement was negatively and significantly related to absenteeism (-0.18, $p < 0.01$).
Fathali (2017)	Cross-sectional study	Undergraduate EFL students attending a Japanese university (n = 164)	Competence: Intrinsic items from Motivation Inventory Autonomy: items from a cited study Relatedness: items from another cited study	Motivation: intentions to continue learning measured using a previously cited instrument	Competence (0.70, $p < 0.01$), autonomy (0.37, $p < 0.01$), and relatedness (0.16, $p < 0.01$) were all significantly and positively related to motivation intentions. Academic performance in EFL was significantly related to autonomy (0.15, $p < 0.05$) and competence (0.25, $p < 0.01$) but not relatedness (0.11, $p > 0.05$).
Jiang and Zhang (2021)	Cross-sectional study	Undergraduate EFL students attending a Chinese university (n = 632)	Motivation Climate in Physical Education Scale	Achievement Goal Questionnaire and items of a study to assess agentic engagement	Autonomy was significantly and positively predictive of agentic engagement (0.70, $p < 0.001$) but negatively related to mastery goals (-0.32, $p = 0.008$). Relatedness was significantly and positively related to mastery goals (0.68, $p < 0.001$) but not agentic engagement (0.17, $p = 0.187$).
Oga-Baldwin et al. (2017)	Cross-sectional study	Higher education students completing EFL in Japan (n = 515)	AFS	Scales for assessing engagement and assessment outcomes	There was a significant but weak relationship between student autonomy and proficiency in English vocabulary (0.16, $p < 0.001$), as well as engagement (0.44, $p < 0.001$).

Authors (date)	Design	Subjects (Sample Size)	Measures of Self-Determination	Measures of Motivation/Engagement	Key Findings
Wang et al. (2015)	Quasi-experimental before-and-after study	English majors at a university in Taiwan (n = 48)	Autonomy: Language Learning Orientation Scale	Intrinsic Motivation Inventory	Students had high levels of autonomy and moderate competence, and this was related to low levels of amotivation and moderate to high levels of intrinsic motivation.
Wang et al. (2023)	Cross-sectional study	Undergraduate EFL students attending a Chinese university (n = 263)	Basic Psychological Needs of Second Language Scale	Previously cited instrument for measuring classroom engagement	Students had strong and significant levels of autonomy (0.69, $p < 0.001$), competence (0.68, $p < 0.001$), and relatedness (0.82, $p < 0.001$), which were significantly and positively associated with classroom engagement (0.24, $p < 0.05$). In turn, these were associated with English-speaking performance (0.22, $p < 0.05$).
Zarfsaz and Hosseini (2023)	Cross-sectional study	Undergraduate EFL students attending an Iranian university (n = 324)	Scales of SDT Questionnaire Psychological Needs Scale	English Learning Motivation Scale	Significant and positive correlations were found between autonomy (0.38, $p < 0.001$), competence (0.49, $p < 0.001$), and relatedness (0.41, $p < 0.001$) with intrinsic motivation of students. In the structured equation model, the relationships were supported, with competence (3.54, $p < 0.001$) being significantly associated with intrinsic motivation, although autonomy incurred a small but significant negative influence upon intrinsic motivation (-

Authors (date)	Design	Subjects (Sample Size)	Measures of Self-Determination	Measures of Motivation/Engagement	Key Findings
					1.83, $p < 0.05$). Relatedness had a positive and weak but significant impact upon intrinsic motivation (1.12, $p < 0.05$).

Quality Assessment.

The CASP framework for cohort studies was used to appraise the quality of evidence across most papers (see Table 5; Dincer & Yesilyurt, 2017; Dincer et al., 2019; Fathali, 2017; Jiang & Zhang, 2021; Oga-Baldwin et al., 2017; Wang et al., 2023; Zarfsaz & Hosseini, 2023), while the randomised trial framework was employed for the before-and-after study (Wang et al., 2015). The mode of recruitment/sampling was unclear in some studies, providing an uncertain risk of selection bias (Dincer & Yesilyurt, 2017; Dincer et al., 2019; Fathali, 2017; Jiang & Zhang, 2021). A risk of selection bias was noted in one study due to an inappropriate sampling strategy and a misbalancing of groups in the comparative characteristics (Wang et al., 2015). A risk of measurement bias may have been present in some studies due to insufficient reporting or analysis of the psychometric validity of instruments used to measure self-determination elements (Jiang & Zhang, 2021; Wang et al., 2015). A potential risk of confounding bias was observed across all studies, as no attempts were made to identify and account for such variables in the statistical analyses. Overall, four studies were assigned a low risk of bias rating (Dincer et al., 2019; Oga-Baldwin et al., 2017; Wang et al., 2023; Zarfsaz & Hosseini, 2023), followed by a moderate risk of bias (Dincer & Yesilyurt, 2017; Fathali, 2017) and a high risk of bias (Jiang & Zhang, 2021; Wang et al., 2015). In terms of generalisability, 7/8 studies were assigned a desirable applicability rating, which was predominantly based on the large and representative samples of the target groups (Dincer & Yesilyurt, 2017; Dincer et al., 2019; Fathali, 2017; Jiang & Zhang, 2021; Oga-Baldwin et al., 2017; Wang et al., 2023; Zarfsaz & Hosseini, 2023). The remaining study was assigned an undesirable rating due to comprising a small sample of 48 students (Wang et al., 2015).

