



Inflectional vs. Derivational Morphological Accuracy in Sudanese Undergraduates' EFL Writing: A Comparative Study of the Suffixes "- ing" and "- ion"

Dr. Ammar M. Ahmed Hassan¹

Dr. Seifaldowla Mubarak Hamed Ahmed²

1. Associate Professor in Applied Linguistics of English, Department of English, Faculty of Education – Hantoub, University of Gezira, Gezira State, Sudan.
Email: amarahmad1717@gmail.com
2. Assistant Professor in Applied Linguistics of English, Department of English, Faculty of Education – Hassaheisa, University of Gezira, Gezira State, Sudan.
Email: Seifha83@gmail.com

Abstract

INFORMATION:

Submission:

3/05/2026

Accepted:

2/08/2026

Publication:

8/10/2026

This study investigates inflectional and derivational morphological accuracy in the academic writing of 30 Sudanese EFL undergraduates in the English Department, Faculty of Education – Hantoub, University of Gezira, Batch 43. A diagnostic writing test was used to examine students' use of the suffixes -ING and -ion. A total of 846 -ING attempts and 312 -ion attempts were identified. Descriptive statistics and a Wilcoxon signed-rank test indicated significantly higher accuracy for -ING (73.9%) than for -ion (46.8%; $Z = 4.62$, $p < .001$, $r = .60$). The suffix -ING occurred approximately 2.7 times as frequently as -ion (Wilcoxon signed-rank test on per-participant means: $Z = 4.71$, $p < .001$, $r = .59$). Error analysis identified 221 -ING errors and 166 -ion errors. The most frequent -ING error was omission of the suffix after the auxiliary be (ING-2), accounting for 89 errors (40.3%). The most frequent -ion errors were stem preservation (ION-1; 58 errors, 34.9%) and inappropriate allomorph selection (ION-2; 47 errors, 28.3%). A subgroup of 12 participants (40%) demonstrated high accuracy with -ING ($M = 81.2\%$, $SD = 6.7$) but substantially lower accuracy with -ion ($M = 38.5\%$, $SD = 9.1$), a pattern consistent with, rather than conclusive evidence for, dual-mechanism accounts of morphological processing. Pedagogically, the findings support explicit instruction in English nominalization, morphological families, and common -ion allomorphs. The study proposes a four-session intervention module and offers a diagnostic error taxonomy for EFL instructors in comparable Arabic-speaking contexts.

KEYWORDS:

inflectional morphology, derivational morphology, morphological accuracy, EFL writing, Sudanese undergraduates, -ING suffix, -ion suffix.

1. Introduction :

In EFL learning, accurate use of inflectional and derivational morphology is an important component of writing proficiency. Inflectional morphology marks grammatical distinctions without normally creating a new lexical item, whereas derivational morphology can create new lexemes or change word class. For Sudanese undergraduates writing in English, competence in both types of morphology is important, but they may not develop at the same rate or with the same degree of stability.

The suffix -ING has several grammatical functions in English, including marking the present participle in progressive constructions and occurring in gerundial constructions. The suffix -ion is a derivational nominalizing suffix that commonly forms nouns from verbal bases, often with stem or allomorphic changes. Comparing learners' use of these two morphological patterns provides a useful way to examine differences in accuracy, frequency, and error profiles.

This study focuses on English Department undergraduates in Batch 43 at the Faculty of Education – Hantoub, University of Gezira. It aims to measure the frequency and accuracy of the two suffixes, identify recurrent error patterns, examine individual differences, and propose pedagogically relevant strategies for addressing the observed difficulties.

Despite the importance of morphological competence for EFL writing, Sudanese undergraduate students continue to exhibit persistent difficulties in both inflectional and derivational morphology. Preliminary observations and informal assessments among English Department students at the Faculty of Education – Hantoub suggest that learners frequently omit the -ING suffix after auxiliary be in progressive constructions and struggle to produce correct -ion nominalizations, often relying on direct suffix attachment to verbal bases (e.g., information for information, decideation for decision). While previous research has documented morphological errors among Arab EFL learners generally (Al-Hazemi, 1993; Al-Jarf, 2005; Mukattash, 1986; Mukhtar, 2018), there is a noticeable gap in the literature regarding the direct comparison of inflectional and derivational morphological accuracy within a Sudanese undergraduate EFL context. The present study, therefore, addresses this gap by combining quantitative accuracy measures with qualitative error analysis.

The paper is organized as follows: Section 2 presents the statement of the problem; Section 3 outlines the objectives; Section 4 presents the research questions; Section 5 states the hypotheses; Section 6 discusses the significance; Section 7 addresses limitations and delimitations; Section 8 reviews the literature; Section 9 describes the methodology; Section 10 reports the results; Section 11 discusses the findings; and Section 12 concludes with recommendations.

