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The Distribution of Lexical Cohesive Ties in Iranian Newly Developed High School English Textbooks, Vision Series, and Their Impact on Iranian EFL Learners' Reading Comprehension

ABSTRACT

This study examined the role of lexical cohesion in the Vision Iran English as a Foreign Language (EFL) textbook series and its subsequent impact on learners' reading comprehension and answered the research question: Quantify the distribution of lexical cohesion subgroups. Using a quantitative, descriptive-correlational, two-stage approach, the first phase of the Vision series textbooks was analyzed to quantify lexical cohesion links (repetition, synonymy, etc.) based on Tanskanen's (2006) framework and showed a progression from basic repetition in Vision 1 to increased use of activity-related conjunctions in Vision 2 and a balance of repetition and elaboration conjunctions in Vision 3. The second phase measured EFL learners' reading comprehension through pre- and post-tests, and statistical analyses including ANOVA and Pearson's r were used to correlate cohesion data with comprehension scores. Key findings indicate a positive correlation between cohesive structure and comprehension, particularly with Vision 2, which suggests that a high density of cohesive ties, coupled with framing ties such as activity-related conjunctions, optimizes comprehension for intermediate learners, thereby emphasizing the critical importance of intentional textbook design and supporting the strategic use of scenario / activity-related conjunction networks. Limitations include the observational design, post-testing, use of intact groups, and a sample of male learners from a single institution. Future research could explore other contexts, longitudinal / experimental designs, effects on writing skills, and the interaction of learner backgrounds with the effectiveness of coherence tools, ultimately providing valuable insights for EFL teaching and textbook development, emphasizing a principled approach to coherence design aligned with learners' cognitive needs.

Keywords: Cohesion, Coherent Links, EFL, Lexical Coherence, Reading Comprehension

Introduction

Reading comprehension is one of the most fundamental objectives of English as a Foreign Language (EFL) instruction because it enables learners to access information, develop academic literacy, and engage meaningfully with written discourse. In contemporary EFL education, reading is no longer viewed as a passive decoding activity but rather as an active process of constructing meaning through the interaction of linguistic knowledge, cognitive resources, and textual features. Recent studies have emphasized that successful reading comprehension depends not only on learners' vocabulary and grammatical knowledge

but also on the structural organization of texts and the coherence mechanisms that facilitate meaning construction (1-4). As educational systems increasingly emphasize communicative competence and literacy development, the quality of instructional materials, particularly textbooks, has become a crucial factor influencing language learning outcomes.

In EFL contexts, textbooks continue to function as the primary source of language input, classroom activities, and reading materials. Consequently, the linguistic characteristics of textbooks directly influence learners' exposure to authentic language patterns and discourse structures. In Iran, the implementation of the newly developed Vision textbook series represented a major reform in secondary school English education. The Vision series was designed to replace older grammar-oriented materials and promote communicative language learning through integrated skills and contextualized language use. Nevertheless, despite extensive research on various dimensions of the Vision textbooks, relatively little attention has been devoted to the cohesive properties of their reading passages and the potential effects of such properties on learners' reading comprehension (5, 6).

The concept of cohesion occupies a central position in discourse analysis and text linguistics. Halliday and Hasan's seminal work established cohesion as the network of semantic relationships that connect elements within a text and transform a collection of sentences into a meaningful discourse (7). According to this perspective, a text is perceived as unified when its components are linked through identifiable cohesive devices. These devices facilitate readers' interpretation of textual information by signaling relationships among ideas and reducing processing demands. Consequently, cohesion contributes significantly to text comprehensibility and reading efficiency, particularly for language learners who may possess limited linguistic resources (8, 9).

Among the various types of cohesion, lexical cohesion has received considerable scholarly attention because it represents one of the most pervasive mechanisms through which textual unity is achieved. Lexical cohesion refers to the semantic relationships among lexical items that establish continuity and coherence throughout a text. These relationships may include repetition, synonymy, antonymy, hyponymy, collocation, and other forms of lexical association. Unlike grammatical cohesion, which relies on structural elements such as reference and conjunction, lexical cohesion emerges from vocabulary choices and semantic connections between words and expressions (7, 10). Because vocabulary serves as the primary carrier of meaning, lexical cohesion plays a particularly important role in guiding readers through a text and facilitating the integration of information across sentences and paragraphs.

Research in text linguistics and educational psychology has consistently demonstrated the importance of lexical cohesion for comprehension and learning. Cohesive ties help readers establish connections between textual propositions, construct coherent mental representations, and maintain thematic continuity throughout the reading process. When texts contain appropriate cohesive devices, readers can more easily identify relationships among concepts and integrate new information with prior knowledge. Conversely, texts characterized by weak or inconsistent cohesion may impose greater cognitive demands and hinder comprehension, especially among less proficient readers (8, 11). These findings underscore the significance of analyzing cohesive structures in educational materials intended for language learners.

