



The Influence of Explicit Morphological Instruction on Reading Comprehension among Malaysian Primary ESL Learners

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This study aims to examine the significant difference in reading comprehension performance after explicit instruction in morphology. This quasi-experimental study investigated specifically the effect of explicit teaching on compounding, inflectional and derivational morphological awareness upon Malaysian primary school learners' reading comprehension in the ESL context. Convenience sampling was applied in recruiting 125 pupils from two government primary schools in a suburb area. The experimental group was given the explicit instruction in morphology during their reading lessons for 12 consecutive weeks, and the control group had been taught without this intervention. After controlling for learners' pre-test scores, ANCOVA statistical result concluded that the experimental group could achieve higher scores in their post-tests, which indicated a significant difference in reading comprehension performance. Therefore, it is essential for curriculum developers to give recognition of the importance of morphology. Educational practitioners and academics should explore further the teaching of morphology in order to improve their learners' reading comprehension skill.

Keywords: English morphological awareness, reading comprehension, primary ESL learners

Introduction

Reading comprehension is the core of reading skill. It is an ability to understand and grasp the meanings of words, sentences and texts (Koda, 2015; Spiro, Bruce & Brewer, 2017). Reading comprehension is generally associated with the ability to identify main ideas, recognise supporting details, draw inferences and derive conclusions from written texts (Eng, Mohamed, & Ismail, 2016). Studies have demonstrated that lots of English as a Second Language (ESL) young learners still showed a distinct lack of reading comprehension skill (Jamaludin et al., 2016; Mansur & Samad, 2015). Therefore, previous studies investigated this issue and suggested morphological awareness (MA) as a potential predictor for reading comprehension in alphabetic languages among monolingual (Deacon, Kieffer, & Laroche, 2014; Kirby, Deacon, Bowers, Izenberg, Wade-Woolley, & Parrila, 2012; McCutchen & Logan, 2011) and bilingual children (Bae & Joshi, 2017; Cheng, Wang, & Perfetti, 2011; Hayashi & Murphy, 2013; Zhang, 2016; Zhang & Koda, 2013). MA pertains to the knowledge about morphemes recognition, perception

and manipulation (Carlisle & Kearnes, 2017; Hedgcock & Ferris, 2018). It is considered as a linguistic skill to apply word formation rules to construct and comprehend morphologically complex words (Lieber, 2015; Plag, 2018; Yun, 2019).

Previous findings suggested that explicit teaching of morphology in English reading lesson can be employed as an effective strategy to increase metacognitive awareness of morphology, which can enhance reading comprehension performance (Hedgcock & Ferris, 2018). It is crucial to guide learners explicitly to foster this type of metacognitive awareness through series of practical steps while engaging with meaningful language context (Bataineh & Al-Kofeiri, 2018; Zhang & Koda, 2013).

Nonetheless, previous related studies pertaining to the potential effects of MA on reading were mainly conducted by using single assessment, observations, surveys, one-time cross-sectional methods and most studies have been limited to only word-level achievements (Carlisle & Kearnes, 2017; Hendrix & Griffin, 2017; Tighe & Schatschneider, 2016; Xue & Jiang, 2017; Yun, 2019). Hence, most previous studies were theory motivated but did not demonstrate the practicality of morphological instruction in the actual classroom setting convincingly. It is vital to explore further the effect of teaching morphology explicitly on young learners' reading comprehension performance. Conclusive findings can facilitate primary ESL teachers to implement explicit morphological awareness teaching strategy that can improve young learners' reading comprehension performance. To the researchers' knowledge, Zhang (2016), and Varatharajoo, Asmawi, and Abedalaziz (2015a, 2015b) had conducted a similar study on the south-east population. However, Zhang's study took place in Singapore, and Varatharajoo's studies only involved secondary school students in Malaysia. There is a relative lack of studies exploring morphological awareness and its contribution to reading comprehension among Asian ESL young learners, especially the effect of explicit morphological awareness instruction. Thus, this current research aims to confirm further and substantiate the research on the effectiveness of morphology in reading comprehension improvement. In particular, we were interested to tackle this research question: Is there a significant difference in reading comprehension performance between the experimental and control groups after explicit instruction in morphology?

Literature Review

It is indeed a difficult mission to teach L2 pupils all the essential vocabulary of English, especially when the target language is their second language (L2). Therefore, instead of imparting all the existing lexical items to them, it is a more viable and effective approach if we teach them how English words are created.

