

The Role of Receptive and Productive Forms of Vocabulary Testing in Lexical Diversity and Lexical Cohesion Aspects of L2 Writing

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Abstract

While both reader and text variables are crucial for second language (L2) learners' success, the impact of the latter has been understudied in the literature. This study investigated the distinct roles of receptive and productive vocabulary testing formats in influencing the lexical diversity and lexical cohesion of L2 descriptive writing. Sixty Iranian English as a Foreign Language (EFL) students were randomly assigned to a control group and two experimental groups. Vocabulary knowledge was assessed using Cloze tests (receptive) and C-tests (productive), followed by two descriptive writing tasks evaluated with computational tools. One-way ANOVA revealed that the C-test group produced more lexically cohesive essays, while the Cloze-test group exhibited greater lexical diversity in their descriptions. These findings offer valuable insights for language teachers and curriculum designers, highlighting the potential of incorporating both receptive and productive vocabulary measures to enhance various aspects of L2 writing performance.

Keywords: Receptive vocabulary testing; Productive vocabulary testing; Lexical diversity; Lexical cohesion; L2 descriptive writing

1. Introduction

Writing is recognized as a challenging skill for English as a Foreign Language (EFL) learners, requiring proficiency in grammar, vocabulary, and genre conventions (Sharma, 2015). Consequently, numerous studies

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have explored the connections between reader variables like grammar and vocabulary knowledge and second language (L2) writing ability (e.g., Kim et al., 2021; Yang et al., 2019). The field of second language and foreign language instruction, particularly research on writing skills, has witnessed a surge in activity over the past decades. Numerous studies published in applied linguistics journals have addressed this issue, shedding light on diverse factors influencing writing development. These investigations have encompassed the impact of self-assessment, lexical proficiency, collaborative learning, and grammar instruction.

Extensive research has been conducted to identify the factors influencing performance in language tests. Youn and Bi (2019) categorize these factors into three main groups: (1) characteristics inherent in the task itself; (2) attributes of test takers; and (3) interactions between test takers and task characteristics. As Alderson (2000) mentioned, many aspects of the text or the task itself that might facilitate or make difficult the text comprehension process have been studied from a variety of different disciplines. He pointed out that these factors range from “aspects of text content, to text types or genres, text organization, sentence structure, lexis, text typography, layout, the relationship between verbal and nonverbal text, and the medium in which the text is presented” (p. 61). Among test takers’ characteristics that affect test performance are cultural background, background knowledge, cognitive characteristics, native language, ethnicity, sex, and age (Jin, 2023).

A substantial body of research has investigated the factors influencing performance on text-dependent language tests, such as reading comprehension, cloze tests, and C-tests. These studies have explored a wide range of variables, including text features that encompass aspects like text difficulty, organization, genre, and specific elements like vocabulary, sentence structure, typography (Ajideh & Mozaffarzadeh, 2012), and individual characteristics of test-takers, such as prior knowledge, reading skill, grammatical knowledge; vocabulary knowledge has also been examined (Drackert & Timukova, 2020). By examining both text features and reader variables, researchers have aimed to gain a deeper understanding of the factors that contribute to success or difficulty in text-based assessments.

Recognizing the crucial role of vocabulary knowledge as a reader variable in productive skills and the acknowledged importance of text features in language instruction, this study investigated the influence of multiple-choice cloze tests and C-tests as receptive and productive vocabulary assessment formats (Read & Chapelle, 2001) on the lexical diversity and lexical cohesion of EFL learners' descriptive writing

performance. This exploration builds on the established link between vocabulary and writing, as Laufer (2013) argued that focusing on different aspects of vocabulary knowledge can enhance its use in writing. Consequently, Levitzky-Aviad and Laufer (2013) suggest that emphasizing vocabulary in writing instruction can improve students' writing ability.

Existing research has established a strong connection between vocabulary knowledge and writing ability (Dabbagh & Janebi Enayat, 2019; Lee, 2003; Haastруп & Henriksen, 2000). However, these studies primarily employed a correlational design and focused solely on receptive vocabulary knowledge. Notably, the impact of productive vocabulary testing through an experimental design has not been explored in previous research. This gap in the literature motivated the present study to investigate how receptive and productive forms of vocabulary testing, namely multiple-choice cloze tests, and C-tests, might influence the lexical diversity and cohesion of L2 descriptive writing performance.

