دور التحليل البسيط للمكونات الصفرية في تدريس بنية الجملة في سياقات تعليم اللغة الإنجليزية لغة اجنبية

The Role of Minimalist Analysis of Null Constituents for Teaching Sentence Structure in EFL Context

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الملخص

غالبا ما تركز المناهج التقليدية لتدريس القواعد النحوية على العناصر النحوية الظاهرة، مثل المفعول به والمفعول به والفعل، بينما تولي اهتماما ضئيلا للبنى الموجودة في النحو الأساسي ولكنها غائبة في الشكل الظاهري. في إطار برنامج تشومسكي البسيط، تلعب هذه المكونات الصفرية و بي ار او في الجمل غير المحدودة واثار الحركة والحذف) دورا حاسما في تكوين الجمل وتفسيرها. ومع ذلك فان عدم ظهورها يجعلها صعبة بشكل خاص على متعلمي اللغة الإنجليزية لغة اجنبية خاصة في السياقات التي تتبنى فيها اللغة الام للمتعلمين (مثل العربية) اعدادات معلمات مختلفة فيما يتعلق بالفئات الصفرية. ونتيجة لذلك، غالبا ما يسيء المتعلمون تفسير او استخدام التراكيب النحوية التي تتضمن هذه المكونات الخفية مثل حذف الفاعل والجمل المضارعة والحذف. مما يؤدي الى أخطاء في الفهم والإنتاج. على الرغم من ذلك، نادرا ما تتناول ممارسات تدريس القواعد النحوية الحالية هذه الظواهر النحوية غير المرئية بشكل صريح، مما يحد من قدرة المتعلمين على الفهم الكامل للمبادئ العميقة التي تحكم بناء الجمل في اللغة الإنجليزية. تهدف الدراسة الى معرفة تأثير التحليل البسيط للمكونات الصفرية على بنية الجمل لدى طلاب الجامعة الذين يدرسون اللغة الإنجليزية لغة اجنبية، تشمل عينة الدراسة الحالية ستين طالبا جامعيا في المرحلة الثالثة من قسم اللغة الإنجليزية، كلية التربية للعلوم الإنسانية / جامعة تكريت العام الدراسي ٢٠٢٤-٢٠٢٥. تم تقسيم العينة التي تمثل ٢٠٪ من المجموعة الأصلية الى مجموعتين متساويتين، هما المجموعة التجريبية والمجموعة الضابطة. تمت معادلة المجموعتين من حيث العمر ومستوى التحصيل في اللغة الإنجليزية في العام الدراسي السابق والتحصيل الأكاديمي للوالدين ومستوى التحصيل في الاختبار التمهيدي. يتم تدريس المجموعة التجريبية باستخدام التحليل البسيط للمكونات الصفرية، بينما يتم تدريس المجموعة الضابطة باستخدام الطريقة التقليدية. تكشف النتائج عن وجود فروق ذات دلاله إحصائية في درجات الاختبار النهائي لصالح المجموعة التجريبية. تشير هذه النتائج الى ان دمج التعليم القائم على النهج البسيط الذي يستهدف العناصر النحوية غير المرئية يعزز وعي المتعلمين القواعد النحوية ويحسن اداءهم في الفهم والانتاج. وبناء على ذلك، توصي الدراسة بدمج التعليم الصريح للفئات الصفرية في دورات قواعد اللغة الانجليزية لغة اجنبية على المستوى الجامعي، وتقترح ان تبحث الدراسات المستقبلية قابلية تطبيق هذا النهج التعليمي عبر مستويات الكفاءة المختلفة والمجالات النحوية الأخرى.

Abstract

Grammar structures that are present in underlying syntax but not in surface form are frequently overlooked in favor of over-syntactic elements, visible subjects, objects, and verbs. These null constituents such as null subjects, null objects, PRO in non-finite clauses, traces of movement, and ellipsis are essential to sentence construction and interpretation in Chomsky's Minimalist Program. However, because of their invisibility, they are especially difficult for English as a foreign language learners to understand, particularly in situations where the learners' L1 (first language), like Arabic, adopts different parameter settings regarding null categories. As a result, learners often misunderstand or abuse grammatical structures that include these hidden elements, such as ellipsis, infinitival clauses, and subject omission, which results in mistakes in both production and understanding. Despite this, language learners' capacity to completely comprehend the profound rules guiding English sentence building is constrained by the fact that such as unseen syntactic events are seldom directly addressed in grammar instruction today. This study aims at finding out the effect of minimalist analysis of null constituents on EFL university students sentence structure. The sample of the present study includes sixty third-year university students from the Department of English language College of Education for Humanities/ University of Tikrit for the academic year 2023-2024. The involved sample who represents 20 % of it's the original population has been divided into two equal groups, i.e. experimental and control groups. They have been equalized in terms of age, level, of achievement in English in previous academic year, parents' academic attainment, and level of achievement in the pretest. The experimental group is taught using minimalist analysis of null constituents whereas the control group is taught using conventional method. Results reveal statistically significant differences in the posttest scores in favor of

the experimental group. These findings indicate that incorporating minimalist-based instruction targeting invisible syntactic elements enhances learners' grammatical awareness and improves performance in both comprehension and production. As a result, the study recommended that explicit instruction on null categories be incorporated into EFL grammar courses at the university level. It also recommends that future research examine the applicability of this instructional strategy across other syntactic domains and competence level.

1. Introduction

Understanding complex sentence patterns is one of the most difficult things for those learning English as a foreign language (EFL). It may be especially difficult to comprehend and construct sentences containing phonetically silent but grammatically required null parts. Chomsky's Minimalist Program provides a powerful theoretical framework for analyzing these elements, particularly the generative grammar framework. One of the main goals of the MP, which models the language faculty as an optimal computer system, is to explain the presence and behaviour of null elements, such as PRO, trace, and null subjects, which are crucial for creating grammatical and semantic relationships (Chomsky, 1995).

Control theory points out the relationship between "John" and the null subject PRO of the infinitive in sentence like "John tried [PRO to leave]" (Radford, 2004). Similarly to this, in a wh-question such as "What did you think John?", a trace(*t*) visualizes the initial objects position of "what", a notion essential to movement operation in Minimalist grammar (Carnie, 2013). Although theoretical syntax has described these components in great detail, there is a glaring pedagogical void. These "hidden" elements are frequently ignored in EFL training, which results in ongoing mistakes in understanding and constructing complicated sentences

(Hawkins, 2001). This study suggest that learners can understand sentence structure by being explicitly taught the Minimalist analysis of null elements.

To investigate this premise, the present study aims to:

1. Find out whether there is any significant difference between the achievement of the experimental group, which receives instruction based on a Minimalist analysis of null constituents, and that of the control group which receives instruction based on the conventional method in the posttest.
2. Find out whether there is any significant difference between the experimental group's achievement at the recognition level and at the production level in the posttest.
3. Find out whether there is any significant difference among students means scores of the five criteria (Metalinguistics Awareness, Controlled Production Task, Sentence Completion Task, Picture-Based Production, Grammatically Judgments Tasks) in the experimental posttest.

Based on these aims, the following null hypotheses are formulated for testing:

1. There is no statistically significant difference between the achievement of the experimental group, which receives instruction based on a Minimalist analysis of null constituents, and that of the control group which receives instruction based on the conventional method in the posttest.
2. There is no statistically significant difference between the experimental group's achievement at the recognition level and at the production level in the posttest.

3. There is no significant difference among students means scores of the five criteria (Metalinguistics Awareness, Controlled Production Task, Sentence Completion Task, Picture-Based Production, Grammatically Judgments Tasks) in the experimental posttest.

2. Literature Review

2.1 Minimalist Program: Core Concept

With the announcement of the Minimalist Program (MP) by Noam Chomsky in 1995, generative language theory saw a significant shift toward conceptual simplicity and explanatory depth. To what extent is the human language faculty a flawless or optimal system, that is idealized to satisfy the minimal interface criteria imposed by other cognitive systems? This fundamental question propels the MP, which goes beyond the more articulated models of its predecessor, Government and Binding Theory. Government and Binding Theory is a framework in generative grammar that describes the syntactic structure of sentences. The pursuit of theoretical economy, which is accomplished via a number of key concepts, such as feature checking, economic principles, and movement as a last option, forms the basis of the program.

A key element of MP is the use of economy principles, which call for syntactic derivations and representations to be as basic and efficient as possible while minimising superfluous steps or components. The full interpretation principle, for instance, requires that every element in the interface representation (Phonetic Form and Logical Form) be interpretable; no unpronounced symbols may remain at the sound interface, and no meaningless elements may remain at the meaning interface (Chomsky, 1995). Furthermore, due to economic considerations, shorter operational steps are preferred over longer moves in derivations that cover (lead to an interpretable structure) (Minimal Link Condition). Together,

these guidelines guarantee that the computational system of language (CHL) runs as efficiently as possible.

Feature checking is what propels syntactic processes in the MP. Lexical item bundles of features, such as phonological, semantic, and formal syntactic aspects (e.g., [Past Tense], [Plural], [Case]), are presumed to be present in the lexicon. The necessity to remove or "check" uninterpretable aspects (like the case feature on a noun phrase) before sending the structure to the interfaces is the main driving force behind syntactic derivation. When two lexical items with similar qualities reach a certain structural relationship (a specifier-head or head-head relation), this process takes place. For instance, to have its nominative case feature verified and valued, a tense morpheme (T) with an [EPP] feature (Extended Projection Principle) needs a noun phrase (the subject) to shift to its specifier position (Spec-TP) (Adger, 2003: 156). This feature-driven system reduces syntax to an essentially mechanical method of meeting formal requirements.

Within this framework, movement is not an arbitrary activity; it is only triggered by the necessity for feature testing; it is a "last resort" operation. When an element has an unintelligible characteristic that can only be checked in a different position, it moves. This term redefines motions as "Copy and Merge," in which a base-generated position is left with a silent trace or copy after an element is copied from its original location and merged into a higher position. The displacement property of language is demonstrated in a minimalistically sound fashion when the shifted element is pronounced in the higher position (the "head" of the chain) while the lower copy stays silent (Hornstein, Nunes, and Grohmann, 2005). As a result, the MP's fundamental ideas of economy, feature-checking, and last-resort movement create a potent, simplified model for explaining phrase structure and derivation.

2.2 Null Constituents in English and Other Languages

The phenomenon of null constituents—syntactic elements that are phonetically silent but grammatically active—is a universal feature of human languages, although its expression differs parametrically. Theoretical syntactic theory proposes several types of empty categories, each with distinct licensing criteria that explain their distribution. A detailed examination of the literature reveals a complex typology that includes null subjects and objects, traces, ellipsis phenomena, and PRO. One of the null elements that has been studied the most is the omission of arguments, particularly subjects. This trait is controlled by the null subject parameter, also called the pro-drop parameter. Because of their rich verbal inflectional morphology, languages like Italian, Spanish, and Japanese provide referential null subjects (PRO), which eliminate the need for an overt pronoun by recovering the person and number characteristics of the subjects from the verb (Rizzi, 1986). However, because of its weak verbal agreement, English is considered a non-null-subject language and usually requires an overt subject. However, English does permit null subjects in a small number of lexically regulated contexts, such as diary style or particular imperative constructions (Haegeman, 1994). The licensing of null objects is also subject to cross-linguistic diversity in languages such as Chinese and Japanese, where objects might be removed when their references are practically recoverable from the discourse content.

One of the main causes of null elements is syntactic movement in addition to argument omission. A silent duplicate of trace (*t*) is left behind when a constituent leaves its base-generated point. Depending on the type of movement, numerous sorts of traces are identified in the literature. An NP-trace, an anaphor that requires a local antecedent, is left by a movement (such as passivation or lifting). In a sentence like “John seems not* to be happy,” the trace in the subject position of the infinitive

clauses is co-referential to “John” (Radford, 2004). On the other hand, A-movement (wh-movement, topicalisation, etc.) leaves a wh-trace, such as "What did you buy [*t*]?" A key element of generative grammar, traces explain the syntactic and thematic connections between moved elements and their original locations (Chomsky, 1981).

Another significant null constituent is PRO (pronounced "big pro"), which is the unpronounced subject of non-finite clauses (infinitival or gerundive). The PRO theorem rules the distribution of PRO, stating that PRO must be ungoverned, occurring only in the subject position of non-finite clauses where tenses (T) are not defined for agreement (Chomsky, 1981). Control theory defines Pro's reference, which can be regulated by an argument in the matrix clauses (e.g., (1) John pledged PRO to depart, where PRO=John) or arbitrary (e.g., "PRO to err is human").

Finally, ellipsis phenomena, such as VP-ellipsis:

(2) e.g., John will leave, and Bill will [VP e] as well.

Involves the removal of a constituent from the discourse under identification with an antecedent. While the result is phonetically null, the elided content is syntactically present and fully comprehended at the Logical Form level (Merchant, 2001). The study of these various null constituents is critical for understanding the abstract computational mechanism that underpins overt linguistic manifestation.

2.3 Previous Studies on Syntax and EFL Teaching

Research into the junction of syntactic theory and EFL instruction has given substantial insights into the obstacles that learners experience, with several studies focusing on difficulties with the acquisition of structures, including null constituents. While not often expressly stated in the Minimalist Program, these findings show recurrent regions of inaccuracy that might be reinterpreted via the lens of null element theory.

A large body of research has focused on the pro-drop parameter,

with clear cross-linguistic influences. Studies repeatedly reveal that learners whose first language (L1) allows null subjects (e.g., Spanish, Arabic, and Chinese speakers) typically transfer this parameter setting to English, resulting in errors of subject omission, such as

(3) "*Is raining" or*

(4) ″Went to the store*" (White, 1985: 351).

In contrast, learners from non-pro-drop L1 backgrounds frequently struggle to conceal overt subjects while learning a pro-drop language. This suggests that parameter resetting is a big and ongoing difficulty and that learners may not fully internalize the feature-checking criteria of English Tense (T), which requires the overt realization of a subject to satisfy the [EPP] feature (Hawkins & Chan, 1997).

Beyond null subjects, research on complicated sentence structures reveals issues related to movement and traces. Studies on the acquisition of relative clauses and wh-questions reveal that EFL learners frequently make errors such as resumptive pronouns:

(5) the man I saw him" or holes in the argument structure.

(6) What did you put?

These issues can be attributed to the movement's failure to adequately represent or license its legacy. The use of a resumptive pronoun can be interpreted as a compensatory strategy to alleviate the computational burden of establishing a chain between a relocated element and a mute trace (Kellerman, 1985). Similarly, A-movement and NP-trace interpretation issues are indicated by challenges with passive constructions and rising adjectives (e.g., (7) John appears to be ebullient). Learners may encounter difficulty in assigning the appropriate thematic role to the null element in the embedded clause.

(8) John attempted to leave using PRO verbs, which are simpler to learn than object control verbs.

(9) Learners often confuse object control verbs with subject control verbs, which leads to erroneous interpretations. For instance, they may misinterpret the subject of "leave" in the sentence, "John promised Bill to leave" (Yip, 1995). The result suggests that the sophisticated anaphoric characters of PRO and its dependence on a controller in the matrix clause are not automatically acquired. In conclusion, previous studies, despite their often descriptive nature, consistently identify specific learner challenges that correspond to the theoretical constructs of null constituents. This underscores the necessity of an explicit, theory-driven investigation into the ways in which these abstract elements influence the EFL learning process.

2.4 Pedagogical Approach to Teaching Sentence Structure

The most effective methods for teaching complex grammatical structures, including those that incorporate null elements, have been the subject of significant debate in the field of second language acquisition (SLA). This matter primarily pertains to the dichotomy between explicit and implicit education, as well as the potential influence of formal syntactic theory on classroom practice, which can affect how learners understand and produce complex grammatical structures, including those that incorporate null element

The effectiveness of explicit vs implicit training has long been a topic of discussion in SLA. While implicit instruction focuses on assisting students in intuitively picking up the rules via extensive practice and exposure without explicit explanations, explicit education involves teaching grammatical rules explicitly, sometimes with explanations about the language itself. Research meta-analyses, like Norris and Ortega's (2000), show that explicit teaching improves grammatical correctness more successfully than implicit instruction, particularly for discrete, rule-based characteristics. One important limitation, however, is that the

measurable increases usually take place on controlled, metalinguistic evaluations rather than in spontaneous creativity. To help learners recognize the difference between their interlanguage and the target structure, additional instruction may be needed for complex syntactic phenomena like movement and null constituents that are difficult to identify in the input (Schmidt, 1990). While implicit approaches are important for language learning and automation, they may not be sufficient to assist learners in overcoming deeply established L1 parameter settings or acquiring abstract syntactic processes.

Given the limitations of traditional grammar explanations, a growing body of literature advocates for **using syntactic theory to inform practice**. This approach moves beyond prescribing "rules of thumb" ,e.g., (10) don't forget the subject,

Toward giving learners, a more comprehensive comprehension of the linguistic system. Proponents say that generative syntactic theory, which includes notions such as hierarchical organization, mobility, and empty categories, can provide learners with a "mental model" for sentence construction. For example, Whong (2011) contends that teaching the concept of wh-movement and the trace it leaves can provide a consistent explanation for the development of questions, relative clauses, and other related structures, so making grammar more rational and less arbitrary. This theoretical approach, which is often referred to as "linguistics for pedagogy", aims to utilize the insights of Minimalist theory to develop more precise and effective instructional materials and activities, rather than instructing students on Minimalist theory itself. The objective is to foster metalinguistic awareness, which enables students to understand the rationale behind the formulation of a sentence, thereby generating more transferable and resilient information (Larsen-Freeman, 2014). Although empirical research on this technique is still in its infancy, preliminary data

indicates that training that emphasizes abstract syntactic relations can lead to more significant and enduring learning effects for complex grammar.

2.5 Theoretical Framework

The theoretical concepts of generative linguistics, particularly Chomsky's Minimalist Program, serve as the foundation for this investigation. This framework provides analytical tools for the description and elucidation of the syntactic events that are the foundation of this investigation. Additionally, the paper links formal syntactic theory to teaching second languages by showing how understanding abstract grammar can impact teaching methods.

2.6 Minimalist Program and Its Relevance

Chomsky's (1995) minimalist program provides the fundamental theoretical basis for this study. Its primary relevance stems from its objective of providing adequate explanations via a succinct collection of activities and ideas. According to the MP, the language faculty is a computationally efficient system that builds structures by fusing lexicon elements to create representations that can be understood by an external cognitive system: the conceptual-intentional (CI) interface for meaning and the sensory-motor (SM) interface for sound. The MP is used in this research because it offers a strong and comprehensive framework for examining the syntactic operations—movement and control—that lead to the existence of null constituents. In contrast to descriptive grammar, the MP provides an explanation for why a sentence has to be organised in a certain manner (e.g., to verify a strong feature), which is essential for identifying the underlying cause of learner mistakes that show up as issues with word order, missing arguments, or misunderstanding (Adger, 2003:4). The research intends to go beyond just listing faults and provide an explanation of their underlying grammatical reasons by using this method to learn English.

2.7 Representing Null Constituent in Minimalism

The syntactic structure of the MP formally reflects null constituents, which are the result of fundamental computing operations, rather than simply being "understood.". The fundamental principles of structure, derivation, and feature verification are employed to elucidate their existence and distribution.

A. Derivations and Structure: The Merge and Move procedures combine and reposition elements to construct syntactic structures. A null constituent, such as a trace (t), is officially defined as a silent copy that is left behind by the bb movement. For example, in the following sentence: (11) What did John acquire? The object is transferred from its base position following the verb, resulting in a copy that is pronounced in the higher position but remains mute in the original position. This arrangement satisfies other grammatical requirements and elucidates the thematic association with the verb "buy" (Bošković & Lasnik, 2007), particularly in how it reflects the relationship between the subject and the object in the context of acquisition.

B. Features Checking: The process of feature checking is responsible for the formation of traces and the movement of objects. A set of formal characteristics is introduced into the derivation by lexical objects. Before the derivation reaches the interfaces, it is necessary to compare the uninterpretable characteristics (e.g., Case Future on a noun phrase) to the interpretable features on a functional head. These characteristics must be verified and deleted. Movement is stimulated by the desire to confirm these attributes. The null subject PRO is permissible in the ungoverned subject position of non-finite clauses due to the fact that the tense (T) in these clauses is incapable of assigning Case or Host agreement qualities that would necessitate an overt subject (Chomsky, 1995). Control theory, which operates at the intersection of discourse and argument structure, establishes

its reference by analysing how subjects are interpreted in relation to the verbs they control and the contexts in which they appear.

3. Methodology

3.1 Research Design

This study used a quantitative method with a genuine experimental design to investigate the influence of minimalist analysis of null constituents on EFL students' sentence construction. In this design, the independent variable is (Chomsky's Minimalist Program), which is only given to the experimental group; the control group does not receive the therapy. Both groups are then exposed to a posttest, and their performance is analysed to determine the influence of the independent variable. If the experimental group outperforms the control group, the improvement is attributed to the influence of Chomsky's Minimalist Program.

3.2 Study Participants

The current study includes sixty (60) third-year students enrolled in the Department of English at the College of Education for Humanities, University of Tikrit, during the academic year 2023-2024. These participants represent the population from whom the study's sample was selected. Participants are randomly assigned to two groups: an experimental group and a control group, each with thirty (30) students. The random selection and distribution technique is used to ensure that both groups have equal academic levels and language backgrounds, as well as to avoid any potential bias that could influence the study's results. The experimental group got teaching based on Chomsky's Minimalist Program, whereas the control group was taught using the department's standard manner. This structure enables a valid comparison of the impact of the instructional intervention on student performance.

3.3 Instrument

In order to measure participants' achievement in recognizing and producing English grammatical structures, the researcher has designed an achievement test that consisted of five questions. The first question is a *Grammaticality Judgment Task* (20 marks), in which students are required to judge whether a given sentence is grammatical or ungrammatical, and provide a correction when necessary. The second question is a *Sentence Completion Task* (20 marks), where students have completed sentences using the correct grammatical structure according to the prompt. The third question is a picture-based production task, which is given (20 marks). It evaluates students' capacity to generate complete grammatical sentences using visual stimuli. The fourth question is a Controlled Production Task (Sentence Combining) (20 marks) that is intended to evaluate learners' capacity to combine two straightforward sentences into a more intricate and precise syntactic structure by utilizing the specified format.

The fifth question is a *Metalinguistic Awareness Questionnaire* (20 marks) that tested students' explicit grammatical knowledge by selecting the correct metalinguistic interpretation of grammatical relations in English. The total score of the test is **100 marks**, and higher scores indicated higher achievement and a stronger ability to recognize, interpret, and produce grammatical structures in English. (See Appendix A).

3.4 Procedure

The study used a pretest-treatment-posttest design, which was carried out over six weeks at two hours each week. The experimental group is handled using Chomsky's Minimalist Program, whereas the control group is taught using the traditional style of instruction. Chomsky's Minimalist Program instruction is regarded the independent variable, whereas the standard approach used by EFL students is termed the dependent variable.

4. Analysis of Data and Discussion of Results

4.0 Introductory Note

4.1 Results Related to the First Hypothesis

To analyze the data related to the first hypothesis specifically: *There is no statistically significant difference between the achievement of the experimental group, which receives instruction based on a Minimalist analysis of null constituents, and that of the control group which receives instruction based on the conventional method in the posttest*, the independent sample test has been used. Therefore, the first aim of the study namely: *Find out whether there is any significant difference between the achievement of the experimental group, which receives instruction based on a Minimalist analysis of null constituents, and that of the control group which receives instruction based on the conventional method in the posttest*, will be achieved.

The results of table (1) show that the experimental group's mean score is 60.86 with a standard deviation of 15.60. The mean score for the control group is 37.66, with a standard deviation of 13.73. The estimated t-value (6.111) is greater than the tabulated t-value (2.00), with 58 degrees of freedom and a significance threshold of 0.05. Observing the values of T-calculated above, it is found that the calculated T-value (6.111) is much greater than the tabulated T-value of the field (2.00), and from this, it can be concluded that there are statistically significant differences between the mean scores of the control group, who are taught according to the conventional method, and the mean scores of the experimental group, who are taught by using Minimalist analysis of null constituents for the benefit of Therefore, the first hypothesis is rejected.

Table 1 *Means, Standard Deviation, and t-Values of the Two Groups In the Achievement Posttest*

Group	N.	Mean	S.D.	T-Value		DF	Level of Sig.
				Calculated	Tabulated		
Experimental	30	60.86	15.60	6.111	2.00	58	0.05
Control	30	37.66	13.73				

4.2 Results Related to the Second Hypothesis

To analyze the data relevant to the second hypothesis, namely that there is no statistically significant difference between the experimental group's accomplishment at the recognition level and at the production level in the posttest, the paired sample T-test statistics were utilized. As a result, the study's linked goal, which is to determine if there is a substantial difference between the experimental group's accomplishment at the recognition and production levels in the posttest, will be met. According to the findings, pupils' mean scores at the recognition level are 28.53, while those at the production level are 20.23. The t-test formula for two paired samples is used to demonstrate that the computed t-value is 6.210 and the tabular t-value is 1.70 at 29 degrees of freedom and 0.05 level of significance, as shown in table 2. It may be inferred that there is no difference in student performance at the recognition and production levels. Therefore, the second hypothesis is rejected.

Table 3

Mean Scores, Standard Deviation, and T-Value of the Experimental Group Students' at the Recognition and Production Levels in the Achievement Posttest

	N.	Mean	S.D.	T-Value		DF	Level of Sig.
				Calculated	Tabulated		
Recognition	30	28.53	9.51	6.210	1.70	29	0.05
Production	30	20.23	9.27				

4.3 Results Related to the Third Hypothesis

To verify the third hypotheses which is, *" There is no significant difference among students' mean scores of the five criteria (Metalinguistic Awareness, Controlled Production Task, Sentence Completion Task, Picture-Based Production Task, Grammaticality Judgment Task) in the experimental posttest."*. A one- way ANOVA is used in the posttest to see whether there are any significant differences in the mean achievement scores of the experimental groups in the *five criteria*. The researcher used a one-way analysis of variance, as shown in the table 3 below:

Table 3 One-*Way Analysis of Variance (ANOVA) Among the Fifth Criteria*

	Sum of Squares	DF	Mean Square	F-value		Sig.
				Calculated	Tabulated	
Between Groups	74.440	4	18.610	2.267	2.4	0.05
Within Groups	1190.333	145	8.209			
Total	1264.773	149				

Table (3) demonstrates that the calculated F-value (2.267) is greater than the tabulated F-value (2.4) at the 0.05 level of significance, with DF = 4-149. This means that there are no statistically significant variations in the mean posttest scores of experimental group students for the fifth criterion. The hypothesis, "There is no significant difference among students' mean scores of the five criteria (Metalinguistic Awareness, Controlled Production Task, Sentence Completion Task, Picture-Based Production Task, Grammaticality Judgement Task) in the experimental posttest" , has been accepted.

Table 4 *Comparisons of Means Among the Fifth Variables (Scheffe[a])*

Groups	N	Subset for alpha = 0.05
		Mean scores
Metalinguistic Awareness	30	8.10
Controlled Production Task	30	8.23
Sentence Completion Task	30	8.53
Picture-Based Production Task	30	9.20
Grammaticality Judgment Task	30	10.00
Sig.		.165
Means for groups in homogeneous subsets are displayed.		
a. Uses Harmonic Mean Sample Size = 30		

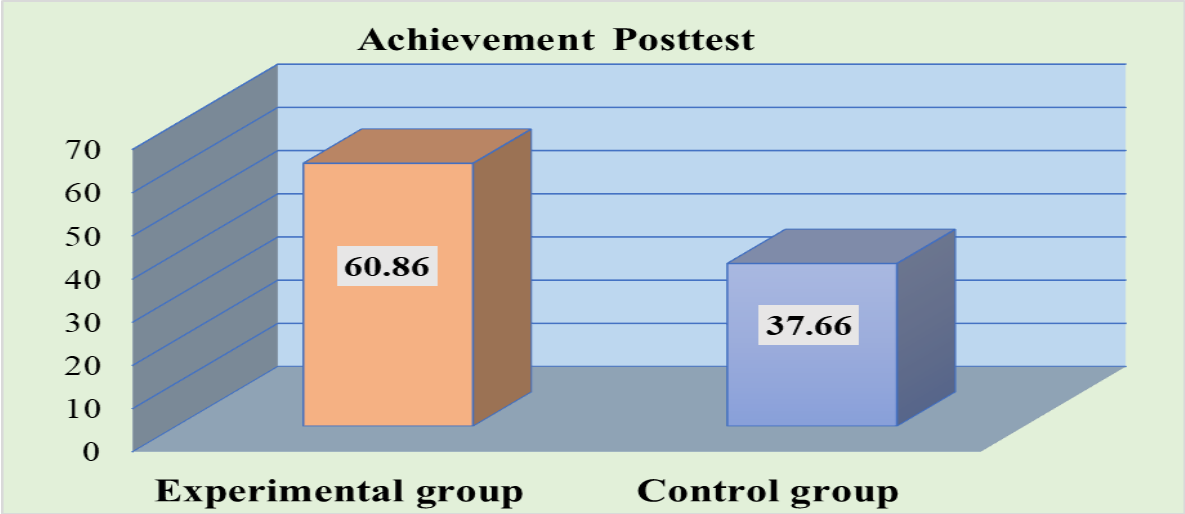
According to the table above, the mean scores of the experimental group in the posttests at Metalinguistic Awareness 8.10, Controlled Production Task 8.23, Sentence Completion Task 8.53, Picture-Based Production Task 9.20, and Grammaticality Judgement Task 10.00 with a harmonic mean sample size of 30. These findings show that students'

performance in the Grammaticality Judgement Task has the highest average score.

4.2 Discussion of Obtained Results

The independent samples t-test results show a statistically significant difference between the experimental and control groups' posttest achievement scores. The mean score of the experimental group (60.86) is significantly higher than that of the control group (37.66). This suggests that the performance difference is not attributable to chance, but rather to the instructional treatment provided to the experimental group. These findings indicate that education based on a Minimalist analysis of null elements had a higher effect on student success than the typical, conventional manner. The Minimalist method most likely increased learners' awareness of syntactic structures, stimulated analytical thinking about sentence production, and aided in a better grasp of how null elements work within syntactic representations. This increased linguistics awareness might have helped to enhance grammatical correctness and understanding, resulting in better posttest results.

Figure 1 *Mean Scores of the Experimental and Control Groups at the Post Achievement Test.*



The posttest recognition and production levels of the experimental group have no statistically significant difference, as indicated by the paired

samples t-test results. Even though the mean score at the recognition level (29.53) is quantitatively higher than that at the production level (20.23). Consequently, the second hypothesis is accepted, as the difference is not statistically significant. These results indicate that students' capacity to identify and produce grammatical constructs was typically balanced as a result of Minimalist-based training. In other words, learners' production abilities improved to a comparable level, although they performed marginally better on recognition assessments. This demonstrates that the minimalist method did not merely help students identify grammatical forms; it also enabled them to internalize these structures for communication purposes. The tight match between recognition and production scores may suggest that the minimalist framework promotes a comprehensive understanding of the syntactic concepts that underpin language usage.

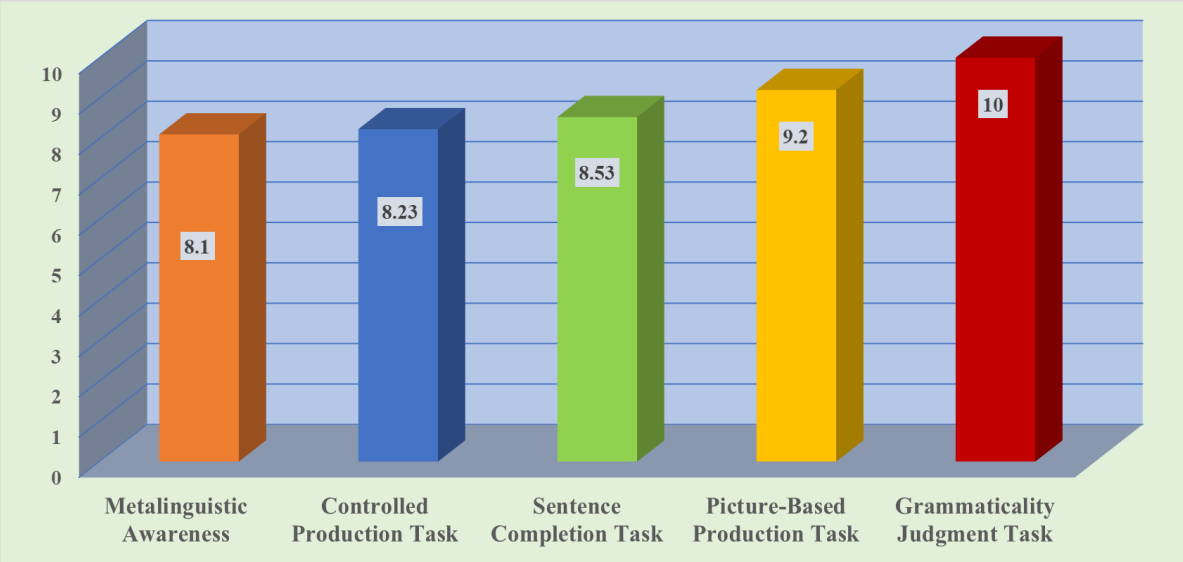
Figure 2 *Mean Scores of the Experimental Group's at the Recognition and Production Level in the Achievement Posttest*

The posttest results of the one-way ANOVA indicate that the experimental group exhibited statistically significant differences in the mean scores across the five criteria (Metalinguistic Awareness, Controlled Production Task, Sentence Completion Task, Picture-Based Production Task, and Grammatically Judgement Task). Is the tabulated F-value less

than the estimated F-value (2.267)? The third hypothesis was rejected as a result (2.4).

This implies that the Minimalist-based educational method did not have an equal impact on all language abilities but rather varied across the domains that were examined. The students' highest scores were achieved in the Grammatically Judgement Task (mean = 10.00), followed by the Sentence Completion Task (mean = 8.53) and the picture-Based Production Task (mean = 9.20), as indicated by the mean results. Conversely, the Controlled Production Task (8.23) and Metalinguistic Awareness (8.10) exhibited lower mean scores. These results suggest that learners derived the greatest benefit from instructional components that prioritized grammatical reasoning and structural analysis, as evidenced by their enhanced performance on the Grammatical Judgement Task. The better performance in grammaticality judgement suggests that education based on Minimalism has helped students develop a strong understanding of correct sentence structure and how to evaluate rules.

Figure 3 *Mean scores of the of the Experimental Group's at the Post Achievement Test in the Fifth Variables*



5. Conclusions

Based on the posttest data analysis, the outcomes of this study clearly demonstrate that Chomsky's Minimalist Program-based instruction, particularly the analysis of null constituents, can have a significant and favorable influence on EFL learners' syntactic performance. First, the independent samples t-test findings demonstrate that the experimental group fared considerably better in the posttest than the control group. This discrepancy was not attributable to chance, since the estimated t-value exceeded the tabular value at the 0.05 level of significance. As a result, the first hypothesis that indicates there are no significant differences between the two groups is rejected. This demonstrates that using Minimalist analysis improves students' grammatical performance beyond what is attained via standard education.

Second, the experimental group's paired samples t-test demonstrated that students' identification and output of grammatical structures improved in a balanced way. Their mean scores are numerically higher in recognition tasks than in production tasks, but the difference is not statistically significant at the 0.05 level. So, the second hypothesis is rejected. This shows that Minimalist-based education improved students' capacity to build syntactically precise structures in addition to helping them discern grammatical correctness in sentences.

Third, the one-way ANOVA findings revealed that the Minimalist treatment does not have an equal impact on all aspects of grammatical performance. Although overall performance increased, there was statistically significant variance across the five examined categories. The Grammaticality Judgement Task performed best, followed by the Picture-Based Production Task and Sentence Completion Task, whereas the Controlled Production Task and Metalinguistic Awareness Task performed poorly. These results show that Minimalist-based training works better for

tasks that require direct analysis of sentence structure than for activities that need a lot of text combining or clear explanations about language.

Overall, these findings suggest that using Minimalist principles, especially null constituent analysis, might work better than traditional methods for improving the grammar skills of EFL learners. The method appears to enhance both receptive sensitivity to grammatical structure (recognition) and productive use of syntactic mechanisms (production), with particularly significant improvements in judgement-based tasks that necessitate learners to employ rule-governed reason. Consequently, the research provides empirical evidence of the pedagogical advantages of integrating theoretical linguistics insights into practical foreign language education.

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Appendix A
The achievement Posttest

Q1 Read each sentence and decide if it is grammatically correct in English. Mark ✅ for Grammatical or ❌ for Ungrammatical. If it is ungrammatical, correct the error. (20 Marks)

1. It is raining heavily ✅ / ❌
Correction ……
2. Went to the market yesterday. ✅ / ❌
Correction ……..
3. What did you eat for lunch? ✅ / ❌
Correction ……
4. The book that I read it is very interesting. ✅ / ❌
Correction ……..
5. She wants to leave early ✅ / ❌
Correction ……
6. Is important to study hard. ✅ / ❌
Correction ……..
7. The student seems to be intelligent. ✅ / ❌
Correction ……
8. Who did you give the letter? ✅ / ❌
Correction ……..
9. He promised to help me with my homework? ✅ / ❌
Correction ……..
10. My brother told that he is coming. ✅ / ❌
Correction ……

Q2 Complete the following sentences using the prompts given in parentheses. Pay attention to the sentence structure (20 Marks)

1. Ali decided ……. (leave) the party early.
2. What did the teacher ……(say) in class?
3. It is difficult ……. (learn) a new language.
4. That is the man ……I (meet) at the conference.
5. The children asked their mother ……(buy) some candy.
6. Who did you ……. (talk) to on the phone.
7. She wants …….. (become) a doctor
8. The movie was exciting ……(watch)
9. I cannot find the keys …….. I (leave) on the table.
10. He promised his friends ……. (come) to party.

Q3 Look at the pictures/descriptions and write a full sentence in English to answer the question. Do not use pronoun like "he", "she", for the subject if the subject is already known. (20 Marks).

1. Picture of a man swimming

Q: What is he doing?
A: ……
2. Picture of a woman thinking about book?
Q: What does she want to do?
A: She wants ……..
3. Picture sequence: A boy ate an apple.
Q: What did the boy eat?
A: ……..
4. Picture of a girl trying to reach a high shelf
Q: What is she trying to do?
A: …….
5. Picture of a car that is broken
Q: How does the car look?
A: ……..
6. Picture of two people, one is persuading the other to sit down
Q: What is he persuading her to do?
A: ……
7. Picture of a man who bought a car
Q: What did he buy?
A: …….
8. Picture of a student studying hard
Q: Why is he studying?
A: ……..
9. Picture of a woman who seems tired
Q: How does she seem?
A: ……..
10. Picture of a teacher who asked a student a question
Q: What did the teacher ask?
A: ……
Q4 Combine the two sentences into one sentence using the prompt given. Don use pronoun like "him", or "it" in the gap. (20 Marks)
1. John bought something. What was it? What ……
2. Sara has a plan. She will travel to Londen. Sara plans ……
3. I saw a man. The man is tall. The man ……
4. It is easy. Anyone can do it. It is easy ……
5. She told me something. I should study more. She told me ……..
6. The teacher read a book. The book was long. The book ……was long.
7. He wants something. He can pass the exam. He wants ……
8. The cake was baked. It smells delicious The cake seems ……
9. The boss ordered the employees. The employees should finish the report. The boos ordered the employees ……
10. I know the woman. You are talking about her. I know the woman ……
Q5 Choose the best answer for the following questions about English grammar.
1. In the sentence "What did he eat", the word "What" is:
A. subject of the sentence B. object of the verb "eats" C. verb
2. In the sentence "She wants to sleep" who is sleeping?
A. She B. Another person C. It is not clear
3. Why is the sentence "Is raining" incorrect in standard English.
A. The verb is Wrong B. It is missing a subject like "it" C. The tense is wrong
4. In the sentence "The man who I saw was tall," the word "who" refers to:
A. I B. The man C. Tall
5. In the sentence "He seems to be happy," Who is happy?
A. He B. Another person C. It is not clear
6. Why is the sentence " The girl that I saw her is my friend" incorrect?
A. The word "that" is missing B. The word "her" is unnecessary because "that" is already the object.
C. The word "saw" is wrong.
7.In the sentence "My father told me to wait," who is waiting?
A. My father B. Me C. Both

8.The sentence "To learn English is important" means:
A. Someone specific must learn English. B. Learning English is important for people in general.
C. It is important to teach English.
9. In the question "Who did you meet?", the word "who" comes from a position:
A. before the verb "meet" B. after the verb "meet" C. it doesn't move
10. The main difference between English and Arabic regarding subjects is that:
A. English always needs a visible subject, but Arabic often omits it.
B. Arabic always needs a visible subject, but English often omits it.
C. There is no difference.