For example, they might have learned the verb hunt means '*to catch and kill animals*', and for the person who hunts is a *hunter*. They will learn that when the suffix *-er* has been put at the ending of a verb or noun, this means '*a person that does that particular activity*'. Simultaneously, with this specific morphological awareness, the pupils also discover that the suffix *-er* can also form words such as *driver*, *painter*, *helper*, *writer*, *singer*, *baker*, *gardener* and other nouns that end with *-er*. Later, when the pupils encounter new words such as *keeper*, *loafer*, *tripper*, *trainer*, etc., which they have not been taught directly by their teachers, they can apply their knowledge of the morphological structure and root words to comprehend the meanings. Furthermore, the awareness of morphological structures can also contribute to understanding the modifications of words in terms of grammatical tenses, plurality, adjective and adverb. Hence, previous studies have found that morphological awareness is an essential and significant contributor to reading comprehension performance.

Morphology in English

A morpheme is the smallest component of a language that has its own meaning. It can be a word (e.g., *lifetime* contains two morphemes → the word ‘*life*’ and the word ‘*time*’) or part of a word (e.g., *freedom* contains two morphemes → the word ‘*free*’ and the suffix *-dom*). There are three types of morphemes in the English language: compounding, inflectional and derivational (Haspelmath & Sims, 2013; Plag, 2018; White, 2017).

Compounding morphemes makes new words by joining two or more root words (e.g., *sun* + *flower* → *sunflower*). In transparent compoundings, the meaning of the compounding is obvious from the meaning of the constituent morphemes (e.g., *basket* + *ball* → *basketball*). In opaque compoundings, the meaning of the compounding is not directly related to one or both constituent morphemes (e.g., *wind* + *fall* → *windfall* = which means an amount of money that we obtain unexpectedly). Previous studies have concluded that young learners can learn quicker the semantically transparent compound words which created by nouns (Bae & Joshi, 2017; Carlisle & Kearnes, 2017), especially the constituent morphemes (both head and non-head) convey the holistic meaning of the compound word. As for the partially transparent words or fully opaque words can be taught after the young learners already fully mastered the fundamental morphological awareness of compounding morphemes (Kim et al., 2015).

Inflectional morphemes are word endings that denote case, verb tense, gender or syntax. They indicate grammatical, syntactic or semantic relations between different words without changing the meaning or the part of speech of the root word (e.g., *play* → *played*). Suffixes of inflexion that considered to be frequent will be easier to acquire than the infrequent types. Words that are frequently attached with inflectional morphemes are also will be faster and easier to be acquired by the ESL learners (Chin, Zainuddin, & Pillai, 2019).

Derivational morphemes modify either the part of speech or the meaning, or both, of a base morpheme (root word) by the addition of a prefix (e.g., *happy* → *unhappy*) or a suffix (*collect* → *collection*). It is vital for learners to acquire the fundamental derivational construction of morphemes at a young age (Bae & Joshi, 2017; Haspelmath & Sims, 2013). Once the solid foundation for derivational morphology has been built, the higher-level conception of derivational morphemes can be developed gradually and steadily afterwards.

Morphological Awareness (MA)

Morphological awareness (MA) has three distinctive dimensions, namely morphological structure awareness, morphological analysis and morphological decoding. These dimensions are closely interrelated but have their own distinctive features and contributions to literacy. All three dimensions are connected to morphemes yet involved in different parts and extent of morphemes. Morphological structure awareness refers to the learners' knowledge in terms of working out and deciphering how the smaller parts of a word being segmented or combined morphologically (Bae & Joshi, 2017; Carlisle & Kearnes, 2017). Morphological analysis awareness refers to learners' capability to interpret the meaning of a novel difficult word based on the careful breakdown and evaluation of the constituents of specific morphemes (Kirby et al., 2012; McCutchen & Logan, 2011). Morphological decoding awareness is related to phonology.

Morphological structure awareness is a less language-specific facet type of awareness (Plag, 2018). This awareness does not involve the word meaning phase (Deacon et al., 2014). It is generally being measured using two types of task, analogy or sentence completion. In the analogy task, subjects were asked to form a correct word using a similar structure of the provided analogy (e.g., *Play* : *Replay* || *Turn* : *Return*). In the sentence completion task, subjects were asked to add a single segment of suitable affix to the given word based on the contextual clues (e.g., *friend*: *Mr Yap is a friendly person because he is always kind and pleasant to us.*). These two tasks require morphological skill at manipulating the word's structure to generate a new word that suitable for the relevant context.