2. Literature review

While lexical knowledge might initially appear as a unified concept, scholars like Nation (2001) and Read (2007) argue against a simplistic view of memorizing word lists. They highlight various aspects of vocabulary knowledge and their distinct contributions to overall language proficiency. As a key reader variable, lexical proficiency has been linked to crucial text features like cohesion and coherence. These concepts refer to explicit linguistic devices and the overall meaning-making ability of a text (Halliday & Hasan, 1976). This suggests that a deeper understanding of vocabulary goes beyond mere recognition and plays a vital role in how readers interact with and interpret texts.

Understanding the meaning of a text, regardless of its purpose (entertainment, comprehension, or assessment), requires careful consideration of the cohesive links that guide the reader's interpretation. Among these, lexical cohesive devices hold particular significance, as research by Sidabutar and Tampubolon (2024) demonstrates a strong correlation between their use and student performance in text-dependent tests. The C-test, developed by Raatz and Klein-Braley (1981), serves as one example of a context-dependent test that assesses this crucial aspect of language proficiency.

Vocabulary knowledge is not a simple "all-or-nothing" phenomenon but rather exists on a spectrum of proficiency (Shen, 2008). Two key aspects of vocabulary knowledge are receptive and productive skills. Mondria and Wiersma (2004) define receptive vocabulary knowledge as

the ability to understand the meaning of a word in the target language (L2) and translate it from L2 to the first language (L1). Conversely, productive vocabulary knowledge refers to the learner's ability to translate a word from L1 to L2.

Henriksen (1999, as cited in Kieffer & Lesaux, 2012) further expands on this concept by proposing three dimensions of vocabulary knowledge: Partial to precise knowledge: This dimension relates to the accuracy of understanding, allowing learners to translate a word into their L1, "find the right definition in a multiple-choice task, or to paraphrase in the target language" (Henriksen, 1999, p. 305).

1. Depth of knowledge: This refers to the quality of vocabulary knowledge, encompassing word associations and collocations.
2. Receptive-productive dichotomy: This dimension distinguishes between simply understanding a word and the ability to actively use it in speaking or writing.

Therefore, vocabulary knowledge is a multifaceted concept encompassing both receptive and productive skills, and its depth and accuracy play a crucial role in language proficiency.

Engaging with a text, whether for pleasure or completing tasks like filling in blanks in a C-test or answering comprehension questions, transcends simply viewing it as a sequence of words. As Alshaar (2008) aptly states, readers "unintentionally try to link all these words in order to have a full understanding of what the text is all about" (p. 14). Among the features that facilitate comprehension are cohesion and coherence. Halliday and Hasan (1976) categorize cohesion into two main types: grammatical and lexical. Grammatical cohesion encompasses devices like reference, substitution, ellipsis, and conjunctions, while lexical cohesion is divided into reiteration and collocation. Reiteration refers to the repetition of the same word, either through exact repetition or synonyms. Collocation, on the other hand, refers to the frequent co-occurrence of specific lexical items. These features play a crucial role in creating a cohesive and coherent text, enabling readers to construct meaning and navigate the text effectively.

The concept of lexical cohesion can be further divided into more specific terms like lexical links and chains. Hoey (1991, as cited in Malah, 2015) proposed a system for describing lexical patterns based on the notion of "link." This term was chosen over the traditional "tie" used by Halliday and Hasan (1976) because "tie implies directionality while links imply multidirectionality thus allowing for the creation of webs among lexical items" (Sardinha, 2001, p. 217). This shift in terminology emphasizes the dynamic and interconnected nature of lexical relationships

within a text, highlighting the creation of complex networks of meaning through word choices

While Halliday and Hasan (1976) initially introduced the term "chain" to describe a relationship where one element refers to another, Tabari and Johnson (2023) argued that lexical cohesion extends beyond simple pairwise connections. They emphasized that lexical cohesion manifests not just between individual word pairs but across a sequence of closely related words spanning a coherent section of the text. These extended sequences of related words are referred to as lexical chains. Lexical chains are formed through semantic relationships between words. As Silber and McCoy (2002) stated, these chains are built around semantically related terms such as synonyms, hypernyms/hyponyms, and superordinates/subordinates. This broader perspective highlights the interconnectedness of lexical choices within a text and how they contribute to the overall meaning-making process.

Lexical diversity as another crucial text variable in texts reflects the range and frequency of words used, emphasizing less common vocabulary over basic words (Nation, 2001). This diversity correlates with vocabulary size, which measures the total number of words known by a learner (Schmitt, 1999). Understanding lexical diversity provides insights into the breadth of a learner's word knowledge and its implications for text analysis and language learning assessment.

