

**THE CORRELATION BETWEEN EFL STUDENTS' SLEEP QUALITY  
AND THEIR READING COMPREHENSION AT THE ELEVENTH  
GRADE OF SMAN 13 BANDAR LAMPUNG**

**(Undergraduate Thesis)**

**By**

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## **ABSTRACT**

### **THE CORRELATION BETWEEN EFL STUDENTS' SLEEP QUALITY AND THEIR READING COMPREHENSION AT THE ELEVENTH GRADE OF SMAN 13 BANDAR LAMPUNG**

**By**

**ROSA INDAH SARI**

This study aims to determine the correlation between sleep quality and reading comprehension of senior high school students in the context of learning English as a foreign language (EFL) at SMAN 13 Bandar Lampung. This study uses a quantitative approach with a correlational design. Data on sleep quality were collected through questionnaires, while reading comprehension was measured using tests distributed to 33 eleventh-grade students. The results showed a significant correlation between sleep quality and students' reading comprehension with a correlation coefficient value of  $r = 0.467$  and a significance value of  $p = 0.006$ . This indicates that the correlation between the two variables is positive. It can be concluded that sleep quality is one of the non-linguistic factors related to students' reading comprehension skills. Therefore, attention to students' sleep quality is important in supporting cognitive readiness and success in English learning, especially reading comprehension skills.

**Keywords:** EFL, reading comprehension, sleep quality

## **ABSTRAK**

### **HUBUNGAN ANTARA KUALITAS TIDUR SISWA EFL DAN PEMAHAMAN MEMBACA PADA SISWA KELAS XI SMAN 13 BANDAR LAMPUNG**

**Oleh**

**ROSA INDAH SARI**

Penelitian ini bertujuan untuk mengetahui hubungan antara kualitas tidur dan pemahaman membaca siswa sekolah menengah atas dalam konteks pembelajaran bahasa Inggris sebagai bahasa asing (EFL) di SMAN 13 Bandar Lampung. Penelitian ini menggunakan pendekatan kuantitatif dengan desain korelasional. Data kualitas tidur dikumpulkan melalui kuesioner, sedangkan pemahaman membaca diukur menggunakan tes yang diberikan kepada 33 siswa kelas XI. Hasil penelitian menunjukkan adanya hubungan yang signifikan antara kualitas tidur dan pemahaman membaca siswa dengan nilai koefisien korelasi sebesar  $r = 0,467$  dan nilai signifikansi  $p = 0,006$ . Hal ini menunjukkan bahwa hubungan antara kedua variabel bersifat positif. Dapat disimpulkan bahwa kualitas tidur merupakan salah satu faktor nonlinguistik yang berkaitan dengan kemampuan pemahaman membaca siswa. Oleh karena itu, perhatian terhadap kualitas tidur siswa penting untuk mendukung kesiapan kognitif dan keberhasilan dalam pembelajaran bahasa Inggris, khususnya kemampuan pemahaman membaca.

***Kata Kunci:*** EFL, pemahaman membaca, kualitas tidur

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**By**

**Rosa Indah Sari**

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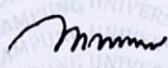
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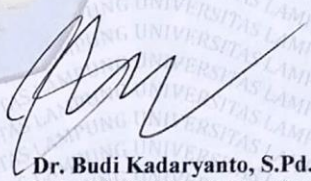
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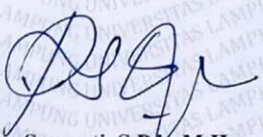
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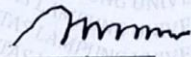
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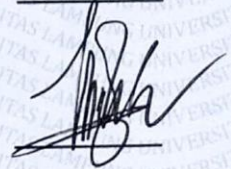
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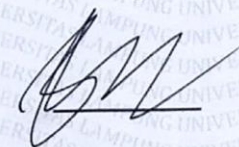
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Menyatakan bahwa skripsi ini adalah karya dari pelaksanaan penelitian saya sendiri. Sepanjang pengetahuan saya, karya ini tidak berisi materi yang ditulis orang lain, kecuali bagian-bagian tertentu yang saya gunakan sebagai acuan. Apabila ternyata terbukti bahwa pernyataan ini tidak benar, sepenuhnya menjadi tanggung jawab saya.

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Yang membuat pernyataan,



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## **CURRICULUM VITAE**

Rosa Indah Sari was born in Bandar Lampung on March 26, 2004. She is the first child of Romzi and Sa'adah Nur.

She began her early education at Kemala Kindergarten and continued her primary education at SDN 1 Way Dadi. During her elementary school years, she transferred to several schools, including SDN 3 Perumnas Way Kandis, SDN 2 Sawah Lama, and SDN 3 Labuhan Dalam, before completing her primary education in 2016. She then pursued her junior high school at SMPN 20 Bandar Lampung and continued to SMAN 13 Bandar Lampung for her senior high school. After graduating from high school, she was admitted to the English Education Study Program through the SNMPTN in 2022.

During her university years, she has been actively involved in academic and organizational activities. She served as a Public Relations staff member in the Society of English Education Department Students (SEEDS). Throughout her time in SEEDS, she participated in various committees, including serving as the Executive Secretary for the Sports Day event and as a committee member in the Storytelling division for ECOMPS.