Morphological analysis awareness is a more language-specific facet type of awareness (Plag, 2018). This awareness aims to understand the meaning of the word (Zhang, 2016). Morphological analysis is a detailed examination of the morphemes and root word in order to understand the meaning of a novel complex word (Rastle, 2018; Cheng et al., 2011). Learners can grasp and decipher the meaning based on the component morphemes (Plag, 2018; Zhang, 2016). It is generally being measured using the definition task. In the definition task, subjects were asked to choose the best definition from four given explanations for the word given based on the attached morphemes. For example, *Fisher* means... A) *a person who catches fish*; B) *a person who catches the animal*; C) *a person who catches a bee*; D) *a person who catches a butterfly*; the answer is 'A'. This task requires morphological skill at interpreting the meaning of the novel word based on the attached morpheme and reference to the root word.

Morphological decoding awareness relates to pronunciation, it concerns the ability of learners to pronounce a written word accurately based on the constituents of morphemes. This type of awareness does not have a significant association with reading comprehension (Choi, 2015; Hasan, 2016; Xue & Jiang, 2017) but Wang, Lin, and Yang (2014) reported otherwise.

Reading Comprehension

Reading comprehension is a receptive skill where learners obtain and sort out the meanings written texts composed by one or more authors (Eng et al., 2016). It is an ability to understand and grasp the meanings of words, sentences and texts (Eng et al., 2016; Spiro et al., 2017). Readers who demonstrate good reading comprehension skill can identify main ideas, recognise supporting details, draw inferences and derive conclusions from written texts (Koda, 2015; Landi & Ryherd, 2017). This particular ability is crucially important for both academic and lifelong learning (Spiro et al., 2017).

An internal mental lexical representation is considered as a contributing factor for reading comprehension (Asher, 2017). This sort of schemata is closely associated with internal attention (Landi & Ryherd, 2017; Ness, 2016). In order to read and comprehend text, the reader has to go through three crucial stages of internal attention. Firstly, a reader has to be alert; he or she has to actively access relevant mental lexical representations involving grapheme-phoneme association, syntax and particular meanings of words or texts (Landi & Ryherd, 2017). Then, the reader has to process specific and related information selectively (Ness, 2016). Therefore, in the final stage of internal attention, the reader has to manage his or her cognitive capacity since the brain has a limited ability for detailed processing (Landi & Ryherd, 2017). The reader has to maintain a steady focus on decoding, relating, assimilating and consolidating of schemata to achieve successful reading comprehension outcome (Asher, 2017). Therefore, a proficient reader can access the schemata quickly and spontaneously, also without much forceful attention to information processing.

English Morphology Awareness and Reading Comprehension

Heightened morphological awareness (MA) develops higher quality mental lexical representations, and this support reading comprehension markedly (Asher, 2017; Bae & Joshi, 2011; Deacon et al., 2014; Zhang, 2016). Learners can interpret and predict the meanings of complicated morphological words based on the root words and constituent morphemes (Choi, 2015; Deacon et al., 2014). Knowledge of multiple morphemic meanings and root words can significantly increase reading comprehension level (Asher, 2017; Zhang, 2016). Furthermore, the ability to discern morphologically related words based on the common root or constituent morphemes can also improve reading comprehension considerably (Bae & Joshi, 2017).

MA is usually regarded as vocabulary depth (Rastle, 2018). It provides a helpful way for learners to organise morphologically interrelated words in their mental lexicon (Landi & Ryherd, 2017). MA contributes uniquely to reading comprehension in three particular circumstances:

- Morphemes deduction knowledge enables inference about the meaning of complex vocabulary during text reading leads to better comprehension (Bae & Joshi, 2017; Ness, 2016; Rastle, 2018).
- Affix (prefix and suffix) syntactic structures awareness enables separation of complex sentences into more comprehensible grammatical parts (Zhang, 2016).
- Competence in segmentation morphologically complex words develops a higher ability to understand text content (Deacon et al., 2014).