2. Statement of the Problem :

Despite the importance of morphological competence for EFL writing proficiency, Sudanese undergraduate students continue to exhibit persistent difficulties in both inflectional and derivational morphology. Preliminary observations and informal assessments among English Department students at the Faculty of Education – Hantoub suggest that learners frequently omit the -ING suffix after auxiliary be in progressive constructions and struggle to produce correct -ion nominalizations, often relying on direct suffix attachment to verbal bases (e.g., information for information, decideation for decision). These difficulties may stem from multiple sources, including L1 interference (Arabic root-and-pattern morphology), overgeneralization of English morphological rules, incomplete proceduralization of grammatical structures, and insufficient explicit instruction in derivational morphology.

While previous research has documented morphological errors among Arab EFL learners generally (Al-Hazemi, 1993; Al-Jarf, 2005; Mukattash, 1986; Mukhtar, 2018), there is a noticeable gap in the literature regarding the direct comparison of inflectional and derivational morphological accuracy within a Sudanese undergraduate EFL context.

Specifically, no study has systematically compared learners' performance on the inflectional suffix -ING and the derivational suffix -ion using both quantitative accuracy measures and qualitative error analysis. This gap is particularly significant because understanding the relative difficulty of these two morphological types could inform more targeted pedagogical interventions.

The present study, therefore, addresses this gap by investigating the following problem: To what extent do Sudanese EFL undergraduates differ in their accuracy and frequency of use of the inflectional suffix -ING and the derivational suffix -ion in diagnostic writing tasks, and what error patterns characterize their performance on each suffix? The findings will hopefully, help help teachers understand common students' errors. This knowledge can then improve how English grammar is taught in Sudanese classrooms.

2. Objectives of the Study :

This study aims to achieve the following objectives:

1. To measure the frequency of occurrence of the inflectional suffix -ING and the derivational suffix -ion in the diagnostic writing of Sudanese EFL undergraduates.
2. To compare the accuracy rates of -ING and -ion usage among the participants.
3. To identify and classify the most frequent error patterns associated with each suffix.
4. To examine individual differences in morphological performance, particularly the potential dissociation between inflectional and derivational accuracy.
5. To propose pedagogical recommendations and a diagnostic error taxonomy for EFL instructors in comparable Arabic-speaking contexts.

4. Questions of the Study:

The study seeks to answer the following research questions :

1. What is the frequency of occurrence of the inflectional suffix -ING compared to the derivational suffix -ion in the diagnostic writing of Sudanese EFL undergraduates?
2. What is the accuracy rate of -ING usage compared to -ion usage among the participants?
3. What are the most frequent error patterns associated with -ING and -ion usage, and how do they differ?
4. To what extent do individual participants demonstrate a dissociation between inflectional (-ING) and derivational (-ion) morphological accuracy?
5. What pedagogical implications can be drawn from the findings for teaching morphology to Sudanese EFL undergraduates?

5. Hypotheses of the Study:

Based on the literature review and the research questions, the following hypotheses are proposed. Each hypothesis is linked to its corresponding research question.

H1- (addressing RQ1): The inflectional suffix -ING will occur significantly more frequently than the derivational suffix -ion in the diagnostic writing of Sudanese EFL undergraduates.

H2 -(addressing RQ2): Participants will demonstrate significantly higher accuracy rates for the inflectional suffix -ING than for the derivational suffix -ion.

H3- (addressing RQ3): The error patterns for -ING and -ion will differ qualitatively, with -ING errors dominated by omission after auxiliary be and -ion errors dominated by stem preservation and inappropriate allomorph selection.

H4- (addressing RQ4): A subgroup of participants will exhibit a dissociation between high -ING accuracy and low -ion accuracy, consistent with dual-mechanism accounts of morphological processing.

6. Significance of the Study:

This study is significant for several reasons:

Theoretical significance: The study contributes to the ongoing debate regarding the distinction between inflectional and derivational morphology by providing empirical evidence from a Sudanese EFL context. It also offers insights into dual-mechanism versus single-mechanism accounts of morphological processing, as the observed dissociation between -ING and -ion accuracy can inform theoretical models.

Pedagogical significance: The findings provide concrete evidence of the specific difficulties Sudanese EFL learners face with English morphology. The proposed error taxonomy (Tables 2 and 3) offers instructors a diagnostic tool for identifying and addressing common morphological errors. The four-session intervention module proposed in Section 12.2 provides a practical framework for explicit morphological instruction.

Curricular significance: The study's findings can inform syllabus design for English departments in Sudanese universities, particularly regarding the allocation of instructional time for morphological awareness and the integration of explicit derivational morphology instruction into writing courses.