**MOTTO**

*“turning to your Lord ‘alone’ with hope.” (QS. 94:8)*

*“Being brave is easy. All you got to do is be scarier than whatever’s scaring  
you.” – Bambi II*

## **DEDICATION**

With deep gratitude to Allah SWT, this thesis is wholeheartedly dedicated to two extraordinary people in her life, her Papi and Mamak. They are the ones who made everything possible, allowing her to reach the point where this thesis could finally be completed. She would also like to express her sincere appreciation to her lecturers and friends who have accompanied her throughout this long journey.

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In conclusion, the writer realizes that this thesis is still far from perfect. Therefore, constructive criticism, suggestions, and feedback from all parties are highly appreciated for the improvement of this thesis. It is hoped that this thesis will be useful.

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## I. INTRODUCTION

This chapter provides a brief description of whole contents of the research including background of the research, research questions, objectives of the research, the uses of the research, scope of the research and definition of terms.

### 1.1. Background of the Research

Reading comprehension is one of the main skills students must master in learning English. At school, one of the goals of English learning is for students to be able to understand various types of written texts, such as descriptive, narrative, recount, report, and exposition. These text types frequently appear in textbooks, classroom activities, and exams. Therefore, reading is not just a learning activity but also a crucial skill that supports students' academic success in English.

Reading plays a crucial role in language learning. Through reading, students can expand their vocabulary, understand grammatical structures, and acquire a variety of new information. Reading also helps students develop critical thinking skills. Harmer (2015) states that reading provides valuable exposure to language, and such exposure contributes to language acquisition and comprehension development. Thus, reading is a foundation for English language acquisition.

However, reading comprehension is not a simple process. Reading goes beyond recognizing words; it also involves understanding ideas, grasping meaning, drawing conclusions, and connecting information within the text. Students need to identify main ideas, detailed information, word references, and implicit meanings in the text. They must also connect the text's content to their existing knowledge. This process requires concentration and active thinking skills. Therefore, successful reading comprehension is influenced not only by language skills but also by students' cognitive abilities.

In English classroom learning, reading is often the primary activity. Teachers use reading texts to introduce vocabulary, grammar, and text structure. Many classroom tasks, such as answering questions, summarizing texts, and analyzing reading content, rely heavily on students' reading skills. Therefore, students' reading skills can impact their overall English achievement.

In reality, many students still experience difficulties comprehending English texts. Some students struggle to understand the meaning of sentences, while others struggle to concentrate when reading long texts. Teachers also frequently encounter students who easily lose focus or quickly forget what they have just read. Some students also feel tired or sleepy while reading. This demonstrates that reading comprehension is influenced not only by language skills but also by students' physical and mental readiness.

Reading itself is a cognitive activity that involves interaction between the reader and the text. Snow (2002) explains that reading is the process of understanding and constructing meaning through interaction with the text. Furthermore, Grabe and Stoller (2019) stated that reading comprehension involves understanding context, connecting ideas, and thinking critically about text. This process involves attention, working memory, and reasoning skills. If a student's cognitive state is not optimal, reading comprehension can also decline.

One factor that can affect a student's cognitive state is sleep quality. Sleep is a basic human need that impacts physical health, emotional stability, and cognitive function. During sleep, the brain processes and stores information acquired throughout the day. Adequate and quality sleep helps improve attention, memory, and thinking skills. Conversely, lack of sleep can leave students feeling tired, having difficulty focusing, and less prepared to learn.

Sleep quality is crucial for adolescents, including high school students. During adolescence, biological changes in sleep patterns occur, making them more likely to go to bed later. However, school schedules require early morning wake up. As a result, many students do not get enough sleep. Modern lifestyles also exacerbate this situation. Mobile phone use, social media, online games, and digital viewing often lead students to stay up late. Schoolwork, extracurricular activities, and

extracurricular activities can also reduce students' sleep time. Poor sleep quality can directly impact students' learning. Students who lack sleep tend to feel sleepy in class, have difficulty concentrating, and are slow to comprehend information. This significantly impacts reading activities, which require focus and clarity of thought. Reading in English requires even greater cognitive effort because students must understand vocabulary and sentence structures that are not always familiar.

Several previous studies have shown that sleep quality is related to student achievement. Curcio et al. (2006) explain that sleep loss negatively affects cognitive performance, including attention and executive function. Similarly, Lo et al. (2016) found that sleep deprivation impairs sustained attention and working memory, and reduces information processing speed. These cognitive components are essential in learning activities that require high concentration, including reading comprehension.

Given that reading comprehension requires concentration and good cognitive function, while sleep quality plays a role in maintaining cognitive function, sleep quality is suspected to be related to students' reading ability. However, research specifically examining the correlation between sleep quality and reading comprehension in the EFL context in Indonesia is still limited. Therefore, this study is important to provide a clearer picture of the correlation between these two variables.

Based on the explanation above, this study aims to determine the correlation between students' sleep quality and their English reading comprehension.

## **1.2. Research Question**

Dealing with the issues presented in the background, this study is intended to answer the following research questions:

Is there any correlation of EFL students' sleep quality and their reading comprehension?

### **1.3. Objectives of the Research**

In relation to the research question above, the purpose of this research is to find out whether there is any correlation between students' sleep quality and their reading comprehension.

### **1.4. The Uses of the Research**

The use of this research is both theoretical and practical.

1. Theoretically, this study is expected to contribute to the development of studies in the field of English language education, especially those related to non-linguistic factors that is related to students' reading comprehension. The results of this study can also enrich the literature on the correlation between sleep quality and academic performance, especially in the context of learning English as a foreign language.
2. Practically, this study is expected to provide information and awareness to teachers, students, and parents regarding the importance of sleep quality as part of learning readiness. English teachers can consider this aspect in designing learning activities that take into account students' cognitive conditions. In addition, the results of this study can also be used as a reference for the development of more holistic learning strategies, which do not only focus on material, but also on students' mental and physical readiness.

### **1.5. Scope of the Research**

This study was conducted on SMAN 13 Bandar Lampung. It focused on students' sleep quality and reading comprehension using narrative text tests and questionnaires. Sleep quality was measured using questionnaire. Meanwhile, students' reading comprehension measured through a reading comprehension test

### **1.6. Definition of Terms**

In this research, there are some terms that mostly appear in explanation of each

chapter. Those terms are dealing with the core of this research, such as:

1. Reading Comprehension

Reading comprehension is a cognitive process in which readers actively create meaning through the interaction between what they read and what they already know. In this research, reading comprehension includes understanding explicit details, inferring implicit meanings, and interpreting vocabulary in context. This process depends heavily on mental focus and working memory, which can be correlated with physical and psychological factors like sleep quality.

2. Sleep Quality

Sleep quality refers to a person's typical pattern of rest and recovery. It includes not just sleep duration, but also how often a person wakes up at night, how long it takes to fall asleep, and how refreshed they feel upon waking (Buysse et al., 1989). In this study, sleep quality is seen not as the direct cause of academic performance, but as a lifestyle tendency that helps support the brain's cognitive readiness.

These explanations ensured that we all understood the important words used in this study. They set the stage to closely examine how sleep quality correlated with students' reading comprehension, and they provided us with ways to understand and explain the results and ideas from this research.

## **II. LITERATURE REVIEW**

Related to several matters discussed in the previous chapter, this chapter presents a theoretical review that supports the implementation of this research. This chapter discusses theories related to reading comprehension and sleep quality. Additionally, this chapter also includes a framework that explains the logical correlations between variables and the hypotheses proposed in this research.

### **2.1. Previous Study**

In the context of learning English as a foreign language, reading is important skill that requires focus, attention, and good memory. Unlike reading in a mother tongue, reading foreign language texts requires students to understand different sentence structures, recognize new vocabulary, and infer meaning from context. All of these processes involve complex brain work, so that students' physical and mental conditions greatly affect their comprehension results.

One factor that is thought to play a role in supporting reading ability is sleep quality. When someone sleeps enough and soundly, their brain will carry out recovery functions and strengthen previously received information. According to Curcio et al. (2006), lack of sleep can disrupt key cognitive functions such as concentration, attention, and decision-making, all of which are crucial for reading comprehension. Poor sleep quality can hinder students' ability to stay focused and process written information effectively. In other words, students who do not get enough sleep may be more likely to lose focus when reading and have difficulty processing the information they read.

Several studies have tried to take a closer look at the correlation between sleep and reading comprehension. Generally, these studies indicate that sleep quality is a non-linguistic factor influencing cognitive functions such as concentration,

memory, and attention, which ultimately impacts academic achievement, including in English as a foreign language (EFL) learning.

Saerang and Sitompul (2025) in their study on the correlation between sleep quality and academic performance of junior high school students found that there was a significant positive correlation between sleep quality and academic performance ( $r = 0.011$ ;  $p < 0.05$ ), where students with better sleep quality tended to achieve higher academic achievement. Similar findings were also reported by Rathakrishnan et al. (2021), who showed that sleep quality has a positive and significant correlation with students' academic achievement ( $r = 0.342$ ;  $p < 0.05$ ). These results indicate that good sleep quality supports cognitive readiness in the learning process, both at the school and university levels.

On the other hand, research by Nilifda et al. (2016) found a significant correlation between sleep quality and students' academic achievement ( $p = 0.004$ ). Students with poor sleep quality tend to have lower academic performance. Similar findings were also reported by Halimatunnisa' et al. (2025) in high school students, indicating that sleep quality is significantly related to students' learning concentration ( $p < 0.05$ ), which is an important aspect of the reading comprehension process.

Beside sleep quality, several studies also indicate that other non-linguistic factors play a role in the reading comprehension abilities of EFL learners. Research by Al-Shumaimeri (2017) found that concentration and cognitive readiness have a significant impact on the reading comprehension of EFL learners. Participants with better concentration levels demonstrated higher text comprehension abilities.

Research by Lo et al. (2016) found that students with insufficient sleep tend to experience decreased attention and cognitive performance, which can affect their understanding of written texts. While, research by Wang and Leng (2024) found that cognitive and metacognitive strategies play an important role in EFL students' reading comprehension. This suggests that reading comprehension is influenced not only by language ability but also by students' cognitive readiness during reading activities.

Additionally, research by Lisnawati, Ningrum, and Nurhidayah (2025) indicates a significant correlation between sleep quality and students' learning concentration levels. Students with good sleep quality tend to have higher learning concentration, while poor sleep quality negatively impacts concentration. Concentration is one of the important cognitive components that supports the reading process and text comprehension in English language learning.

From these findings, it can be concluded that sleep quality and other non-linguistic factors are related to academic achievement, cognitive function, and reading comprehension ability. However, research specifically examining the correlation between sleep quality and reading comprehension ability in EFL learners, particularly English language education students in Indonesia, is still very limited. Therefore, this study aims to investigate the correlation between sleep quality and students' reading comprehension abilities.

## **2.2. Concept of Reading**

Reading is one of the basic skills that is important in learning English. Through reading, students can recognize various forms of text, increase vocabulary, understand sentence structure, and expand knowledge. However, reading is not just about seeing words and then saying them. More than that, reading also involves understanding. This means that when someone reads, they must also be able to capture the meaning of the contents of the reading.

Reading is not merely the recognition of written words, it is a complex cognitive process that engages multiple mental functions. According to Mikulecky (2011), reading is a complex mental process, both conscious and unconscious, in which the reader uses various strategies to reconstruct the meaning intended by the author, based on data from the text and the reader's prior knowledge. Kintsch (1998) further explains that comprehension requires integrating textual information with prior knowledge to construct a coherent understanding. Sutarsyah (2015) emphasizes that efficient word processing and the use of cognitive strategies are essential for effective reading.

From these various opinions, it can be concluded that reading is a complex thinking process, not just a technical ability. Readers do not only read letters or words, but also work mentally to understand and interpret the contents of the reading. Therefore, reading is a cognitive activity because it involves brain work such as attention, working memory, and the ability to connect new information with existing knowledge. In the context of this study, reading is understood as a cognitive process that is greatly influenced by brain conditions, one of which is the quality of students' sleep.

### ***2.2.1. Aspects of Reading***

Reading is an important skill that must be mastered. When someone reads, they do not just see the letters but also strive to understand and find the meaning of the text. To be able to comprehend the reading well, it is important to pay attention to several supporting aspects in the reading process.

Various literacy studies indicate that mastering reading comprehension requires an understanding of five crucial aspects. According to Nuttal (1996), those aspects are main idea, reference, inference, detail information and vocabulary. These aspects can help in capturing the ideas conveyed in the text and improving comprehension skills.

#### **1. Main Idea**

The main idea is the central thought of a text that conveys the author's key message, and identifying it is crucial for effective reading comprehension, as it allows readers to organize information and make meaningful connections within the text.

#### **2. Reference**

Reference in reading comprehension is the correlation between linguistic expressions in the text and what they represent, requiring readers to link words or phrases to their antecedents or contextual meaning to build coherent understanding.

#### **3. Inference**

According to Olson (1994), inference allows readers to interpret the nuances of language and emotions associated with a particular situation,

enabling them to understand the content of the text more deeply.

#### 4. Details Information

Identifying detailed information in reading is the ability to find and understand specific information contained in the text. This involves searching for facts, figures, or specific data that support ideas or arguments in the reading.

#### 5. Vocabulary

Understanding vocabulary is very important for learners because it helps them comprehend texts more effectively. By choosing the right teaching method, students can more easily understand the context of the text. Vocabulary has a significant impact on reading ability. Meanwhile, vocabulary depth means understanding pronunciation, spelling, and grammar more deeply too, which helps readers grasp the message in a paragraph and understand expressions that can have multiple meanings.

In conclusion, reading is an important skill that must be mastered to understand texts well. There are five main aspects that support reading comprehension, namely the main idea, references, inferences, detailed information, and vocabulary. By paying attention to and developing these five aspects, readers can be more effective in understanding and digesting the information they read.

### ***2.2.2. Types of Reading***

In reading, different types play an important role in helping in the reading comprehension of a text. Each type is designed for a specific purpose, such as obtaining general information, looking for specific details, or analyzing the content of the text in depth. Understanding the correct way to read greatly helps readers capture the message and meaning contained in the text. The ability to choose the right type will have a significant impact on the success in understanding the information read. According to Brown (2004), there are four types of reading.

#### 1. Skimming

Skimming is a quick way of reading to get an overview of the text. Readers look at headings, subheadings, and read the first and last

sentences of each paragraph to understand the main points.

## 2. Scanning

Scanning is a way of searching for specific information in a text without reading the entire text. This involves quickly skimming the text to find keywords.

## 3. Intensive Reading

Intensive reading involves reading carefully and deeply to understand all the details and nuances in the text. It is used when analyzing complex texts.

## 4. Extensive Reading

Extensive reading is a type of reading done for entertainment and general comprehension, where readers focus on understanding the overall content of the text without paying too much attention to small details.

In conclusion, various types of reading, such as skimming, scanning, intensive reading, and extensive reading, play an important role in improving reading comprehension of a text.

### **2.3. Reading Comprehension**

Reading comprehension is an important skill in English literacy because it is the main goal in the reading process. According to Kintsch (1988), reading comprehension is not just about recognizing written words, but also involves complex mental processes, where the reader must build a mental representation of the information contained in the text.

Perfetti and Stafura (2014) stated that reading comprehension involves the integration of various components such as word recognition, sentence structure, and the arrangement of complete meaning. When readers read a text, they not only read the surface of the words, but also process them in working memory, maintain attention, and draw conclusions from the scattered information. For example, readers must be able to draw implied meanings from narrative texts, recognize correlations between ideas in expository texts, or identify the communicative purpose of functional texts. All of this requires high-level thinking skills.

According to Grabe and Stoller (2019), reading comprehension involves the integration of various components such as word recognition, sentence structure, and constructing coherent meaning. When readers read a text, they process it in working memory, maintain attention, and draw conclusions from the information presented. When these strategies are used effectively, readers are able to construct a mental representation of the text and store that information in long-term memory. This improves comprehension and information retention.

Overall, reading comprehension can be understood as an active and complex process. Its success depends largely on the brain's ability to process and store information efficiently, as well as on internal states such as concentration, mental fatigue, and readiness to learn. Therefore, factors that affect a reader's cognitive function, such as sleep quality, can have an impact on reading comprehension success.

#### **2.4. Sleep Quality**

Sleep is a crucial process for a person's physical, cognitive, and emotional well-being. The quality and quantity of sleep play a crucial role in regulating various brain functions, including memory consolidation and learning (Chong, 2024).

Sleep quality is one of the factors that can influence students' ability to learn effectively, especially in reading comprehension. Previous studies have shown that sleep plays an important role in learning and memory processes (Curcio et al., 2006). Students who have good sleep quality tend to have better concentration, memory, and understanding. In contrast, poor sleep quality can reduce attention, concentration, and memory (Alhola and Polo-Kantola, 2007). These cognitive functions are important in reading comprehension because they help students understand and remember the information in a text.

Medic, Wille, and Hemels (2017) argue that sleep supports cognitive functions such as attention and alertness, which are essential when engaging with learning materials. Buysse et al. (1989) and Mollayeva et al. (2016) suggest that sleep quality can be assessed based on how easily a person falls asleep, how often they

wake during the night, and how refreshed they feel in the morning. These aspects directly affect the ability to process and integrate information while reading.

Diekelmann and Born (2020) explains that sleep helps strengthen and store information acquired during waking hours, which is particularly relevant for retaining what is read.

In this sense, sleep quality does not only determine how much students sleep, but also how ready their minds are to understand and remember reading material.

#### ***2.4.1. Good and Poor Sleep Quality***

Sleep quality refers to an individual's satisfaction with sleep, including aspects such as sleep duration, restfulness, and consistency (Buysse et al., 1989). Based on these aspects, sleep quality can generally be categorized into good and poor sleep quality.

##### **1. Good Sleep Quality**

Good sleep is defined as sleep that is adequate in terms of duration, restfulness, and consistency, thus supporting optimal cognitive function, including attention, memory, and concentration. Optimal cognitive function enables students to comprehend text more effectively, draw conclusions, and retain important information when reading.

##### **2. Poor Sleep Quality**

In contrast, poor sleep is characterized by insufficient sleep duration, sleep disturbances, or even inconsistent sleep, which can impair cognitive function. This condition can make it difficult for someone to focus, remember information, and comprehend text.

#### ***2.4.2. Components of Sleep Quality***

According to Buysse et al. (1989), a person's sleep quality can be measured through seven main components summarized in the Pittsburgh Sleep Quality Index (PSQI). These seven aspects complement each other in providing a complete picture of how a person sleeps in their daily life.

1. Subjective sleep quality, which is a person's personal assessment of how well one perceives the quality of their sleep.
2. Sleep latency, which shows how long it takes a person to fall asleep after lying down.
3. Sleep duration, which is the total sleep time during the night.
4. Habitual sleep efficiency, measures how efficiently time in bed is actually used for sleep.
5. Sleep disturbances, related to disorders that may interfere with sleep, such as frequent waking up at night.
6. Use of sleeping medication, which refers to how often a person uses sleeping pills.
7. Daytime dysfunction, refers to the impact of sleep on daily functioning, such as excessive fatigue or difficulty concentrating during the day.

These seven components, when combined, will provide a total score that reflects how good or poor a person's sleep quality has been over the past month.

#### ***2.4.3. The Role and Importance of Sleep for Learning***

Sleeping is an important part of the biological process that not only affects physical health, but also a person's ability to learn. In learning activities, especially those that require high focus such as reading, sleep plays a major role in helping the brain to process information and store long-term memory. With good quality sleep, a person is better able to concentrate, think clearly, and understand the material being studied more effectively.

According to Curcio, Ferrara, and De Gennaro (2006), sleep deprivation has been shown to reduce disrupt various aspects of cognitive function, such as concentration, attention, and decision-making. All of these aspects are important in the process of understanding reading, because students not only have to read word by word, but also capture the main idea, draw conclusions, and connect information with previous knowledge. In other words, adequate sleep directly supports the ability to understand text. In line with that, sleep plays an important role in students' learning processes. Poor sleep quality has been shown to negatively affect attention, memory, and academic performance (Hershner and

Chervin, 2014). Lack of sleep not only makes a person feel tired, but also reduces the ability to learn and process information effectively. In learning English as a foreign language (EFL), this becomes a challenge because students need extra cognitive effort to understand new structures and vocabulary.

Thus, it can be concluded that quality sleep is not only a physical rest, but also a basic need that have relation to students' mental readiness and cognitive abilities. Therefore, understanding the role of sleep in the learning process is important, especially in the context of EFL students who need high concentration in understanding foreign language texts.

### **2.5. Theoretical Assumption**

Sleep quality is one of the factors that relates to students' learning activities. Adequate and sleep quality can help the body and brain to rest, so that when you wake up, you are in a fresher, more focused, and ready to receive lessons.

One of the academic activities that requires concentration is reading, especially reading in a foreign language. Reading comprehension is not only about recognizing words, but also understanding the contents of the text as a whole. For this, focus, good memory, and a stable mental condition are needed. When someone experiences lack of sleep or poor quality sleep, they usually feel sleepy, have difficulty concentrating, and have difficulty understanding information well. In this context, sleep quality is thought to be related to a person's ability to understand text in reading, especially English texts. Therefore, this study was conducted to determine whether there is a correlation between sleep quality and students' reading comprehension.

### **2.6. Hypothesis**

Based on the study above and problem formulation in this study, the following hypothesis are:

There is a correlation between EFL students' sleep quality and their reading comprehension.

This hypothesis will be tested using a quantitative approach with statistical analysis to determine whether sleep quality has a measurable correlation with students' reading comprehension scores.

### **III. METHODS**

This chapter discusses the methodology used to examine the correlation between students' sleep quality and their reading comprehension. The methods applied include research design, data sources, instruments, and data collection processes.

#### **3.1. Research Design**

In this research, the researcher used a quantitative approach with a non-experimental design (ex post facto) and applied a correlational design. According to Creswell (2023), quantitative research is an approach for testing objective theories by examining the relationship among variables. These variables can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures. This design was appropriate for studies that aimed to test whether one variable could predict or influence another without applying specific treatment to the participants.

To describe the design of this study simply, the correlation between variables can be illustrated as follows:

$$\mathbf{X \rightarrow Y}$$

Where:

X: Students' Sleep Quality

Y: Students' Reading Comprehension

#### **3.2. Variables**

In this study, there are two main variables that are the focus, namely the independent variable and the dependent variable.

1. Independent Variable (X): Sleep Quality

This variable is defined as the level of comfort, adequacy, and effectiveness of sleep experienced.

2. Dependent Variable (Y): Reading Comprehension

This variable is the outcome to be measured in the study. Reading comprehension refers to the extent to which students can understand the contents of English texts, including finding main ideas, concluding meaning, and answering reading comprehension questions.

### **3.3. Data Sources**

The data sources in this study were eleventh grade students at SMAN 13 Bandar Lampung, who became respondents by completing a sleep quality questionnaire and taking an English reading comprehension test. The researchers used random cluster sampling. The data collected were primary data obtained directly from the participants through two instruments: a sleep quality questionnaire to measure sleep quality and a reading comprehension test to measure the ability to understand English texts.

### **3.4. The Instrument of Research**

The instruments that were used in this study consisted of two types, namely:

1. Questionnaire

The questionnaire was used to measure students' sleep quality. The instrument was originally developed by Buysse et al. (1989) and has been widely used in various studies in the world to assess sleep quality. In this study, the instrument was adapted and modified to suit the context of high school students. The adjustments included simplifying the language for students, using the total score from all questionnaire items directly, modifying the scoring system so that higher sleep quality scores indicate better sleep quality.

The questionnaire consisted of 18 items reflecting the seven main components of the PSQI: subjective sleep quality, sleep latency, sleep

duration, sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. Each item was scored from 0 to 3 used Likert scale.

## 2. Test

The reading comprehension test was used to measure students' ability to understand English text. The material used in the test was narrative text. The questions were designed by researchers based on material that was appropriated to the students' ability level. The test consists of several short texts, followed by comprehension questions, such as finding the main idea, summarising the content, understanding the meaning of vocabulary, and answering inferential questions.

In this study, 60 multiple-choice questions were used to measure students' reading comprehension before the tryout, and 50 questions were used after the tryout.

Both instruments were used to collect numerical data, which was then analysed statistically to determine whether there was a significant correlation between sleep quality and students' reading abilities.

### **3.5. Validity**

Validity is the extent to which a measuring instrument measures what it is supposed to measure (Setiyadi, 2018). Validity is an important aspect so that the data obtained can reflect the actual conditions and support the accuracy of the research results.

#### ***3.5.1. Content Validity***

The content validity of the sleep quality questionnaire in this study was based on the indicators established by the developers of the Pittsburgh Sleep Quality Index (PSQI) instrument, namely Buysse et al. (1989). The PSQI instrument was designed to measure sleep quality through seven main components: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. Each statement in this questionnaire was designed to represent those indicators.

Table 3.1. Aspects of students' sleep quality

No.	Indicator	Number of Question
1.	Subjective Sleep Quality	18
2.	Sleep Latency	2, 5
3.	Sleep Duration	4
4.	Sleep Efficiency	1, 3
5.	Sleep Disturbances	6, 7, 8, 9, 10, 11, 12, 13, 14
6.	Use of Sleep Medication	15
7.	Daytime Dysfunction	16, 17

On other hand, reading comprehension test was designed to measured students' ability to understand English narrative texts thru several reading comprehension indicators (Nuttal, 1996), namely determining the main idea, finding specific details information, making inferences, identifying references, and understanding the meaning of vocabulary. Each question is designed to represent those reading comprehension indicators.

Table 3.2. Aspects of reading comprehension

No.	Indicators	Number of questions
1	Main Idea	1, 6, 11, 16, 21, 26, 31, 36, 41, 46, 51, 56
2	Inference	2, 7, 12, 17, 22, 27, 32, 37, 42, 47, 52, 57
3	Reference	3, 8, 13, 18, 23, 28, 33, 38, 43, 48
4	Detail Information	4, 9, 14, 19, 24, 29, 34, 39, 44, 49, 54, 58, 59, 60
5	Vocabulary	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 53, 55

### 3.5.2. Construct Validity

The construct validity of the sleep quality questionnaire in this study was based on the Pittsburgh Sleep Quality Index (PSQI) developed by Buysse et al. (1989). The PSQI was constructed based on a theoretical framework of sleep quality and has been widely used and validated in various previous studies. Furthermore, a

systematic review conducted by Mollayeva et al. (2016) reported that the PSQI demonstrated good construct validity across different populations.

For a reading comprehension test, construct validity is established by ensuring the test items cover the essential sub-skills of reading (Brown, 2004). In this research, the test consisted of multiple-choice questions with five options follows the standard of curriculum (a, b, c, d, e). All items were designed to measure students' reading comprehension based on specific reading specifications, namely main idea, detail of information, inference, reference, and vocabulary. The 60 test items were distributed across these categories to ensure a comprehensive measurement of the construct. Therefore, the instrument was considered to have good construct validity as it consistently measured the intended reading sub-skills.

### 3.6. Reliability

According to (Setiyadi, 2018), a reliable instrument is an instrument that, when used repeatedly to measure the same object, produces consistent data. To measure the reliability of test, the researcher used Split-half Spearman Brown formula as follows:

$$r_{xy} = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[(n \sum x - (\sum x)^2)] [(n \sum y^2 - (\sum y)^2)]}}$$

$$r = \frac{2r_{xy}}{1 + r_{xy}}$$

$r$  : instrument reliability

$r_{xy}$  : correlation index between the two halves of the instrument

$N$  : number of respondent

$X$  : first split (odd items)

$Y$  : second split (even items)

To determine the reliability of previously validated results, the formula above was used. The results are listed in the Appendix 7. The reading comprehension test reliability was 0,931, meaning the result was  $> 0.80$ , indicating the test is reliable and can be used for measurement.

### 3.7. Item Analysis

Item analysis is used to improve the validity and reliability of a measuring instrument by analysing each test item. In this case, the items to be tested are the questions on the Reading Comprehension test.

#### 3.7.1. Level of Difficulty

The level of difficulty refers to the extent to which the items in the reading comprehension test are easy or difficult for students to answer. The purpose of this analysis is to ensure that the questions used have varying levels of difficulty, not too easy and not too difficult, so that they will be able to measure students' reading comprehension fairly and proportionally. Items that are considered too easy or too difficult were revised or replaced based on the results of the trial, so that the overall quality of the test became better and more suitable to the ability level of the students being studied.

$$LD = \frac{U + L}{N}$$

*LD* : Difficulty index

*U* : 27% number of students in the upper group

*L* : 27% number of students in the lower group

*N* : total students in both groups

Criteria (Heaton, 1988):

0.00 - 0.30 : Difficult

0.31 - 0.70 : Average (Good)

0.71 – 1.00 : Easy

Table 3.3. Percentage of Level of Difficulty

Criteria	Item Numbers	Amount	Percentage
Difficult	58	1	1,67%
Average	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 26, 27, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39,	53	88,33%

	40, 41, 42, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57, 59, 60		
Easy	18, 25, 28, 33, 43, 55	6	10,00%

The results show that there was 1 difficult number, 53 average numbers, and 6 easy numbers. The complete results of the analysis can be seen in Appendix 11.

### 3.7.2. Discrimination of Power

Discriminating power refers to the ability of a test item to differentiate between students with high ability and students with low ability. Discriminating power analysis is done to ensure that the questions can truly differentiate students who have understood the material well and students who have not. Questions that have low discriminating power are likely not able to measure differences in student ability effectively. Therefore, questions with inadequate discriminating power will be considered for improvement or replacement.

$$DP = \frac{U - L}{\frac{1}{2}N}$$

*DP* : discrimination power index

*BA* : 27% number of students in the upper group

*BB* : 27% number of students in the lower group

*N* : total number of students who took the test

Criteria (Heaton, 1988):

DP < 0.00 : Bad items

0.00 – 0.19 : Poor items

0.20 – 0.39 : Satisfactory items

0.40 – 0.69 : Good items

0.70 – 1.00 : Excellent items

Table 3.4. Percentage of Discrimination Power

Criteria	Item Numbers	Amount	Percentage
Bad items	18	1	1,67%
Poor items	25, 33, 37, 38, 43, 44, 55, 58	9	15,00%

Satisfactory items	1, 4, 5, 6, 12, 15, 23, 24, 28, 29, 41, 45, 51, 54,	14	23,33%
Good items	3, 7, 9, 10, 13, 16, 17, 19, 20, 22, 26, 30, 31, 32, 34, 36, 39, 40, 42, 46, 48, 49, 50, 52, 59, 60	26	43,33%
Excellent items	2, 8, 11, 14, 21, 27, 47, 53, 56, 57	10	16,67%

The results (Appendix 11) show that there were 1 bad item, 9 items, 14 satisfactory items, 26 good items, and 10 excellent items. Due to the 1 bad item and 7 poor items poor items, the researchers sorted the items.

Afterward, only 50 items were tested on students, and 10 items were removed due to invalidity, too difficult or too easy, and poor discrimination power.

### 3.8. Data Collection

The research procedure explains the data collection steps taken by the researcher from the beginning to the end of the study. This section is a crucial step in the research process because its purpose is to obtain data. To collect data, the researcher used questionnaires and tests. The procedure is as follows:

1. Prepare the research instruments. The two instruments used in the study were a questionnaire and a test. The questionnaire was used to measure students' sleep quality, and the questions were tailored to students' understanding. Then, the test, which was tailored to the students, measured the students' reading comprehension.
2. Tryout. The researcher first conducted a tryout of the reading comprehension test in another class, then tested its validity using SPSS 26.
3. Distribute the instruments. The questionnaire and test were distributed to the main sample classes of the study with the approval of the school and teachers. The research objectives were then explained to the students and explained how to complete the questionnaires and tests.
4. Collect data. Collect the questionnaire and test results from students.
5. Process the data. Process the collected questionnaire and test data using statistical analysis in accordance with the research objectives.

### 3.9. Data Analysis

Data collected from the sleep quality questionnaire and reading comprehension test were analyzed using quantitative statistical techniques with SPSS (Statistical Package for the Social Sciences) 26. The analysis in this study was conducted using the Pearson Product Moment Correlation and regression test. Furthermore, to interpret the strength and the level of correlation obtained from the SPSS output, the researcher refers to the following classification (Sugiyono, 2013).

Table 3.5. Level of Correlation

Interval Coefficient	Level of Correlation
0.00 – 0.199	Very Low
0.20 – 0.399	Low
0.40 – 0.599	Moderate
0.60 – 0.799	High
0.80 – 1.000	Very High

Prior to the correlation analysis, a classic assumption test was performed to ensure the data met the requirements.

### 3.10. Hypothesis Testing

Hypothesis testing is used to determine whether there is sufficient evidence in the sample data to conclude a correlation between two variables. In this study, correlation analysis was used to determine whether students' sleep quality correlated with their English reading comprehension. The proposed hypothesis:

1.  $H_0$  (Null Hypothesis): There is no correlation between EFL students' sleep quality and their English reading comprehension.
2.  $H_a$  (Alternative Hypothesis): There is a correlation between EFL students' sleep quality and their reading comprehension.

## **V. CONCLUSIONS AND SUGGESTIONS**

This chapter contains the research conclusions and recommendations based on the data analysis and discussion presented in the previous chapter.

### **5.1. Conclusions**

Based on the data analysis and discussion in the previous chapter, it can be concluded that sleep quality has a significant correlation with the reading comprehension skills of high school students learning English as a foreign language (EFL). The correlation test results show a positive, moderate correlation, indicating that the better the student's sleep quality, the better their ability to comprehend English reading texts. Thus, students' reading comprehension skills are influenced not only by linguistic factors, but also by non-linguistic factors related to the students' physical and cognitive conditions. The results of this study reinforce the view that sleep quality is related to the reading comprehension skills of EFL students and warrants attention in the context of English language learning in high schools.

### **5.2. Suggestions**

Based on the research results, the researcher has several related suggestions as follows:

1. English teachers can pay more attention to factors that may affect students' reading comprehension, especially students' sleep quality and concentration during the learning process.
2. Students can increase their awareness of the importance of learning readiness in English learning, especially in reading. Cognitive readiness, such as concentration and focus, is important for understanding texts and

is related to sleep quality. Therefore, students can build regular study habits to improve their reading comprehension.

3. Future researchers can examine other factors that may influence EFL students' reading comprehension, such as vocabulary mastery, reading strategies, learning motivation, reading habits, and students' personality. In addition, future studies may explore sleep quality in more depth because longer sleep duration does not always indicate good sleep quality. Different research designs, additional instruments, or larger sample sizes can also be used to obtain more comprehensive and generalizable results.

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