Theoretical Framework

Figure 1 outlines the theoretical framework; it is derived from both schema and generative grammar theories. Schema theory claims that learned information is stored up mentally in units (Spiro et al., 2017; Liu, 2015). Learners develop schemata to organise their knowledge of generalisation about something and conception of tasks (Tracey & Morrow, 2017). Therefore, our knowledge is considered as schemata. Linguistic schemata of morphology refer to knowledge of roots, stems, bases, grammatical functions of morphemes and internal structure of words (Jackendoff & Audring, 2016). Generative grammar linguistic theory outlines the system of language rules that concerns the ordering and structuring of words (Botha, 2017; Horrocks, 2014). In the late 1950s, an American linguist, Avram Noam Chomsky started to use this term when he constructed the theoretical linguistics of grammar. Generativists have adopted this approach to study the syntax and other related linguistic features of a language's structure since then (Schiffer, 2015). Their studies have explored the formation of words (morphology) and sounds of words (phonology).

This current research was established based on the structure which applies morphological awareness (MA) as a reading comprehension reading strategy for primary school learners in the local ESL context. Therefore, both schema and generative grammar theories had been applied as the basis for examining reading comprehension performance (dependent variable) and the use of explicit morphological instruction (independent variable). MA pertains to the knowledge about recognition, perception and manipulation of three types of morphemes in the English language, namely compounding, inflectional and derivational (Hall, 2017; Hedgcock & Ferris, 2018). Therefore, morphological linguistic schemata enable learners to analyse the internal structure of words (grammar of words), then decode the meanings which lead to successful comprehension of texts (Booij & Audring, 2017; Jackendoff & Audring, 2016). Generative grammar theory claims that the basic unit of a word is stored cognitively as an individual morpheme (Kiparsky, 2018). Each of the morphemes is stored as a simple morphological word in the mental lexicon (Borer, 2017). Therefore, it is assumed that primary school level learners can comprehend written texts better via decoding words if they can build a strong foundation of morphological linguistic knowledge (Hendrix & Griffin, 2017). It is claimed that bottom-up is the crucial reading process model that highlights the importance of schema in reading comprehension (Tracey & Morrow, 2017).