Table 5. Summary of CASP responses to quality questions

Studies	CASP Questions										Overall Judgements	
	1	2	3	4	5	6	7	8	9	10	Risk of Bias	Applicability
Dincer and Yesilyurt (2017)	Y	CT	Y	Y	N	N	Y	CT	N	Y	Moderate	Desirable
Dincer et al. (2019)	Y	CT	Y	Y	N	Y	Y	Y	Y	Y	Low	Desirable
Fathali (2017)	Y	CT	Y	Y	N	N	Y	Y	Y	Y	Moderate	Desirable
Jiang and Zhang (2021)	Y	CT	CT	Y	N	Y	Y	Y	CT	Y	High	Desirable
Oga-Baldwin et al. (2017)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Low	Desirable
Wang et al. (2015)	Y	N	CT	N	CT	Y	Y	Y	CT	Y	High	Undesirable
Wang et al. (2023)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Low	Desirable
Zarfsaz and Hosseini (2023)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Low	Desirable

Key: Y—yes/desirable response to CASP question, N—no/undesirable response to CASP question, CT—cannot tell .

Findings of Individual Studies.

A descriptive summary of the key findings of each study related to the research question is provided here. In the quantitative component of the mixed-methods study reported by Dincer and Yesilyurt (2017), the authors showed that students did not generally agree with the items assessing amotivation (mean 1.7), suggesting that they were motivated to speak English across the elements of self-determination theory. The highest score on the 5-point Likert scale was noted for intrinsic motivation (mean 4.1), while measures of extrinsic motivation were lower (external regulation, mean 3.02; introjected regulation, mean 3.7; identified regulation, mean 3.7). Such findings suggest that students were largely intrinsically motivated and, thus, personally desired to master speaking English for their own gratification and interests. In the correlation analysis, the results showed that intrinsic motivation was moderately and significantly associated with autonomy in terms of autonomy support (0.46, $p < 0.01$), and this coefficient

was stronger than for external motivations (0.19–0.34), although these were also statistically significant (all $p < 0.05$). However, the study did not provide insight into the relationship between motivation and the other two elements of self-determination: competence and relatedness .

In a later follow-on study, conducted among a larger and more representative sample of EFL students ($n = 412$) and providing more useful data, Dincer et al. (2019) used a divergent statistical approach to examine the relationship between self-determination and motivation: structured equation modelling. At baseline, the assessment of self-determination showed that the students observed themselves as having a moderate level of autonomy (mean 2.9), competence (mean 3.1), and relatedness (mean 3.1), and behavioural, emotional, and cognitive engagement were similarly moderate (mean 3.2–3.5). The structured equation model observed a good fit to the predefined model ($p < 0.001$) and, notably, self-determination as a composite of autonomy, competence, and relatedness positively and significantly predicted behavioural (0.64, $p < 0.001$), emotional (0.89, $p < 0.001$), and cognitive (0.67, $p < 0.001$) engagement. Preceding self-determination, teacher autonomy support was significantly related to self-determination of students (0.75, $p < 0.001$). Following on from engagement, emotional engagement was significantly predictive of achievement (0.15, $p > 0.05$), and cognitive engagement was negatively and significantly related to absenteeism (-0.18, $p < 0.01$). However, the overall model was only able to account for 56% of the variance in self-determination, suggesting that various other factors can influence student motivation, engagement, and attainment in learning English .

In a cross-sectional study that used a path analysis, similar to structured equation modelling, Fathali (2017) examined the relationship between autonomy, competence, and relatedness with motivation, as assessed in terms of students' intentions to continue learning English. The path model was found to have an acceptable fit to the data and that competence (0.70, $p < 0.01$), autonomy (0.37, $p < 0.01$), and relatedness (0.16, $p < 0.01$) were all significantly and positively related to motivation intentions. In keeping with the findings of Dincer et al. (2019), the model explained 43% of the variance and, thus, a range of factors other than self-determination likely influence motivation levels of students engaging in EFL. In addition, actual academic performance in EFL was significantly related to autonomy (0.15, $p < 0.05$) and competence (0.25, $p < 0.01$) but not relatedness (0.11, $p > 0.05$) .

Jiang and Zhang (2021) also used structured equation modelling to explore the relationship between autonomy and relatedness with mastery goals and performance in EFL students attending university. The results showed that autonomy was significantly and positively predictive of agentic

engagement (0.70, $p < 0.001$) but negatively related to mastery goals (-0.32, $p = 0.008$). Relatedness was significantly and positively related to mastery goals (0.68, $p < 0.001$) but not agentic engagement (0.17, $p = 0.187$) .

Oga-Baldwin et al. (2017), using a similar statistical equation model, found that there was a significant but weak relationship between student autonomy and proficiency in English vocabulary (0.16, $p < 0.001$) as well as engagement (0.44, $p < 0.001$). The model predicted 44% of the variance in engagement and, thus, is in keeping with the findings of Fathali (2017) and Dincer et al. (2019). In addition, Oga-Baldwin et al. (2017) showed that engagement was significantly and positively predictive of intrinsic motivation (0.47, $p < 0.001$), highlighting an important relationship and distinction between the specific outcomes of engagement and motivation .

Wang et al. (2015) conducted a comparative study to explore the effects of a teacher autonomy support approach upon student motivation; however, the baseline data provided some useful insight into the links between student autonomy and competence against motivation. The data showed that students in the experimental arm had a high level of autonomy (5.9/7) and moderate competence (4.5/7), and this was related to low levels of amotivation (1.5/7) and moderate to high levels of intrinsic motivation (4.9–5.4/7). The control arm observed similar qualities at baseline with high autonomy (5.2/7) and moderate competence (4.0/7) and moderate to high intrinsic motivation (5.2–5.5/7). The impact of the intervention showed that teacher autonomy support was significantly associated with positive student autonomy and competence (all $p < 0.01$), although this did not translate into significant relationships with positive motivation ($p > 0.05$), suggesting that self-determination among students may be more influential upon motivation and engagement .

In a more recent study reported by Wang et al. (2023), the authors conducted a more specific investigation into the relationship between self-determination of students and classroom engagement. A structured equation model was used to examine the associations, with the results indicating that various factors significantly influenced the end outcomes of English-speaking performance. These factors included strong and highly significant influences from student autonomy (0.69, $p < 0.001$), competence (0.68, $p < 0.001$), and relatedness (0.82, $p < 0.001$), which, in turn, were significantly and positively associated with classroom engagement (0.24, $p < 0.05$). The subtypes of engagement were significant and strongly correlated, but the findings are unclear due to poor reporting by the authors: no stipulation, definition, or reference to the acronyms was given in the model. Despite this, self-determination and engagement, in turn, were significantly linked to English-speaking performance (0.22, $p < 0.05$) .

In the final study, also exploring the noted variable relationships using structured equation modelling, Zarfsaz and Hosseini (2023) found that there were significant and positive correlations between autonomy (0.38, $p < 0.001$), competence (0.49, $p < 0.001$), and relatedness (0.41, $p < 0.001$) with intrinsic motivation of students. There were also significant and negative correlations observed between autonomy (-0.30, $p < 0.001$), competence (-0.34, $p < 0.001$), and relatedness (-0.29, $p < 0.001$) with amotivation. In the structured equation model, the relationships were supported, with competence (3.54, $p < 0.001$) being significantly associated with intrinsic motivation, although autonomy incurred a small but significant negative influence upon intrinsic motivation (-1.83, $p < 0.05$). Relatedness had a positive and weak but significant impact upon intrinsic motivation (1.12, $p < 0.05$), while competence (-3.14, $p < 0.01$) and relatedness (-0.70, $p < 0.05$) imparted significant negative influences upon amotivation.

Meta-Analyses.

Studies that provided sufficient beta coefficient data were used to inform the meta-analysis as this was the most homogenous outcome measure used to explore the relationships between autonomy, competence, and relatedness with motivation and/or engagement.

Autonomy and Motivation/Engagement .

Seven studies provided data to inform a pooled meta-analysis regarding the relationship between student autonomy and motivation/engagement (see Figure 2; Dincer & Yesilyurt, 2017; Dincer et al., 2019; Fathali, 2017; Jiang & Zhang, 2021; Oga-Baldwin et al., 2017; Wang et al., 2023; Zarfsaz & Hosseini, 2023). The pooled analysis, adapted to accommodate the beta-coefficient values, showed that student autonomy was significantly and positively associated with motivation/engagement (0.44; 95% CI 0.36, 0.51, $p < 0.0001$). However, moderate and significant inter-study heterogeneity was observed ($I^2 = 61\%$, $p = 0.02$), thereby reducing confidence and certainty in the pooled effect.

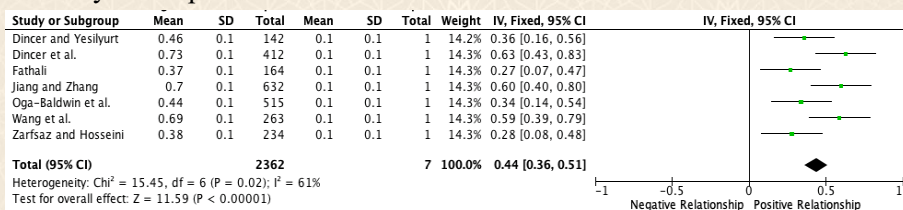


Figure 2. Pooled meta-analysis showing the relationship between student autonomy and motivation/engagement.

Competence and Motivation/Engagement.

Four studies provided data to inform a pooled meta-analysis regarding the relationship between student autonomy and motivation/engagement (see Figure 3; Dincer et al., 2019; Fathali, 2017; Wang et al., 2023; Zarfsaz & Hosseini, 2023). The pooled analysis, adapted to accommodate the beta-coefficient values, showed that student competence was significantly and positively associated with motivation/engagement (0.58; 95% CI 0.48, 0.67, $p < 0.0001$). There was no significant inter-study heterogeneity detected ($I^2 = 49\%$, $p = 0.12$), thereby promoting confidence and certainty in the pooled effect.

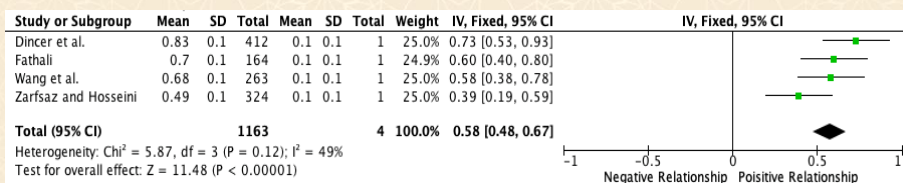


Figure 3. Pooled meta-analysis showing the relationship between student competence and motivation/engagement.

Relatedness and Motivation/Engagement.

Five studies provided data to inform a pooled meta-analysis regarding the relationship between student autonomy and motivation/engagement (see Figure 4; Dincer et al., 2019; Fathali, 2017; Jiang & Zhang, 2021; Wang et al., 2023; Zarfsaz & Hosseini, 2023). The pooled analysis, adapted to accommodate the beta-coefficient values, showed that student relatedness was significantly and positively associated with motivation/engagement (0.31; 95% CI 0.22, 0.40, $p < 0.0001$). There was significant inter-study heterogeneity detected ($I^2 = 86\%$, $p = 0.12$), thereby reducing confidence and certainty in the pooled effect.

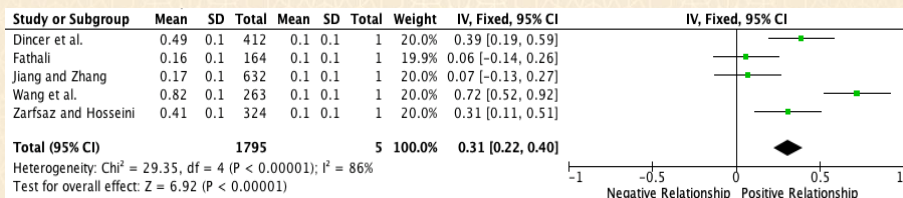


Figure 4. Pooled meta-analysis showing the relationship between student relatedness and motivation/engagement.

Discussion.

In summary, a total of eight empirical studies were identified as having investigated the relationships between self-determination and motivation/engagement in students undertaking English as a second language. The key findings from the pooled meta-analyses revealed that all three components of self-determination theory—competence, autonomy, and relatedness—were significantly and positively associated with motivation and engagement. The strongest pooled beta-coefficient value was observed for competence (0.58), followed by autonomy (0.44) and relatedness (0.31), suggesting that competence, and to a lesser extent autonomy, likely incur the most influence upon motivation or engagement of students. Some, but lesser, influence appears to be imparted by relatedness. In the descriptive per-study analysis, the findings showed that self-determination accounts for around 40–50% of the variance in motivation and engagement levels. This suggests that other factors account for the remaining 50–60% variance, and these possible factors are briefly explored in this discussion section .

Previous studies support a positive relationship between self-determination components and the motivation or engagement of students but among those undertaking courses other than English as a second language (Howard et al., 2021; Raufelder et al., 2016). Such evidence does, however, corroborate the findings of this meta-analysis. In a prior meta-analysis reported by Howard et al. (2021), the authors explored the factors associated with student motivation using a self-deterministic perspective. The analysis was based on 344 samples of students with a collective size of 223,000 participants, although the study did not attempt to pool and assess the influence of competence, autonomy, and relatedness. Despite this, the findings suggested that greater levels of student autonomy are strongly linked to intrinsic motivation and lower levels of amotivation, supporting the findings of this work .

In an early study that failed to meet the inclusion criteria of this review, due to being published prior to the year 2010, Yesilyurt (2008) conducted an investigation of the influences of self-determination upon intrinsic motivation of TESOL students. The results showed that autonomy was significantly and positively associated with motivation (0.12, $p < 0.05$), as was competence (0.34, $p < 0.01$) but not relatedness (0.11, $p > 0.05$). Such findings are in general support of the meta-analyses herein, albeit in contrast to the influences of relatedness .

The influences of self-determination upon motivation and engagement have also been supported in qualitative research. For example, Collett et al. (2022) analysed data from the reflective essays of 46 Chinese students who had undertaken a post-graduate training course in peer review. The results

were analysed through a self-determination lens with the findings showing that each component of competence, relatedness, and autonomy enhanced their engagement during the course. Competence was acquired through peer-to-peer support and education in peer review that optimised confidence as self-educators and, therefore, promoted ongoing engagement with the programme. The receipt of feedback from others also demonstrated competence, and this further encouraged engagement in peer review through motivations to address the critical feedback and individuals' weaknesses. Due to the extent of interactions and communication among peers, relatedness naturally emerged as a quality of the course, and the use of compassion and respect when providing feedback helped to strengthen inter-peer relationships. These relationships enhanced the enjoyment of learning and, thereby, engagement with the programme. Finally, competence and relatedness, in turn, appeared to optimise autonomy of learning and future endeavours among students to maintain engagement with peer review following course completion to benefit their ongoing education and careers. However, it is useful to note that some students did not value peer feedback as they were mostly familiar with and accepting of traditional teacher-centred pedagogies in Chinese education, which made receiving feedback from peers difficult and challenging. This issue with receiving feedback has been reported elsewhere (Tsui & Ng, 2000; Zhao, 2014).

In another qualitative study, similar to that of Collett et al. (2022), Khotimah et al. (2022) explored the influences of self-determination among Indonesian students undertaking English as a second language. The responses of students to interviewing revealed that most participants had high levels of autonomy and competence, and this encouraged strong motivation for mastering the English language. However, there were mixed perceptions about relatedness in the cohort and uncertainty over its impact upon motivation levels. Such findings fall in support of the meta-analysis herein, where relatedness incurred the weakest relationship with motivation and engagement.

In contrast, however, a study conducted among students who were learning French as a second language showed that relatedness was strongly related to motivation, followed by competence and autonomy; however, the extent and nature of the relationships varied over time and tended to deteriorate across the semester (Noels et al., 2019). The studies included in this meta-analysis did not assess the temporal dynamic variances in self-determination and motivation/engagement levels and, thus, represent a pertinent limitation of the pre-existing evidence base. This poses an important avenue for future research to address, as described in the latter sections of this section. In view of this, the findings of the meta-analysis

require caution in their interpretation, although representing the best available data regarding the influences of autonomy, competence, and relatedness upon motivation and engagement of students learning English. The analysis also showed that self-determination imparted the greatest influence upon intrinsic, rather than extrinsic, motivation, supporting prior reports by experts in this field (Madasa et al., 2017).

In this meta-analysis, competence incurred the strongest influence upon motivation and engagement levels. This component of self-determination theory relates to students' ability in English as a second language and, therefore, proficiency influences self-confidence and belief in students (Kosmala-Anderson et al., 2010). In turn, such perceptions would influence motivation and engagement. It is also plausible and expected that autonomy was the second strongest factor of the three self-determination components that influenced motivation and engagement levels in the meta-analysis, since a degree of competence is needed to promote autonomy in learning and, in particular, self-directedness of learning (Gagnon, 2023) .

Although relatedness incurred the smallest influence upon motivation and engagement levels, it is often considered an important factor affecting the acquisition of knowledge and skills in foreign languages due to the sense of belonging within groups inciting familiarity and boosting confidence levels among individuals (McEown & Oga-Baldwin, 2019). Attaining and understanding the influences of self-determination within the context of English as a second language is useful, as this subject may not always be considered an absolute ambition of students in view that an intended career path or ambition in life may still be achievable using one's native language. In other subjects, therefore, students may rely upon self-determination to a much greater extent, particular in situations when attaining a qualification or mastery of a subject directly influences ongoing prospects and opportunities (Al-Hoorie et al., 2022). As previously noted, a number of other factors may account for a significant proportion of the variances in motivation and engagement of students learning English as a second language. Previous research suggests that these factors include, but are not limited to, teaching methods and styles, concordance between teaching styles, and learner preferences, as well as learning attitudes and self-confidence levels (Guan, 2022; Li et al., 2022; Pae, 2007).

Augmenting students' self-determination appears to represent a key strategy to optimising motivation and engagement in learning English and, in turn, promoting improvements in performance and attainment. Indeed, research has explored the impact of motivational teaching strategies upon the autonomy, competence, and relatedness among students undertaking English as a foreign language (Sardarbi et al., 2023). The cited authors showed that

four motivation strategies applied as a composite intervention were significantly and positively associated with students' competence, autonomy, and relatedness (all $p < 0.05$). The assessment of self-determination was based on the Basic Psychological Needs Satisfaction and Frustration Scale, thus representing a valid and reliable means of reducing the likelihood of measurement bias .

In other studies, Oraif (2018) and Dieu (2024) showed that the introduction of the flipped classroom led to significant improvements in the autonomy, competence, and relatedness of students learning English. Similar effects of interventions upon self-determination (intrinsic motivation) and engagement in English learning have been replicated elsewhere (Agawa & Takeuchi, 2017; Ockert, 2018) .

These findings highlight and justify the implications that this review has formulated: a need to enhance the use of teaching strategies designed to optimise intrinsic motivation among TESOL students. Evidence suggests that teachers may not always employ approaches that can optimise the key components of self-determination and intrinsic student motivation and, therefore, some considerations for a refined strategy are needed (Muñoz & Ramirez, 2015; Wei & Chen, 2022).

Limitations and Implications.

While the findings of this meta-analysis have provided a collective insight into the relationship between self-determination and the motivation and engagement of TESOL students, the evidence should be considered in view of some methodological limitations. First, the search for relevant papers may have been prone to a risk of searching bias and, thus, one or more valuable studies could have been unknowingly or incidentally precluded from the synthesis. Second, the quality of the informing papers was varied, with most studies having an overall moderate to high risk of bias rating. This reduces confidence in the key findings. Third, two-thirds of the meta-analyses were affected by significant levels of inter-study heterogeneity, reflecting the methodological issues previously noted. This restricts certainty in the overall influences of self-determination components upon motivation and engagement outcomes .

Conclusion and Recommendations .

In summary, this meta-analysis showed that autonomy, competence, and relatedness, as elements of self-determination, incur a significant positive influence upon motivation and engagement with learning English as a second language at the higher educational level. Based on these findings, several recommendations for educational stakeholders emerge: education policy makers should incorporate SDT principles into TESOL curriculum

design; language institutions should provide professional development focused on fostering student autonomy; program administrators should implement assessment practices that support competence development; and educational planners should create environments that enhance student relatedness in language learning. In view of some limitations and persistent gaps in the knowledge base, some avenues for ongoing research may prove useful. Future studies should attempt to explore the impact of various teaching strategies in TESOL upon student autonomy, competence, and relatedness, in order to identify the best methods. Such research should also consider the important outcomes of motivation, engagement, and performance in TESOL. There is also a need for studies to explore the temporal dynamics of self-determination of TESOL students, as autonomy, competence, and relatedness are likely to vary across semesters and year groups. This may help to better tailor and optimise teaching strategies to maximise student performance and attainment. Finally, more research is needed to uncover the wider factors that account for the residual variance in motivation and engagement when accounting for self-determination theory.

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