The C-test was distinguished by unique features, including the "rule of two" for assessing students' language proficiency. This rule, based on Gestalt psychology (Oller, 1972), emphasizes the importance of context in language comprehension. Additionally, the C-test aimed to be an integrative measure of general language proficiency, encompassing various aspects of language knowledge and usage (Shoahosseini et al., 2024).

In the realm of productive language skills, vocabulary knowledge holds immense predictive power for learners' performance. As Read (2004) aptly states, "lexical items carry the basic information load of the meanings they wish to comprehend and express" (p. 146). This underscores the crucial role vocabulary plays in both understanding and producing language effectively. Lee (2003) investigated the effect of productive vocabulary instruction on EFL learners' vocabulary use in writing. The results demonstrated that explicit instruction in using vocabulary effectively improved learners' writing. However, the study also highlighted that delaying writing tasks after instruction did not yield the same positive outcomes as immediate writing practice. These findings

collectively emphasize the significant influence of vocabulary knowledge on productive language skills, particularly in the context of writing.

Several studies have explored the impact of vocabulary knowledge on EFL writing, particularly focusing on the two aspects of size and depth. Baba (2009) investigated the effects of these aspects on summary writing but did not find a significant influence on lexical proficiency. Batty (2007), however, found that depth of word knowledge significantly predicted performance in the written section of the Kanda English Proficiency Test (KEPT). Atai and Dabbagh (2010) confirmed the importance of depth, demonstrating its association with appropriate word use in Iranian EFL learners' writing. Dabbagh and Janebi Enayat (2019) further examined both size and depth in relation to overall writing ability and the lexical dimension of descriptive writing. While both aspects were positively correlated with overall L2 writing, vocabulary size emerged as a stronger predictor of the lexical dimension. These studies highlight the multifaceted nature of vocabulary knowledge and its influence on different aspects of L2 writing performance. While the relative importance of size and depth may vary depending on the specific writing task and assessment focus, both play a crucial role in enabling learners to express themselves effectively.

While research in ELT has primarily focused on the role of lexical cohesion in text interpretation (e.g., Frestl & von Cramon, 2001) and discourse analysis (Gonzalez, 2010), Palmer (1999) investigated its impact on EFL writing. He examined how EFL students utilize both cohesion and coherence to complete writing assignments and how the use of cohesive devices affects the overall quality of their writing. His findings revealed that students relied heavily on reiteration to create coherent texts, while the use of other cohesive devices was less prominent. This suggests that while EFL learners may employ specific lexical cohesion strategies, their overall command of the concept and its diverse range of devices may require further development.

While the influence of cohesion and coherence on text comprehension has been extensively explored (e.g., Halliday & Hasan, 1976), the specific neural mechanisms involved remain a topic of ongoing investigation. In a more ELT-focused study, MacMillan (2007) examined the impact of lexical cohesion on EFL reading proficiency assessment. Utilizing Hoey's (1991) framework for lexical cohesion analysis, MacMillan investigated the relationship between question stems in different versions of the TOEFL reading section (PBT, CBT, and IBT) and specific sentences within the texts. The results revealed that the types of lexical links employed varied across different TOEFL versions and could potentially

serve as cues for test-takers to enhance their reading comprehension skills. This highlights the importance of considering lexical cohesion not only in text comprehension but also in the design of effective language assessments.

Therefore, the present study aims to investigate how multiple-choice cloze tests and C-tests, as two forms of vocabulary assessment, can improve the lexical diversity and lexical cohesion aspects of EFL students' writing performance. The purpose of this experimental study was to answer the following questions:

- 1) Do receptive and productive forms of vocabulary testing have any effects on Iranian EFL students' lexical diversity aspect of writing performance?
- 2) Do receptive and productive forms of vocabulary testing have any effects on Iranian EFL students' lexical cohesion aspect of writing performance?

3. Methodology

This study operates under the assumption that receptive and productive vocabulary assessment, as measured by multiple-choice cloze tests and C-tests respectively, might correlate with the lexical diversity and lexical cohesion aspects of EFL students' writing. This is based on the premise that productive testing can enhance the use of vocabulary in writing, which in turn affects the overall quality of writing (e.g., Read, 2004). The study hypothesizes that both passive and active forms of vocabulary instruction could influence the text features of students' writing by promoting lexical diversity and lexical cohesion.

3.1. Design of the Study

This study adopted a quasi-experimental design to investigate the potential influence of different vocabulary assessment methods on EFL learners' writing. The independent variables were the two forms of vocabulary testing: receptive (multiple-choice cloze tests) and productive (C-tests). The dependent variables were the lexical diversity and lexical cohesion aspects of the student's writing performance.