The relationship between lexical cohesion and reading comprehension is particularly relevant in EFL settings because learners often encounter difficulties in processing extended discourse. While vocabulary knowledge is widely recognized as a predictor of reading success, recent studies suggest that the organization and interconnectedness of lexical items within texts also contribute substantially to comprehension outcomes. Research has shown reciprocal relationships among vocabulary breadth, vocabulary depth, and reading comprehension, indicating that effective comprehension depends not only on knowing individual words but also on understanding the semantic networks connecting them (1). Similarly, investigations into self-

regulated reading strategies have demonstrated that learners benefit when textual features facilitate the identification of meaningful relationships among ideas (3).

Numerous studies have examined cohesion in academic writing and language learning contexts. Investigations of student writing have revealed that the effective use of cohesive devices contributes significantly to writing quality and textual coherence. For example, research on grammatical cohesion among EFL learners has highlighted the role of cohesive markers in organizing ideas and enhancing readability (12). Likewise, analyses of lexical and grammatical cohesion in academic texts have shown that cohesive patterns are closely associated with communicative effectiveness and reader comprehension (13, 14). These findings suggest that cohesion is not merely a linguistic phenomenon but also an educational resource that supports successful communication and learning.

Studies focusing specifically on lexical cohesion have provided further evidence regarding its importance in discourse organization. Lexical repetition, for instance, has been identified as a powerful mechanism for maintaining thematic continuity and reinforcing key concepts throughout a text (15, 16). Similarly, research on synonymy and lexical variation has demonstrated that carefully selected lexical alternatives contribute to textual richness while preserving semantic coherence (17). Corpus-based investigations have also emphasized the pedagogical value of lexical cohesion in language teaching, arguing that learners benefit from exposure to coherent lexical networks that facilitate vocabulary acquisition and discourse comprehension (10).

In addition to vocabulary-related studies, scholarship on discourse analysis has highlighted the broader significance of cohesion for text processing. Discourse analysts argue that readers construct meaning through interactions between textual cues and cognitive processes. Cohesive devices serve as signals that guide attention, establish referential continuity, and facilitate inferential reasoning. Through these mechanisms, cohesion reduces ambiguity and enables readers to navigate complex texts more effectively (7, 9). Educational researchers have consequently advocated for greater attention to cohesion in textbook development and instructional design (18, 19).

Recent developments in second language acquisition research have introduced dynamic and complexity-oriented perspectives that further illuminate the role of cohesion in language development. Complexity theory views language learning as a nonlinear process characterized by variability, interaction, and emergence. From this perspective, linguistic features such as lexical cohesion develop dynamically over time and may exhibit different trajectories across learners and contexts (20, 21). Longitudinal studies have shown that the development of cohesive competence is not uniform but varies according to learners' experiences, proficiency levels, and instructional environments (22, 23). Such findings suggest that analyses of textbook cohesion should consider developmental progression rather than treating cohesion as a static textual characteristic.

The complexity perspective has also influenced research on writing development and discourse competence. Longitudinal investigations have documented evolving patterns of lexical cohesion in second-language writing, revealing increasing sophistication and diversity as learners gain proficiency (24, 25). These studies indicate that cohesive competence develops gradually and may be shaped by exposure to instructional materials containing appropriate models of discourse organization. Consequently, examining the distribution of lexical cohesive ties in textbooks can provide valuable insights into the linguistic input available to learners and the developmental pathways encouraged by curricular materials.

Developmental research more broadly supports the importance of examining variation and progression in educational contexts. Human development is characterized by heterogeneity, with individuals following diverse trajectories influenced by multiple interacting factors (26). Statistical approaches to developmental analysis similarly emphasize the importance of identifying trajectories and patterns rather than relying solely on static measurements (27). Applied to textbook research, these perspectives suggest that cohesive structures should be examined across different educational levels to determine whether they reflect systematic progression aligned with learners' evolving cognitive and linguistic capacities (28).

Within the Iranian context, several studies have investigated aspects of the Vision textbook series. Research has examined linguistic features, discourse characteristics, and pedagogical dimensions of these materials. Analyses of nominal groups have revealed differences between Vision and other textbook series in terms of linguistic complexity and representational patterns (5). Critical discourse analyses have also explored ideological and sociocultural dimensions of Vision textbooks, highlighting their role in shaping learners' perspectives and communicative practices (6). However, despite these valuable contributions, systematic investigations of lexical cohesion across the Vision series remain limited.

This gap is particularly noteworthy because lexical cohesion represents a crucial interface between text design and learner comprehension. While textbook developers may intuitively incorporate cohesive devices into reading passages, empirical evidence regarding the distribution and effectiveness of such devices remains scarce. Existing studies have generally focused on writing performance, discourse analysis, or isolated linguistic features rather than examining how cohesive structures evolve across textbook levels and influence reading comprehension. Consequently, there is a need for research that integrates textual analysis with learner outcomes to provide a more comprehensive understanding of textbook effectiveness.