Contextual significance: By focusing on Sudanese EFL learners—a population underrepresented in morphological research—the study fills a gap in the literature and provides data that may be relevant to other Arabic-speaking EFL contexts with similar morphological backgrounds.

7. Limitations and Delimitations:

7.1 Limitations.

The following limitations should be acknowledged:

1. **Sample size:** The sample was small ($N = 30$) and drawn from one university batch (Batch 43), which limits the generalizability of the findings to broader populations.
2. **Task constraints:** The diagnostic test provides controlled evidence but may not represent the full range of morphology used in natural student writing.
3. **Productive vs. receptive knowledge:** The study measures productive performance only; receptive knowledge of -ion may be greater than productive performance suggests.
4. **Causal explanations:** The proposed explanations of L1 transfer, overgeneralization, and developmental influence are hypotheses rather than experimentally established causal mechanisms.
5. **Subgroup criteria:** The cut-offs for defining the high -ING/low -ion subgroup ($\geq 70\%$ and $< 50\%$) were chosen for pragmatic clarity rather than derived from established diagnostic thresholds; the subgroup analysis should therefore be treated as exploratory.
6. **Statistical verification:** The statistical claims should be verified against the original participant-level SPSS file.

7.2 Delimitation

The study is delimited to:

1. **Population:** English Department undergraduates in Batch 43 at the Faculty of Education – Hantoub, University of Gezira, Sudan.

2. Target forms: The study focuses exclusively on the suffixes -ING (inflectional) and -ion (derivational), excluding other morphological forms.
3. Instrument: Data were collected through a single 40-minute diagnostic writing test consisting of three tasks.
4. Time frame: Data were collected during the 2023–2024 academic year.

8. Literature Review :

8.1 Inflectional Morphology and the -ING Suffix

Inflectional morphology expresses grammatical information associated with a word while generally preserving its lexical category. Bloomfield (1933) described inflection as modification of word from within the grammatical system of a language. In English, -ING is an important marker associated with progressive constructions. In a sentence such as "She is reading a book," the -ING form contributes to the progressive aspect.

The -ING form also occurs in gerundial constructions, as in "Swimming is good exercise." Because analyses differ concerning the precise morphological status of gerundial -ING, the present study treats -ING as a target form that occurs in both progressive and gerundial environments, while recognizing that these environments are not theoretically identical. This clarification is important because the study is concerned with learners' accuracy in producing the form rather than with resolving the broader theoretical debate about the categorical status of every -ING construction.

For EFL learners, the distinction between progressive and non-progressive uses of -ING can be difficult. Ellis (1994) notes that learners may overextend progressive morphology, producing forms such as "I am liking reading" in contexts where a simple present construction is more appropriate.

8.2 Derivational Morphology and the -ion Suffix:

Derivational morphology is involved in the formation of new lexical items and may change lexical meaning or grammatical category. Aronoff (1976) describes derivation as a process involved in the creation of new lexemes. The suffix -ion is a highly frequent English nominalizing pattern, particularly in academic vocabulary, and commonly occurs in words such as educate → education, inform → information, and decide → decision.

For EFL learners, -ion can be difficult because its realization is not always predictable through a single linear rule. Learners must often know the appropriate lexical base, stem alternation, spelling pattern, and allomorphic realization. Arabic-speaking learners may experience additional difficulty because Arabic morphology is organized primarily through root-and-pattern processes rather than through the same type of linear suffixation found in English (Mukattash, 1986).

8.3 Comparison of Inflectional and Derivational Morphology:

Haspelmath (2002) distinguishes inflection from derivation in terms of their grammatical and lexical functions. Inflection is generally closely tied to grammatical syntax, whereas derivation contributes to lexical expansion and word formation. In the present study, the comparison is operationalized through two measurable dimensions: frequency of occurrence and accuracy of production. The study does not claim that raw frequency alone constitutes morphological productivity in the strict theoretical sense.

Previous research on Arab EFL learners has reported persistent difficulties with English derivational morphology and has highlighted the potential value of explicit instruction in suffixation. However, the direct comparison of -ING and -ion within a Sudanese undergraduate EFL population remains insufficiently documented. The present study, therefore, addresses this gap by combining quantitative accuracy measures with qualitative error analysis. Ultimately, this research

aims to identify specific patterns in how students process nominal and participial suffixes. It is hoped that, these findings will help educators design better instructional strategies

8.4 Sudanese-Specific Studies on Morphological Errors :

Research on Sudanese EFL writing has documented persistent morphological difficulties. Mukhtar (2018) investigated common errors in Sudanese EFL writing from a morphological perspective and reported that students frequently struggle with English suffixation, particularly derivational forms. These findings align with the broader Arab EFL literature (Al-Hazemi, 1993; Al-Jarf, 2005; Baniabdelrahman & Bataineh, 2014) and suggest that the challenges observed in the present study are not isolated but part of a wider pattern documented across Arabic-speaking contexts. The present study extends this line of work by providing a direct comparison of inflectional and derivational accuracy within the same learner group and by offering a structured error taxonomy.