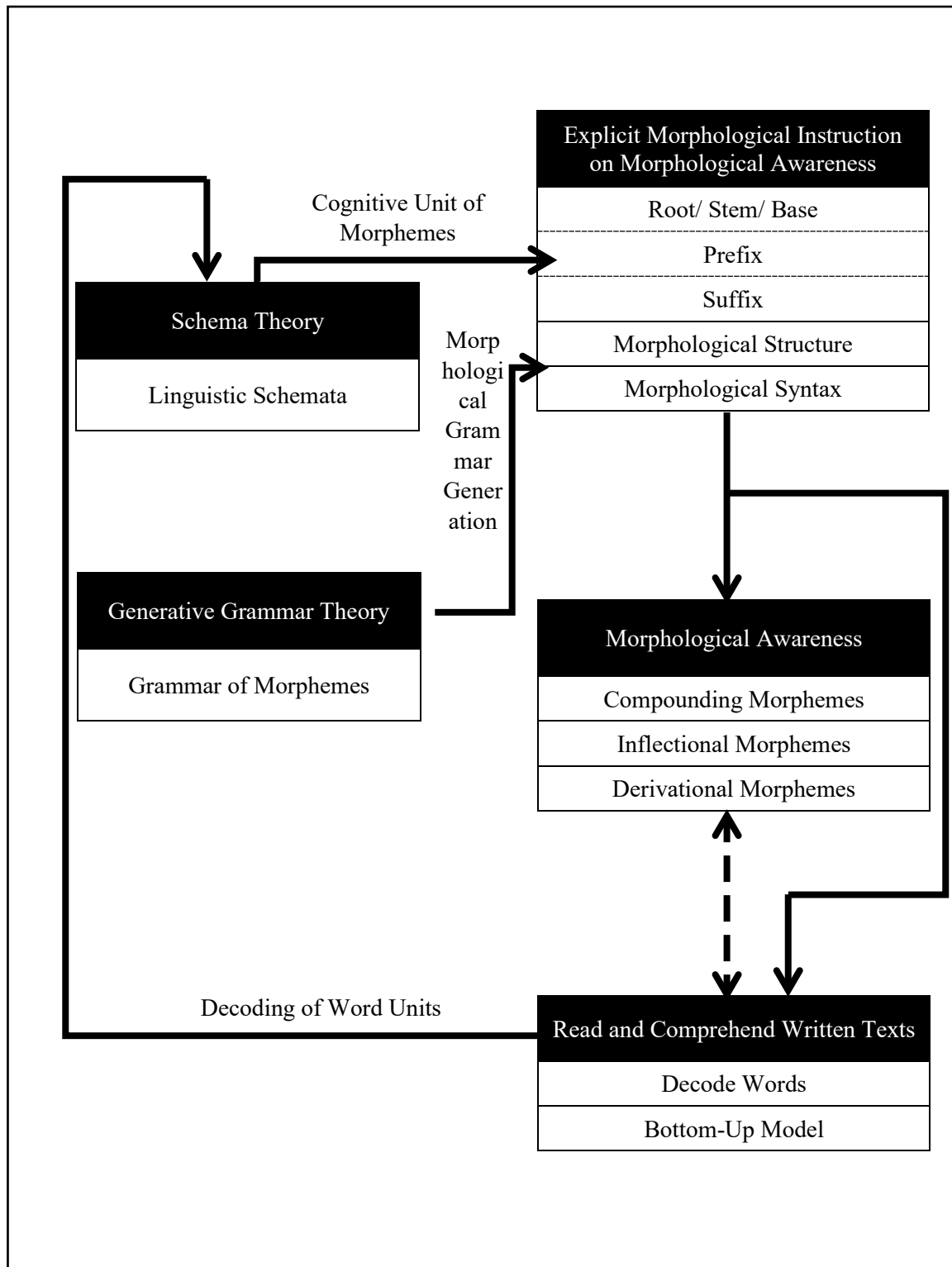


Figure 1. Theoretical framework based on the linguistic schemata by Jackendoff & Audring (2016) as well as the generative grammar theory by Kiparsky (2018).

Methodology

Research Design

The current study employed the quantitative quasi-experimental pre-test- post-test research design to validate the causality between English reading comprehension and explicit teaching of morphology which focused on three types of morphemes, namely compounding, inflectional and derivational. There were one control group and one experimental group.

According to Campbell and Stanley (2015), quasi-experimental research is a non-randomised experiment which aims to control the effect of an intervention programme. The comparison of outcomes between the non-randomised control group and experimental group was used as a form of evaluation. This study aimed to test this one particular null hypothesis: ‘There is no significant difference in reading comprehension performance between the experimental and control groups after explicit instruction in morphology’.

Sampling Method

This present empirical study was conducted at two government primary schools (SJKC – *Sekolah Jenis Kebangsaan Cina* – a Mandarin National-Type school) in the *Skudai* suburb of *Johor Bahru*, Malaysia. Both schools were situated within the same district. Due to the geographical proximity to the researchers, convenience sampling was the ideal sampling technique applicable to this current study (Etikan, Musa, & Alkassim, 2016). Furthermore, the rationale behind using this sampling method also has been determined by the time and funding constraints (Campbell & Stanley, 2015). This method of collecting data can save a significant amount of time.

Intervention Programme

The researchers appointed two teachers to teach the respondents. The selected teachers had similar characteristics in terms of age, gender, teaching major and work experience. Moreover, they also had similar teaching styles (see Figure 2). Therefore, they had been asked to answer the Staffordshire Evaluation of Teaching Styles (SETS) questionnaire survey, which was adapted from Mohanna, Chambers and Wall (2016) to determine their preferred teaching styles. It is to mitigate the confounding effects upon the research, for instance, their ability and teaching styles. Furthermore, the researchers regularly conducted face-to-face meetings with the two appointed teachers. They were continuously briefed and guided to ensure consistency in their teaching. The researchers made certain that they were on track to implement the lessons accordingly.

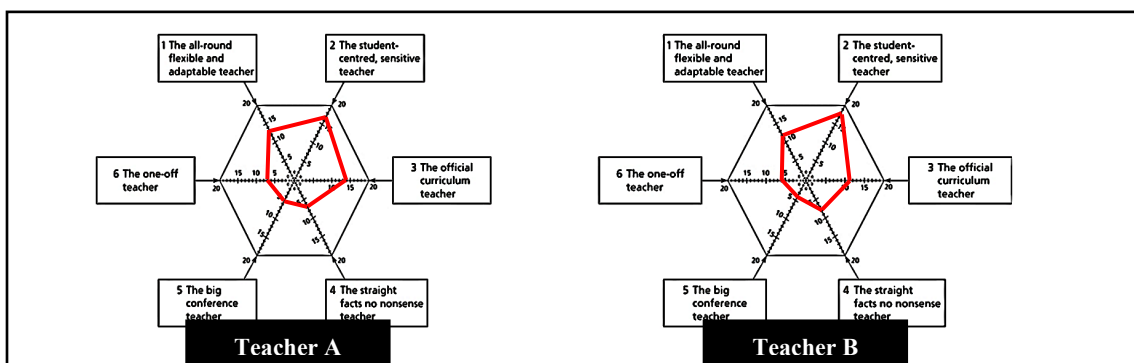


Figure 2. The Staffordshire Hexagon of Teacher A and B's teaching styles.

