

CONSTRUCTION OF THE ENGLISH LANGUAGE GRAMMAR DIAGNOSTIC TEST FOR GRADE 12 STUDENTS

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ARTICLE HISTORY

Received: 15 March 2024

Revised: 29 March 2024

Published: 12 April 2024

ABSTRACT

This research aims at constructing the English language Grammar diagnostic test for grade 12 students. The diagnostic test comprised of 3 subsets: Syntax rule, Predicated verb, and Sentence construction, designed to identify English grammatical errors. The samples are divided into 3 group including group 1, 420 individuals, is used to investigate the error and collect incorrect answers to use them as distractor in diagnostic test. Group 2 consisting of 187 individuals, is used for research to assess quality, select, and improve the test items. Group 3 with 375 individuals, is used to collect the grammatical errors. The test construction included the survey test in the form of completing item for identify the grammatical errors from the response of students and English language grammar diagnostic test in the form of multiple choices test with four choices which obtained from the survey test. The diagnostic test was tried out with samples to find validity, difficulty, discrimination, reliability, and cut-off score and to select the qualified items to form the test. The result of the study revealed that the diagnostic test consisted of three subtests; Syntax rule, Predicated verb, and Sentence construction. The content validity index was evaluated by five expert evaluators, with values ranging from 0.6 to 1.00. Difficulty levels ranged from 0.65 to 0.88, and discrimination indices ranged from 0.07 to 0.67. The reliability coefficient of each subtest calculated by the Binomial formula were 0.90, 0.76, and 0.75 respectively. The cut-off score for each subtest were 10, 12 and 6 respectively.

Keywords: English Language Grammar Diagnostic Test, Diagnostic Test, Grammatical Errors

CITATION INFORMATION: Thongsibsong, N., & Intanate N. (2024). Construction of the English Language Grammar Diagnostic Test for Grade 12 Students. *Procedia of Multidisciplinary Research*, 2(4), 8

INTRODUCTION

English has been one of the core subjects included in the basic education curriculum of Thailand since 1895 (Soomintara Angwattanagul, 1992). This is because English is widely used as a global language. Therefore, Thailand has incorporated English language learning at all levels of education system. The Ministry of Education has established a framework for English language education, following the Common European Framework of Reference for Languages (CEFR), which is widely recognized as the standard for assessing second or foreign language proficiency. The CEFR framework divides language proficiency into 6 levels across 3 categories: Basic User (A1-A2), Independent User (B1-B2), and Proficient User (C1-C2). The Ministry of Education has adopted this framework to set learning objectives for Thai students at each level.

However, despite the push for English language learning among Thai students, a common issue is the inability to achieve proficiency in using English in daily life as expected. This is evident from the results of English language proficiency tests for students at the basic education level, such as the Ordinary National Educational Test (O-NET). The scores of Thai students in the English subject are significantly lower than expected, as revealed by the National Institute of Educational Testing Service in 2022. Additionally, there is a challenge in using English for communication in real-life situations. According to the 2021 report by Education First (EF), Thailand ranks 89th out of 100 countries in English proficiency, indicating a low level of English language development among Thais. This low proficiency is attributed to the differences in grammatical structures between English and Thai, making it difficult for learners to adapt grammar structure to a new language.

Furthermore, one of the significant challenges in English language learning for Thai students is the grammatical differences between English and Thai. Therefore, addressing issues of complexity and misunderstanding in grammar is crucial because grammar serves as the backbone of English language learning. A solid understanding of grammar enables learners to communicate effectively in all four language skills: listening, speaking, reading, and writing. Moreover, feedback plays a vital role in improving grammar proficiency in English language learners. When learners receive feedback from teachers, they become aware of their mistakes and can work on rectifying them to enhance their language skills. Diagnostic testing is an effective tool for identifying learners' errors and weaknesses. It's allowing for personalized instruction and targeted improvement.

In conclusion, addressing the challenges in English language learning in Thailand requires a systematic approach. This includes creating effective diagnostic tools to provide constructive feedback and utilizing data to design language learning strategies. Additionally, incorporating grammar instruction and fostering an environment that encourages language development are essential for enhancing English proficiency among Thai students.

This research aims to construct the diagnostic test to investigate the errors in the use of English grammar among 12 grade students.