8.5 Theoretical Framework:

The study is informed by dual-mechanism accounts of morphological processing (Pinker, 1999; Ullman, 2001). According to this framework, inflectional morphology is primarily rule-based and procedural, whereas derivational morphology relies more heavily on declarative memory and lexical storage. This distinction predicts that learners may show a dissociation between inflectional and derivational accuracy—a prediction tested in the present study through the subgroup analysis (H4). The study also draws on contrastive analysis (Lado, 1957) to interpret potential L1 influence, and on error analysis procedures (Corder, 1974; Ellis, 1994) to classify and interpret learner errors.

9. Methodology:

9.1 Research Design:

A mixed-methods descriptive-analytical design was adopted. Quantitative measures of suffix frequency and accuracy were combined with qualitative error analysis. This design made it possible to compare learners' performance on the two target suffixes and to describe recurrent error patterns in greater detail.

9.2 Participants:

The target population comprised 120 students in Batch 43 (2023–2024 academic year) in the English Department, Faculty of Education – Hantoub, University of Gezira, Sudan. Using simple random sampling through a lottery procedure, 30 students were selected, representing 25% of the population. The sample consisted of 27 female and 3 male students. The mean age was 21.4 years ($SD = 1.2$). All participants were native speakers of Sudanese Arabic and had received approximately 12 years of formal English instruction, including six years of primary education, three years of secondary education, and three years of university education.

Ethical approval was obtained from the relevant research ethics committee at the Faculty of Education – Hantoub, University of Gezira. Informed consent was obtained from all participants prior to data collection, and all responses were anonymized to protect participant confidentiality.

9.3 Data Collection Instrument: Diagnostic Writing Test:

A 40-minute diagnostic writing test was administered during regular class hours under supervised conditions. The test consisted of three tasks (see Appendix A for the full instrument):

Task 1 – Descriptive paragraph (15 minutes): "Describe your daily morning routine from waking up to leaving for university. Use at least five verbs in the present progressive tense (e.g., I am brushing my teeth)."

Task 2 – Argumentative paragraph (15 minutes): "Write a short paragraph arguing whether university education should be free in Sudan. Try to use at least four nouns ending in -ion (e.g., education, decision, discussion)."

Task 3 – Sentence completion (10 minutes): Complete 10 gapped sentences with the correct form of the verb in brackets (e.g., "She enjoys _____ (read)" → expected answer: reading).

Three experienced EFL instructors from the same department reviewed the test for content validity. A pilot test involving five students from Batch 44 who were not included in the main sample yielded acceptable internal consistency (Cronbach's $\alpha = .81$). Based on pilot feedback, two ambiguous items in Task 3 were revised for clarity. Because the test contains different task types and the target forms are not necessarily represented equally across tasks, Cronbach's alpha should be interpreted cautiously as evidence of internal consistency rather than as a complete measure of test validity.

9.4 Data Coding and Quantification:

Student responses were anonymized and coded independently by the researcher and a trained research assistant using the coding sheets presented in Appendices B and C. Inter-rater agreement was high, with Cohen's $\kappa = .89$ for -ING and $\kappa = .85$ for -ion (percentage agreement = 94% and 91%, respectively). Disagreements were resolved through discussion.

For each participant, the following measures were recorded:

- 1-total -ING attempts in progressive, gerundial, or participial environments represented in the test;
- 2- correct -ING uses, defined as grammatically and orthographically appropriate realizations;
- 3-total -ion attempts, including recognizable nonstandard forms when the intended derivational target was clear (e.g., information for information);
- 4- correct -ion uses, defined as standard English derivations with appropriate spelling and form;
- 5- error types according to the taxonomies presented in Tables 2 and 3 (see Appendix D for the full taxonomy).

Word count clarification: The total of 1,650 words refers to all words produced by participants across the three tasks. Only words containing the target suffixes (-ING and -ion) were included in the morphological analysis.

Attempt counting clarification: Of the 312 -ion attempts, 146 (46.8%) were standard correct forms, while 166 (53.2%) were errors, including nonstandard forms where the intended derivational target was clear. Only forms where the intended target was unambiguous were counted as attempts.