3.2. Participants

Sixty intermediate-level Iranian EFL learners (male and female) from a private language institute aged 25-30 participated in this Quantitative study. To ensure homogeneity in terms of both general English language proficiency and writing ability, participants were pre-tested using the

Oxford Placement Test and a 300-word descriptive writing task. Subsequently, they were randomly assigned to three groups: two experimental groups and one control group, each consisting of 20 participants.

3.3. Instruments

The Oxford Placement Test (OPT) served as the pre-treatment assessment to ensure homogeneity in general English language proficiency among the participants before the study commenced. This test aimed to create a level playing field by standardizing the participants' baseline English competence. The OPT comprises a cloze test and multiple-choice items that evaluate the test-taker's grammar, vocabulary, and reading comprehension skills. Geranpayeh (2003) reported high validity and a reliability coefficient of 0.90 for this test, indicating its effectiveness in accurately measuring general English proficiency.

Cloze test. To investigate the influence of receptive vocabulary assessment on lexical diversity and cohesion in EFL learners' writing, the first experimental group engaged in multiple-choice cloze tests based on topics and vocabulary from the "American Files" textbook. This study examined how this assessment format impacted these aspects of descriptive essays. Readability was ensured by aligning test items with the textbook's language complexity. The multiple-choice cloze tests contained 20 items per assessment session. Reliability was established through test-retest reliability measures over a two-week interval. Validity was supported by content validity ensured through expert review and alignment with curriculum objectives. This approach aimed to provide comprehensive insights into the effects of receptive vocabulary assessment on language production in educational settings.

C-test. The second experimental group engaged with a series of teacher-made C-tests designed specifically for this study. These tests adhered to the "rule-of-two," where the first and last sentences of each paragraph remained intact. However, every other word in the remaining sentences was partially deleted, requiring test-takers to fill in the missing half of each word. This specific format, based on the textbook content and vocabulary, allowed us to investigate whether engaging with this productive form of vocabulary assessment could potentially influence the lexical diversity and lexical cohesion aspects of the students' descriptive essays. Reliability was ensured through internal consistency measures, such as Cronbach's alpha, across multiple test administrations during the piloting phase and reported to be .84. Content validity was established by aligning the C-tests with the curriculum objectives and expert review.

Construct validity was supported by the theoretical framework of the C-test format, which aims to assess both receptive and productive vocabulary knowledge in context.

Descriptive writing. A descriptive writing task was used for all three groups after the treatment. The task asked the students to describe something or someone. The students had to write at least 250 words for the task.

ADELEX ANALYSER (ADA) is an online tool specifically designed for measuring lexical diversity in written English texts. Developed by Moreno Jaen (2006), ADA leverages a 7,000-word frequency list derived from the British National Corpus, Bank of English, and Longman Corpus Network databases. The tool employs a combination of factors to estimate lexical diversity, including lexical density and lexical frequency. One key metric employed is the type/token ratio, where "type" refers to the number of distinct words and "token" refers to the total number of words in the text. ADA utilizes this measure in conjunction with the frequency of individual words to provide a comprehensive assessment of lexical diversity.

Hoey's (1991) Lexical Analysis. This framework proposes a method for identifying patterns of lexis that reflect text organization through the analysis of cohesion. It posits that lexical ties act as cohesive bridges between sentences, creating a sense of connection and unity within the text. Sentences are considered linked when they share lexical ties, which are formed through various lexical-semantic relationships between lexical units. These relationships include:

- Repetition: The same word or phrase is used multiple times.
- Synonymy: Words with similar meanings are used interchangeably.
- Superordinate/Subordinate: A more general term is used alongside a more specific term (e.g., "tree" and "oak").
- Collocation: Words that frequently co-occur are used together (e.g., "tree" and "trunk").
- Meronymy: A part-whole relationship exists between words (e.g., "tree" and "branch").
- Hyponymy: A specific term is used alongside a more general term (e.g., "oak" and "tree").
- Co-hyponymy: Two specific terms share the same superordinate term (e.g., "oak" and "pine" are both types of trees).
- Antonymy: Words with opposite meanings are used (e.g., "awake" and "asleep").

Sentences containing an above-average number of these lexical ties are considered to be lexically cohesive. Therefore, conducting a lexical analysis involves the following steps:

1. Identifying lexical-semantic relations: Analyze the text to identify the specific relationships between words, such as those listed above.
2. Counting lexical ties: Treat each identified semantic relationship between a pair of sentences as a single "link."
3. Quantifying cohesion: Count the total number of links between all possible pairs of sentences in the text. This provides a numerical measure of the text's lexical cohesion.