LITERATURE REVIEWS

The primary goal of language learning is communication, but it cannot be denied that grammar plays a crucial role in enabling language learners to achieve their learning objectives. According to David Nunan (2004), English grammar refers to the rules that dictate the precise placement of each word in a sentence. Each sentence is deemed communicative when it adheres to grammatical rules. Furthermore, Celce-Murcia and Hilles (1988) stated that language is governed by rules that dictate language usage behaviors, with grammar being a subset of these rules. While native speakers automatically understand these rules, English language learners, especially those learning English as a Second Language (ESL) or as a Foreign Language (EFL), often make more grammatical errors.

Additionally, grammar is described as the study or guidelines concerning the modification of word forms and their combination to form sentences (Somphoch Panawa, 2002). Grammar consists of three essential components: Syntax, Lexicon, and Semantics. Grammatical error in English language education can be categorized into two types: Local errors and Global errors (Gozali, 2018; Valencia, 2019). Local errors, which are primary language deficiencies, result in deviations from the form or structure of English sentences but still allow for understanding. In contrast, Global errors lead to communication errors or misinterpretations.

To illustrate, consider the following sentence: "We have gone to Paris twice. It was a wonderful time." The grammatical error here is the use of "to have + gone," which means speaker has not yet returned. On the other hand, the grammatical rule for using the Present Perfect Tense to describe experiences of travelling to a place and returned. The correct grammar should be "to have + been." categorizing it as Global errors. Another example is the sentence "My family are from Thailand," where the error lies in using "are" instead of "is" according to the Subject-Verb Agreement rule. Despite this grammatical error, the meaning of the sentences may still be understood, thus this belongs to local errors.

Furthermore, researchers have identified various other types of grammar errors, including grammatical errors such as those related to adjectives, adverbs, articles, nouns, possession, pronouns, prepositions, and verbs; Substance errors such as capitalization, punctuation, and spelling; Lexical errors involving word formation and word selection; Syntactic errors related to incorrect word order or non-compliance with English grammatical structures; and Semantic errors leading to misinterpretations or incoherence in sentences (John & Woll, 2018; Phetongkam, 2017; Saad & Sawalmeh, 2014; Sermsook et al., 2017; Velikaya, 2018).

These grammar errors pose challenges for English language learners in understanding and communicating in English, affecting their confidence and proficiency in language learning. Addressing and rectifying these errors are crucial for developing English language skills among learners. Therefore, analyzing grammar errors in students can assist both learners and teachers in achieving success in English language education, enabling effective lesson planning and remedial interventions.

Diagnostic Test

Diagnostic test is a form of testing used to identify strengths, weaknesses, and problems in various subjects studied by students. It typically yields individualized results and involves a process of identifying the causes of errors to guide future development, correction, and reinforcement of identified weaknesses (Adams & Torgerson, 1964; Boonchum Srisaad, 2010; Brown, 1983; Leighton & Gierl, 2007). The primary purpose of creating diagnostic assessments is to determine what prevents students from achieving learning objectives and to understand the underlying causes of those problems. Unlike using test results to compare students' learning outcomes, the crucial aspect of creating diagnostic assessments is to use them as a guide for rectifying and reinforcing specific learning content. Diagnostic assessments can also be used to identify areas where students need additional learning and areas where they require further instruction (Prakai Krua-netra, 2015; Swan & Baker, 2012). This aligns with Nuramma Nisala and Pantong Chalikruea's (2020) and Pantong Chalikruea's (2021) assertions that diagnostic assessments are tools that teachers can use to adjust and improve teaching activities, helping students develop their knowledge more effectively by identifying their strengths and weaknesses in learning content. It is evident that diagnostic assessments are instrumental in enhancing students' learning and aiding teachers in goal-oriented lesson planning. They serve as a means of identifying the reasons why students are not successful in their learning endeavors and analyzing learning problems to facilitate students' development and advancement of knowledge for future learning. However, diagnostic assessments have also been discussed in terms of their role in educational assessment, with an emphasis on their importance in educational management and ensuring alignment with educational management

practices (Tip Kamyu & Seri Chadsaem, 2013). In summary, the meaning of diagnostic assessments can be understood as a testing format used to identify errors, problems, obstacles, strengths, and weaknesses in learning, with individualized test results being analyzed to identify causes and guide the development of learning and teaching practices to achieve learning objectives.