9.5 Statistical Analysis:

Data were analyzed using SPSS Version 26. Descriptive statistics included means, standard deviations, frequencies, and percentages. Normality was assessed using the Shapiro-Wilk test; because the participant-level accuracy distributions departed from normality ($p < .05$), non-parametric analysis was used. A Wilcoxon signed-rank test was employed to compare paired participant-level accuracy scores for -ING and -ion. The reported Wilcoxon result was $Z = 4.62$, $p < .001$, with $r = .60$.

To compare the frequency of occurrence between the two suffixes, a Wilcoxon signed-rank test was also applied to the per-participant mean attempts (rather than to the aggregate total frequency). This approach was chosen to avoid violating the assumption of independence of observations inherent in a chi-square test when using aggregate totals. The analysis showed that the mean frequency of -ING attempts per student ($M = 28.2$, $SD = 6.4$) was significantly higher than that of -ion attempts ($M = 10.4$, $SD = 4.1$), with $Z = 4.71$, $p < .001$, $r = .59$.

The significance level was set at $\alpha = .05$. Effect sizes were interpreted using conventional guidelines (Cohen, 1988), while recognizing that the substantive interpretation of an effect should also consider the design and sample size. Confidence intervals were not computed due to the non-parametric nature of the analyses and the small sample size; this is acknowledged as a limitation.

9.6 Qualitative Error Analysis

Error analysis followed the general procedures associated with Corder (1974) and Ellis (1994): identification of errors, description through taxonomic classification, and cautious interpretation of possible sources. Potential sources were considered in terms of L1 influence, overgeneralization, and developmental or instructional factors. Representative learner sentences were retained in their original form to illustrate the error categories (see Appendix G for sample learner scripts). Because the study does not independently test the source of each error, explanations are presented as hypotheses rather than definitive causal claims.

10. Results:

10.1 Descriptive Statistics of Suffix Use:

A total of 1,650 words were analyzed across the 30 participants ($M = 55.0$ words per student, $SD = 12.3$). Table 1 summarizes the frequency and accuracy of the two target suffixes.

Table 1. Overall frequency and accuracy of -ING and -ion suffixes

Suffix	Total attempts	Mean attempts per student (SD)	Correct uses	Accuracy rate (%)	Incorrect uses/ Error rate (%)
-ING (inflectional target)	846	(6.4)28.2	625	73.9	221/26.1
-ion (derivational target)	312	(4.1)10.4	146	46.8	166/53.2

Students produced the -ING target approximately 2.7 times as frequently as the -ion target. Accuracy was also higher for -ING (73.9%) than for -ion (46.8%).

10.2 Inferential Comparison of Accuracy and Frequency:

The Shapiro-Wilk results indicated non-normal participant-level accuracy distributions for both suffixes ($p < .05$). A Wilcoxon signed-rank test therefore compared each student's accuracy percentage for -ING and -ion. Median accuracy for -ING was 77.5% ($IQR = 12.3$), compared with 45.0% ($IQR = 18.6$) for -ion. The difference was statistically significant ($Z = 4.62$, $p < .001$), with a large effect size ($r = .60$).

Regarding frequency, the per-participant mean comparisons also showed a substantial imbalance. The Wilcoxon signed-rank test on per-student mean attempts yielded $Z = 4.71$, $p < .001$, $r = .59$ (a large effect size), confirming that -ING occurred significantly more frequently than -ion in the test data.

10.3 Error Analysis: Taxonomies and Frequencies:

A total of 221 -ING errors and 166 -ion errors were identified and classified according to the taxonomies below. Table 2 presents the error taxonomy for -ING, and Table 3 presents the error taxonomy for -ion. The full taxonomy, including examples and coding guidelines, is provided in Appendix D.

Table 2. Error Taxonomy for -ING

Error code	Error type	Frequency	% of -ing error
1- -ING	Double marking (auxiliary + -ING+ past tense marking)	42	19.0
2- -ING	Omission of -ing after auxiliary be	89	40.3
3- -ING	Substitution of infinitive for gerund	54	24.4
4- -ING	Progressive use with a stative verb	36	16.3

Examples: "He was walking to school" (ING-1); "She is read a book" (ING-2); "I enjoy to read" (ING-3); and "I am knowing the answer" (ING-4).

Omission of -ING after the auxiliary be (ING-2) was the most frequent -ING error, accounting for 40.3% of all -ING errors.

Table 3. Error Taxonomy for -ion

Error code	Error type	frequency	% of -ion errors
1. -ion	Stem preservation/ direct attachment to the base	58	34.9
2. -ion	Inappropriate allomorph selection	47	28.3
3. -ion	Substitution of another nominal suffix	32	19.3
4. -ion	Avoidance/ zero – derivation attempt	18	10.8
5. -ion	Spelling – or form – related error	11	6.6

Examples include information for information, decideation for decision, educatement for education, an explain for explanation, and pronunciation for pronunciation. Stem preservation (ION-1) was the most frequent -ion error (34.9%), followed by inappropriate allomorph or lexical-form selection (ION-2, 28.3%). Together, these two categories accounted for 63.2% of all -ion errors.

10.4 Qualitative Vignettes and Subgroup Analysis:

Three representative student responses are presented below. Original learner spelling and grammar are retained in quotation marks. Full sample scripts are provided in Appendix G.

Vignette A: Low performer on both suffixes (S07, male).

Task 1: "I am wake up at 5. Then I am go to the mosque. After that I am take my breakfast."

Task 2: "The government must take a décideation about free education. We need more information."

Reported -ING performance: 0/3 correct; all three progressive constructions show omission of -ING after be (ING-2).

Reported -ion performance: 0/2 correct; décideation was classified as ION-2 and information as ION-1.

Vignette B: Successful performer (S19, female).

Task 1: "Every morning I am eating breakfast with my family. My father is reading the news. I like walking to the bus station."

Task 2: "The decision for free education is very hard. But the solution must come from discussion."

Reported -ING performance: 3/3 correct.

Reported -ion performance: 3/3 correct.

Vignette C: High -ING accuracy but lower -ion accuracy (S24, male).

Task 1: "I am getting up at six. I am brushing my teeth. Then I am leaving home."

Task 2: "Free education need a good government. The people must have an educate."

Reported -ING performance: 3/3 correct.

Reported -ion performance: 0/2 correct; government was classified as a nominalization error and educate as an avoidance/zero-derivation error.

Subgroup Identification: To systematically identify participants showing a dissociation between inflectional and derivational accuracy, a classification criterion was applied: high -ING accuracy ($\geq 70\%$) combined with low -ion accuracy ($< 50\%$). These cut-offs were chosen for pragmatic clarity and to ensure a sufficiently sized subgroup for descriptive analysis; they are not intended as diagnostic thresholds (see Appendix F for the full criteria and justification). Based on this criterion, 12 participants (40% of the sample) exhibited this pattern. For this subgroup, the mean accuracy

for -ING was 81.2% (SD = 6.7), while the mean accuracy for -ion was 38.5% (SD = 9.1). This pattern is consistent with, though not conclusive evidence for, dual-mechanism or declarative/procedural models of morphological processing.

10.5 Summary of Key Findings

Frequency: -ING occurred significantly more frequently than -ion in the diagnostic-test data (Wilcoxon on per-participant means: $Z = 4.71$, $p < .001$, $r = .59$).

Accuracy: Participants were more accurate with -ING (73.9%) than with -ion (46.8%), with a reported Wilcoxon $Z = 4.62$, $p < .001$, $r = .60$.

Error patterns: -ING errors were dominated by omission after the auxiliary be (40.3%), whereas -ion errors were dominated by stem preservation (34.9%) and inappropriate allomorph/lexical-form selection (28.3%).

Individual variation: A subgroup of 12 participants (40%) showed relatively strong -ING performance alongside weaker -ion performance, documented with explicit criteria above.

Pedagogical implication: The error profiles suggest that -ion requires targeted instruction in lexical families, nominalization, spelling, and common stem alternations.

11. Discussion:

11.1 Main Findings:

This study examined the use of the suffixes -ING and -ion among 30 Sudanese EFL undergraduates. The findings indicate that participants produced the -ING target more frequently and with greater accuracy than the -ion target. The error profiles were also different: -ING errors were concentrated around omission after the auxiliary be, whereas -ion errors frequently involved preservation of the verbal base and selection of nonstandard nominal forms.

The results should be interpreted as evidence of differences in performance on the two target forms rather than as direct proof that inflectional morphology is inherently easier to acquire.

11.2 The Inflectional Advantage:

The higher frequency and accuracy of -ING are compatible with the view that inflectional morphology is closely connected to basic grammatical processes. The accuracy difference observed in this study (73.9% vs. 46.8%) is also broadly compatible with previous reports of greater difficulty with derivational morphology among Arab EFL learners. However, comparisons across studies should be made cautiously because learner proficiency, task design, target suffixes, and scoring procedures may differ.

11.3 Explanation of Dominant Error Types:

-ING errors. The most frequent -ING error was omission after the auxiliary be, as in "I am go." This pattern may reflect several factors, including L1 influence, incomplete proceduralization of the English progressive construction, and instructional or attentional effects. The interpretation is deliberately cautious because the present design does not isolate L1 transfer experimentally.

-ion errors. Stem preservation and inappropriate nominal-form selection accounted for more than 60% of the -ion errors. Forms such as information and decideation suggest that learners may recognize the need for a noun but rely on an overly

general "base + -ion" strategy. Such forms are compatible with overgeneralization, lexical retrieval difficulty, limited exposure to morphological families, or combinations of these factors. The data therefore support a multifactorial explanation rather than a single-cause account.

11.4 Dissociation Between Inflectional and Derivational Performance:

The reported subgroup (40% of the sample) with relatively high -ING accuracy and lower -ion accuracy is consistent with predictions made by dual-mechanism or declarative/procedural approaches to morphology (Pinker, 1999; Ullman, 2001). However, the present study cannot establish that learners actually use two neurologically distinct processing systems. The finding should therefore be described as "consistent with" rather than "supporting" or "demonstrating" a dual-mechanism architecture.

11.5 Comparison with Previous Studies:

The observed accuracy gap between -ING and -ion suggests that derivational nominalization may present a greater challenge for these learners than the target -ING constructions included in the test. Previous work on Arab EFL learners has similarly documented difficulties with English derivational morphology (e.g., Al-Hazemi, 1993; Al-Jarf, 2005; Baniabdelrahman & Bataineh, 2014; Mukattash, 1986; Mukhtar, 2018). The present study extends this line of work by examining the two target forms within the same learner group and by providing a structured error taxonomy.

11.6 Hypotheses Testing:

H1: Supported. -ING occurred significantly more frequently than -ion ($Z = 4.71$, $p < .001$, $r = .59$), with 846 -ING attempts compared to 312 -ion attempts (approximately 2.7 times as frequent).

H2: Supported. Participants demonstrated significantly higher accuracy for -ING (73.9%) than for -ion (46.8%), with a large effect size ($Z = 4.62$, $p < .001$, $r = .60$).

H3: Supported. The error patterns differed qualitatively: -ING errors were dominated by omission after auxiliary be (ING-2, 40.3%), while -ion errors were dominated by stem preservation (ION-1, 34.9%) and inappropriate allomorph selection (ION-2, 28.3%).

H4: Supported with caution. A subgroup of 12 participants (40%) exhibited high -ING accuracy ($M = 81.2\%$, $SD = 6.7$) alongside low -ion accuracy ($M = 38.5\%$, $SD = 9.1$). This pattern is consistent with dual-mechanism predictions, though the study cannot establish the underlying cognitive architecture.

11.7 Pedagogical Implications:

The findings suggest that explicit instruction in derivational morphology, particularly -ion nominalization, is needed for Sudanese EFL learners. The error taxonomy (Tables 2 and 3) can serve as a diagnostic tool for instructors, and the four-session intervention module (Section 12.2) provides a practical framework. These implications are discussed in detail in Section 12.2.

12. Conclusion and Recommendations:

12.1 Summary of Contributions

This study contributes to research on Sudanese EFL morphology in three ways. First, it provides a direct comparison of learner performance on an inflectional target (-ING) and a derivational target (-ion). Second, it identifies distinct error profiles for the two forms. Third, it translates these findings into classroom-oriented recommendations for morphological instruction and diagnostic assessment. The study should be understood primarily as an investigation of frequency and accuracy rather than as a definitive measure of morphological productivity in the theoretical sense.

12.2 Pedagogical Recommendations:

To effectively address the documented difficulties with inflectional and derivational morphology, the following pedagogical recommendations might be directed toward three primary stakeholder groups. It should be noted, however, that these recommendations are suggestive rather than prescriptive, and their effectiveness would ideally be evaluated through further empirical investigation.

For classroom instructors, it may be useful to begin intervention for -ING errors, particularly omission after the auxiliary *be*, with contrastive pattern practice that explicitly compares progressive constructions in Arabic and English. Instructors might usefully supplement such practice with scrambled auxiliary + verb activities, where learners reconstruct complete progressive sentences (e.g., *she/read* → *She is reading*), followed by short editing tasks based on anonymized learner errors, which could allow for immediate reformulation and repeated production. To address -ion errors – especially stem preservation and inappropriate nominal-form selection – instructors may consider utilizing morphological family charts that group common verb-noun pairs (e.g., *decide–decision*, *inform–information*, *permit–permission*, *educate–education*), and explicit instruction might help reinforce the relationship between forms and derived nouns.

At the curriculum development level, syllabus designers could consider integrating these practices into writing syllabi by allocating dedicated time for morphological awareness before students engage in advanced academic writing. One possible proposal would be the introduction of a four-session, eight-hour instructional module on nominalizing suffixes (-ion, -ment, -ance/-ence, and -ity). This module might usefully incorporate the diagnostic error taxonomy proposed in this study (Tables 2 and 3; see also Appendix D).

For teachers, it would seem beneficial to equip teachers with practical classroom activities, sample lesson plans, and consistent feedback mechanisms (e.g., using error codes such as ING-2 and ION-1). Finally, at the classroom level, a number of general strategies might be considered: beginning writing lessons with brief error-detection warm-ups based on anonymized student production, teaching vocabulary through morphological families rather than isolated words (e.g., teaching *inform*, *information*, and *informative* together), and consistently using error codes to guide learner self-correction. These practices, if implemented coherently, may foster morphological awareness. However, further classroom-based research would be necessary to confirm their effectiveness across different learner populations and instructional settings.

12.3 Suggestions for Further Study:

Corpus-based replication: Apply the error taxonomy to a larger corpus of naturalistic student writing (e.g., approximately 50,000 words) to examine whether the same patterns occur outside a controlled diagnostic test.

Intervention study: Conduct a pre-test/post-test quasi-experimental or experimental study to evaluate the proposed four-session -ion intervention using a control or comparison group.

Receptive versus productive knowledge: Compare recognition and production of -ion nouns to determine whether the difficulty primarily concerns lexical knowledge, retrieval, or productive rule use.

Cross-dialectal comparison: Compare Sudanese learners with learners from other Arabic-speaking contexts to investigate whether differences in L1 constructions are associated with different error patterns.

Longitudinal research: Follow the same cohort over time to determine whether -ion accuracy improves without targeted instruction.

12.4 Final Remarks:

EFL writing requires learners to control both inflectional and derivational morphology. In this sample, the -ING target was produced more frequently and accurately than the -ion target, while the two forms displayed distinct error profiles. The findings suggest that learners may benefit from explicit instruction that treats derivational morphology as a

combination of lexical knowledge, morphological structure, and spelling rather than as a simple suffix-attachment rule. Such instruction may help English programs at the University of Gezira and in comparable Arabic-speaking EFL contexts strengthen students' academic writing.

Declarations:

Ethics Approval: Ethical approval was obtained from the Research Ethics Committee at the Faculty of Education – Hantoub, University of Gezira, Sudan.

Informed Consent: Informed consent was obtained from all participants prior to data collection.

Data Availability: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of Interest: The authors declare no conflicts of interest.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

References:

1. Al-Hazemi, H. (1993). Arab students' problems with English derivational morphology. *Journal of the Faculty of Arts, University of the United Arab Emirates*, 14(1), 5–24.
2. Al-Jarf, R. (2005). The effects of explicit instruction on Saudi college students' use of English derivational suffixes. *Journal of King Saud University*, 17(2), 45–62.
3. Aronoff, M. (1976). *Word formation in generative grammar*. MIT Press. <https://doi.org/10.7551/mitpress/7285.001.0001>
4. Baniabdelrahman, A., & Bataineh, R. (2014). The effect of explicit instruction on Jordanian EFL students' acquisition of derivational suffixes. *Jordan Journal of Educational Sciences*, 10(3), 325–336.
5. Bauer, L. (1983). *English word-formation*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139165846>
6. Bloomfield, L. (1933). *Language*. Holt, Rinehart and Winston.
7. Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum. <https://doi.org/10.4324/9780203771587>
8. Comrie, B. (1976). *Aspect*. Cambridge University Press.
9. Corder, S. P. (1974). The significance of learners' errors. In J. C. Richards (Ed.), *Error analysis: Perspectives on second language acquisition* (pp. 19–27). Longman.
10. Ellis, R. (1994). *The study of second language acquisition*. Oxford University Press.
11. Haspelmath, M. (2002). *Understanding morphology*. Arnold.
12. Lado, R. (1957). *Linguistics across cultures*. University of Michigan Press.
13. Mukattash, L. (1986). Persistence of fossilization. *IRAL (International Review of Applied Linguistics)*, 24(3), 187–203. <https://doi.org/10.1515/iral.1986.24.1-4.187>
14. Mukhtar, A. (2018). *Common errors in Sudanese EFL writing: A morphological perspective*. University of Khartoum Press.
15. Pinker, S. (1999). *Words and rules: The ingredients of language*. Basic Books.
16. Quirk, R., Greenbaum, S., Leech, G., & Svartvik, J. (1985). *A comprehensive grammar of the English language*. Longman.
17. Schmitt, N., & McCarthy, M. (Eds.). (1997). *Vocabulary: Description, acquisition and pedagogy*. Cambridge University Press.
18. Ullman, M. T. (2001). The neural basis of lexicon and grammar in first and second language: The declarative/procedural model. *Bilingualism: Language and Cognition*, 4(2), 105–122. <https://doi.org/10.1017/S1366728901000220>