3.4. Procedure

The study employed a three-month intervention to investigate the impact of different vocabulary assessment methods on EFL learners' writing. Initially, a 45-minute placement test was administered to both experimental and control groups to ensure homogeneity in language proficiency. Subsequently, participants were randomly assigned to three groups of 20 students each:

- Control Group: Received no additional testing treatment and followed the standard textbook curriculum.
- Experimental Group 1: Engaged in multiple-choice cloze tests throughout the intervention.
- Experimental Group 2: Completed teacher-made C-tests as a productive vocabulary assessment tool.

The intervention itself lasted for three months, with the course completed within six weeks of two weekly sessions. The same instructor, who was also the researcher, taught all three groups. The researcher tried to apply clear communication about the study's relevance to their language learning goals and the potential impact on their skills, which could have encouraged participation. The key distinction between the groups was the type of vocabulary assessment:

- Control Group: No additional testing.
- Experimental Group 1: Multiple-choice cloze tests.
- Experimental Group 2: C-tests.

In addition to the weekly vocabulary assessments, all groups completed a weekly vocabulary exam and a brief descriptive essay writing assignment.

Following the intervention, both groups were given a 45-minute descriptive essay writing exam, requiring them to write at least 250 words.

The writing performances were then analyzed using ADELEX ANALYSER (ADA) and Hoey's lexical cohesion framework to assess their lexical diversity and cohesion.

3.5. Data Analysis

To analyze the data, descriptive statistics were employed. Additionally, one-way ANOVAs were conducted for each research question using SPSS version 22.0. These analyses were performed separately for the lexical diversity and lexical cohesion aspects of the students' descriptive essays, aiming to identify any statistically significant differences between the groups exposed to different vocabulary assessment methods.

4. Results

4.1. Descriptive statistics

Table 1 presents the descriptive statistics for the participants' scores on the OPT, as well as the lexical diversity and lexical cohesion aspects of their descriptive writing performance. Table 1 includes the maximum possible score for each measure, the mean score, the standard deviation, and the range of scores observed for each group.

Table 1. *Descriptive statistics for the students' scores on each test and sub-test.*

Test	MPS	Range	Mean	SD	N
OPT	60	12	33.01	2.75	60
Lexical diversity	--	0.60	0.62	0.16	60
Lexical cohesion	--	31	30.30	8.64	60

Note: MPS = Maximum possible score; SD = Standard deviation

4.2. Effects of receptive and productive vocabulary assessment on lexical diversity aspect of L2 descriptive writing

To address the first research question, a one-way ANOVA was conducted to compare the means of the three groups on the lexical diversity aspect of their descriptive writing. The results, presented in Table 3, revealed statistically significant differences between the groups ($p < .001$). Specifically, the lexical diversity of the control group differed significantly from both the group using multiple-choice cloze tests and the group using C-tests. Furthermore, the effect of receptive vocabulary testing (cloze tests) on lexical diversity was significantly greater than the effect of productive testing (C-tests) ($p < .001$). These findings suggest that both cloze tests and C-tests can positively impact the lexical diversity of L2 descriptive writing, with receptive testing having a stronger influence.

Table 2. Results of one-way ANOVA for the lexical diversity in L2 descriptive writing

(I) groups	(J) groups	Mean Difference (I-J)	Std. Error	Sig.
Control	Cloze	-.351	.025	.000***
	C-test	-.139	.025	.000***
Cloze test (receptive)	Control	.351	.025	.000***
	C-test	.211	.025	.000***
C-test (productive)	Control	.139	.025	.000***
	Cloze	-.211	.025	.000***

*** $p < .001$

4.3. Effects of receptive and productive vocabulary assessment on lexical cohesion component of L2 descriptive writing

To address the second research question, a separate one-way ANOVA was conducted to compare the means of the three groups in terms of lexical cohesion.