The experimental group was given the explicit instruction in morphology (compounding morphemes, inflectional morphemes, and derivational morphemes) as the intervention during their reading lessons for twelve consecutive weeks. Nonetheless, the control group had their reading lessons using conventional teaching methods. Each week, the experimental group had a lesson, and each lesson was 60 minutes (an hour). Therefore, it was 720 minutes (12 hours) in total for the whole intervention programme. The control group attended the reading lessons within the equivalent time frame. The intervention programme for the experimental group began concurrently with the reading comprehension lessons for the control group. Both groups had their lessons in the same week. Nonetheless, these two groups had their lessons on a different school day, lessons for the control group were Sundays, the experimental group were conducted on Thursdays.

Explicit teaching of morphology had been conducted within a series of lessons by following the following essential instructional steps (Hedgcock & Ferris, 2018):

- (1) Presented the target novel unknown words and introduced the concept (compounding words, inflectional words or derivational words).
- (2) Demonstrated how to segment the root words and affixes.
- (3) Explained the root words and the morphemic meanings of the constituent morphemes.
- (4) Guided pupils to decipher the meanings of words in contextualised and meaningful texts.
- (5) Provided more examples of words with similar root attached to different morphemes or similar morpheme with different roots.
- (6) Gradually guided learners to practise the strategy individually, in pairs or in groups.
- (7) Gave pupils group or individual reading assignment to apply the approach practically.

Explicit instruction on morphological awareness had been carried out either prior, during or post stages of the reading lesson. English language morphology has a few inherent limitations, namely the semantic transparency of morphemes and the adaptability of morphemes (Plag, 2018). Therefore, during the intervention, pupils had been guided by their teachers to practise the morphological analysis strategy with multiple genuine contextualised texts. Learners are able to apply the strategy tactically if they have more learning opportunities to decode compounding, inflectional and derivational words in a practical context (Hedgcock & Ferris, 2018).

Word choice is one of the crucial factors for the explicit teaching of morphology in a reading comprehension lesson (Zhang, 2016). Therefore, the words had been chosen appropriately according to learners' prior knowledge and proficiency. The associations between the root words and constituent morphemes were highlighted clearly as well (Plag, 2018). Furthermore, the number of target words for one lesson was moderate, and it was as a buffer against the overload of pupils' memories (Hedgcock & Ferris, 2018). Each lesson could only use one text and the total words in a text was between 80 to 100 words only.

Teacher clearly highlighted the semantically opaque morphemes, orthographic and phonological changes, whenever the mentioned conditions did exist. Then, teacher asked them to suggest a plausible hypothesis about the meanings of words based on the root words, morphemic meanings and relevant context (Hedgcock & Ferris, 2018). After they had decoded the meanings of words, then the teacher gradually guided them to relate the meanings to the contextual clues in the phrases and sentences of the given texts. (Plag, 2018; Zhang, 2016).

Lesson plans in this current study adopted the Cognitive Academic Language Learning Approach (CALLA) model. The model is created based on the contemporary theory of cognition which facilitates greater integration of knowledge contents (Gu, 2018), and accelerates the development of linguistic skills as well (Marimuthu, Muthusamy, & Veeravagu, 2016). Therefore, every lesson had five recursive phases of instructional sequence that support learners with sufficient practices in language learning. Each lesson began with the preparation phase, which focused on activating pupils' prior knowledge. Teachers clarified the learning objectives, then also conducted fun and engaging activities to develop necessary vocabulary

capacity for the related topic. Secondly, morphology analysis strategies were explicitly modelled during the presentation phase. Teachers presented new knowledge content in varied efficient ways. Furthermore, teachers also integrated other relevant language skills and provided differentiation. In order to mitigate the unwanted effect on the research outcomes, the integrated skills such as listening, speaking and writing only served as complementary skills, the dominant and main skill was reading comprehension. Differentiation strategy for each lesson was solely focusing on the feedback given to individual pupils regarding their learning progress. Thirdly, pupils had been provided with opportunities in the practice phase to employ the proposed strategies independently or collaboratively. Teacher guided pupils to practice and apply the strategies through inquiry-based activities, different collaborative learning structures and authentic content tasks. The next phase was the pupils' self-evaluation process. They were guided to evaluate and assess their own learning performance. Finally, the last phase was an expansion. Pupils were facilitated to apply the strategies to the new setting. Teachers gave them more texts to read.