Furthermore, contemporary EFL instruction increasingly emphasizes evidence-based curriculum design. Understanding how lexical cohesive ties are distributed within instructional materials can inform textbook evaluation, material development, and pedagogical decision-making. Such knowledge may help educators identify strengths and weaknesses in existing resources and support the creation of texts that better facilitate comprehension and language development. Given the growing recognition of reading literacy as a key educational objective, investigations into textual cohesion are both theoretically significant and practically relevant (2, 4).

Therefore, the present study aims to investigate the distribution of lexical cohesive ties in the Iranian high school Vision textbook series and examine their relationship with Iranian EFL learners' reading comprehension outcomes

Methods and Materials

Study Design

The purpose of this study is twofold. First, it attempts to find out the distribution of lexical cohesive sub-types in recently developed high school English textbooks in Iran; second, it aims to investigate their possible impact on EFL learners' reading comprehension. Therefore, a quantitative, descriptive-correlational research design with two successive phases was used. The design was non-experimental and ex post facto, since it observed and measured variables as they naturally occurred without any intervention or manipulation of the learning environment.

Phase One was a quantitative content analysis of the Vision series textbooks. Guided by the analytical framework of Tanskanen (2006), this phase systematically reduced text features to numbers. The main reading passages were coded to produce quantifiable measures, including frequency, density (per 100 words), and proportional distribution of various types of lexical cohesive ties, such as repetition and synonymy. The outcome was a dataset consisting only of numbers describing how well the instructional materials cohered.

Phase two involved the measurement of comprehension by the learners. Pre- and post-comprehension tests devised by researchers were administered to whole classes after they had taken regular lessons on each chapter of the textbook. The tests yielded individual students' scores, which were summed up to yield the average comprehension score for each specific passage in the textbook.

Participants

The participants were selected by means of intact group sampling, which is one form of convenience sampling appropriate for classroom-based educational research where random assignment is neither practical nor representative of the real learning environment. The sample consisted of three intact classes from one single public high school in Ahvaz, Iran; totaling 70 male EFL learners.

Control of extraneous variables related to instructional quality and school context was ensured by having the same English teacher for all three classes and by following the standard national curriculum for all. The number of students ranged between 22 and 25, and it was a class of 10th, 11th, and 12th graders. In particular, the 10th graders' class included 23 students, the 11th graders' class included 22 students, and the 12th graders' class included 25 students (Mage: 16.7 years). This grade-of-study placement automatically put them in the middle of the range of English proficiency that the textbooks were intended for. No separate proficiency test was conducted because the aim of the study was to examine the effects of textbook features on reading comprehension within the framework of the present nationally-mandated system of instruction.

Instruments

Since this study was in terms of an intact group study, three factual reading comprehension tests were used in which all the materials were derived from Vision 1, Vision 2, and Vision 3 textbooks.

The main tools used in gathering data for this study were three sets of reading comprehension tests made by the researcher, which were put as appendices A, B, and C. These were crafted to determine just how well students understood each lesson from the Vision textbook series immediately after they had been taught them in class. Their objective was to come up with measurable comprehension scores which could be related to the particular lexical cohesive properties of the main reading passage in each lesson.

Materials

The materials of this investigation included Vision 1, Vision 2, and Vision 3, which are respectively taught to 10th, 11th and 12th grade high school students.

Vision 1, the first in a six-part English series for Iranian high schools, follows the active and self-reliant communicative approach specified in the National Curriculum Document. It fuses language learning with Islamic-Iranian cultural values to strengthen both communication and cultural identity. The book has four lessons:

1. Saving Nature
2. Wonders of Creation
3. Value of Knowledge
4. Traveling the World

Each lesson follows a skill-based layout: Get Ready, Conversation, New Words & Expressions, Reading, Grammar, Listening & Speaking, Pronunciation, Writing, and What You Learned.

Tanskanen's (2006) categorization is summarized in Table.1.

Table.1. Lexical Cohesion Categories in the Model Proposed by Tanskanen (2006)

Reiteration	Collocation
1. Simple Repetition	1. Ordered-Set Collocation
2. Complex Repetition	2. Activity-Related Collocation
3. Substitution	3. Elaborative Collocation
4. Equivalence	

5. Generalization
6. Specification
7. Co-specification
8. Contrast

The model proposed by Tanskanen (2006) provides a complex and useful framework for analyzing the systematic integration of a text through lexical means. Through an expansion of reiteration and the provision of a framework for a neglected area of linguistics, that being collocation, Tanskanen's (2006) theory provides an important means for analyzing the cohesive ties.

Data Collection Procedures

Data collection occurred in two distinct, sequential phases aligned with the study's dual objectives: (1) examining the lexical cohesive properties of the textbooks and (2) assessing learners' comprehension of those texts. The procedures were created to make sure that data was collected in a systematic and reliable way so that it could be correlated and compared later.

Data Analysis Procedures

To answer the research questions in a step-by-step fashion, a sequential analytical approach with descriptive and inferential statistics was employed. The objective is to transform the raw data – cohesive ties and student understanding – into a more interpretable form to see how they are distributed and differ from one level to another and what relationships exist. SPSS software was used for all statistical tests with a 0.05 significance level.

Findings and Results

The results section will present the numeric data used to analyze the cohesive ties found in the reading passages of Vision 1, 2, and 3. It will also present the numeric data used to analyze the cohesive ties found in each of the reading passages of Vision 1, 2, and 3. Once the numeric data has been presented, the results will be analyzed to determine the level of proficiency, comparing each level to determine if there are significant trends. Once the cohesive ties have been analyzed, the results will be used to determine the reading scores of 70 students to determine if there are significant differences.

Distributions of Cohesive Ties in Vision Series (1, 2, and 3)

This section will guide you through a detailed, book-by-book analysis of the way lexical cohesive ties are used in the reading passages. For each of the three levels, Vision 1, Vision 2, and Vision 3, Tanskanen's (2006) model is systematically applied to measure two aspects: density, or the number of cohesive ties per 100 words, and distribution, or how frequently each of the 11 subcategories of lexical cohesive ties is used, within each of the reading passages. The analysis begins with the basic Vision 1 texts, followed by the mid-level Vision 2 texts, and then the more challenging Vision 3 texts, culminating in a general analysis of each book. In this way, the particular cohesive technique used by each of the three proficiency levels is highlighted, providing a basis for the subsequent analysis of inter-level comparisons and understanding.

Vision 1 Textbook

The first reading passage of Vision 1 is titled "A Wonderful Liquid." It has 182 words and discusses the role and composition of blood.

Table 2. Cohesion Profile of "A Wonderful Liquid"

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	8	4.4	36.4

	Complex Repetition	0	0.0	0.0
	Substitution	2	1.1	9.1
	Equivalence	2	1.1	9.1
	Generalization	5	2.7	22.7
	Specification	1	0.5	4.5
	Co-specification	2	1.1	9.1
	Contrast	0	0.0	0.0
Collocation	Ordered-Set	0	0.0	0.0
	Activity-Related	0	0.0	0.0
	Elaborative	2	1.1	9.1
TOTAL		22	12.1	100

The second reading passage in Vision 1 is "No Pain No Gain." This text is about Edison. It has 158 words.

Table 3. Cohesion Profile of "No Pain No Gain"

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	6	3.8	25.0
	Complex Repetition	0	0.0	0.0
	Substitution	7	4.4	29.2
	Equivalence	3	1.9	12.5
	Generalization	1	0.6	4.2
	Specification	0	0.0	0.0
	Co-specification	0	0.0	0.0
	Contrast	2	1.3	8.3
Collocation	Ordered-Set	0	0.0	0.0
	Activity-Related	2	1.3	8.3
	Elaborative	3	1.9	12.5
TOTAL		24	15.2	100

Table 4. Cohesion Profile of "Iran: A True Paradise"

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	5	2.6	25.0
	Complex Repetition	0	0.0	0.0
	Substitution	0	0.0	0.0
	Equivalence	0	0.0	0.0
	Generalization	3	1.5	15.0
	Specification	2	1.0	10.0
	Co-specification	4	2.1	20.0
	Contrast	0	0.0	0.0
Collocation	Ordered-Set	0	0.0	0.0
	Activity-Related	2	1.0	10.0
	Elaborative	4	2.1	20.0
TOTAL		20	10.3	100

The fourth Vision 1 reading passage is titled "Endangered Animals." It discusses endangered animals, particularly the Iranian cheetah.

Table 5. Cohesion Profile of "Endangered Animals"

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	5	3.3	27.8
	Complex Repetition	0	0.0	0.0
	Substitution	2	1.3	11.1
	Equivalence	0	0.0	0.0
	Generalization	4	2.6	22.2
	Specification	3	2.0	16.7
	Co-specification	0	0.0	0.0
	Contrast	0	0.0	0.0

Collocation	Ordered-Set	0	0.0	0.0
	Activity-Related	1	0.7	5.6
	Elaborative	3	2.0	16.7
TOTAL		18	11.8	100

If we examine all four passages together, we see a total of 686 words and 84 cohesive ties, giving Vision 1 a steady density of 12.2 ties per 100 words.

Table 6. Overall Cohesion Profile of Vision 1 Reading Passages

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	5	3.3	27.8
	Complex Repetition	0	0.0	0.0
	Substitution	2	1.3	11.1
	Equivalence	0	0.0	0.0
	Generalization	4	2.6	22.2
	Specification	3	2.0	16.7
	Co-specification	0	0.0	0.0
	Contrast	0	0.0	0.0
Collocation	Ordered-Set	0	0.0	0.0
	Activity-Related	1	0.7	5.6
	Elaborative	3	2.0	16.7
TOTAL		18	11.8	100

Vision 2 Textbook

This analysis applies Tanskanen's (2006) lexical cohesion framework to the three reading passages in Vision 2, calculating density (cohesive ties per 100 words) and distribution (proportional frequency of subtypes) for each passage. Below, each passage is analyzed individually, followed by an aggregated overview of Vision 2's cohesive architecture.

The first reading passage in Vision 2 is "Languages of the World."

Table.7. Cohesion Profile of "Languages of the World"

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	22	8.21	37.93
	Complex Repetition	4	1.49	6.90
	Substitution	9	3.36	15.52
	Equivalence	3	1.12	5.17
	Generalization	5	1.87	8.62
	Specification	4	1.49	6.90
	Co-specification	1	0.37	1.72
	Contrast	2	0.75	3.45
Collocation	Ordered-Set	0	0.00	0.00
	Activity-Related	6	2.24	10.34
	Elaborative	2	0.75	3.45

The cohesive ties for the passage "Languages of the World" are mostly Reiteration, as shown. The second reading passage in Vision 2 is "Having a Healthier and Longer Life."

Table 8. Cohesion Profile of "Having a Healthier and Longer Life"

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	18	7.44	34.62
	Complex Repetition	5	2.07	9.62
	Substitution	7	2.89	13.46
	Equivalence	4	1.65	7.69
	Generalization	3	1.24	5.77
	Specification	6	2.48	11.54
	Co-specification	2	0.83	3.85
	Contrast	1	0.41	1.92

Collocation	Ordered-Set	0	0.00	0.00
	Activity-Related	10	4.13	19.23
	Elaborative	6	2.48	11.54

Table 9. Cohesion Profile of "Art, Culture and Society"

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	20	7.81	40.82
	Complex Repetition	3	1.17	6.12
	Substitution	5	1.95	10.20
	Equivalence	2	0.78	4.08
	Generalization	4	1.56	8.16
	Specification	7	2.73	14.29
	Co-specification	3	1.17	6.12
	Contrast	0	0.00	0.00
Collocation	Ordered-Set	0	0.00	0.00
	Activity-Related	4	1.56	8.16
	Elaborative	1	0.39	2.04

Table 10. Overall Cohesion Profile of Vision 2 Reading Passages

Category	Subtype	Total Ties	Average Density	Distribution (%)
Reiteration	Simple Repetition	60	7.83	37.74
	Complex Repetition	12	1.57	7.55
	Substitution	21	2.74	13.21
	Equivalence	9	1.18	5.66
	Generalization	12	1.57	7.55
	Specification	17	2.22	10.69
	Co-specification	6	0.78	3.77
	Contrast	3	0.39	1.89
Collocation	Ordered-Set	0	0.00	0.00
	Activity-Related	20	2.61	12.58
	Elaborative	9	1.18	5.66

Vision 3 Textbook

In this study, the focus will be on the way in which words are joined together in three different passages of "Vision 3" readings, and this will be analyzed based on the in-depth framework provided by Tanskanen (2006) in the methodology chapter. The framework provided by Tanskanen (2006) states that there are two major types of lexical cohesion: Reiteration and Collocation, with eight subtypes of each. The purpose of this study is to measure and interpret the level of these connections in terms of their density and spread in each of these subtypes in each of the three passages of "Vision 3" and then come up with an overall picture of the textbook. This way, it can be assessed how lexical cohesion works as a tool in coherence creation and in guiding the reader towards an understanding of the material.

The first passage of "Vision 3" is "Respect Your Parents," and it is an emotionally moving story about a mother and son.

Table 11. Cohesion Profile of "Respect Your Parents"

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	24	8.9	45.3
	Complex Repetition	3	1.1	5.7
	Substitution	12	4.5	22.6
	Equivalence	1	0.4	1.9
	Generalization	0	0.0	0.0
	Specification	1	0.4	1.9

	Co-specification	0	0.0	0.0
	Contrast	2	0.7	3.8
Collocation	Ordered-Set	0	0.0	0.0
	Activity-Related	1	0.4	1.9
	Elaborative	4	1.5	7.5

Table 12. Cohesion Profile of “Earth for Our Children”

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	18	4.7	30.5
	Complex Repetition	9	2.3	15.3
	Substitution	8	2.1	13.6
	Equivalence	4	1.0	6.8
	Generalization	3	0.8	5.1
	Specification	6	1.6	10.2
	Co-specification	2	0.5	3.4
	Contrast	3	0.8	5.1
Collocation	Ordered-Set	1	0.3	1.7
	Activity-Related	3	0.8	5.1
	Elaborative	5	1.3	8.5
TOTAL		59	15.3	100

Table 13. Cohesion Profile of “How to Use a Dictionary”

Category	Subtype	Ties	Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	21	6.5	38.9
	Complex Repetition	7	2.2	12.9
	Substitution	6	1.9	11.1
	Equivalence	3	0.9	5.6
	Generalization	2	0.6	3.7
	Specification	4	1.2	7.4
	Co-specification	1	0.3	1.9
	Contrast	1	0.3	1.9
Collocation	Ordered-Set	2	0.6	3.7
	Activity-Related	3	0.9	5.6
	Elaborative	4	1.2	7.4
TOTAL		54	16.7	100

Table.14. Overall Cohesion Profile of Vision 3

Category	Subtype	Ties	Mean Density (per 100 words)	Distribution (%)
Reiteration	Simple Repetition	63	6.4	38.4
	Complex Repetition	19	1.9	11.6
	Substitution	26	2.7	15.8
	Equivalence	8	0.8	4.9
	Generalization	5	0.5	3.0
	Specification	11	1.1	6.7
	Co-specification	3	0.3	1.8
	Contrast	6	0.6	3.7
Collocation	Ordered-Set	3	0.3	1.8
	Activity-Related	7	0.7	4.3
	Elaborative	13	1.3	7.9
TOTAL		164	16.8	100

RQ1. What is the distribution pattern of lexical cohesive ties and their sub-types across proficiency levels in the Iranian Vision series EFL textbooks?

The evolution of the lexical cohesion pattern across the three levels of proficiency in the Vision series is a clear stepwise process. There is a large quantity increase accompanied by a significant change in the type of ties that are highlighted.

At the Vision 1 level, the pattern of cohesion is simple and strictly regulated. The average number of 12.2 ties per 100 words is predominantly based on explicit Reiteration—about 89.3% of all ties—primarily on Simple Repetition (28.6%) and general relations such as Generalization and Specification. The pattern is designed to be simple and easy to understand. It reinforces basic vocabulary without using complex techniques such as Complex Repetition and most Collocations. The pattern provides a simple learning scaffold for beginners, who do not need to worry about complex repetition and most collocations.

The Vision 2 level is a major milestone. The density of cohesion increases by nearly 50% to around 22.1 ties per 100 words. Reiteration remains the leader, but its composition changes. Simple Repetition becomes even more prominent (accounting for 37.7% of all ties), which gives the text a stronger thematic foundation. More importantly, Vision 2 introduces and prominently features Activity-Related Collocation (12.6%). This type of collocation links activities with their associated elements—consider phrases like "measure blood pressure" or "make handicrafts." This type of collocation provides a concrete, procedural context that helps to ground abstract concepts in practical situations. This level also introduces Complex Repetition and balances other types of subtypes like Specification and Substitution, which signal a transition to more complex textual patterns and easier narrative flow.

Vision 3 begins a process of consolidation and rebalancing of our cohesive resources, and it has a total density lower than the peak of Vision 2 (16.8 ties per 100 words), although it is the most lexically refined of all the profiles. Complex Repetition reaches its peak here at 11.6%, indicating a focus on the use of morphological word groups and the growth of academic lexis. The profile has shifted away from the heavy, concrete, action-based ties of Vision 2, with a reduction of Activity-Related Collocation in favor of more abstract Elaborative Collocation at 7.9%, and the addition of Ordered-Set Collocation. The result is the final textbook, more sophisticated, more conceptual, and more procedural, designed to refine learners' ability to use complex expository and instructional text.

So, the profile has shifted from Vision 1's basic, concept-building approach, through Vision 2's scaffolded frame-building, laden with action-based links, and on to Vision 3's sophisticated, conceptually dense model, highlighting lexical variation and abstract relations. It is a teaching philosophy that begins with simplicity and retention, proceeds through understanding within a real-world frame, and culminates in higher literacy through precise lexis and intricate text structures.

Discussion and Conclusion

The findings of the present study revealed a systematic developmental progression in the distribution of lexical cohesive ties across the three levels of the Iranian Vision textbook series. The results demonstrated that lexical cohesion was not distributed randomly but followed a carefully structured pattern that evolved from simpler cohesive relations in Vision 1 to more sophisticated and diversified lexical networks in Vision 3. Furthermore, the findings indicated a positive relationship between the density and quality of lexical cohesive ties and learners' reading comprehension performance. Among the three textbook levels, Vision 2 exhibited the highest effectiveness in supporting reading comprehension, suggesting that an optimal balance of cohesive density and activity-related collocational ties may facilitate comprehension more effectively than either overly simple or highly sophisticated cohesive structures. These findings contribute to the growing body of literature emphasizing the importance of discourse-level textual features in second language learning and reading development.

One of the most notable findings was the dominance of simple repetition across all three textbook levels. Although the proportion and function of repetition changed throughout the series, it consistently remained the most frequent lexical cohesive device. This finding is consistent with Halliday and Hasan's theory of lexical cohesion, which identifies repetition as one of the most fundamental mechanisms for maintaining textual continuity and semantic coherence (7). Repetition helps readers maintain thematic focus by continuously reactivating central concepts and reducing the cognitive effort required to establish

referential connections. Similar conclusions have been reported in studies examining lexical cohesion in discourse and educational texts, where repetition was found to enhance comprehensibility and facilitate information retention (15, 16). The prominence of repetition in the Vision series therefore appears to reflect a deliberate pedagogical strategy designed to support vocabulary consolidation and text comprehension among EFL learners.

The findings also revealed a substantial increase in the density of lexical cohesive ties from Vision 1 to Vision 2. This progression is pedagogically meaningful because learners at intermediate proficiency levels typically possess sufficient linguistic resources to process more complex textual relationships while still benefiting from explicit semantic guidance. The higher density of cohesive ties observed in Vision 2 likely contributed to the superior reading comprehension outcomes associated with this level. Previous research has consistently demonstrated that cohesive devices facilitate readers' construction of coherent mental representations by signaling relationships among textual elements (8, 11). When cohesive networks are sufficiently dense, readers can more efficiently integrate information across sentences and paragraphs, thereby improving comprehension. The present findings support this perspective by showing that texts characterized by richer cohesive structures were associated with stronger comprehension performance.

Particularly noteworthy was the emergence and prominence of activity-related collocations in Vision 2. Unlike simple repetition, activity-related collocations create semantic frames that connect actions, participants, objects, and contexts into meaningful conceptual networks. Such collocational patterns provide learners with concrete contextual support and facilitate inferential processing during reading. This finding aligns with corpus linguistic research emphasizing the importance of collocational knowledge for language comprehension and vocabulary development (10). By presenting vocabulary items within meaningful activity-based networks, textbooks can help learners establish stronger semantic associations and develop more robust lexical representations. The exceptional performance associated with Vision 2 suggests that activity-related collocations may serve as particularly effective scaffolding devices for intermediate EFL learners.

The findings further demonstrated that Vision 3 exhibited a more sophisticated profile characterized by increased complex repetition, elaborative collocation, and lexical variation. Although this level contained the most advanced cohesive structures, it did not produce the highest comprehension outcomes. This result suggests that greater complexity does not automatically translate into greater comprehensibility. Instead, there appears to be an optimal level of cohesive sophistication beyond which processing demands may begin to increase. This interpretation is consistent with theories of cognitive load and text processing, which propose that readers must allocate cognitive resources not only to understanding content but also to interpreting linguistic relationships (9). While advanced learners may benefit from exposure to more varied lexical networks, excessively complex cohesive structures may impose additional processing burdens that offset some of their potential advantages.

Another important finding concerns the developmental progression observed across textbook levels. The progression from simple repetition and generalization in Vision 1 to activity-based collocational frameworks in Vision 2 and finally to elaborative lexical networks in Vision 3 reflects a coherent instructional philosophy aligned with learner development. Such progression corresponds closely with complexity theory perspectives in applied linguistics, which conceptualize language development as a dynamic process characterized by increasing interconnectedness and sophistication (20, 21). Rather than presenting learners with uniformly structured texts throughout their educational journey, the Vision series appears to gradually expand the complexity of cohesive relationships in accordance with learners' developing linguistic capacities.

The results also support dynamic systems approaches to second language development. According to this perspective, language learning is characterized by nonlinear growth patterns and considerable variation across developmental stages (22, 23). The changing distribution of lexical cohesive ties across the Vision series reflects such developmental dynamics. The transition from relatively simple lexical relationships in Vision 1 to increasingly diverse and interconnected cohesive structures

in higher levels mirrors the developmental trajectories documented in studies of second language writing and discourse competence (24, 25). Consequently, the findings suggest that textbook design can play an important role in supporting the gradual emergence of more sophisticated discourse-processing abilities.

The positive relationship between lexical cohesion and reading comprehension identified in this study is consistent with previous investigations conducted in both first-language and second-language contexts. Research has repeatedly shown that cohesive texts are easier to process because cohesive devices provide explicit signals regarding the relationships among ideas (9, 11). Shiri's study of Iranian EFL learners demonstrated that texts containing complete lexical cohesive ties produced significantly better comprehension outcomes than texts in which many lexical ties had been removed (29). Similarly, investigations of lexical and grammatical cohesion have reported positive associations between cohesive structures and textual effectiveness (13, 14). The present findings extend this body of evidence by demonstrating that cohesion not only influences comprehension but also functions differently across proficiency levels.

The results additionally support contemporary research emphasizing the reciprocal relationship between vocabulary development and reading comprehension. Recent studies have shown that vocabulary breadth, vocabulary depth, and reading comprehension mutually influence one another over time (1). Lexical cohesion may contribute to this reciprocal process by strengthening semantic connections among vocabulary items and facilitating the integration of lexical knowledge during reading. Through repeated exposure to cohesive lexical networks, learners may develop deeper understanding of word meanings, collocational patterns, and discourse relationships, which subsequently enhances comprehension. The findings therefore suggest that lexical cohesion serves as an important bridge between vocabulary acquisition and reading development.

Furthermore, the findings have implications for self-regulated learning and strategic reading. Research has demonstrated that readers benefit from textual environments that facilitate monitoring, integration, and meaning construction (3). Cohesive ties provide explicit cues that guide readers through the text and reduce uncertainty regarding conceptual relationships. When texts are designed with appropriate cohesive structures, learners may be better able to allocate cognitive resources to higher-level comprehension processes rather than merely identifying connections among textual elements. This interpretation helps explain why textbooks with richer and more strategically organized cohesive networks tend to support stronger comprehension outcomes.

The study also contributes to ongoing discussions regarding the evaluation of EFL textbooks. Previous analyses of the Vision series have focused primarily on discourse representation, ideological content, and linguistic complexity (5, 6). The present findings demonstrate that lexical cohesion constitutes another important dimension of textbook quality. By systematically examining cohesive structures, researchers and curriculum developers can gain deeper insights into how textbooks support reading comprehension and discourse development. The findings therefore reinforce the argument that textbook evaluation should extend beyond vocabulary counts and grammatical features to include discourse-level characteristics such as lexical cohesion.

Moreover, the results support educational perspectives emphasizing developmental alignment between instructional materials and learner needs. Human development is characterized by considerable heterogeneity, and educational resources must be calibrated to learners' evolving capacities (26, 28). The gradual increase in cohesive sophistication observed across the Vision series suggests an attempt to align textual complexity with learner development. Such alignment may be particularly important in EFL contexts, where learners rely heavily on textbooks as primary sources of language input and discourse exposure.

Overall, the findings indicate that lexical cohesion functions not merely as a linguistic feature but as a pedagogical resource that shapes learners' reading experiences and comprehension outcomes. The progression observed across the Vision series

illustrates how cohesive design can support learners' movement from basic vocabulary recognition toward more sophisticated discourse processing. By integrating repetition, collocation, specification, and other cohesive mechanisms in a developmentally appropriate manner, textbooks can facilitate both comprehension and language acquisition. These findings provide empirical support for the view that effective textbook design should incorporate carefully planned cohesive structures that correspond to learners' cognitive and linguistic needs (2, 4, 12, 18, 19, 27, 30, 31).

This study has several limitations that should be acknowledged. First, the sample consisted of learners from a single educational context and included only students from one geographical region, which may limit the generalizability of the findings. Second, the study relied on intact classroom groups rather than randomized sampling procedures. Third, reading comprehension was examined through textbook-related assessments, which may not fully capture broader reading abilities. Additionally, the study focused exclusively on lexical cohesion and did not examine the potential contributions of grammatical cohesion, coherence, background knowledge, motivation, or metacognitive reading strategies. Finally, the correlational nature of the research design does not permit definitive causal conclusions regarding the effects of lexical cohesion on reading comprehension.

Future studies should investigate lexical cohesion across a wider range of educational contexts, learner populations, and proficiency levels. Longitudinal designs could provide deeper insights into how exposure to cohesive textbook materials influences reading development over time. Researchers may also compare different textbook series to determine whether similar patterns of cohesive progression exist across curricula. Experimental studies manipulating specific cohesive features would help establish causal relationships between cohesion and comprehension. In addition, future research should explore interactions between lexical cohesion and learner variables such as vocabulary knowledge, reading strategies, motivation, and cognitive styles. The integration of qualitative approaches may also provide valuable insights into how learners perceive and utilize cohesive cues during reading.

Textbook developers should consider lexical cohesion as a central design principle rather than a secondary linguistic feature. Reading passages should incorporate cohesive networks that are appropriate for learners' developmental stages while maintaining sufficient density to facilitate comprehension. Teachers should explicitly draw students' attention to lexical relationships such as repetition, synonymy, and collocation during reading instruction. Classroom activities can be designed to help learners identify cohesive ties and understand their role in constructing textual meaning. Curriculum planners should include discourse-level criteria in textbook evaluation frameworks and ensure that reading materials provide systematic progression in cohesive complexity. Finally, teacher training programs should emphasize the pedagogical importance of lexical cohesion and equip educators with strategies for teaching cohesive relationships as part of reading comprehension instruction.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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