Table 3. Results of one-way ANOVA for the lexical cohesion in L2 descriptive writing

(I) groups	(J) groups	Mean Difference (I-J)	Std. Error	Sig.
Control	Cloze	-23.3	.027	.000***
	C-test	-29.2	.027	.000***
Cloze test (receptive)	Control	23.3	.027	.000***
	C-test	20.2	.027	.000***
C-test (productive)	Control	29.2	.027	.000***
	Cloze	-20.2	.027	.000***

*** $p < .001$

The results, presented in Table 3, revealed statistically significant differences between the groups ($p < .001$). Specifically, the lexical cohesion of the control group differed significantly from both the group using multiple-choice cloze tests and the group using C-tests. Interestingly, the effect of productive vocabulary testing (C-tests) on

lexical cohesion was significantly greater than the effect of receptive testing (cloze tests) ($p < .000$). These findings suggest that both cloze tests and C-tests can positively impact the lexical cohesion of L2 descriptive writing, with productive testing having a stronger influence.

5. Discussion

This study investigated the impact of cloze tests and C-tests, representing receptive and productive vocabulary assessment methods, on the lexical diversity and lexical cohesion aspects of Iranian EFL learners' descriptive writing. The quantitative data analysis revealed statistically significant differences among the three groups (control, cloze test, and C-test). Notably, both receptive and productive vocabulary testing significantly affected the lexical diversity of L2 descriptive writing. However, the cloze test, as a receptive measure of vocabulary, demonstrated a stronger influence compared to the C-test.

While the current study contributes to the existing research on receptive and productive vocabulary assessment, it is important to acknowledge that most prior studies in this area have employed correlational designs. This study aligns with the findings of Tomen and Kose (2023), who investigated the relationship between vocabulary size, lexical density, and lexical diversity in argumentative essays written by Turkish EFL students. Their study, analyzing essays from 309 students, found that only lexical diversity significantly correlated with first-year students' essay scores. However, for fourth-year essays, no significant effects of the examined variables were observed. These findings suggest that the influence of vocabulary knowledge and its specific aspects on writing performance may vary depending on learner proficiency and the writing task itself.

The present study's findings on lexical diversity align with those of Juanggo (2018), who investigated the lexical diversity and sophistication of productive vocabulary in Indonesian EFL learners' written discourse. His study, involving 31 B1 and B2 level high school students, found that the higher-level group exhibited greater lexical diversity in their writing. Additionally, both groups exhibited similar patterns of lexical diversity, with the second most common 1000 wordlist, "not in the lists" category, and AWL being the most, second most, and least varied categories, respectively. However, no significant difference in lexical diversity or sophistication was observed between the groups. Juanggo attributed these findings to the potential influence of background knowledge, aligning with the notion that prior knowledge plays a crucial role in second language learning (Lee & Anderson, 2007). Familiarity with the topic can

facilitate recall and elaboration, leading to improved writing performance (Tedick, 1988; Long, 1990).

Furthermore, the effectiveness of cloze tests as a measure of receptive vocabulary knowledge aligns with previous research (e.g., Bachman, 1985; Chavez-Oller, 1994; Oller & Taira, 1994; Sasaki, 1996). These studies suggest that cloze tests go beyond assessing individual clauses, effectively measuring both lower and higher-level reading abilities depending on the specific word deleted. This supports the current study's findings regarding the positive impact of cloze tests on lexical diversity.

The present study's findings shed light on the distinct impacts of receptive and productive vocabulary testing on lexical diversity and lexical cohesion in L2 descriptive writing. This can be understood by examining the cognitive and linguistic processes involved in each type of assessment and their subsequent influence on writing performance. Cloze tests primarily assess receptive vocabulary knowledge, which involves recognizing and understanding words within a specific context (Chai, et al., 2020). This process encourages learners to consider various possibilities that fit the context, enhancing their ability to recall and recognize diverse vocabulary items. C-tests, on the other hand, assess productive vocabulary knowledge by requiring learners to actively generate missing parts of words in a given text. This type of test focuses on the ability to retrieve and generate words accurately and appropriately within a context (Aslrasouli, et al., 2024). Completing C-tests involves deep cognitive processing related to word formation and usage, reinforcing the connections between words and their contexts. This process strengthens the learners' ability to produce coherent and cohesive text, as they practice generating lexically and syntactically appropriate words (Bonner, et al., 2022).

Lexical diversity thrives when learners possess a broad receptive vocabulary, allowing them to access and utilize a diverse array of words. The cloze test group's superior performance in this area suggests that their enhanced receptive vocabulary knowledge provided them with a wider selection of lexical choices, enriching their descriptive writing (Kongsuwannakul, 2017). Lexical cohesion, on the other hand, benefits from productive vocabulary skills that enable learners to consistently use related and contextually appropriate words. The C-test group's superior performance in lexical cohesion implies that their productive vocabulary knowledge helped them maintain thematic consistency and logical progression in their writing.

