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Article

Chinese EFL Learners' Use of English Synonyms: A Mixed Methods Study

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Abstract
The appropriate use of synonyms enhances clarity and precision in writing and communication. This study investigates Chinese English-as-foreign-language (EFL) learners' use of synonyms and factors influencing it, using an explanatory sequential mixed methods approach. Specifically, the study examines the extent to which Chinese EFL learners utilize syntactic and semantic information to distinguish between synonymous pairs, such as *suggest* and *advise*, and whether their L2 proficiency modulates their abilities to utilize these two cues. The study also explores factors influencing their use of synonyms through follow-up interviews. Two groups of EFL learners (n = 53) with differing L2 proficiency levels completed a forced-choice test, which also required brief written explanations for their lexical choices. The test included both syntactic and semantic items, with either syntactic or semantic cues available to aid them in making lexical choices. Results revealed that neither syntactic nor semantic knowledge was adequately mastered by learners. In within-subject comparisons, while low-proficiency learners performed comparably on both item types, the high-proficiency group performed better on semantic items than syntactic ones. In between-subject comparisons, the high-proficiency group outperformed their lower-proficiency peers on semantic items, but not on syntactic ones. Interview data revealed influencing factors associated with item-specific, learner-centered, and learning-related properties. Pedagogical implications are discussed.

Keywords
Synonym, syntactic, semantic, Chinese EFL learners, proficiency level

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1 Introduction

Synonymy refers to the sense relationship of words sharing identical or nearly identical meanings in some or all of their senses[1]. It is a pervasive linguistic phenomenon observed across many languages (Divjak, 2010). In recent years, prompted by the availability and widespread application of corpora, research on synonyms has gained momentum, particularly through the analysis of first language (L1) speakers' usage patterns (Alanazi, 2022; Lin & Chung, 2021; Liu, 2010; Liu 2013a; Liu & Espino, 2012; Wu, 2021). These studies provide valuable reference points for learners to grasp the subtle distinctions among sets of synonyms. Researchers have also explored learners' use of synonyms by conducting corpus-linguistic analyses (Liu, 2018; Pan, 2010; Wang & Pan, 2018) and psycholinguistic experiments (Hong, 2012, 2016; Jiang, 2004; Liu & Zhong, 2016; Wongkhan & Thienthong, 2021). Collectively, this growing body of literature underscores the challenges that synonyms pose for English-as-a-foreign-language (EFL) learners, characterized by a lack of fully contextualized language exposure.

Despite the inherent difficulty distinguishing among highly similar synonyms, various linguistic cues—such as stylistic, syntactic, collocational, and semantic cues—can be utilized to differentiate them effectively (Martin, 1984). These cues represent the essential dimensions of vocabulary knowledge (Nation, 2013; Tabak & Takač, 2023) and are vital for precise expression, effective communication, and the attainment of native-like language proficiency (Edmonds & Hirst, 2002). Studies on synonym use have largely focused on a single type of linguistic cues, such as semantic cues (Sun & Wang, 2020) or collocational cues (Wongkhan & Thienthong, 2021). However, few of them have systematically examined multiple cue types separately or concurrently within the same group of participants. Such research warrants closer attention, as it enables a more rigorous comparison of the relative difficulty associated with each cue and facilitates the identification of factors that may constrain synonym acquisition. In addition, research exploring factors influencing learners' use of synonyms remains limited.

The present study adopted an explanatory sequential mixed methods approach (Creswell & Plano Clark, 2018), using follow-up qualitative data to elaborate or explain the quantitative results, to probe into Chinese EFL learners' use of synonyms. Specifically, the study investigated the extent to which Chinese EFL learners utilize syntactic and semantic knowledge to differentiate English synonymous pairs. The focus on Chinese EFL learners is motivated by previous research (Jiang, 2004; Liu, 2018; Liu & Zhong, 2016; Pan, 2010; Wang & Pan, 2018), which has consistently demonstrated challenges in synonym use among this group. This highlights the need for further research to better understand their use of synonyms. The emphasis on these syntactic and semantic cues is grounded in two considerations. First, both semantic and syntactic information are central to lexical theory construction (Jiang, 2000). Second, syntactic structure, or more broadly, grammar, and lexical meaning have traditionally been emphasized in classroom instruction. In addition, this study examined whether their use of synonyms varied as a function of English proficiency and what factors might contribute to their use. Addressing these questions offers insights into learners' utilization of linguistic cues and sheds light on whether different dimensions of vocabulary knowledge develop in tandem with increasing proficiency. The findings are expected to inform more targeted and effective pedagogical strategies for teaching synonyms in EFL contexts.

2 Literature Review

This section reviews the concept of vocabulary knowledge and theoretical perspectives on its development in relation to L2 proficiency and exposure. It is then followed by a review of previous studies on how L2 learners use synonyms.

2.1 Vocabulary knowledge

Vocabulary plays an indispensable role in language learning and development (Hartshorn et al., 2023; Milton & Hopwood, 2022). It is often conceived as a multi-dimensional construct. According to Nation's (2013) influential framework, knowing a word involves mastery of its form, meaning, and use, each of which includes several subcomponents. For instance, regarding meaning, learners must understand the concept the word represents and its referents. Regarding use, they are expected to grasp the word's grammatical functions, such as the syntactic patterns in which it typically occurs.

As an alternative conceptualization, vocabulary knowledge comprises *breadth* and *depth* dimensions[2] (Read, 2009). The former refers to vocabulary size, that is, the number of words a learner recognizes, or the form-meaning links they can identify. The latter, on the other hand, concerns the quality of vocabulary knowledge, or how well individual words are known. This dimension encompasses several lexical components, including syntactic structure, collocational behavior, synonymy, derivational forms, and word associations, among others. The depth dimension aligns closely with the *use* component in Nation's (2013) framework. Previous studies have consistently shown that second language (L2) learners' depth of vocabulary knowledge tends to lag behind their breadth (Schmitt, 2014). Given this imbalance, further research is needed to explore the underlying causes of limited depth knowledge among L2 learners. Addressing this gap, the present study partially investigates the acquisition of syntactic structures in English synonyms among Chinese L2 learners.

2.2 Theories concerning vocabulary development and L2 proficiency/exposure

At the core of language skill development lies vocabulary growth (Cheung, 2023; Stæhr, 2008). Several theories and models have been proposed to explain this complex and multifaceted process. The usage-based theory is one of the most direct, positing that language learning is highly sensitive to input frequency (Ellis, 2002). According to this perspective, more frequent exposure to a word increases the likelihood of its acquisition.

Another influential framework is Jiang's (2000) Second Language Lexical Representation and Development Model, which integrates semantic and syntactic knowledge—referred to as the "lemma"—within lexical entries. This model outlines a three-stage process of L2 lexical development. Initially, L2 phonological and orthographic information (referred to as the "lexeme") is encoded in learners' mental lexicon. In the second stage, the L1 lemma is copied into the L2 lexical entry, mediating early L2 word use. At this point, L2 lexical access is still largely shaped by L1 semantic and syntactic structures. Most words are thought to stagnate at this intermediary stage unless learners receive extensive and richly contextualized input, which facilitates the final stage: the full integration of the L2 lemma into the mental lexicon.

2.3 Learners' use of synonyms

Given their central role in learners' attaining native-like proficiency, synonyms have garnered growing attention in vocabulary research over the past decade. In examining how learners acquire and use synonyms, researchers have primarily adopted two methods: the corpus-linguistic approach and the experimental approach.

2.3.1 Corpus-linguistic approach

Within the corpus linguistic approach, researchers have undertaken comparative studies between L1 speakers and L2 learners to examine whether these two groups converge in their use of synonyms and

to identify potential gaps when divergent patterns emerge. For instance, Pan (2010) contrasted the collocational features of *cause* and *lead* to using data from the British National Corpus (BNC) and the Spoken and Written English Corpus of Chinese Learners (SWECCL). The study revealed substantial differences in collocational patterns, despite similar semantic preferences. Similarly, drawing on data from SWECCL, Liu (2018) examined the use of *circumstance, demand,* and *significant* in relation to their synonyms. The study identified various instances of inappropriate usage, particularly concerning the semantic aspect of these words. He concluded that L1 interference, inadequate instructional attention, and insufficient instructors' explanations might have contributed to these errors. Wang and Pan (2018) investigated the frequency, collocational behavior, and colligation of the synonym pair *refuse/reject* among L1 speakers and L2 learners. Their findings pointed to several instances of misuse and overuse by L2 learners. Overall, this line of corpus-based inquiry is pedagogically valuable, particularly for lexicographers and textbook writers aiming to support nuanced vocabulary development.

2.3.2 Experimental approach

The second approach in synonym research involves experimental designs, particularly sentence completion tasks, where participants choose the most appropriate word among several options based on the context and the meaning of the sentence. Using this method, Jiang (2004) asked advanced Chinese learners of English as a second language (ESL) and English-L1 speakers to distinguish between six pairs of synonyms based on the semantic cue provided in each sentence. Participants were also required to write descriptions explaining the differences between the two words in each pair. Compared to L1 speakers, whose responses were considered the baseline, learners demonstrated significantly higher error rates and showed limited awareness of semantic distinctions, as evidenced by their written explanations (seven successful attempts out of 60). To capture variations across proficiency levels, Liu and Zhong (2016) examined four sets of synonyms among intermediate and advanced Chinese EFL learners. Unlike Jiang's (2004) study, which provided only a single semantic cue, Liu and Zhong (2016) incorporated multiple linguistic cues, aiming to identify factors driving lexical choice. Their forced-choice test revealed that while synonym knowledge improved with proficiency, even advanced learners struggled to discriminate between certain synonyms. The study further highlighted that learners' selections were influenced by frequent collocates, context construal, and lexical frequency.

Building on Jiang' (2004) and Liu and Zhong' (2016) work, Sun and Wang (2020) investigated Chinese EFL learners' semantic knowledge of English synonyms across two proficiency levels. Two key findings emerged. First, learners performed significantly more poorly on synonym pairs (same-translation pairs) than those with related but distinct translations (different-translation pairs). Second, both proficiency groups performed similarly on same-translation pairs, indicating a persistent influence of L1 semantic mapping in synonym use. Wongkhan and Thienthong (2021) examined Thai EFL learners' abilities to select appropriate words from sets of synonyms in academic contexts (e.g., *fully* understand, improve *significantly*), considering the role of collocates. They also gathered participants' rationales for their choices. Their results showed that learners with more academic experience generally outperformed those with less experience, and that word frequency played a key role in the development of this lexical knowledge.

While the aforementioned research has concentrated on semantic and collocational cues, a small number of studies have also explored other types of cues, such as syntactic structures. Using acceptability and multiple-choice tests, Hong (2012) examined the acquisition of semantic versus syntactic distinctions in Chinese synonyms among learners of Chinese as a second language. The findings revealed that learners acquired syntactic differences faster and more accurately than semantic ones. Furthermore, as learners' proficiency in Chinese increased, the gap between their syntactic and semantic knowledge narrowed. Hong (2012) concluded that salience—the degree to which a linguistic feature could be noticed in a given context—might play a crucial role in the acquisition of such distinctions. This

conclusion was further supported by Hong's (2016) extension study, which investigated five subtypes of differences within the syntactic and semantic categories, including syntactic function and semantic emphasis.

3 The Present Study

Based on the literature reviewed above, a consensus has emerged that L2 learners' mastery of synonyms is incomplete, evidenced by learners' partial acquisition of meaning, collocational patterns, and syntactic structures. This then raises an important question regarding which type of cue poses the greatest challenge for learners. Identifying the most difficult aspect can help inform targeted pedagogical interventions and guide more focused vocabulary instruction.

Sun and Wang (2020) and Wongkhan and Thienthong (2021) focused exclusively on semantic and collocational cues, respectively. Although Liu and Zhong (2016) attempted to incorporate multiple cues, their study did not disentangle these cues, leaving semantic, syntactic, and collocational influences potentially interacting with learners' lexical choices. Moreover, their study was limited in scope, examining only four synonym pairs (nouns and adverbs). Hong (2012, 2016) compared the acquisition of syntactic and semantic cues among two groups of learners of Chinese as an L2. However, these two studies did not elicit explicit rationales for learners' lexical choices, as was done by Liu and Zhong (2016) and Wongkhan and Thienthong (2021).

Motivated by the foregoing studies, the present study adopts an explanatory sequential mixed methods design to investigate Chinese EFL learners' use of semantic and syntactic cues in distinguishing English synonyms. Specifically, we examined the performance of two proficiency groups using a forced-choice instrument designed to assess semantic and syntactic knowledge separately. In addition to the quantitative test scores, we collected written justifications and conducted follow-up interviews to glean qualitative insights into learners' lexical choices for triangulation. The study is guided by the following research questions (RQs):

RQ1: To what extent can Chinese EFL learners apply syntactic and semantic cues to differentiate the two words in each synonym pair? [Quantitative]

RQ2: How do L2 proficiency (low and high) and cue type (syntactic and semantic) influence learners' abilities to use cues to differentiate the words in each synonym pair? [Quantitative]

RQ3: What factors influence learners' mastery of syntactic and semantic cues in differentiating English synonyms? [Qualitative]

4 Methods

4.1 Participants

Through convenience sampling, 60 undergraduate students from two classes at a university in the Chinese mainland were recruited for the study. Of them, 35 were first-year engineering majors, while 25 were third-year students majoring in English education. All participants were Chinese L1 speakers and learned English as a foreign language in formal instructional settings. Seven participants were excluded from the analysis due to incomplete responses or failure to follow experimental procedures. The remaining 53 students were retained and classified into two proficiency groups, with engineering students comprising the low-proficiency group ($n = 31$) and English education students forming the high-proficiency group ($n = 22$).

The participants were surveyed on language backgrounds, including biological age, the age at which they began learning English, and the number of years spent learning English. Descriptive data are

presented in Table 1. Three independent samples t-tests revealed significant differences between the two groups in age and years of learning ($p < .001$), but not in age of acquisition ($p = .735$). It is important to note that the two groups also differed in their learning experiences at the university setting. While engineering students had only one English reading course, English education majors had a broader range of courses in reading, listening, speaking, and writing.

The participants were assessed using additional instruments to capture the multifaceted nature of their L2 proficiency. All participants completed the Oxford Quick Placement Test (OQPT) and a self-reported English Proficiency Questionnaire. Details of these tests are provided in the Instruments section below, with the results shown in Table 2. Statistical analyses indicated that: (a) the High Group scored higher than the Low Group on the OQPT ($p < .001$); (b) the High Group reported higher self-ratings on listening ($p = .013$), reading ($p = .041$), and overall proficiency ($p = .008$), but not on speaking ($p = .076$) and writing ($p = .184$). Overall, participants from the English education program demonstrated higher English proficiency than those from the engineering program, as indicated by both objective and subjective measures.

Table 1

Descriptive Statistics of Self-Reported Demographic Information

	N	Age**		Age of Acquisition		Years of Learning**	
		Mean	SD	Mean	SD	Mean	SD
Low	31	18.61	0.59	8.68	1.58	9.94	1.90
High	22	20.41	0.50	8.82	1.37	11.59	1.44

Note. ** $p < .001$

Table 2

Descriptive Statistics of OQPT and Self-Reported English Proficiency

	OQPT**	Self-reported English proficiency (7-point scale)				
	(Max. = 60)	Listening*	Speaking	Reading*	Writing	Overall*
Low	32.90 (5.40)	2.84 (0.93)	2.90 (1.14)	3.39 (1.15)	3.23 (0.99)	2.94 (0.93)
High	39.32 (5.05)	3.50 (0.91)	3.45 (1.06)	4.09 (1.23)	3.55 (0.74)	3.59 (0.80)

Note. * $p < .05$; ** $p < .001$; SD in parenthesis

4.2 Material preparation

Twenty pairs of synonyms, consisting of 40 individual words, were sourced from the first three thousand words of the BNC/COCA headword lists[3]. This word pool was chosen based on the requirement that participants, graduating from senior high school, possessed an estimated vocabulary size of approximately 3,500 words, as stipulated by the *National English Curriculum Standards for General Senior High Schools* in China (2018 Edition). Therefore, the selected words were most likely familiar to them. To validate this assumption, a word recognition test was administered prior to the main experiment (see the next section). The distribution of words across word types and frequency bands is presented in Table 3, and the complete list of target words along with their frequency ranges can be found in Appendix 1.

Unlike Liu and Zhong's (2016) study, which included only two pairs of nouns and adverbs, this study incorporated one additional word class—verbs. Considering the current study's focus on syntactic

structures and the fact that different word classes function distinctly in sentences, broadening the word-class coverage enhanced the robustness of the findings and provided more nuanced insights into synonym acquisition and usage. However, the considerations of word familiarity and the presence of clearly distinguishable semantic or syntactic differences between word members in each synonym pair resulted in an uneven distribution of word classes: 11 verb pairs, six adjective pairs, and three noun pairs. Of these, eight verb pairs and two adjective pairs were selected for their syntactic differences, and the remaining pairs—three verbs, three nouns, and four adjectives—were distinguished based on semantic differences[4], embedded in similar syntactic structures.

After finalizing the word list, the next step was to contextualize each word pair within a single sentence. Because semantic and syntactic differences were examined independently, we strived to minimize the interaction between these two types of cues. Specifically, each sentence was constructed to include only one salient cue—either semantic or syntactic—to guide participants in selecting the more contextually appropriate word. For simplicity, we refer to these as *semantic items* and *syntactic items*, respectively.

In semantic items, both words in a pair were syntactically acceptable within the sentence, but one word was more appropriate due to meaning-related contextual constraints. For example, in the item [*In this film, because of a bad decision made by others, a man from the south was accused of murder, which was* ____. (wrong/incorrect)], both *wrong* and *incorrect* are syntactically acceptable, yet *wrong* is the better fit because of its connotation of immorality or injustice—an interpretation more compatible with contextual cues such as *bad*, *accused*, and *murder*. In contrast, the syntactic items provided clear grammatical structures that distinguished one word as a more suitable option from the other, without offering sufficient semantic context to influence the choice. In another item [*I'd* ____ *not telling him the truth.* (suggest/advise)], although *suggest* and *advise* differ subtly in meaning, the sentence offers no strong semantic clues. Instead, the choice hinges on syntactic patterns: *suggest* is typically followed by a gerund, while *advise* more commonly takes an infinitive. Hence, *suggest* is the appropriate choice.

All sentences were carefully designed with these distinctions in mind, and several items were adapted from or inspired by Liu's (2013b) study. Notably, semantic item sentences were, on average, longer (*M number of words* = 17.3, *SD* = 7.18) than syntactic counterparts (*M number of words* = 12.6, *SD* = 5.13). However, this sentential length difference was not statistically significant (p = .109). The length discrepancy was inevitable because conveying the contextual nuances required for semantic differentiation necessitated more elaborate sentence construction.

Table 3

The Distributions of Target Words by Word Class Against Frequency Band

Word Class	1,000	2,000	3,000	Total No.
Noun	3	2	1	6
Verb	8	10	4	22
Adjective	9	3	0	12
Total No.	20	15	5	40

Once the 20 sentences were constructed, we invited an English-L1 speaker, whom the first author had previously worked with as a teaching assistant, to evaluate the clarity and appropriateness of each sentence. The face validity was tenable, indicating that each sentence had one clear, unambiguous answer. Revisions were made based on the feedback. Following the revisions, pilot testing was performed; that is, five first-year students—who were from the same participant pool as the experimental participants but did not take part in the study—were asked to review the sentences to identify unfamiliar words or any potential barriers to comprehension. Their feedback indicated no issues with word familiarity or clarity for comprehension.

4.3 Instruments

We administered a battery of tests and questionnaires. In the following, we describe each of these measures in detail, before the introduction to the forced-choice synonym test and interview.

The Written Word Recognition Test was designed to determine whether participants were familiar with the words in the synonym pairs, thereby ruling out the possibility that any observed poor performance could not be attributed to a lack of knowledge of the target words (Sun, 2020). To invite participants to engage in this test and get them motivated, we included 40 additional words at more advanced levels. For this test, participants were asked to circle the words they recognized and provide a Chinese translation as evidence of their knowledge.

The Short Background Questionnaire collected participants' demographic and language background information, including gender, biological age, the age at which they began learning English in classroom settings, and the total length of time they had spent learning English.

The Oxford Quick Placement Test is a widely adopted and objective tool for determining English proficiency, available in two versions. We selected the first version due to its accessibility. The test consists of 60 multiple-choice items that assess grammar and vocabulary knowledge. Administered in a pen-and-paper format, the test had a time limit of 30 minutes, with a maximum possible score of 60.

In *the Self-Reported English Proficiency Questionnaire*, participants were asked to self-rate their listening, speaking, reading, and writing skills, as well as their overall proficiency, on a scale from 1 to 7, with 7 representing a native-like level. This subjective measure was used to complement the results of the OQPT.

A *Forced-Choice Synonym Test* served as the central instrument (see Appendix 2). Participants read 20 sentences and selected the word that best fit the context. To prevent blind guessing, along with word selection, they were also asked to provide written justifications or rationales for each of their choices in either Chinese or English. One point was awarded for each correct response. We then analyzed the rationales to determine the number of responses that correctly identified the linguistic cues.

A *Brief Interview* comprised follow-up open-ended questions, aimed at understanding the participants' awareness of lexical differences. We selected particular pairs based on actual test results, categorizing them into high- and low-performing pairs (HP and LP) for both groups. Ten students from each group were randomly chosen to respond to the same questions: (a) how did you learn differences between the synonym pairs in general? (b) how did you learn to differentiate between the items of HPs and LPs (see the Results section) used in this study? All interviews were conducted in Chinese to ensure participants could freely express their thoughts and were audio-recorded with permission for subsequent analyses.

4.4 Procedure

The experiment was conducted over four weeks. During the first week, participants were briefed on the research purpose, that is, to test their vocabulary knowledge, and informed that their test performances would not affect their course grades. They then completed the written word recognition test, the short background questionnaire, and the self-reported English proficiency questionnaire. In the second week, they took the Oxford Quick Placement Test. In the third week, participants completed the forced-choice synonym instrument. We spread out these tests over three weeks because these tests were completed within regular class sessions, and we intended not to disrupt the class sessions too much. A brief interview was conducted outside class sessions the next day after the completion of the synonym test and continued into the fourth week.

4.5 Data coding and analysis

Data coding and analyses were undertaken by the first author. The written word recognition test and the Oxford Quick Placement test were coded binarily as correct or incorrect. For the forced-choice synonym test, the first author reviewed each response, generating two types of scores: one for the total correct responses and the other for the semantically/syntactically cue-based correct responses (i.e., correct responses with proper rationale for word selection). The rationales behind word selection were carefully read and coded by the first author as appropriate or inappropriate. Re-coding was undertaken to ensure coding accuracy, which resulted in a 100% agreement. All data in these tests, along with those from the short background questionnaire and the self-reported English proficiency questionnaire, were entered into Excel spreadsheets and analyzed using R (R Core Team, 2016).

Interview data were transcribed by the first author. An inductive approach was used to thematically code the data (Ary et al., 2014), which involved multiple readings of the data and categorizing them into emerging themes. The second author was consulted wherever uncertainties arose, and all disagreements were resolved through discussions.

5 Results

The results of the written word recognition test showed that all participants could recognize the target words included in the forced-choice synonym test. This means that learners' potential poor performance on the synonym test could not be attributable solely to a complete lack of lexical knowledge.

5.1 RQ 1: The overall accuracy

Tables 4 and 5 present the descriptive statistics of test scores for both syntactic and semantic items. Several important observations can be made from these data. First, the correct response rates across participant groups and item types are generally satisfactory, ranging from 61% (6.10/10) to 75% (7.45/10), with some learners even achieving full scores in semantic items. However, these results might be inflated and inaccurate from an acquisition perspective, as learners might have relied on intuitive judgments as a strategy, without truly knowing or understanding the differences between the two words in each synonym pair.

To address this issue, we also asked participants to provide written explanations justifying their lexical choices. Among the correct responses, only those that indicated an understanding of the semantic or syntactic differences were retained for further analysis. This procedure led to a significant decrease in scores, ranging from 1.71 to 3.73 points. These findings suggest that while the synonymous words under investigation were familiar to our learners, they were not sufficiently acquired in terms of syntactic structure and lexical meaning.

5.2 RQ2: The role of L2 proficiency and cue type

We conducted an ANOVA to check for the effects of the proficiency group (high versus low) and cue type (syntactic versus semantic) on the test scores. The results revealed a significant main effect of proficiency on the outcome measure ($F(1) = 18.657$, $p < .001$), indicating that the proficiency level influenced test performance on synonym choice. The main effect of cue type was not significant ($F(1) = 3.443$, $p = .066$). However, the interaction between proficiency and cue type reached a significance level ($F(1) = 12.257$, $p < .001$), suggesting that the impact of cue type differed depending on proficiency level.

We then conducted post hoc multiple comparison tests to further analyze the interaction effect. Results indicated that high-proficiency learners performed significantly better on semantic items than on

syntactic items (p = .001, 95% CI = [-2.968, -0.577]). In contrast, no differences were found among low-proficiency learners (p = .837, 95% CI = [-0.685, 1.330]).

It was also found that the low- and high-proficiency groups differed significantly on semantic items (p < .001, 95% CI = [-3.446, -1.235]), with high-proficiency learners outperforming their low-proficiency counterparts. However, no significant group differences were observed on syntactic items (p = .938, 95% CI = [-1.350, 0.860]).

Table 4

Descriptive Statistics of the Scores of Syntactic Items (n = 10)

	Total correct response				Syntactically cue-based correct response*			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Low	6.10	1.40	3.00	8.00	1.71	1.44	0.00	6.00
High	6.77	1.45	4.00	9.00	1.95	1.50	0.00	5.00

Note. * Correct syntactic rationales were provided.

Table 5

Descriptive Statistics of the Scores of Semantic Items (n = 10)

	Total correct response				Semantically cue-based correct response*			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Low	6.58	1.82	3.00	10.00	1.39	1.23	0.00	4.00
High	7.45	2.02	3.00	10.00	3.73	1.96	0.00	8.00

Note. * Correct semantic rationales were provided.

Table 6

Percentages of the Participants' Correct Cue-Based Responses by Group and Item Word Pair

Syntactic knowledge (%)			Semantic knowledge (%)		
	Low (n = 31)	High (n = 22)		Low (n = 31)	High (n = 22)
ill-sick	9.68	22.73	error-mistake	6.45	18.18
likely-probable *	48.39	40.91	duty-responsibility *	38.71	45.45
suggest-advise *	32.26	45.45	chance-opportunity	0.00	40.91
hope-wish *	32.26	31.82	sure-certain ~	3.23	0.00
provide-supply	12.90	13.64	real-true *	35.48	72.73
choose-select	19.35	4.55	surprising-amazing *	35.48	68.18
decrease-reduce ~	0.00	4.55	wrong-incorrect	0.00	40.91
rise-raise ~	0.00	9.09	refuse-reject ~	0.00	9.09
suspect-doubt	12.90	22.73	demand-require	9.68	27.27
permit-allow ~	3.23	0.00	ignore-neglect	9.68	50.00
Total	17.10	19.55	Total	13.87	37.27

Note. * HP pairs; ~ LP pairs for the interview question

We also tallied the number of participants who provided correct responses accompanied by appropriate rationales on an item-by-item basis. Due to the unequal number of participants in the two groups, all raw counts were converted into percentages to enable direct comparisons. These results are presented in Table 6. Given the overall low performance across most items, we set a 30% threshold to distinguish HP pairs; items that fell below this cutoff in both groups were labeled as LP pairs. Based on this criterion, six HPs (*likely*/*probable, suggest*/*advise, hope*/*wish, duty*/*responsibility, real*/*true, surprising*/*amazing*) and five LPs (*decrease*/*reduce, rise*/*raise, permit*/*allow, sure*/*certain, refuse*/*reject*) were identified to subsequently address RQ 3.

5.3 RQ 3: Factors influencing learners' synonym choice

The follow-up interview revealed that item-related factors (frequency, salience), learning-related factors (explicit instruction in vocabulary materials, teacher feedback), and learner-related factors (learning strategies, motivation) played key roles in participants' abilities to learn and apply semantic and syntactic cues in distinguishing synonyms.

The following are sample interview responses from the learners. The first and second excerpts reflect item-related factors, highlighting the influence of lexical frequency and usage salience on learners' utilization of semantic and syntatic cues. The third and fourth passages show learning-related factors, underscoring the role of explicit instruction and feedback. The last quote represents the learner factor, emphasizing the impact of individual learning strategy or experience.

(1) *I could distinguish some pairs of English synonymous words, such as "real" and "true", because we learned both words at the very beginning of our learning. We used them quite often, indeed. However, I could not distinguish some other pairs.* (Student 1, high proficiency, frequency/usage)

(2) *Some synonymous pairs were relatively easy to distinguish, because of the noticeable structures, like "suggest" and "advise".* (Student 7, low proficiency, structural salience)

(3) *As English major students, we had to sit the TEM-4 test. Some test items in the multiple-choice section required us to make distinctions between two synonymous words. The test preparation materials I used contained some instructions that helped me effectively differentiate the two words, such as "likely" and "probable".* (Student 4, high proficiency, explicit instruction)

(4) *I do not know much about the differences between the words used in this study. I used these words intuitively, and I was not sure if I used them correctly. I also did not receive any feedback from others, including my English teacher.* (Student 5, high proficiency, a lack of feedback)

(5) *For me, I did not pay much attention to synonymous words, because the learning materials I was using did not provide such information useful for me to distinguish two words. They simply paired English words with their Chinese translations, which made it really quick for me to memorize words.* (Student 3, low proficiency, learning strategy)

6 Discussion

The present study investigated the acquisition of two key components of synonymous word knowledge—semantic meaning and syntactic structure unique to each word in synonym pairs—and aimed to understand the developmental trajectories of these components in relation to L2 proficiency. A forced-choice task was employed to assess whether Chinese EFL learners could differentiate synonymous items using semantic and syntactic cues embedded in contextualized sentences. To ensure that the analysis focused on genuine understanding, only correct responses accompanied by appropriate justifications were included in the main analysis. Additionally, follow-up interviews were conducted to explore learners' perceptions of the cues and potential reasons for their successful or unsuccessful acquisition.

Beyond the quantitative results, the study yielded three principal findings, which are discussed below in light of interview data as an explanatory scheme and relevant theoretical frameworks.

Firstly, given that all participants were able to visually recognize the target words, their very low scores suggest an incomplete mastery of the syntactic and semantic content of these synonyms. This finding aligns with previous studies (Jiang, 2004; Sun & Wang, 2020), particularly at the semantic level. In Jiang's (2004) study, ten advanced learners completed a synonym differentiation task that included additional options such as "both words" and "not sure," yielding a notably low overall accuracy rate of 35%. By comparison, our study, which excluded these extra options, resulted in higher rates of 66% (6.58/10) and 75% (7.45/10) for the two proficiency groups, although these figures do not account for learners' rationales. Despite higher accuracy, our participants performed poorly when their written justifications were considered, echoing Jiang's (2004) observation that learners struggled to articulate the differences between synonyms (only 7 out of 60 attempts were successful). One plausible explanation lies in the influence of learners' L1 conceptual systems. According to Jiang's (2000) lexical development model, L2 words are initially mapped onto existing L1 representations, particularly at early learning stages. As such, members of a synonym pair (e.g., *demand* and *require*), both often mapped to the same Chinese translation (e.g., *xuqiu*), are perceived as interchangeable. Without sufficient contextualized input, these distinctions fail to integrate into learners' L2 lexical entries, and the L1 lemma continues to mediate L2 word use at both semantic and syntactic levels.

Our interview data further support this interpretation. Several participants reported relying heavily on vocabulary lists as a strategy to rapidly expand their lexical repertoire. Such materials typically present L2 words with L1 translation equivalents or near-synonyms in isolation. Some learners admitted that once they could recall an L1 translation for an L2 word, they would move on to the next item, often neglecting deeper aspects of word knowledge, including structure and collocation. This shortcut approach to vocabulary learning may explain their limited abilities to distinguish between synonyms beyond surface-level recognition.

In addition to learner-related cognitive (i.e., learning strategy) and affective (i.e., demotivation) factors, another plausible explanation for the observed difficulties lies in the properties of the test items themselves. Certain linguistic features are inherently more complex and thus more demanding, regardless of individual learner characteristics (Housen & Simoens, 2016). In our study, semantic differences between synonymous pairs appear to be particularly challenging because they are not governed by systematic rules. As a result, learners need to acquire the meaning distinctions of each word on an item-by-item basis. In contrast, certain syntactic structures are often governed by explicit rules that can be abstracted from authentic input (Liu, 2013a; Liu & Zhong, 2016). For instance, in responding to the item discussed in the Material Preparation section, learners can rely on the salient structure *suggest doing something* to inform their decisions.

However, structural salience may be better conceptualized as a continuum rather than a binary category. Some syntactic cues are more perceptually prominent than others, and those with greater salience are more likely to be noticed and internalized by learners (Hong, 2012). The HP and LP items in our study offer compelling evidence for the potential impact of varying degrees of salience. For the three HPs, highly visible structures—infinitive (*be likely to do*), gerund (*suggest doing*), and indicative mood (*hope that…do…*)—serve as clear cues that help differentiate the synonymous word items. Conversely, the syntactic cues embedded in the three LP items, though present, were more subtle and not easily detected by learners. Interview responses support this interpretation. Some students noted that they rarely paid attention to whether a verb was transitive or intransitive. When working with pairs like *rise*/*raise* and *decrease*/*reduce*, where transitivity serves as the primary grammatical cue, many failed to consider whether a form of the verb *be* was present. This difficulty may also stem from negative L1 transfer, as the Chinese language often uses zero-passive to imply passivity. Interestingly, as shown in Table 6, most HP and LP syntactic items were answered correctly (with reasonable rationales) by a similar percentage

of learners across proficiency levels. We believe this pattern reflects the intrinsic ease or difficulty of the items themselves.

Given the inherent challenges posed by semantic distinctions, an intriguing question arises: why were some semantic items—such as *real*/*true* and *surprising*/*amazing*—answered correctly by a comparable or even greater proportion of learners than certain syntactic items? We propose that lexical frequency might have played a significant role in this outcome. Frequency data presented in Appendix 1 indicate that all four words in these two pairs fall within the first thousand frequency band. Additionally, participant feedback suggests that some HP items, such as *real*/*true,* were perceived as easier to differentiate semantically due to learners' high familiarity with them. This observation aligns with the usage-based account (Ellis, 2002), which emphasizes the central role of input frequency in language acquisition. It also resonates with Jiang's (2000) three-stage model of lexical development, which posits that extensive and high-quality L2 exposure can support the semantic restructuring of lexical items over time.

Our second key finding indicates that less proficient learners did not show significant differences in their performance on semantic versus syntactic items. This is somewhat unexpected, especially when considering individual item pairs. As discussed earlier, some syntactic structures (e.g., *be likely to do*) were highly salient and thus more readily noticed, while others (e.g., *be reduced*) went undetected despite their rule-based nature. Similarly, although semantic distinctions are primarily memory-based, some pairs, such as *real/true*, might have benefited from greater lexical frequency, which in turn attracted learners' attention. Therefore, for low-proficiency learners, the varying degree of salience in syntactic structures may have counterbalanced the potential advantages conferred by lexical frequency in semantic items.

A more surprising result emerged among high-proficiency learners, who performed better on semantic items than syntactic ones. To further investigate this pattern, we examined interview data. Several participants reported having extensive exposure to vocabulary exercises focusing on synonym differentiation—a common item type in the Test for English Majors Band 4 (TEM-4), a high-stakes exam for second-year English majors in China. Given the exam's prominence in their academic trajectory, learners indicated that test preparation materials, including vocabulary lists and mock tests, often provided explicit strategies for distinguishing between confusing synonyms. This observation highlights the influence of assessment on teaching and learning behavior—commonly referred to as the washback effect (Alderson & Wall, 1993). It is therefore unsurprising that high-proficiency learners responded more accurately to certain semantic items, such as *wrong*/*incorrect* and *ignore*/*neglect*. Another explanation that learners offered for their comparatively lower performance on syntactic items was the lack of corrective feedback in classroom settings. Many participants noted that they were unsure whether their syntactic usage was correct, suggesting that form-focused instruction may be limited. We speculate that this is likely influenced by the meaning-oriented approach commonly adopted in their instructional environments, which tends to prioritize communicative effectiveness over syntactic accuracy.

The positive washback effect of testing may also help explain our third finding that high-proficiency participants outperformed their lower-proficiency counterparts on semantic items. This outcome is further supported by Jiang's (2000) three-stage model of lexical development. As previously discussed, learners with higher proficiency levels might have encountered more explicit instruction or been exposed to richer contextual input for certain synonym pairs, thereby facilitating semantic restructuring. However, a different trend emerged for syntactic knowledge, showing that L2 proficiency did not appear to affect learners' performance on syntactic synonym pairs, with both groups performing comparably. One plausible reason, as noted by several interviewees, is the lack of corrective feedback from instructors. Without explicit attention to form, learners may remain unaware of incorrect usage, which in turn impedes the development of syntactic accuracy.

It is also important to note that all participants were able to recognize all target words, as confirmed by the written word recognition test administered in this study. However, their mastery of the syntactic

knowledge associated with these words, conceptualized as a component of the depth of vocabulary knowledge (Nation, 2013), is notably limited. From this perspective, our findings lend further support to Schmitt's (2014) assertion that the depth of vocabulary knowledge does not necessarily develop alongside vocabulary size or breadth. This highlights the need for pedagogical practices that do not focus solely on expanding lexical breadth but must also address the more intricate syntactic and nuanced semantic aspects of word knowledge to foster comprehensive lexical competence.

7 Conclusion

The current study investigated the relative difficulty associated with syntactic versus semantic knowledge of L2 synonymous word pairs and explored how these components would develop in relation to learners' overall English proficiency. Results showed that both syntactic and semantic cues posed challenges for learners. Notably, syntactic knowledge emerged as more difficult than semantic intricacies, showing little development even among higher proficiency learners. The interview data further suggested that the acquisition of these distinctions was influenced by item-specific, learning-related, and learner-centered factors.

These findings have important pedagogical implications for teaching L2 synonyms. First, explicit instruction is crucial, as it helps learners become aware of subtle intricacies between synonymous items. For example, teachers could employ a corpus-based data-driven approach by presenting authentic language instances from English-L1 speaker corpora, such as BNC or COCA, followed by detailed explanations to help learners identify and internalize these differences. This should be supplemented with extensive practice activities and corrective feedback as needed (Liu, 2013b). Additionally, course material developers should enhance the visibility of challenging word pairs by repeating them across diverse contexts and providing comprehensive glossing. Finally, learners should be informed about the multifaceted nature of vocabulary knowledge and receive systematic training to develop effective vocabulary learning strategies.

Despite its contributions, this study has several limitations. First, the small sample size and the relatively narrow proficiency gap (albeit statistically significant) may limit the generalizability of the findings, potentially underestimating proficiency effects. Future research should involve larger samples with more substantial proficiency differences. Second, the cross-sectional design compared two different groups of learners, assuming that they were comparable except for L2 proficiency. However, other individual differences might have influenced the results. To address this, future studies could adopt a longitudinal approach with a within-participant design, tracking the same learners over time as they progress to higher proficiency levels. Third, although all target words were familiar to the participants, varying degrees of familiarity might have influenced the results. This limitation could be mitigated in future research by using the same set of target words. Finally, this study only examined syntactic and semantic cues at the acquisition level. Future research could expand the scope by including other cues, such as collocational and stylistic cues, to explore whether learners are sensitive to these distinctions when processing synonymous words.

Notes

1. Retrieved from https://www.merriam-webster.com/dictionary/synonym
2. Some researchers welcome the later addition of automaticity (Schmitt & Mccarthy, 1998) or fluency (Daller, et al., 2007), which refers to how speedy certain words are accessed. In this paper, however, we adhere to the traditional breadth/depth dichotomy, because our study only taps into receptive knowledge at the sentential level with no consideration of time limits.

3. The lists are available at https://www.wgtn.ac.nz/lals/resources/paul-nations-resources/vocabulary-lists
4. We consulted the Merriam-Webster Dictionary of Synonyms and one English-L1 speaker for the semantic differences of each pair.

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Appendix

Appendix 1. Target words with their respective frequency range (in parenthesis)

Noun	Verb	Adjective
error (3) - mistake (1)	suggest (1) - advise (2)	ill (2) - sick (1)
duty (2) - responsibility (1)	hope (1) - wish (1)	likely (2) - probable (1)
chance (1) - opportunity (2)	provide (2) - supply (2)	sure (1) - certain (1)
	choose (1) - select (2)	real (1) - true (1)
	decrease (3) - reduce (2)	surprising (1) - amazing (1)
	rise (1) - raise (1)	wrong (1) - incorrect (2)
	suspect (2) - doubt (1)	
	permit (3) - allow (1)	
	refuse (2) - reject (3)	
	demand (2) - require (2)	
	ignore (2) - neglect (3)	

Note: 1 = 1~1000; 2 = 1001 ~ 2000; 3 = 2001 ~ 3000

Appendix 2. Forced-choice synonym test

Name: _____ Student NO.:_____

Choose the word that can best complete each sentence and write down the REASON for your choice in either Chinese or English.

1. Tickets are ____ to be expensive, because this film is very popular. (probable/likely)

Reason:_____

2. The museum was recently robbed by several gunmen. They took a ____ diamond that was worth millions of dollars. (real/true)

Reason:_____

3. I'd ____ not telling him the truth. (suggest/advise)

Reason:_____

4. Last time I saw he was quite fat. I ____ that he will control his diet from this moment. (hope/wish)

Reason:_____

5. In this film, because of a bad decision made by others, a man from the south was accused of murder, which was ____. (wrong/incorrect)

Reason:_____

6. I'm extremely grateful for your gift but I'm afraid I'll have to ____ it due to company policy. (refuse/reject)

Reason:_____

7. We ____ money and clothes to him. (provide/supply)

Reason:_____

8. After a second thought, he ____ to go there by plane. (chose/selected)

Reason:_____

9. It is the police officers' ____ to maintain the peace. (duty/responsibility) keep the peace

Reason:_____

10. He was very busy the whole week and he had to go to the hospital to look after his ____ mother. (ill/sick)

Reason:_____

11. He left early so I missed my ____ to say goodbye to him. (chance/opportunity)

Reason:_____

12. The number of new students was ____ from 210 to 160 this year. (decreased/reduced)

Reason:_____

13. Since the raw material has gone up in price, the price of this product will probably ____. (rise/raise)

Reason:_____

14. All three tests ____ that students should use more than content knowledge. (demand/require)

Reason:_____

15. I ____ whether the new system will work better. (doubt/suspect)

Reason:_____

16. She saw him coming, but she _____him. (neglected/ignored)

Reason:_____

17. The computer broke down several times. As a result, over 50 people were denied a vote because of this _____. (mistake/error)

Reason:_____

18. Although he worked really hard, he did not pass the final exam. It was quite ____ to us all. (surprising/amazing)

Reason:_____

19. Since you are smoking, we cannot ____ you in. (allow/permit)

Reason:_____

20. - Do you know if John is in the classroom ?

- Well, I saw him in the library a minute ago, so I am ____ that he was not in the classroom. (sure/certain)

Reason:_____

Syntactic items: 1, 3, 4, 7, 8, 10, 12, 13, 15 and 19

Semantic items: 2, 5, 6, 9, 11, 14, 16, 17, 18 and 20

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