Characteristics of Diagnostic Assessment

Traditional assessment mainly focuses on measuring students' knowledge and understanding of the content learned at the end of a lesson. However, diagnostic assessments differ from regular assessments. They are designed to identify learning deficiencies rather than measure students' abilities or evaluate their learning outcomes.

Based on the analysis of diagnostic assessment characteristics from relevant documents and research studies (Akveld & Kinnear, 2023; Boonchum Srisaad, 2010; Graf, 2008; Irida Mongkolsuk, 2020; Shim et al., 2017; Wisarn Wongphuri, 2013), the following can be summarized:

- 1) Diagnostic assessments often emphasize measuring abilities in different areas or sub-skills. Scores in each area indicate the weaknesses of that specific area.
- 2) Diagnostic assessments are subdivided to measure students' abilities in each subject. The number of questions in each area is appropriate, focusing on content relevance.
- 3) Diagnostic assessments measure cognitive domain, affective domain, and psychomotor domain. The questions are adequate, content-focused, and measure various aspects of students' abilities.
- 4) Diagnostic test questions are diverse and used to identify learning errors. They are scored individually and can diagnose individual or group learning success.
- 5) Diagnostic exam questions are easy and excessively numerous. They focus on individual scoring and do not require extensive time to complete.
- 6) Diagnostic assessments aim to identify deficiencies, address them, and plan for future teaching. They emphasize measuring subunits more than overall assessments.

Quality of Diagnostic Test

Researchers seek the quality of diagnostic assessments as criterion-referenced tests. They examine documents and studies to find the quality of diagnostic assessments according to the criterion-referenced test approach. Assessing the quality of tools is a crucial process in research, as it contributes to obtaining accurate data and ensures the reliability of research work. When considering the reliability and quality of tools, especially in the case of testing tools, several factors need to be considered. These include validity, reliability, difficulty, and discriminative power. Questionnaires must be valid, reliable, difficult, and discriminative. Meanwhile, surveys, interviews, observations, or tools with low objective must be accurate and should seek consistency or alignment among observers and raters (Phaisan Worakham, 2015). Validity, one of the aspects analyzed in criterion-referenced tests, focuses on the accuracy of the test content reflecting students' knowledge, understanding, and critical thinking, which align with the curriculum content or the intended objectives (Piyathida Panya, 2015; Somanuk Paiyati, 2010; Surawat Thongbu, 2010).

The difficulty of the test refers to the analysis of the difficulty level of the test content according to the criteria. Many students have suggested ideas and recommendations regarding the difficulty level of criterion-referenced tests. This refers to the characteristics of each test item that indicate the proportion or the number of chances to answer correctly in that item. The analysis is based on the number of correct answers. If many students answer correctly, it indicates an easy question, while few correct answers suggest a difficult question (Phaisan Worakham, 2015; Sompat Taisuearnkam, 2008). Following by characteristics of diagnostic test, the difficulty should be up to 0.6. Moreover,

Discrimination refers to the effectiveness of test items in distinguishing examinees with different characteristics or abilities. In other words, it assesses whether the test can distinguish between knowledgeable or successful examinees and those who are not (Boonchum Srisaad, 2002; Phaisan Worakham, 2015). Analyzing test items on a criterion-referenced basis focuses solely on finding the discrimination of test items. Since it is a test that emphasizes measuring knowledge, understanding, and abilities according to the set objectives, it is not necessary to consider the difficulty level (Surawat Thongbu, 2010).

Reliability refers to the consistency of results obtained from measuring with the same set of tools on multiple occasions. Reliable measurement instruments provide consistent results regardless of how many times they are measured. Reliability is related to the variability of measurement errors. Therefore, reliable measurements indicate that the measurement tool has no variability in measurement, making reliability an essential component in creating tests because it is an index of whether the test has quality or not.

The cut-off score is the score used as a criterion for comparing test results of criterion-referenced tests to determine whether students have scores higher or lower than the cut-off score. If the test score is higher than the cut-off score, it indicates that the student is competent enough to proceed to learn the new learning objectives. Conversely, if the test score is lower than the cut-off score, it indicates that the student is not competent, and they need to go back and remediate in that learning objective. Thus, the cut-off score serves as the minimum competence point or the minimum requirement for learning. Sometimes referred to as standard setting (Luang Sairat & Angkana Sairat, 2000)

From the literature review, the conceptual framework can be drawn as shown in Figure 1.

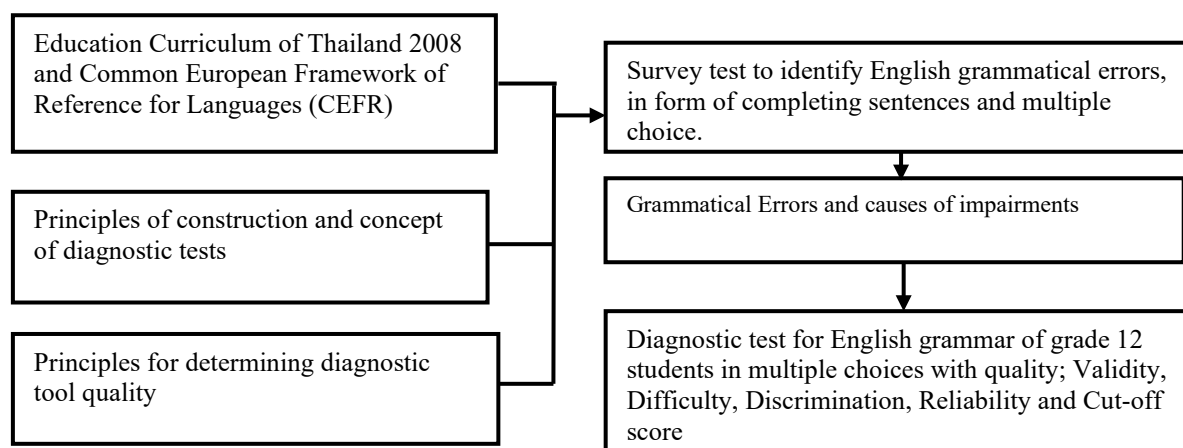


Figure 1 Conceptual Framework

RESEARCH METHODOLOGY

In this research, the sample used in this study consists of 982 individuals, divided into 3 groups: Group 1: This group, comprising 420 individuals, is used to investigate the error and collect incorrect answers to use them as distractor in diagnostic test. The sample selection was done through multi-stage random sampling.

Group 2: This group, consisting of 187 individuals, is used for research to assess quality, select, and improve the test items. The sample was selected simply based on school affiliation, with one school per affiliation.

Group 3: This group, with 375 individuals, is used to study the grammatical errors. The sample selection was done through multi-stage random sampling.

The research tools used in this study include:

1) Survey test to identify English grammatical errors for twelfth-grade students: This test consists of 87 completing sentences and multiple-choice questions.

2) Diagnostic test for English grammar: This test is designed for twelfth-grade students.

2.1) Survey test: procedures for constructing survey test, First, analyze the English grammar from CEFR framework. Then, test it with Group 1, collecting the wrong answers to use them as distractor choices in diagnostic test, enabling identification of errors and causes of incorrect answers.

2.2) Diagnostic test; creating a diagnostic test in multiple-choice format with 4 choices, dividing to 3 subtests. To construct this diagnostic test, questions are taken from the survey test. The choices came from frequently incorrect answers which are collecting from survey test. Afterwards, try out the diagnostic test on Group 2, consisting of 187 individuals. Analyze the test quality, validity, difficulty, discrimination, reliability and cut-off score. Select and improve the test items according to the following steps:

- Evaluate the test by awarding 1 point for correct answers and 0 points for incorrect or unanswered questions.

- Determine the difficulty level using the proportion of correct responses and calculate the discrimination index using the B index for each test item.

- Select test items based on the following criteria:

3) Choose items with difficulty levels (p) of 0.65 or higher, indicating easy questions according to the nature of diagnostic tests (Bloom, 1997).

4) Select items with discrimination indices greater than 0.00. This is because the purpose of the diagnostic test is to identify errors in students and analyze which deficiencies are more prevalent compared to students' learning outcomes.

Subsequently, refine the revised test items, evaluating the quality of each subtest and considering the cut-off points for each subtest based on students' English language learning outcomes. Students with scores of 3.00 or higher are categorized as passing, while those below 3.00 are categorized as failing, using Glass's method for diagnosis.

Develop a comprehensive diagnostic test and create a test manual to guide test administration, including test objectives, time allocation, administration procedures, scoring, and diagnosis criteria. Finally, revised diagnostic test to Group 3, consisting of 375 individuals, and analyze the result of the diagnostic test.

RESEARCH RESULTS

The results of constructing a diagnostic test in English Language Grammar for grade 12 students:

Construction of the English language grammar diagnostic test: The diagnostic test was created by synthesizing grammar content from The Common European Framework of Reference for Languages (CEFR). The test format includes completing sentences and multiple-choice questions. It was tested to a sample group of 420 individuals and collected incorrect answers from the survey test were used as distractors in the diagnostic test. English language expert evaluators assessed the alignment between test deficiencies and incorrect answers obtained from the survey test. All test items and distractors were compiled into three subtests of the diagnostic test, each consisting of 4 multiple-choice options.

Test Quality: The diagnostic test consists of three Subtests:

Subtest 1: Syntax Rules with 21 items.

Subtest 2: Predicated Verb with 30 items.

Subtest 3: Sentence Construction with 14 items.

Table 1 The diagnostic test quality

Diagnostic Test	Full score	IOC	Difficulty Level	Discrimination Index	Reliability	Cut-off Score
Subtest 1	21	0.6-1.00	0.65-0.88	0.18-0.62	0.90	10
Subtest 2	30	0.6-1.00	0.65-0.85	0.07-0.67	0.76	12
Subtest 3	14	0.6-1.00	0.65-0.81	0.37-0.66	0.75	6

From table 1, the test quality of the diagnostic test consists of content validity of the diagnostic test, difficulty level, discrimination index, reliability, and cut-off score. The detail as follow:

Results of Diagnostic Test Construction for English Grammar for grade 12 Students:

Content Validity of the Diagnostic Test:

Upon examining the content validity of the diagnostic test for English grammar for grade 12 students, following the evaluation method of Rowe and Hambleton, it was found that:

Diagnostic test had a content validity index ranging from 0.60 to 1.00. This indicates that the test accurately measures the content, as the grammar content used in the test was derived from The Common European Framework of Reference for Languages (CEFR) at the B1 level. This level aligns with the knowledge and skills expected of grade 12 students according to the Ministry of Education (Ministry of Education, 2012).

Difficulty Level of the Diagnostic Test:

After creating the diagnostic test, it was found that:

Subtest 1, Syntax rules with 21 questions, had a difficulty level ranging from 0.65 to 0.88.

Subtest 2, Predicate verbs with 30 questions, had a difficulty level ranging from 0.65 to 0.85.

Subtest 3, Sentence construction with 14 questions, had a difficulty level ranging from 0.65 to 0.81.

Overall, all subtests of the diagnostic test met the criterion of having a difficulty level of 0.65 or higher. This aligns with the requirement for diagnostic tests to be relatively easy (Bloom et al., 1971) to facilitate accurate diagnosis. However, some questions with higher difficulty levels were removed to ensure that the test remains accessible to students.

Discrimination Index of the Diagnostic Test:

The discrimination index of the diagnostic test was determined as follows:

Subtest 1, Syntax rules with 21 questions, had a discrimination index ranging from 0.18 to 0.62.

Subtest 2, Predicate verbs with 30 questions, had a discrimination index ranging from 0.07 to 0.67.

Subtest 3, Sentence construction with 14 questions, had a discrimination index ranging from 0.37 to 0.66.

These discrimination indices are consistent with the criterion that diagnostic tests should have discrimination indices of 0.00 or higher (Bloom et al., 1971). Due to the purpose of the diagnostic test was not to rank students' performance but to identify grammar weaknesses and their causes.

Reliability of the Diagnostic Test:

Upon evaluating the reliability of the diagnostic test, it was found that:

Subtest 1, Syntax rules with 21 questions, had a reliability coefficient of 0.90.

Subtest 2, Predicate verbs with 30 questions, had a reliability coefficient of 0.76.

Subtest 3, Sentence construction with 14 questions, had a reliability coefficient of 0.75

Thus, the diagnostic test demonstrated reliable measurement properties.

Cut-off Score of the Diagnostic Test

After constructing of the diagnostic test using Glass's method, it was found that:

Following the method of Glass. The cut-off scores of the diagnostic test are presented in

Subtest 1, Syntax rules with 21 questions, a cut-off score is 10

Subtest 2, Predicate verbs with 30 questions a cut-off score is 12

Subtest 3, Sentence construction with 14 questions, a cut-off score is 6

DISCUSSION & CONCLUSION

From the research on constructing diagnostic tests for English grammar for grade 12 students, the following discussions can be made:

Subtest 1: Syntax Rule with 21 items. The content validity index was evaluated by five expert evaluators, with values ranging from 0.6 to 1.00. Difficulty levels ranged from 0.65 to 0.88, and discrimination indices ranged from 0.18 to 0.62. The reliability coefficient was 0.90, with a standard deviation for measurement of ± 1.71 . The cut-off score was set at 10 points.

Subtest 2: Predicate Verb with 30 items. The content validity index was assessed by five expert evaluators, with values ranging from 0.6 to 1.00. Difficulty levels ranged from 0.65 to 0.85, and discrimination indices ranged from 0.07 to 0.67. The reliability coefficient was 0.76, with a standard deviation for measurement of ± 3.86 . The cut-off score was set at 12 points.

Subtest 3: Sentence Construction with 14 items. The content validity index was assessed by five expert evaluators, with values ranging from 0.60 to 1.00. Difficulty levels ranged from 0.65 to 0.81, and discrimination indices ranged from 0.37 to 0.66. The reliability coefficient was 0.75, with a standard deviation for measurement of ± 1.92 . The cut-off score was set at 6 points.

When construction of the English language grammar diagnostic test reached with the quality of diagnostic test principle. The content validity of the diagnostic test was examined by assessing the content alignment using the Rowe and Hamilton method. The findings revealed that the content validity index, assessed by five experts, ranged from 0.60 to 1.00. This indicates that the diagnostic test created has content validity. The grammar content used in the test was derived from The Common European Framework of Reference for Languages (CEFR) at the B1 level, which is the level designated by the Ministry of Education for Grade 6 secondary school graduates or equivalent, implying that the test measures the required knowledge, abilities, and skills at the B1 level (Ministry of Education, 2012). Moreover, when grammatical deficiencies were identified, the researchers analyzed the causes and then had the experts assess the content alignment. The experts' consensus on the assessment and the subsequent development of deceptive test options led to the conclusion that the content validity index between 0.60 and 1.00 indicates that each test item is of high quality and can accurately measure the intended content. Moreover, the overall difficulty level of the diagnostic test was found to meet the established criterion of 0.65 or higher, as diagnostic tests should generally be relatively easy (Bloom et al., 1971; Graf, 2008) to facilitate diagnosis. However, there were several test items that did not meet the established criterion due to the use of difficult vocabulary that students might not be familiar with, rendering them unable to answer the questions. Additionally, some items were deemed excessively difficult, making them unanswerable for students. Therefore, the researchers removed such items that did not meet the criterion. Easy test items are essential as they allow the diagnostic test to accurately identify errors. If students do not have errors in English grammar, they should be able to answer the grammar questions correctly. Furthermore, the diversity of the sample group used to determine the difficulty level included schools affiliated with the Basic Education Commission, Vocational school, and other affiliated schools. This diversity resulted in variations in knowledge bases and testing experiences among the students. The diagnostic grammar test for English language students in grade 6 deployed discriminant power values ranging from 0.07 to 0.67, which is consistent with the expected range for diagnostic tests (Bloom et al., 1971). This aligns with the nature of the diagnostic test, which is not designed to rank or compare students' performance but rather to identify grammatical errors in English language skills. The primary focus is on identifying which areas of grammar students are deficient in and understanding the underlying causes of these errors. Therefore, the range of discriminant power values obtained from the test is appropriate for its intended purpose. In addition, assessing the quality of the diagnostic grammar test for English language students in grade 6, it was found that the

reliability coefficients for different sections were as follows: 0.90, 0.76 and 0.75. These reliability coefficients indicate that the diagnostic test has acceptable reliability. A measurement tool with high reliability indicates that it yields consistent results upon repeated measurement, implying that it has minimal measurement error or error variance. Therefore, reliability is a crucial component in test construction because it indicates the quality of the test. In summary, if a measurement tool demonstrates high reliability, the measurement error will be low, emphasizing the importance of reliability as an index of test quality.

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Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conflicts of Interest: 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.

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