Instrument

The target respondents of both groups took the English Reading Comprehension Assessment (ERCA) prior to the intervention programme (pre-test); after the intervention, both groups were asked to retake the above-mentioned test (post-test). This would enable the researchers to evaluate their entry-level before the intervention and determine the amount of change that took place as the effect of it (Campbell & Stanley, 2015; Valente & MacKinnon, 2017). The ERCA instrument contained three passages which were taken from the available texts in school summative assessment questions bank. The passages were developed from three dominant themes: (a) World of Self, Family and Friends; (b) World of Knowledge; and (c) World of Stories. There were two types of questions for each passage. The first type was objective multiple-choice question, this task required respondents to choose the most suitable answer from the four given options. The second type was true-or-false statement which required respondents to determine whether the given statement was true or not based on the passage. There were five multiple-choice-questions and five true-or-false statements for each passage. There were 30 items in total. Fifty percent of the items were designed to test participants' literal comprehension which required them to focus on the explicit stated information in the texts. Other fifty percent of the items were designed to test participants' evaluation skill which required them to focus on the accuracy, acceptability and assessment of information in the texts. The sequence of questions for each passage had been altered for post-test to avoid participants' familiarity with texts. Furthermore, topics and vocabulary items that related to the texts in the instrument were not covered during the intervention to prevent familiarity.

Validity and Reliability of Instrument

The research instrument had been inspected by five language experts to ensure content validity. The expert group was composed of five English language teachers who were still active in the teaching field at that point in time. Two of them have earned the Doctor of Philosophy (PhD) in TESOL from the local higher institutions, and they also have considerable work experience in teaching English language and English language assessment for more than eight years. Another three are the heads of English language panels from three different public primary schools. They have at least eight years of experience as an English language teacher. It was a small expert group review, as this scale is considered sufficient for this sort of research (Campbell & Stanley, 2015). The panel of experts had been invited to provide constructive comments and practical suggestions concerning the suitability of knowledge content, items arrangement and the difficulty level of the given tasks. The experts unanimously agreed and deemed that the instruments were eminently suitable for the primary pupils.

The reliability of the instrument had been analysed using the Cronbach's Alpha Coefficient of IBM SPSS (Statistical Package for Social Sciences) version 24. Items for three passages in English Reading Comprehension Assessment (ERCA), passage 1 ($\alpha = 0.881$), passage 2 ($\alpha = 0.853$) and passage 3

($\alpha = 0.897$) had shown high coefficient value. Overall, 30 items of ERCA yielded α -value of 0.878, and this implied that this test was relatively reliable.

Target Morphemes

After the comprehensive and thorough literature review, the researchers compiled a morphemes corpus of public primary school textbooks. All the relevant words had been categorised according to the morphological structures. Only the structures that had a relatively high frequency in the texts would be chosen. Finally, the target morphemes had been evaluated and selected by the researchers in collaboration with other five language experts, as mentioned above.

See Table 1, after the thorough and comprehensive evaluations, the target for English compound morphemes were closed compound words, open compound words and hyphenated compound words; four English inflectional morphemes, namely, the suffix *-s* and its associated suffixes to denote the plural form of a noun, the suffix *-s* and its associated suffixes to denote third-person singular simple present tense of a verb, the suffix *-ed* and its associated suffixes to denote simple past tense of a regular verb and the suffix *-ing* and its associated spelling rules to denote gerund or participle for continuous tense of a verb; four derivatives, namely prefix *re-* to assign the meanings of again or back to a root word, the suffix *-ly* to attribute the meanings of having the qualities, in the way mentioned or at intervals of a root word, the suffix *-ion* and its associated suffixes to convey the action or state of the attached root word and the suffix *-er* to bear the meaning a person or a thing that has the quality of the root word.

