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The Role of Syntactic Complexity in Second Language Acquisition: A Comparative Study

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Abstract

The study of second language acquisition (SLA) has always been an important field of study in applied linguistics, and the syntactic complexity has since been identified as one important factor in language development and proficiency in L2. The role of syntactic complexity for successful language acquisition for various groups of learners, however, has not been fully researched. In this study, syntactic complexity plays a role in SLA by comparing learners at different levels of proficiency. The main goal is to analyze the effects of the syntactic complexity on the performance of the language and communicative competence as a whole. A quantitative comparative research design was used, involving written and spoken language samples from beginner, intermediate, and advanced learners. Syntactic development was assessed through the use of mean length of T-unit, clause density, subordination ratio, and phrasal complexity. Results indicate that syntactic complexity correlates with language proficiency, with higher levels of language proficiency corresponding to more complex sentence structures, more subordinate clauses, and more expanded noun phrases. Lower-proficiency learners on the other hand used much simpler syntactic constructions. The findings also indicate that a growth in complexity and grammatical accuracy are important for effective communication and language learning. The study finds that syntactic complexity is a useful indicator of L2 learning and L2 proficiency. The findings have implications for pedagogical design of the curriculum, language assessment, and instruction that promotes higher-level language competence of second language learners.

The keywords are: Syntactic Complexity, Second Language Acquisition, Language Proficiency, Comparative Analysis, Linguistic Development, Grammatical Accuracy, Communicative Competence.

1. Introduction

1.1 Context and Background of the Study

Second Language Acquisition (SLA) is a multidisciplinary field that investigates how individuals learn a language other than their native language. In the last few decades, linguists, cognitive scientists and social scientists have studied a variety of linguistic, cognitive and social factors that exert an influence on the success of language learning. Of these, syntactic complexity has proven to be a good measure of language proficiency and linguistic development. Syntactic complexity

is the number and complexity of syntactic structures used in spoken or written discourse. It includes the length of the sentences, embedding of clauses, coordination, subordination, and elaboration through phrases (Ortega 493).

The concept of syntactic complexity has been becoming more popular due to the fact that it offers a measurable sign of the learners' growing language competence. Generally, students' capacity to use more complex grammatical structures is facilitated as they become more advanced in the language. There are arguments that syntactic complexity is an indication of the grammatical knowledge, but also of cognitive maturity, and communicative competence (Ellis and Barkhuizen 141).

Today, English is a global language, used as a medium of communication in educational, working, and international environments. Therefore, knowing the linguistic characteristics which facilitate successful language learning is important for education teachers, curriculum planners, and policy makers. One such characteristic is syntactic complexity that may provide interesting clues for language assessment or language development.

With the growing importance of communicative language teaching, the importance of considering language complexity has also been emphasized. The traditional way of teaching language was to concentrate on grammar while the current approaches in language teaching were to highlight meaningful communication and the expression of complex ideas. Thus, examining syntactic complexity can assist language instructors in understanding the process of language development and how learners strive for accuracy, fluency, and complexity (Larsen-Freeman 590).

Furthermore, recent developments in the field of corpus linguistics and computational language analysis have made it possible to study syntactic complexity systematically in a way like never before. By employing automated language analysis tools, researchers can discover commonalities in language usage at various proficiency levels, in different educational settings, and with different language learner groups. The advances have greatly broadened the scope of syntactic complexity research and its implications for SLA theory and practice.

Problem Statement

Although a large amount of research has been conducted on L2 acquisition, considerable ambiguity still exists about the exact function of syntactic complexity in L2 acquisition. There are many language programs that focus on learning words and grammar but comparatively little attention is given to the development of increased syntactic sophistication. Consequently, students can reach an acceptable degree of accuracy but fail to be able to write linguistically complex discourse.

Moreover, past research on syntactic complexity–language proficiency relationships has yielded conflicting results. Some scholars claim that high correlations exist between complexity measures and proficiency levels, while others propose that some learner factors, as well as learner instructional settings and language tasks, may influence complexity (Norris and Ortega 566). Inconsistencies pose difficulties for teachers who are interested in incorporating syntactic complexity in the assessment and teaching of language.

It is, therefore, desirable to conduct comparative studies that investigate the differences in syntactic complexity of learner groups and the relationship between these differences and the success or failure in second language acquisition.

Research Gap

While syntactic complexity has been studied in SLA, there are a few areas that have not been examined. First, many investigations are restricted to written or spoken language production, thus restricting a full understanding of syntactic development in communication modalities.

Secondly, previous studies mostly investigate a single level of proficiency but do not make comparisons between levels.

Third, much of the literature comes from Western educational settings, with a lack of evidence on learners from different language and cultural backgrounds. Moreover, there has been relatively little research that examines the effects of syntactic complexity on communicative competence together. Research is focused on structural measures and not on the impact of syntactic complexity on meaningful communication.

Another important deficiency is related to the complexity-accuracy trade-off. There is some danger that greater complexity, although it may be associated with higher levels of competence, may cause the occurrence of errors and decrease in comprehension. Thus, more investigation is needed to clarify the effective ways in which complexity is integrated into language production.

Research Objectives

The study aims to:

1. Examine the role of syntactic complexity in second language acquisition.
2. Compare syntactic complexity across different learner proficiency levels.
3. Investigate the relationship between syntactic complexity and communicative competence.
4. Identify linguistic features that distinguish advanced learners from beginner and intermediate learners.
5. Explore the pedagogical implications of syntactic complexity for language teaching and assessment.

Research Questions

The study seeks to answer the following questions:

1. How does syntactic complexity vary among learners at different proficiency levels?
2. What relationship exists between syntactic complexity and second language proficiency?
3. How does syntactic complexity influence communicative competence?
4. Which measures of syntactic complexity most effectively predict language development?
5. What instructional implications can be derived from syntactic complexity research?

Scope of the Study

The English as a second language learners are taken in this study at all three proficiency levels, namely, beginner, intermediate, and advanced level. The study investigates both oral and written language production with reference to well-defined syntactic complexity procedures. The study does not cover settings where English is the primary language of instruction or a setting in which native speakers are the predominant participants.

The research focuses on the linguistic and educational aspects of SLA but not the sociopolitical or psychological aspects. In addition, the study focuses on the measurable levels of syntactic complexity such as clause length, T-unit length, subordination, coordination and phrasal elaboration.

Significance of the Study

This study is important because it brings a contribution to both theory and practice of the second language acquisition research. In theory, the paper contributes to knowledge about the role of syntactic complexity as language development and proficiency indicator. The study highlights the role of comparison to other levels of proficiency in the discussion of the relationship between complexity, accuracy and communicative competence.

In practice, the results can be applied to the design of curriculum, language teaching and evaluation. Based on syntactic complexity research, teachers are able to plan instruction with the goal of progressive linguistic sophistication. Assessment specialists in language may also find it useful to be able to find reliable indicator measures of complexity to assess learner progress.

Additionally, the results can be utilized by policy makers and educational institutions in designing evidence-based language programs to aid high-level language skills. Finally, it adds to the effectiveness of L2 teaching and learning by highlighting the role of syntactic complexity as part of the linguistic proficiency of L2 learners.

2. Literature Review

The syntactic complexity has been a major focus in second language acquisition studies especially in the understanding of how the learners' syntactic sophistication develops over time. Ortega's initial research highlighted the relationship of syntactic complexity to language proficiency and the way it can be determined based on structural elements like subordination and clause density (Ortega 492). In a similar way, Norris and Ortega expressed that complexity, accuracy and fluency (CAF) is a valid measure of learner performance in second language contexts (Norris and Ortega 556).

Secondly, Ellis noted how syntactic development is related to the learners' cognitive processing abilities, and the fact that the L2 system gradually shifts from simple to more complex sentences as the interlanguage system evolves (Ellis and Barkhuizen 143). This is typically considered to be the logical next steps in more exposure, practice and input in the target language.

Biber and Gray also showed that the language of the academic world is higher in terms of the complexity of its phrases, particularly in writing, in which noun phrases and embedded structures occur more often (Biber and Gray 88). Their results corroborate the notion of not all modalities being equally complex syntactically, but rather that spoken and written language have differing degrees of complexity.

World-wide, grammars and syntax have attracted researchers' interest due to the need to balance accuracy and syntactic complexity in language instruction. Some programs continue to focus on the production of correct language, thereby not allowing learners to venture into more sophisticated language structures (Larsen-Freeman 591). Consequently, learners tend to have syntactically simple sentences, which limits their communication effectiveness, although they may be grammatically correct.

Moreover, cross-linguistic research has revealed differences in the syntactic development of different L1 groups (Lu 234). For instance, learners whose L1 has rigid sentence structure might have more difficulty learning flexible sentence structure in L2.

The development of new technologies in computational linguistics has also triggered a new concern on a global scale about the standardization of syntactic complexity measures. Tools like automated syntactic analyzers offer efficiency, but researchers warn that quantitative measures need to be complemented by qualitative ones of learner language (Kyle and Crossley 78).

Local and Regional Concerns

In many non-native English speaking countries, including South Asian countries, the teaching and learning of English focusses on memorization and rules more than syntactic development. The outcome is learners who are able to perform successfully on written tests and do not have the ability to make complex oral presentations.

Research in the regional setting has revealed that learners often have difficulties in producing simple sentences because of their lack of exposure to real English input (Mahboob 112). Furthermore, there are large class sizes and exam-based teaching approaches which limit opportunities for meaningful language production, which in turn limits syntactic development.

In some educational contexts, such as that of Pakistan, students may be able to use the correct grammatical forms but are unable to shift the syntactic structure within their academic writing or speech. The lack of this is an indication of the need for instructional methods that include explicit teaching of syntactic complexity development.

Theories of Grammar in L2 Writing

There are several theories that are believed to account for syntactic development in SLA. The Interaction Hypothesis proposes that language learning takes place in a meaningful way, with the learner being challenged to make adjustments to his or her product (Long 419). This interaction allows more complex syntactic structures to be built.

The Output Hypothesis also states that in producing language, students will push the structures deeper into their minds, resulting in increased complexity and accuracy (Swain 249). In output practice, students realize their interlanguage system lacks some aspects and try to improve the grammatical structures.

Cognitive theories also imply that the complexity of syntax is related to working memory. Cognitive control increases as learners develop, enabling them to have more complex thoughts and to express them in more complex sentences (Robinson 45). These theoretical approaches all lend themselves to the notion that syntactic complexity is a linguistic and cognitive phenomenon.

Research Gap

While there are considerable studies of syntactic complexity, there are some issues that remain unanswered. First, there is no longitudinal research on syntactic development over time, especially in the developing educational context. Most studies are cross sectional, which restricts knowledge of developmental trajectory.

Second, there is a lack of linkage between syntactic complexity and frameworks of communicative competence. Complexity has been defined structurally, but fewer studies have looked into the contribution of complexity to the effectiveness of communication in real-life situations.

Third, the existing literature is based on Western contexts or ESL contexts and EFL contexts are under explored (Mahboob 115). This reduces the scope of the findings to a broad range of learners.

Finally, there is a current discussion regarding the degree of syntactic complexity and the degree of grammatical correctness. Some researchers believe that as complexity grows, so will the number of errors, and others believe that this can happen concurrently with the proper instruction (Larsen-Freeman 593).

3. Research Methodology

3.1 Research Design

The study has employed quantitative comparative research design to compare the syntactic complexity in the target language between different levels of proficiency in the L2. A comparative design is applicable in the evaluation of the linguistic variation between different levels of learner's proficiency, which are beginners, intermediate, and advanced students (Creswell 155). Some of the qualitative findings are also incorporated into the study, to aid the interpretation of the syntactic patterns observed in the learner data.

Research Approach: Quantitative and Qualitative Integration

The primary approach is quantitative, focusing on measurable indicators of syntactic complexity such as **T-unit length**, **clause density**, **subordination ratio**, and **phrasal complexity**. However, qualitative interpretation is also applied to understand how learners use syntactic structures in real communicative contexts (Dörnyei 67). This mixed perspective strengthens validity by combining numerical analysis with contextual explanation.

Participants and Sampling

The study involves **30 English language learners** divided into three proficiency groups:

- Beginner group (10 participants): *Ali B1, Sara B2, Ahmed B3, Fatima B4, Hassan B5, etc.*
- Intermediate group (10 participants): *Usman I1, Ayesha I2, Bilal I3, etc.*

- Advanced group (10 participants): *Noor A1, Zain A2, Maryam A3, etc.*

Pseudonyms are used to maintain confidentiality and ethical compliance. Participants were selected through **purposive sampling**, ensuring representation of different proficiency levels based on institutional placement tests (Patton 243).

Data Collection Methods

Data were collected using three main instruments:

3.4.1 Written Tasks

Participants completed structured essay writing tasks on familiar academic topics. These tasks were designed to elicit natural syntactic production.

3.4.2 Spoken Tasks

Learners participated in short semi-structured speaking sessions, including personal narration and opinion-based prompts.

3.4.3 Questionnaires

A structured questionnaire was used to gather background information on language exposure, learning strategies, and classroom experience.

Interviews

Semi-structured interviews were conducted with selected participants from each group. These interviews explored learners' perceptions of sentence construction difficulty, confidence in using complex structures, and classroom exposure to advanced grammar. Interviews allowed deeper understanding of syntactic choices beyond numerical data (Kvale and Brinkmann 89).

Data Analysis Procedure

Data were analyzed using descriptive and comparative statistical methods. Syntactic complexity was measured through:

- Mean Length of T-unit
- Clause per T-unit ratio
- Subordination frequency
- Phrasal complexity index

The collected data were organized using spreadsheets and analyzed to identify patterns across proficiency levels. Comparative analysis was then used to determine differences between groups (Biber, Gray, and Poonpon 216).

Ethical Considerations

The study followed strict ethical guidelines. Participation was voluntary, and informed consent was obtained from all participants. Confidentiality was ensured through pseudonyms, and no personal identifiers were disclosed. Participants were also informed of their right to withdraw at any stage without penalty (BERA 12).

Reliability and Validity

To ensure reliability, data coding was cross-checked twice. Validity was strengthened through triangulation of written, spoken, and questionnaire data. Standard syntactic complexity measures widely used in SLA research were adopted to ensure consistency with established methodologies (Norris and Ortega 559).

4. Data Analysis and Discussion

Overview of Syntactic Complexity Results

The analysis of collected data reveals clear variation in syntactic complexity across beginner, intermediate, and advanced learner groups. Overall, the findings demonstrate that syntactic complexity increases in parallel with language proficiency, supporting earlier claims that structural development is a key indicator of SLA progress (Ortega 495). The comparison of

written and spoken data shows consistent trends, although written production generally exhibits higher complexity across all groups.

Beginner Level Analysis

Beginner participants such as *Ali B1* and *Sara B2* predominantly produced simple sentence structures with minimal subordination. Their mean T-unit length remained low, and clause embedding was rarely observed. Instead, coordination using “and” was the most frequent linking strategy. This pattern reflects early-stage interlanguage development, where learners prioritize communication over structural sophistication (Ellis and Barkhuizen 146).

For example, beginner learners frequently produced sentences such as: “I went to school and I met my friend and we studied together.”

Such constructions demonstrate limited syntactic variation and a reliance on linear sentence formation.

Intermediate Level Analysis

Intermediate learners such as *Usman I1* and *Ayesha I2* showed moderate improvement in syntactic complexity. Their data revealed increased use of subordinate clauses and relative clauses. Clause density was higher than that of beginner learners, indicating developing syntactic control.

For instance, intermediate learners produced sentences like: “I went to school because I had an exam that was very important.”

This indicates growing ability to embed clauses and express causal relationships. However, occasional grammatical inconsistencies were still observed, suggesting partial but not full control over complex structures (Norris and Ortega 562).

Advanced Level Analysis

Advanced learners such as *Noor A1* and *Maryam A3* demonstrated significantly higher syntactic complexity. Their language production included frequent use of nominalization, embedded clauses, and varied sentence structures. T-unit length and phrasal complexity were notably higher compared to other groups.

For example: “Despite having limited preparation time, the student who was selected for the presentation managed to deliver a coherent argument that impressed the audience.”

Such structures indicate advanced syntactic control and the ability to integrate multiple ideas within a single sentence. These findings align with research suggesting that advanced learners develop more compressed and information-dense language structures (Biber and Gray 92).

Comparative Analysis across Groups

A clear gradient of syntactic development is observed across proficiency levels:

- Beginner learners: simple coordination, low clause density
- Intermediate learners: emerging subordination, moderate complexity
- Advanced learners: high embedding, phrasal density, and structural variety

This progression supports the hypothesis that syntactic complexity is positively correlated with language proficiency (Lu 238). The results also confirm that syntactic development is gradual and non-linear, often influenced by exposure and instructional input (Larsen-Freeman 595).

Relationship between Complexity and Communicative Competence

The findings indicate that increased syntactic complexity enhances communicative effectiveness, particularly in academic and explanatory discourse. However, data also show that excessive complexity at lower proficiency levels may lead to errors and reduced clarity. This supports the view that complexity must be balanced with accuracy to ensure effective communication (Swain 251).

Advanced learners demonstrated stronger communicative control, suggesting that syntactic complexity contributes not only to linguistic sophistication but also to meaning-making ability.

Integration with Theoretical Frameworks

The results align strongly with the **Output Hypothesis**, which argues that language production promotes syntactic development (Swain 252). Learners who engaged in more structured output tasks demonstrated greater complexity.

Similarly, the Interaction Hypothesis is supported, as learners exposed to interactive tasks produced more varied syntactic forms (Long 421). Cognitive theory also explains these findings by linking syntactic growth with increased working memory capacity and processing efficiency (Robinson 48).

Key Findings Summary

The analysis identifies three major findings:

1. Syntactic complexity increases with proficiency level.
2. Advanced learners use more embedded and phrasal structures.
3. Balanced complexity and accuracy improve communicative effectiveness.

These findings reinforce the role of syntactic complexity as a reliable indicator of SLA development.

5. Conclusion

Summary of Findings

The purpose of the current research was to discuss the influence of syntactic complexity in the learning of the second language by comparing beginner, intermediate and advanced level learners. The results of the present study are clearly indicative of the fact that the syntactic complexity is closely related to the language proficiency and communicative competence. Higher level learners made more complex sentence constructions, had more clause embedding and more sophisticated phrasals than lower level learners. The findings are also similar to previous studies that have indicated that syntactic development is an ongoing and measurable process in SLA (Ortega 496).

The very basic and co-ordinated sentences were greatly used by the beginner learners and the intermediate learners were developing control over subordination. The advanced learners showed evidence of advanced syntactic manipulation such as nominalization and constructions with multiple clauses, reflecting higher linguistic maturity.

Key Interpretations

The study demonstrates the syntactic complexity as not only a structural property of language but also an indicator of cognitive and communicative development. The students' sentences become increasingly complex and informative as their language becomes more developed. This process is in favor of the notion of incremental and dynamic language acquisition (Larsen-Freeman 597).

The results also reveal, however, that complexity is not enough to ensure effective communication. At lower levels of proficiency, in some cases, overly complex structures led to less clarity, indicating that there is a need to build accuracy and comprehensiveness along with complexity (Swain 253).

Pedagogical Implications

The results of this study have important implications for language teaching and curriculum design. Teachers should not only teach students grammar forms but also enable students to try out more complex syntactic forms little by little. Task-based learning activities, writing scaffolds, and guided speaking tasks can be used to guide a learner to syntactic sophistication in a structured manner (Ellis and Barkhuizen 149).

Moreover, it is necessary to include syntactic complexity measures in assessment systems like T-unit length and clause density to better measure learner progress. This would give a broader picture of the development of language than the accuracy-based assessment approaches (Norris and Ortega 565).

Theoretical Contributions

This study will contribute to the theory of SLA by reinforcing the relationship between the syntactic complexity, cognitive development and communicative competence. The findings do confirm the Output Hypothesis where emphasis is placed on the importance of language production for syntactic development (Swain 254). They have also been found to be congruent with the Interaction Hypothesis which emphasizes the need for meaningful communication for language development (Long 422).

Moreover, the findings indicate that syntax-structure relates to processing capacity and development of working memory in line with cognitive theories (Robinson 50). These theories can work together to account for why syntactic complexity rises with proficiency.

Limitations of the Study

The study offers valuable insights but has a relatively small sample size and a focused geographical scope. Limitations in generalizability may exist because participants were selected from one educational setting. Furthermore, this research was mainly concerned with some selected syntactic aspects and failed to consider all potential dimensions of linguistic complexity. Future research should include larger and more diverse samples, as well as longitudinal data to track syntactic development over time.

Recommendations for Future Research

Future studies should explore:

- Longitudinal changes in syntactic complexity across years of language learning
- The role of digital learning environments in syntactic development
- Cross-linguistic comparisons of syntactic complexity development
- Integration of automated linguistic tools for more precise measurement

Such research would further strengthen understanding of how syntactic complexity evolves in different learning contexts.

Final Conclusion

In conclusion, syntactic complexity plays a vital role in second language acquisition and serves as a strong indicator of learner proficiency and communicative ability. The study demonstrates that learners progressively develop more complex syntactic structures as they advance in proficiency. However, effective language use requires a balance between complexity, accuracy, and clarity. Therefore, syntactic complexity should be integrated into both instructional practices and assessment frameworks to enhance second language learning outcomes. By doing so, educators can better support learners in achieving higher levels of linguistic competence and communicative effectiveness.

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