Regarding the second research question, this study's findings reveal that C-tests effectively improved students' writing abilities in terms of lexical

cohesion. This outcome partially diverges from the work of Chai et al. (2020), who suggest that cloze-based passages can help measure and expand the vocabulary of EFL learners. Their findings imply that incorporating cloze passages into the learning process could potentially enhance EFL learners' active vocabulary knowledge. This discrepancy might be partially explained by the nature of the assessed skills. While cloze tests primarily assess receptive vocabulary knowledge, C-tests focus on productive skills. Kılçkaya's (2019) study supports this notion, suggesting that individuals tend to rely more on receptive expertise than productive knowledge when answering multiple-choice questions. Therefore, the observed difference in the impact of C-tests and cloze tests on lexical cohesion might be attributed to the distinct cognitive processes involved in each type of assessment.

Babaii and Jalali Moghadam (2006) highlight that C-tests involve macro-level processing, requiring test-takers to actively search for contextual clues, including lexical chains. This type of processing likely contributes to the positive effects observed in the present study, as it triggers higher-order cognitive processes. This, in turn, could enhance the active recall of vocabulary knowledge and overall comprehension (Chae & Shin, 2015). In essence, engaging in productive vocabulary tasks like C-tests may lead to improved active recall of vocabulary knowledge. This aligns with the findings of Enayat and Derakhshan (2021), who demonstrated that productive measures of vocabulary knowledge were more closely associated with L2 speaking ability than receptive measures.

The present study's findings regarding the effectiveness of C-tests in enhancing lexical cohesion align with the work of Chai et al. (2020). Their study demonstrated that C-tests can effectively improve EFL learners' active vocabulary knowledge. Additionally, Chai et al. (2020) suggest that incorporating cloze-based passages into the learning process can be beneficial for measuring and expanding vocabulary development. This implies that using cloze tests to provide such passages could potentially enhance EFL learners' active vocabulary knowledge. Furthermore, their study concluded that cloze-based tasks, such as cloze passages with multiple-choice items, can contribute to improved vocabulary knowledge. These findings provide further support for the potential of cloze tests and C-tests as valuable tools for promoting vocabulary development and writing skills in EFL learners.

Harsch and Hartig (2016) highlight the C-test's value as a reliable, affordable, and rigorous tool for placement and screening purposes. They acknowledge the ability of C-tests to account for guessing, suggesting them as measures of both vocabulary breadth and guessing ability. The

present study's findings align with Babaii and Jalali Moghadam's (2006) work, which emphasized the importance of macro-level processing in C-tests, where test-takers actively search for contextual clues like lexical chains. This type of processing, as Chae and Shin (2015) suggest, likely contributes to the observed positive effects by triggering higher-order cognitive processes. This, in turn, could enhance the active recall of vocabulary knowledge and improve overall comprehension.

Furthermore, the notion that productive testing can lead to better active recall of vocabulary knowledge finds support in the work of Enayat and Derakhshan (2021). Their study demonstrated that productive measures of vocabulary knowledge were more closely associated with L2 speaking ability than receptive measures. Therefore, the present study's findings, along with the existing research, suggest that C-tests can be valuable tools for assessing and potentially enhancing EFL learners' vocabulary knowledge and writing skills.

The present study's findings resonate with previous research suggesting that productive skills are more strongly influenced by productive vocabulary assessments. Enayat and Derakhshan (2021) investigated the relationship between L2 speaking proficiency and both receptive and productive measures of vocabulary size. They found that productive vocabulary assessments had a positive impact on both lexical and general speaking abilities. Furthermore, C-tests, which often incorporate semantic sets (Janebi Enayat & Babaii, 2018), may be particularly beneficial for EFL students in producing higher-quality compositions. Atai and Dabbagh (2010) suggest that the more contextual and engaging nature of C-tests (Read & Chapelle, 2001) can help EFL students produce essays with richer vocabulary and greater cohesion and coherence. Therefore, the present study, along with existing research, highlights the potential of C-tests as valuable tools for assessing and enhancing EFL learners' productive vocabulary knowledge and, consequently, their writing skills.

The present study's findings resonate with those of Chai et al. (2014), who demonstrated the effectiveness of C-tests in enhancing EFL learners' active vocabulary knowledge. This further supports the argument by Chai et al. (2020) that C-tests are valuable tools for measuring and expanding vocabulary development in EFL learners. While the study did not specifically investigate individual differences, it is possible that the success of the three treatment groups was not solely determined by the type of instruction received. Individual characteristics, positive attitudes, and eagerness to learn may have played a significant role. To gain a more complete understanding of the data, it would be beneficial to assess the number of participants who genuinely benefited from the treatment and

whether the observed gains were sustained over time. Researchers acknowledge the importance of individual differences, including factors like intelligence, cognitive and learning styles, and strategies, in research aimed at identifying effective methods for teaching various skills and sub-skills (Erlam, 2003). Therefore, while the study aligns with prior research on the effectiveness of C-tests, future investigations could benefit from exploring the potential influence of individual learner characteristics on vocabulary development and writing performance.