TABLE 1
Target Morphemes of The Intervention Programme

| | Morphemes | Examples |
|--------------|--|--|
| Compounding | Open | <i>armchair</i> |
| | Hyphenated | <i>coal-black</i> |
| | Close | <i>school bus</i> |
| Inflectional | -s (noun) [-es, -ses, -zes, -ves, -ies] | <i>ball<u>s</u></i> |
| | -s (verb) [-es, -ses, -zes, -ves, -ies] | <i>walk<u>s</u></i> |
| | -ed [-d, -ied, -led] | <i>walk<u>ed</u></i> |
| | -ing | <i>walk<u>ing</u></i> |
| | Derivational | re- -ly -ion [-ation, -ition, -sion, -tion, -xion] -er |

Results

This study aims to examine the significant difference in reading comprehension performance between the experimental and control groups after explicit instruction in morphology. ANCOVA statistical test was conducted to explore the significant difference in the English Reading Comprehension Assessment (ERCA). The differences in the scores of ERCA Pre-Test among the learners in both groups were controlled.

As Table 2 shows, the empirical findings revealed that learners' ERCA Pre-Test scores (covariate variable) did not have an effect on their post-test scores (dependent variable) with $F(1, 122) = 1.774$ and $p = 0.185$. After controlling for the learners' pre-test scores, a significant difference in reading comprehension performance existed between the experimental and control groups ($F(1, 122) = 835.137$, $p < 0.05$). The partial eta squared value also indicated a large effect size with partial eta squared = 0.873.

This large effect size implied that the variance in the learners’ reading comprehension post-test scores could be primarily explained by the independent variable, which was the group classification. The group had been distinguished by the intervention of explicit instruction in morphology.

TABLE 2
ANCOVA for ERCA Post Test as a Function of Group, using ERCA Pre-Test as Covariate

| | <i>df</i> | <i>MS</i> | <i>F</i> | <i>Sig.</i> | <i>Partial Eta Squared</i> |
|---------------|-----------|-----------|----------|-------------|----------------------------|
| ERCA Pre-Test | 1 | 11.037 | 1.774 | 0.185 | 0.014 |
| Group | 1 | 5196.123 | 835.137 | 0.000 | 0.873 |
| Error | 122 | 6.222 | | | |
| Total | 125 | | | | |

Note. Adjusted R Squared = 0.878 and computed using alpha value = 0.05.

Table 3 below presents the means and the standard deviations for both groups on their ERCA post-test scores, prior to and after adjusting the pre-test scores. ANCOVA results above had revealed that learners in the experimental group ($M = 25.16, SD = 3.112$) scored considerably higher mean than learners in the control group ($M = 11.85, SD = 1.668$). Therefore, the null hypothesis was rejected. There was a significant difference in reading comprehension performance between the experimental and control groups after explicit instruction in morphology.

TABLE 3
Unadjusted and Adjusted Group Means and Variability for English Reading Comprehension Assessment (ERCA) performance using Pre-Test Scores as Covariate

| Group | <i>n</i> | Unadjusted | | Adjusted | |
|--------------|----------|------------|-----------|----------|-----------|
| | | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SE</i> |
| Experimental | 63 | 25.16 | 3.112 | 25.10 | 0.318 |
| Control | 62 | 11.85 | 1.668 | 11.92 | 0.320 |

Note. Pre-Test scores in the model were evaluated at the values of 11.8560.

Discussions

This research question was formulated with the aim to examine the effectiveness of explicit morphological instruction during the reading lesson on young pupils’ reading comprehension performance. The statistical findings have confirmed that there was a significant difference in reading comprehension performance between the experimental and control groups after explicit instruction in morphology. Pupils in the experimental group had scored considerably higher than the control group.

Explicit teaching of morphology can help to improve learners’ reading proficiency. This finding is consistent with other previous studies (Bataineh & Al-Kofeiri, 2018; Kim et al., 2015). According to Batanie and Al-Kofeiri (2018), their pre- and post-tests had indicated that the experimental group achieved significant improvement in their reading comprehension after the intervention. Nonetheless, their respondents were secondary students. Kim et al. (2015) conducted similar research with primary school learners, and they suggested that explicit teaching of morphological awareness in English among ESL learners from typologically different languages could even help to increase their morpho-syntactic awareness. Varatharajoo et al. (2015a, 2015b) studies also support this finding; nonetheless, their studies focused on the effect of explicit teaching of morphology upon vocabulary acquisition among secondary students.

As been highlighted in the above-mentioned theoretical framework, heightened morphological awareness advances sophisticated quality mental lexical representations, and this support reading comprehension evidently (Hedgcock & Ferris, 2018; