



Affective and cognitive correlates of reading comprehension: A structural analysis

Elsa Alfiani,¹ Helta Anggia*,² Harpain Harpain,¹ Yanuarius Yanu Dharmawan,³ Dameria Magdalena Sidabalok,¹ Kristóf Lakatos⁴

¹Universitas Bandar Lampung, ²Universitas Bandar Lampung, University of Szeged

³Universitas Katolik Atmajaya, Universitas Bandar Lampung, ⁴Eötvös Loránd University, University of Szeged

This study investigated the impact of reading motivation, dictation, vocabulary, and socioeconomic status on students' reading comprehension. A quantitative research methodology was employed, with data collected over four sessions involving tenth-grade students from SMA Yadika Bandar Lampung. The data were gathered through multiple-choice tests, questionnaires, and dictation assessments. The results demonstrated a strong positive correlation between decoding skills and vocabulary in relation to reading comprehension. Statistically significant p-values of 0.000 were found for the relationships between decoding and English reading comprehension (DEC->ERC), decoding and vocabulary (DEC -> VOC), vocabulary and reading comprehension (VOC->ERC), as well as the combined effects of dictation and vocabulary on English reading comprehension (DEC->VOC ->ERC). The findings highlight that both dictation skills and vocabulary development play a crucial role in enhancing reading comprehension. In contrast, the study found no significant relationship reading motivation or socioeconomic status and reading comprehension. The correlations between extrinsic motivation and English reading comprehension (EM->ERC), intrinsic motivation and English reading comprehension (IM->ERC), and family income and English reading comprehension (INC->ERC) were not statistically significant. These results suggest that while dictation and vocabulary skills are essential for reading comprehension, factors such as reading motivation and socioeconomic status did not exert a significant influence in the study. The findings underscore the importance of focusing on vocabulary and dictation skills to improve students' reading comprehension, suggesting that targeted educational interventions in these areas could lead to enhanced academic performance for all students.

Keywords: decoding skills, English reading comprehension, reading motivation, socio-economic status, vocabulary development

OPEN ACCESS

ISSN 2503 3492 (online)

*Correspondence:

Helta Anggia

helta@ubl.ac.id

Received: 30th September 2024

Accepted: 09th October 2024

Published: 26th October 2024

Citation:

Alfiani, E., Anggia, H., Harpain, H., Dharmawan, Y.Y., Sidabalok, D.M., Lakatos, K. (2024). Affective and cognitive correlates of reading comprehension: A structural analysis.

JEES (Journal of English Educators Society), 9(2).

<https://doi.org/10.21070/jees.v9i2.1900>

INTRODUCTION

Language is crucial for human communication, enabling the transfer of ideas, dissemination of information, and social interaction among communities ([Schomaker & Zaheer, 2014](#)). It encompasses components such as semantics, syntax, and grammar, which facilitate the creation of well-structured sentences and meaningful communication. In learning a language, particularly English, achieving proficiency requires the development several core skills, namely reading, writing, speaking, and listening. Reading, a highly complex cognitive process, allows individuals to derive meaning from written texts ([Dey, 2021](#)). Moreover, reading comprehension is influenced by various cognitive and affective factors, including reasoning abilities, prior knowledge, strategic competence, decoding skills, and motivation ([Ahsani and Budairi, 2022](#); [Schaffner and Schiefele, 2013](#)).

The educational field acknowledges intrinsic and extrinsic incentives as crucial for enhancing students' engagement and interest in reading, which in turn contributes to the development of their comprehension skills ([Rogiers et al., 2020](#)).

Various factors have been identified as crucial for understanding the differences in students' reading comprehension. Socioeconomic status (SES) is a significant determinant, often linked to disparities in academic performance. Students from higher (SES) backgrounds generally have greater access to educational resources, participate in enriched learning experiences, and receive additional support to enhance their reading skills ([Chen et al., 2018](#)). However, research on the influence of SES on academic achievements remains inconclusive. While some studies suggest a substantial impact, others report only minor effects ([Bradley & Corwyn, 2002](#); [Rech & Stevens, 1996](#)). Furthermore, the ability to decode information and understand language plays a key role in overall comprehension of both written texts and spoken materials, as noted by [Gough and Tunmer \(1986\)](#). A strong vocabulary is also crucial for reading comprehending, as it allows readers to better grasp and analyze content ([Mar et al., 2021](#)). Given the importance of these factors, this study explores the complex interconnections among cognitive abilities, affective characteristics, socioeconomic status, decoding skills, vocabulary knowledge, and their collective influence on students' reading comprehension.

Several studies such as [Anggia et al. \(2023\)](#); [Chen et al., 2018](#); [Michael and Kyriakides \(2023\)](#); [Wawire and Zuilkowski \(2021\)](#) have examined the complex influence of SES, cognitive and linguistic characteristics, and motivation on reading comprehension. Most of these studies have focused on the direct impact of SES on reading achievement, as well as the indirect effects mediated by factors such as student motivation and parent-child relationships. Additionally, they have investigated the roles of decoding abilities and lexical comprehension at various stages of reading development. By adopting a holistic approach, this body of research seeks to gain a comprehensive understanding of how these variables interact and contribute to reading comprehension outcomes. Thus, this investigation aims to identify the primary factors influencing variations in students' reading abilities. Overall, the study provides valuable insights into the ways cognitive, linguistic, and social factors contribute to the achievement of reading proficiency.

This research focuses on two primary objectives related to English reading competency, building on insights from previous studies. The first objective is to evaluate the reliability of instruments used to measure English reading comprehension, vocabulary proficiency, and decoding skills. This evaluation seeks to ensure that these tools generate consistent and accurate results across different administrations and conditions, thus validating their long-term effectiveness. The second objective is to examine the relationships among critical factors such as reading motivation, vocabulary acquisition, decoding skills, and

socioeconomic status, and to determine how these elements collectively impact reading comprehension. By exploring the interplay between intrinsic motivation, foundational language skills, and socioeconomic background, the study aims to uncover the complex relationships that contribute to the development of reading proficiency. This thorough investigation not only sheds light on the cognitive and socioeconomic factors influencing reading skills but also offers valuable insights for educators and policymakers. Understanding these dynamics is essential for improving reading instruction and fostering literacy development, particularly among diverse student populations. By addressing both the reliability of assessment tools and the interrelated factors affecting reading competency, this research contributes to a more holistic approach to enhancing literacy outcomes.

Reading Comprehension Overview

Language acquisition involves mastering the core skills of listening, reading, writing, and speaking. Reading, as a cognitive activity, requires individuals to interpret written symbols to derive meaning, a process closely linked to comprehension. Comprehension becomes particularly crucial as readers move from understanding individual words to phrases and entire paragraphs ([Smith et al., 2021](#)). If a reader can decode words but fails to grasp their meaning, true comprehension has not been achieved. [Elleman and Oslund \(2019\)](#) describe reading comprehension as a multifaceted process involving active reader engagement, the text itself, and the specific reading task, all within a broader sociocultural framework. Developing strong reading comprehension is essential not only for understanding academic material but also for fostering the ability to express concepts, ideas, and emotions proficiently. This, in turn, prepares students to actively participate in society.

Instruction in reading comprehension employs a variety of strategies aimed at improving students' comprehension and communication skills. For instance, decoding skills contribute to vocabulary expansion, while integrating technology can boost students' enthusiasm for reading. Comprehension involves a range of cognitive processes, including problem-solving and critical thinking, as well as affective factors such as interests and attitudes ([Rosalina, 2019](#)). These components are interdependent and exert a complex, reciprocal influence on one another ([Zaccoletti et al., 2020](#)). Recognizing the complexity of reading comprehension as one of the most sophisticated cognitive processes ([Elleman & Oslund, 2019](#)), teachers continuously seek effective methods to teach and assess it. The use of diverse instructional approaches, which include techniques for enhancing comprehension and applying various cognitive frameworks, is vital for developing students' reading skills and fostering their overall cognitive development.

Reading comprehension aspects

Understanding the information in a text is essential for readers to fully grasp its subject matter. Several key variables, each serving a specific function, contribute to reading comprehension: identifying the main idea, locating

supporting details, recognizing references, making inferences, and understanding language. At the outset, identifying the main idea requires readers to discern the central topic or focus of a paragraph, which is supported by a solid grasp of syntax, vocabulary, and discourse structure (Stutz et al., 2016). The main idea represents the core message or viewpoint the author intends to convey, whether stated directly or implied. Additionally, obtaining supporting details involves identifying specific elements within the text that clarify or provide evidence for the main idea, aiding in comprehension (Stutz et al., 2016). Recognizing references, such as pronouns, play a crucial role in linking antecedents and enhancing clarity, thus improving understanding of explicit details within the text (Stutz et al., 2016). Furthermore, making inferences requires readers to draw conclusions or insights not directly stated, relying on cognitive abilities such as reasoning and language comprehension (Silagi et al., 2021). Finally, a robust vocabulary is critical, as it enables readers to extract meaning from words and terms, contributing significantly to overall comprehension (Stutz et al., 2016). Mastery of these skills equips readers with the necessary tools to efficiently interpret and understand written content.

Cognitive Factors of Reading Comprehension

Ostojić (2023) emphasizes that reading comprehension is a complex cognitive process that depends on a range of skills and strategies. Among the key cognitive components, vocabulary and decoding abilities are fundamental for effective comprehension. Vocabulary, defined as the body of words in a language, plays a crucial role in reading comprehension. According to Samuelson (2021), research consistently demonstrates a strong relationship between vocabulary breadth and the ability to understand written texts. A robust vocabulary enables students to better grasp and interpret the meaning of texts (Suk, 2021). Moreover, the depth and range of vocabulary knowledge significantly affect overall language proficiency and comprehension abilities (Röthlisberger et al., 2023). In addition, educators stress the importance of vocabulary instruction, not only for acquiring new words but also for enhancing students' ability to extract meaning from texts (Jonathans et al., 2021). Therefore, building vocabulary is a critical component of developing students' reading comprehension skills.

As Wawire & Zuilkowski (2021) explain, decoding skills enable readers to convert written symbols into spoken language. Effective decoding relies on phonological awareness and phonics, which are critical for accurately pronouncing and identifying words (Genelza, 2022). Mastery of decoding enhances the pace and precision of reading, allowing readers to focus on understanding the text rather than laboriously deciphering each word (Aro et al., 2018). However, decoding goes beyond mere word identification; it also involves understanding words meanings and sentence structures, thereby contributing to overall cognitive abilities and academic success (Levesque et al., 2021).

Vocabulary and decoding play interrelated roles in reading comprehension. Foorman et al. (2018) emphasize the importance of a strong connection between decoding proficiency and vocabulary understanding for the development of comprehensive reading skills. In dictation, where individuals transcribe spoken texts, the link between decoding and language expression becomes evident, as this technique assesses language competency (Kazazoğlu, 2013). Proficient decoding enables accurate transcription, while weak decoding hinders effective communication. Thus, for advanced reading comprehension, both strong vocabulary and decoding skills are essential. This aligns with educational goals aimed at enhancing students' linguistic proficiency and fostering cognitive growth.

Affective Factors of Reading Comprehension

Reading comprehension is influenced not only by cognitive factors but also by affective components, with motivation playing a crucial role in the latter (Kim, 2020). Motivation, encompassing both intrinsic and extrinsic elements, significantly impacts students' engagement with texts and their ability to comprehend (Efriza et al., 2023). Intrinsic motivation refers to the internal drive to engage in reading for its inherent rewards, such as enjoyment and personal interest (Ryan & Deci, 2020). Readers who are intrinsically motivated are more likely to persist in their reading efforts, explore texts in depth, and integrate new material into their existing knowledge base (Kurnaz and Kurnaz, 2021).

On the other hand, extrinsic motivation involves reading to achieve external rewards or meet external expectations, such as earning good grades or receiving recognition (Ryan & Deci, 2020). While extrinsic motivators can initially encourage students to engage with reading, they may not sustain long-term interest or promote deep comprehension unless paired with intrinsic motivation (Yang et al., 2023). Self-efficacy, a key aspect of reading motivation, refers to an individual's confidence in their ability to successfully complete reading tasks (Schunk & DiBenedetto, 2021). According to Anggia et al. (2023), students with strong self-efficacy are more likely to persevere through challenging reading tasks, monitor their comprehension effectively, and employ specific strategies to enhance understanding. This belief in one's reading capabilities is critical for maintaining motivation and achieving higher levels of reading comprehension.

Teachers play a crucial role in nurturing and sustaining students' motivation to read by creating classroom environments that encourage both intrinsic and extrinsic incentives (Alvarado and Adriatico, 2019). By providing meaningful feedback and recognizing students' efforts, teachers can enhance students' self-efficacy and overall motivation to engage with reading (Schunk & DiBenedetto, 2021). Understanding and applying motivational strategies allows educators to cultivate strong reading comprehension skills in their students, which in turn supports their academic success and promotes lifelong learning.

METHODS

Research Design

As defined by [Creswell \(2014\)](#), quantitative research is a methodological approach that involves the collection and analysis of numerical data to understand phenomena within individuals or group and to address specific research questions. This study adopts a quantitative methodology, focusing on evaluating students' reading comprehension and decoding abilities through standardized assessments, which play a crucial role in measuring learning outcomes ([Hamilton et al., 2021](#)). The study employed online reading comprehension assessments via Google Forms, complemented by offline dictation assessments to evaluate students' decoding skills.

Additionally, students completed a questionnaire designed to measure their enthusiasm for reading and their socioeconomic background. To ensure clarity and minimize potential misunderstandings, the researcher provided detailed instructions for both online and offline assessments prior to their administration. Anonymity was guaranteed in the questionnaire to protect participants' confidentiality, with the collected data securely stored. During the assessments, participants adhered to strict time constraints under the supervision of the research teacher. After completing the assessments, each participant received an automated email confirming their submission and granting them access to their test results.

Participants

The participants in this study were tenth-grade students from SMA Yadika Bandar Lampung. The sample comprised 87 female and 58 male students across four classes, with each class averaging between 35 and 38 students. SMA Yadika Bandar Lampung was chosen for the study due to the students' widespread difficulties in reading comprehension, particularly among those with limited English proficiency after transitioning from junior high school. These challenges have significantly impacted the students' ability to understand and interpret texts. The school offers two distinct English learning environments: the LBI (English Lab) which focuses on enhancing listening and speaking skills, and conventional classrooms aimed at developing reading and writing competencies. The students come from diverse socioeconomic backgrounds, which may contribute to varying levels of English reading comprehension. These contextual factors are crucial in assessing and understanding students' reading comprehension abilities.

Materials

This study employed multiple instruments to assess key factors related to reading comprehension, reading motivation, SES, and decoding skills. The primary instrument was a modified multiple-choice reading comprehension assessment, consisting of nine vocabulary questions and 23 comprehension questions ([Shakir & Ahmad, 2020](#)). The tool assessed students' proficiency by assessing their vocabulary knowledge and their ability to comprehend main ideas, draw inferences, and interpret details from provided texts. The Motivations for Reading Questionnaire (MRQ) was used to assess self-efficacy (SE),

intrinsic motivation (IM), and extrinsic motivation (EM) for reading. This questionnaire utilized a four-point Likert scale to gauge students' confidence in overcoming reading challenges, their enjoyment of reading, and their motivation driven by external factors such as grades. As [Coloma et al. \(2020\)](#) explain, decoding skills were assessed using the "letter-word identification" subtest, which measured students' ability to accurately and fluently identify and read familiar words. Each correct response was awarded five points, with the total score reflecting the students' decoding competency. Finally, the SES questionnaire, developed by [Rogelberg et al. \(2021\)](#), concisely assessed family income as an indicator of socioeconomic status. Jointly, these instruments provided a comprehensive assessment for the factors influencing students' reading comprehension and related abilities.

Data Analysis

This study explores the complex effects of reading motivation and socioeconomic status on students' reading comprehension skills. To thoroughly analyze the relationships among socioeconomic status, reading motivation, vocabulary knowledge, decoding ability, and reading comprehension outcomes, researchers utilized structural equation modeling (SEM) with Smart-PLS version 4 software. SEM is widely recognized for its ability to examine intricate, multidimensional relationships and causal pathways in empirical research ([Fan et al., 2016](#)). In addition to SEM, the study employed SPSS version 23 software to enhance data processing and ensure the accuracy of statistical analyses. The combined use of these methods provided a robust framework for investigating the influence of various factors on students' reading comprehension, offering valuable insights into how cognitive, motivational, and socioeconomic factors interact to shape their reading abilities.

RESULTS AND DISCUSSION

Descriptive statistics

[Table 1](#) provides a detailed summary of the descriptive statistics for the latent variables, which represent underlying constructs inferred from observable data. These variables were measured using a four-point Likert scale, where higher values reflect stronger agreement or positive responses. The mean values for all variables exceeded 2.00, indicating that participants generally expressed higher levels of engagement both emotionally and behaviorally. The standard deviations for these variables ranged from 0.57 to 6.65. Despite the relatively broad range, the low standard deviation values for most variables suggest that the responses were closely clustered around the mean, demonstrating consistent levels of active participation among students. This consistency reinforces the favorable overall average scores observed across the variables.

TABLE 1 | Descriptive Statistics of the Study Construct

Variables	Mean	SD
English Reading Comprehension	15.29	6.65
Vocabulary	6.16	2.51
Decoding	11.14	4.68
Intrinsic Motivation	2.89	0.57
Extrinsic Motivation	2.75	0.82

Evaluation of the Measurement Model

In accordance with methodological guidelines outlined by [Hair et al. \(2019\)](#), the study used a reflective measurement approach to assess latent variables. This method involved evaluating key elements such as item loading factors, construct internal consistency, and both convergent and discriminant validity. [Hair et al. \(2019\)](#) suggest that loading factors should exceed 0.70 to confirm significant relationships between items and their respective constructs. As shown in Table 2, all items demonstrated strong loading factors, ranging from 0.764 to 0.946, which fall well within the recommended range. For assessing internal reliability, composite reliability was employed instead of Cronbach’s alpha, as composite reliability provides a more accurate assessment of construct reliability. The composite reliability scores ranged from 0.849 to 0.892, surpassing both the commonly accepted threshold of 0.70 and the minimum benchmark of 0.60, often considered acceptable for construct reliability. Convergent validity was evaluated using the average variance extracted (AVE). A score of 0.50 or higher indicates that constructs adequately reflect their associated measures. As indicated in [Table 2](#), all latent variables met this criterion, as their AVE coefficients exceeded 0.50. This comprehensive approach to validation underscores the robustness and reliability of the measurement model used in this study.

TABLE 2 | Convergent Validity of the Construct

Latent Variables	Item	Factor Loading	Average Variance Extracted	Composite Reliability
Intrinsic Motivation			0.74	0.849
	RCU	0.946		
	RI	0.764		
Extrinsic Motivation			0.805	0.892
	RFG	0.879		
	RFR	0.914		

In this study, data on Intrinsic Motivation (IM) and Extrinsic Motivation (EM) presents notable correlation coefficients that warrant further examination. Specifically, IM demonstrates a strong negative correlation of -0.86, indicating an inverse relationship with other variables. EM shows a strong positive correlation of 0.907 with IM, indicating a direct and robust relationship between these two motivational constructs. Additionally, EM exhibits a strong negative correlation of -0.897 with another variable, which

could be another aspect of motivation, potentially extrinsic

motivation itself, though the data may require further clarification.

In line with [\(Fornell & Larcker, 1981\)](#) method for assessing discriminant validity, the square root of the Average Variance Extracted (AVE) for each construct should be greater than the correlation between that construct and others. However, in this case, the square root of the AVE for both motivation constructs appears to be lower than the correlation between them, indicating higher shared variance between these constructs than with their individual measures. This suggests an issue of multicollinearity, which occurs when two or more independent variables are highly correlated. High multicollinearity makes it difficult to determine the unique contribution of each variable because they overlap significantly in the information they provide. In this context, the high correlations between IM and EM raise concerns about their distinctiveness and discriminant validity, meaning the constructs may not be sufficiently separate to assess their individual effects accurately. Addressing this multicollinearity is crucial to ensure that the constructs in this study can be meaningfully distinguished and analyzed.

Hypothesis testing

Key statistical assessments in hypothesis testing involve calculating coefficients of determination (R^2), assessing cross-validated redundancy through blindfolding (Q^2), and analyzing the statistical significance and relevance of path coefficients. Data were analyzed according to the proposed model ([Figure 1](#)). The endogenous construct, English Reading Comprehension (ERC), was conceptualized as being influenced by several exogenous variables: Extrinsic Motivation (EM), Intrinsic Motivation (IM), Income (INC), Decoding (DEC), and Vocabulary (VOC). Collectively, these factors explain 69.1% of the variation in ERC, as evidenced by the coefficient of determination ($R^2 = 0.691$).

In addition, the study investigated the relationships between Extrinsic Motivation (EM) and Intrinsic Motivation (IM) in relation to English Reading Comprehension (ERC). The findings indicate that EM accounts for 2.2% ($R^2 = 0.022$) of the variation in ERC, whereas IM accounts for 3.7% ($R^2 = 0.037$). These results suggest that both EM and IM make relatively small contributions to ERC. The model’s predictive accuracy was evaluated using blindfolding procedures and the Q^2 statistic ([Hair et al., 2019](#)). For an endogenous construct to demonstrate predictive significance, the Q^2 value must exceed zero. Q^2 values range from low (0 to 0.25), to medium (0.25 to 0.5), to high (above 0.5) prediction accuracy. The study found that the predictive accuracy for ERC was strong, with a Q^2 value of 0.640, indicating that the combined influence of DEC, VOC, INC, EM, and IM on ERC is substantial. In contrast, the Q^2 value for predicting DEC using VOC was lower, at 0.218, suggesting a relatively low to moderate accuracy level in predicting the association between VOC and DEC. These results highlight the varying degrees of impact that these factors have on ERC within the context of the study model.

This study conducted comprehensive evaluation of the statistical significance of path coefficients to gain a clear understanding of both direct and indirect relationships between different factors and English Reading Comprehension (ERC). Figure 1 presents the model, with standardized path coefficients (β) representing the strength and direction of these relationships. The results revealed strong positive correlations among several variables.

For instance, there was a significant positive correlation between Decoding (DEC) and English Reading Comprehension (ERC) ($\beta = 0.123, p = 0.000$), indicating that higher decoding skills are associated with improved reading comprehension.

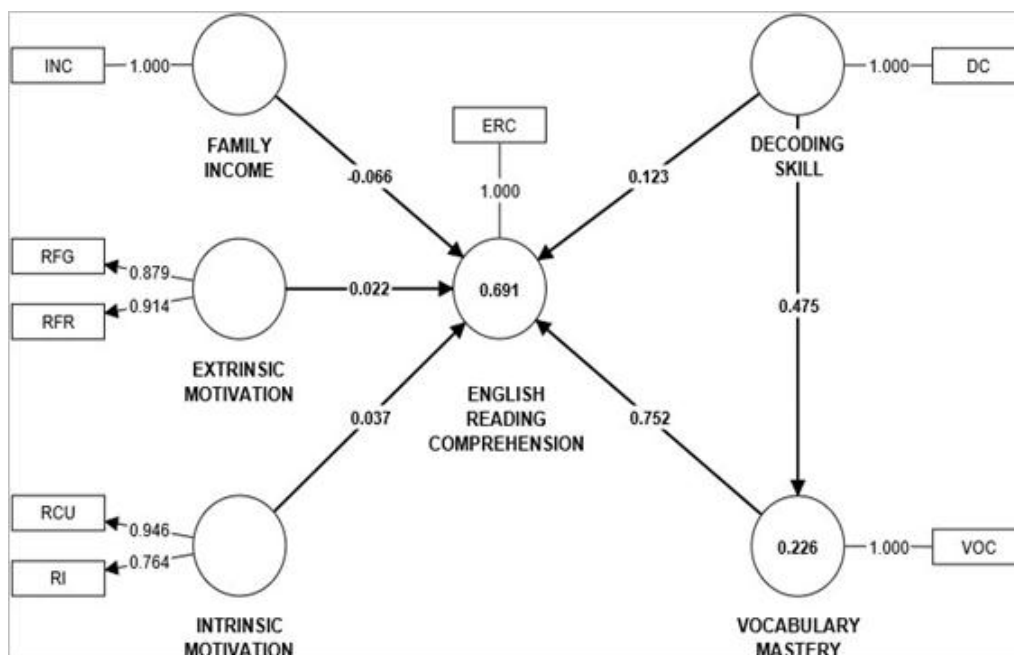


FIGURE 1 | The standardized relationship between the factors

Additionally, a significant positive correlation was found between DEC and Vocabulary (VOC) ($\beta = 0.475, p = 0.000$), suggesting that enhanced decoding abilities contribute to the improvement of vocabulary. The study also revealed a large positive correlation between VOC and ERC ($\beta = 0.752, p = 0.000$), suggesting that strong vocabulary skills greatly enhance reading comprehension. DEC indirectly influenced ERC through VOC, with VOC acting as a mediator in this relationship ($\beta = 0.357, p = 0.000$). This finding underscores the importance of vocabulary as a mediating factor through which decoding skills impact reading comprehension.

In contrast, this investigation did not corroborate certain hypothesized associations. For example, Income (INC) did not have a statistically significant effect on English Reading Comprehension (ERC) ($\beta = -0.066, p = 0.353$), indicating that financial incentives did not directly contribute to improvements in reading comprehension. Similarly, no significant relationship was found between Extrinsic Motivation (EM) and ERC ($\beta = 0.022, p = 0.731$). Additionally, Intrinsic Motivation (IM) did not positively influence ERC; in fact, it had a slightly negative effect that was not statistically significant ($\beta = -0.0037, p = 0.547$). These findings suggest that, within this model, income, extrinsic motivation, and intrinsic motivation do not substantially impact reading comprehension. Table 4 provides a comprehensive overview of the statistical

findings, highlighting the complex interactions and influences of various parameters on ERC.

TABLE 4 | Results of the hypothesis test

Path	Estimate	t- value	p- value	Result
DEC -> ERC	0.123	6.277	0	Supported
DEC -> VOC	0.475	5.985	0	Supported
EM -> ERC	0.022	0.344	0.731	Not
INC -> ERC	-0.066			Supported
IM -> ERC	0.037	0.929	0.353	Not
VOC -> ERC	0.752			Supported
		0.602	0.547	Not
				Supported
				Not
				Supported
DEC -> VOC	0.357	12.414	0	Supported
VOC -> ERC		5.689	0	Supported

This study investigated the intricate interplay between emotional and cognitive factors in reading comprehension, expanding on the Simple View of Reading (SVR) theory. SVR emphasizes the significance of decoding skills and vocabulary mastery for English reading comprehension. According to SVR, decoding skills have a dual effect: first, they directly influence vocabulary acquisition, and second, through vocabulary mastery, they indirectly enhance reading comprehension. The study's empirical results confirmed these relationships, demonstrating strong positive correlations between decoding skills and vocabulary knowledge. Decoding skills accounted for 12.3% of the variation in reading comprehension and 47.5% of the variation in vocabulary knowledge. Vocabulary proficiency, in turn, was responsible for a substantial 75.2% of the differences in reading comprehension, underscoring its critical role in improving reading ability. These results support the alternative hypothesis, suggesting a significant relationship between decoding, vocabulary mastery, and reading comprehension. Furthermore, the findings align with previous research, which highlights that the combination of decoding and vocabulary skills plays a crucial role in enhancing English reading comprehension, particularly among early readers in multilingual contexts such as Kenya ([Wawire & Zuilkowski, 2021](#)).

The study also examined socioeconomic and motivational factors, focusing on family wealth, intrinsic motivation, and extrinsic motivation. The coefficient value for motivation items exceeded 0.70, indicating a strong correlation between motivational factors and external influences on reading comprehension. The high factor loading also suggests a significant association between items related to reading motivation and extrinsic motivation. Surprisingly, the study revealed negative correlation between family income and reading comprehension, with specific impact measured at -6%. Contrary to previous studies, which often links higher SES with stronger reading abilities, this study revealed that increased family wealth does not necessarily lead to improved reading comprehension skills. This supports the null hypothesis, indicating no significant influence or relationship between family income and reading comprehension. This finding aligns with earlier research, such as [Michael and Kyriakides \(2023\)](#), which emphasized that while SES is often considered an important variable, its indicators can be inconsistent and irrelevant in certain contexts.

The study also investigated the complexities of how motivation influences reading comprehension. Extrinsic motivation showed a small but positive association with reading comprehension, accounting 2% of the variation, while intrinsic motivation had a slightly stronger impact, contributing 3.7%. An AVE metric, which exceeded 0.5, confirmed the convergent validity of both intrinsic and extrinsic motivation components. Additionally, the scales demonstrated strong composite reliability, surpassing the 0.7 threshold. However, discriminant validity was not established, as the AVE values were lower than the correlations observed between these components. This indicates that the assessment items for intrinsic and extrinsic

motivation may not be sufficiently distinct from one another. These findings support the alternative hypothesis, suggesting a significant relationship between motivations and reading comprehension. As previously noted by [Baba and Aydogmus \(2021\)](#), students with high levels of motivation, particularly intrinsic motivation, tend to make deeper connections with texts. They immerse themselves in narratives, empathize with characters, and engage creatively, which helps them use reading strategies more effectively and successfully.

To summarize, this study highlights the complex nature of reading comprehension, emphasizing the significant contributions of cognitive elements such as decoding abilities and vocabulary proficiency, alongside socioeconomic and motivational factors. While decoding abilities and vocabulary mastery were shown to strongly predict high levels of reading comprehension, the study also revealed intricate connections between socioeconomic status and motivation, both of which play pivotal roles in either enhancing or limiting reading competence. These findings challenge certain traditional assumptions and underscore the importance of adopting a comprehensive instructional approach that integrates a diverse range of cognitive, socioeconomic, and motivational strategies to effectively foster reading comprehension skills.

This study highlights several important limitations that warrant consideration in future research. First, the assessment of extrinsic and intrinsic motivation relied on questions that, while adequate for measuring general agreement, lacked the precision to clearly differentiate between these constructs. This suggests the need for more refined instruments that can better distinguish and accurately measure different motivational factors. Additionally, the study was limited to a single educational institution, which restricts the generalizability of the findings to other educational contexts. Future studies should involve larger, more diverse samples to provide a more comprehensive understanding of the relationships between the variables studied and to strengthen the relevance of the findings across various educational settings. Furthermore, despite the common assumption that higher income levels and greater parental involvement contribute to a more enriched literacy environment, this study found only a modest connection between socioeconomic status (SES) and students' reading comprehension. This suggests that SES alone is not the primary determinant of differences in reading comprehension. Particularly, children from certain ethnic backgrounds may continue to struggle with reading comprehension despite adjustments for SES. These findings underscore the importance of further research into the underlying causes of disparities in reading comprehension and highlight the need for the development of targeted instructional strategies to support all learners, regardless of socioeconomic or ethnic background.

CONCLUSION

This study investigates the intricate relationship between cognitive and affective factors and their impact on students' reading comprehension. The findings reveal that while decoding ability has both direct and indirect positive effects, its overall contribution to reading comprehension is only moderately significant. Students with strong decoding skills generally exhibit better comprehension, particularly when these skills are paired with a rich vocabulary. There is a robust, direct relationship between decoding ability and vocabulary acquisition, indicating that as students improve their ability to decode words, their vocabulary expands, further enhancing their reading comprehension. Furthermore, the acquisition of a broad and diverse vocabulary is crucial for achieving high levels of reading competence. Children with a wide range of vocabulary are better equipped to comprehend complex texts. These findings emphasize the importance of vocabulary development as a key component of reading success, suggesting that students who acquire an extensive vocabulary are more capable of understanding intricate literature and are likely to perform better in reading tasks.

These findings have significant implications for educational programs and policies. Emphasizing the development of cognitive abilities—particularly decoding skills and vocabulary mastery—should be a central focus of reading curricula. Given the limited or nonexistent correlations between reading comprehension and factors such as extrinsic and intrinsic motivation and family income, it appears that concentrating on these aspects may not substantially improve reading outcomes. Therefore, it is essential to prioritize educational initiatives aimed at enhancing students' decoding skills and expanding their vocabulary to foster more robust reading comprehension. Implementing such strategies could potentially improve reading interventions and contribute to closing the literacy gap, especially in diverse school environments where the development of cognitive skills plays a crucial role in academic achievement. By focusing on these foundational skills, educators can create a more effective learning framework that supports students in achieving higher levels of reading proficiency.

ACKNOWLEDGEMENTS

This work was supported by Universitas Bandar Lampung Research Fund, Indonesia (grant number: 012024) and the University of Szeged, Hungary.

REFERENCES

Ahsani, N., & Budairi, A. (2022). A review on L2 models of reading theories and reading teaching strategy. *International Journal of Education and Learning*, 4(1), 13–27. <https://doi.org/10.31763/ijele.v4i1.474>

Alvarado, E. S., & Adriatico, C. (2019). Reading Motivation vis-s-vis Academic Performance. *Open Journal of Social Sciences*, 07(06), 92–106. <https://doi.org/10.4236/jss.2019.76007>

Anggia, H., Dharmawan, Y. Y., Cucus, A., & Deviyanti, R. (2023). Student's reading self-efficacy regression model and differences in online extensive reading program. *AIP Conference Proceedings*, 2621(1). <https://doi.org/10.1063/5.0142284>

Aro, T., Viholainen, H., Koponen, T., Peura, P., Rääkkönen, E., Salmi, P., Sorvo, R., & Aro, M. (2018). Can reading fluency and self-efficacy of reading fluency be enhanced with an intervention targeting the sources of self-efficacy? *Learning and Individual Differences*, 67, 53–66. <https://doi.org/10.1016/j.lindif.2018.06.009>

Baba Öztürk, M., & Aydogmus, M. (2021). Relational Assessment of Metacognitive Reading Strategies and Reading Motivation. *International Journal of Progressive Education*, 17(1), 357–375. <https://doi.org/10.29329/ijpe.2021.329.23>

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology*, 53, 371–399. <https://doi.org/10.1146/annurev.psych.53.100901.135233>

Chen, Q., Kong, Y., Gao, W., & Mo, L. (2018). Effects of socioeconomic status, parent-child relationship, and learning motivation on reading ability. *Frontiers in Psychology*, 9(JUL). <https://doi.org/10.3389/fpsyg.2018.01297>

Coloma, C. J., De Barbieri, Z., Quezada, C., Bravo, C., Chaf, G., & Araya, C. (2020). The impact of vocabulary, grammar and decoding on reading comprehension among children with SLI: a longitudinal study. *Journal of Communication Disorders*, 86. <https://doi.org/10.1016/j.jcomdis.2020.106002>

Creswell. (2014). *Research design: Qualitative, quantitative, and mixed method approaches (4th ed.)*. SAGE Publications. <https://doi.org/10.5539/elt.v12n5p40>

Dey, M. (2021). Psychological processes in language learning and teaching: Scoping review and future research directions. *Journal of Psychological Perspective*, 3(2), 105–110. <https://doi.org/10.47679/jopp.321532021>

Efriza, D., Deswarni, D., & Sepyanda, M. (2023). What Can Reading Motivation Do for Improving Student's Reading Comprehension? Implications for Reading Instruction in the School. *ENGLISH FRANCA: Academic Journal of English Language and Education*, 7(1), 133. <https://doi.org/10.29240/ef.v7i1.4344>

Elleman, A. M., & Oslund, E. L. (2019). Reading Comprehension Research: Implications for Practice and Policy. *Policy Insights from the Behavioral and Brain Sciences*, 6(1), 3–11. <https://doi.org/10.1177/2372732218816339>

Fan, Y., Chen, J., Shirkey, G., John, R., Wu, S. R., Park, H., & Shao, C. (2016). Applications of structural equation modeling (SEM) in ecological studies: an updated review. In *Ecological Processes*, 5(1). Springer Verlag. <https://doi.org/10.1186/s13717-016-0063-3>

Foorman, B. R., Petscher, Y., & Herrera, S. (2018). Unique and common effects of decoding and language factors in predicting reading comprehension in grades 1–10. *Learning and Individual Differences*, 63, 12–23.

- <https://doi.org/10.1016/j.lindif.2018.02.011>
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.2307/3151312>
- Genelza, G. (2022). Phonemic Awareness as Predictor of Word Decoding Ability among Bachelor of Science in Information Technology Students. *REiLA : Journal of Research and Innovation in Language*, 4(1), 24–40. <https://doi.org/10.31849/reila.v4i1.8721>
- Gough, P. B., & Tunmer, W. E. (1986). Decoding, Reading, and Reading Disability. *Remedial and Special Education*, 7(1), 6–10. <https://doi.org/10.1177/074193258600700104>
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (2019). Multivariate Data Analysis, Multivariate Data Analysis. In *Book*, 87(4).
- Hamilton, D., McKechnie, J., Edgerton, E., & Wilson, C. (2021). Immersive virtual reality as a pedagogical tool in education: a systematic literature review of quantitative learning outcomes and experimental design. *Journal of Computers in Education*, 8(1), 1–32. <https://doi.org/10.1007/s40692-020-00169-2>
- Jonathans, P. M., Widiati, U., Astutik, I., & Ratri, D. P. (2021). The Practices of Intentional Vocabulary Acquisition for Asian EFL Learners: a Systematic Review. *English Review: Journal of English Education*, 9(2), 253–262. <https://doi.org/10.25134/erjee.v9i2.4350>
- Kazazoğlu, S. (2013). Dictation as a Language Learning Tool. *Procedia - Social and Behavioral Sciences*, 70, 1338–1346. <https://doi.org/10.1016/j.sbspro.2013.01.195>
- Kim, Y. S. G. (2020). Toward Integrative Reading Science: The Direct and Indirect Effects Model of Reading. *Journal of Learning Disabilities*, 53(6), 469–491. <https://doi.org/10.1177/0022219420908239>
- Kurnaz, H., & Kurnaz, G. (2021). Individual and Socioeconomic Variables as Predictors of Middle School Students' Intrinsic Reading Motivations. *International Journal of Educational Methodology*, 7(3), 401–410. <https://doi.org/10.12973/ijem.7.3.401>
- Levesque, K. C., Breadmore, H. L., & Deacon, S. H. (2021). How morphology impacts reading and spelling: advancing the role of morphology in models of literacy development. *Journal of Research in Reading*, 44(1), 10–26. <https://doi.org/10.1111/1467-9817.12313>
- Mar, R. A., Li, J., Nguyen, A. T. P., & Ta, C. P. (2021). Memory and comprehension of narrative versus expository texts: A meta-analysis. *Psychonomic Bulletin & Review*, 8, 732–749. <https://doi.org/10.3758/s13423-020-01853-1/Published>
- Michael, D., & Kyriakides, L. (2023). Mediating effects of motivation and socioeconomic status on reading achievement: a secondary analysis of PISA 2018. *Large-Scale Assessments in Education*, 11(1). <https://doi.org/10.1186/s40536-023-00181-9>
- Ostojić, A. B. (2023). Reading Comprehension Processes: A Review Based on Theoretical Models and Research Methodology. *Hrvatska Revija Za Rehabilitacijska Istrazivanja*, 59(1), 122–143. <https://doi.org/10.31299/hrri.59.1.8>
- Rech, J. F., & Stevens, D. J. (1996). Variables Related to Mathematics Achievement Among Black Students. *The Journal of Educational Research*, 89(6), 346–350. <https://doi.org/10.1080/00220671.1996.9941338>
- Rogelberg, S. L., Starrett, A., Irvin, M. J., & DiStefano, C. (2021). Examining motivation profiles within and across socioeconomic levels on educational outcomes. *International Journal of Educational Research*, 109. <https://doi.org/10.1016/j.ijer.2021.101846>
- Rogiers, A., Van Keer, H., & Merchie, E. (2020). The profile of the skilled reader: An investigation into the role of reading enjoyment and student characteristics. *International Journal of Educational Research*, 99. <https://doi.org/10.1016/j.ijer.2019.101512>
- Rosalina, E. (2019). The Correlation between Self-Esteem and Student's Reading Comprehension. *English Language Teaching Educational Journal*, 2(2), 70–78. <https://doi.org/10.12928/eltej.v2i2.1190>
- Röthlisberger, M., Zangger, C., & Juska-Bacher, B. (2023). Matthew effect in vocabulary and reading: A comparison of good and average readers in Grade 1 to Grade 3. *International Journal of Educational Research Open*, 5. <https://doi.org/10.1016/j.ijedro.2023.100278>
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Samuelson, L. K. (2021). Toward a Precision Science of Word Learning: Understanding Individual Vocabulary Pathways. *Child Development Perspectives*, 15(2), 117–124. <https://doi.org/10.1111/cdep.12408>
- Schaffner, E., & Schiefele, U. (2013). The prediction of reading comprehension by cognitive and motivational factors: Does text accessibility during comprehension testing make a difference? *Learning and Individual Differences*, 26, 42–54. <https://doi.org/10.1016/j.lindif.2013.04.003>
- Schomaker, M. S., & Zaheer, S. (2014). The role of language in knowledge transfer to geographically dispersed manufacturing operations. *Journal of International Management*, 20(1), 55–72. <https://doi.org/10.1016/j.intman.2013.10.004>
- Schunk, D. H., & DiBenedetto, M. K. (2021). Self-efficacy and human motivation. In *Advances in Motivation Science*, 8, 153–179. Elsevier Ltd. <https://doi.org/10.1016/bs.adms.2020.10.001>
- Shakir, A., & Ahmad, M. (2020). A Review on the Principles of a Reading Comprehension Test Construction to Assess the Test Takers at Different Levels. *Psychology and Education*, 57(8), 1920–1302. <https://doi.org/10.17762/pae.v57i8.4315>
- Silagi, M. L., Romero, V. U., de Oliveira, M. O., Trés, E. S., Brucki, S. M. D., Radanovic, M., & Mansur, L. L. (2021). Inference comprehension from reading in

- individuals with mild cognitive impairment. *Acta Neurologica Belgica*, 121(4), 879–887.
<https://doi.org/10.1007/s13760-019-01264-7>
- Smith, R., Snow, P., Serry, T., & Hammond, L. (2021). The Role of Background Knowledge in Reading Comprehension: A Critical Review. *Reading Psychology*, 42(3), 214–240.
<https://doi.org/10.1080/02702711.2021.1888348>
- Stutz, F., Schaffner, E., & Schiefele, U. (2016). Relations among reading motivation, reading amount, and reading comprehension in the early elementary grades. *Learning and Individual Differences*, 45, 101–113. <https://doi.org/10.1016/j.lindif.2015.11.022>
- Suk, N. (2021). Developing a sensitive but generalizable measurement of vocabulary gains from self-selected extensive reading. *System*, 101.
<https://doi.org/10.1016/j.system.2021.102614>
- Wawire, B. A., & Zuilkowski, S. S. (2021). The role of vocabulary and decoding language skills in reading comprehension: a cross-linguistic perspective. *International Multilingual Research Journal*, 15(1), 23–42.
<https://doi.org/10.1080/19313152.2020.1753953>
- Yang, L., Xiong, Y., & Chen, Q. (2023). The role of linguistic and cognitive skills in reading Chinese as a second language: A path analysis modeling approach. *Frontiers in Psychology*, 14.
<https://doi.org/10.3389/fpsyg.2023.1131913>
- Zaccoletti, S., Altoè, G., & Mason, L. (2020). The interplay of reading-related emotions and updating in reading comprehension performance. *British Journal of Educational Psychology*, 90(3), 663–682.
<https://doi.org/10.1111/bjep.12324>

Conflict of Interest Statement: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2024 Elsa Alfiani, Helta Anggia, Harpain Harpain, Yanuarius Yanu Dharmawan, Dameria Magdalena Sidabalok, Kristóf Lakatos. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.