6. Conclusion

This study investigated the differential impact of receptive and productive vocabulary testing on lexical diversity and cohesion in L2 descriptive writing among Iranian EFL learners. The findings reveal a clear distinction in the effects of these two assessment methods. Students whose vocabulary knowledge was assessed through C-tests, which measure productive vocabulary, demonstrated significantly greater lexical cohesion in their essays. Conversely, students who took Cloze tests, indicative of receptive vocabulary knowledge, displayed higher levels of lexical diversity in their writing.

These results highlight the importance of incorporating both receptive and productive vocabulary assessments into language teaching practices. By doing so, educators and curriculum designers can gain a more comprehensive understanding of learners' vocabulary strengths and weaknesses, allowing them to tailor their instructional strategies to effectively target specific aspects of L2 writing performance. The study suggests that employing a balanced approach that integrates both types of vocabulary measures can lead to more well-rounded and effective language learning outcomes. Consequently, language programs should consider the complementary roles of receptive and productive vocabulary assessment in fostering comprehensive L2 writing skills, ultimately contributing to the development of more proficient and versatile language learners.

This study's findings highlight the crucial role of incorporating both receptive and productive vocabulary assessments in language teaching and curriculum design. Recognizing that each type of vocabulary knowledge contributes differently to various aspects of writing performance is key. Therefore, a balanced approach that includes both cloze tests and C-tests can significantly enhance learners' vocabulary skill set. Integrating activities and assessments that address both receptive and productive vocabulary fosters a well-rounded vocabulary learning experience. This can be achieved through diverse exercises, such as cloze

passages for receptive vocabulary and word formation or completion tasks for productive vocabulary. Furthermore, designing writing tasks that specifically target either lexical diversity or cohesion can help learners apply their vocabulary knowledge more effectively. For instance, exercises that encourage the use of varied vocabulary can promote lexical diversity, while tasks that focus on thematic consistency can enhance lexical cohesion. By understanding and leveraging the distinct benefits of receptive and productive vocabulary testing, language teachers and curriculum designers can better support L2 learners in developing comprehensive and effective writing skills.

As with any research, this study encountered limitations that offered opportunities for further investigation. Firstly, the study focused on a single language proficiency level. Replicating the research with learners at different proficiency levels could provide more comprehensive insights into the impact of receptive and productive vocabulary testing across a broader spectrum of language learners. Secondly, the study's sample size was relatively small. Conducting similar research with larger samples could enhance the generalizability of the findings. The study solely examined descriptive writing. Future research could expand the scope to include other writing genres, such as argumentative or letter writing, as well as the productive skill of speaking, to explore how receptive and productive forms of vocabulary testing influence various aspects of language learning. Lastly, this study had a limited duration. Longitudinal studies could provide more reliable and nuanced insights by examining the effects of different types of vocabulary testing over extended periods.

Addressing these limitations could lead to a deeper understanding of how receptive and productive vocabulary measures impact L2 learning and help in the development of more effective language teaching strategies. The study's findings open several avenues for further research to deepen our understanding of the relationship between vocabulary knowledge and L2 writing performance. Future studies could explore the following aspects. Conducting longitudinal studies to observe how receptive and productive vocabulary knowledge develops over time and its long-term effects on lexical diversity and cohesion in L2 writing. This can provide insights into the durability and progression of vocabulary skills. Implementing specific vocabulary instruction interventions and tracking their impact on writing performance over extended periods. This could help identify the most effective strategies for enhancing both lexical diversity and cohesion. Investigating how the effects of receptive and productive vocabulary testing vary across different proficiency levels (beginner, intermediate, advanced). This could reveal whether certain

types of vocabulary knowledge are more critical at specific stages of language learning. Extending the research to different types of writing (e.g., narrative, argumentative, expository) to see if the effects of receptive and productive vocabulary knowledge vary by genre. This can help us understand how vocabulary skills transfer across various writing contexts. By addressing these recommendations, future studies can contribute to the development of more effective teaching methods and curriculum designs, ultimately enhancing the writing skills of L2 learners.

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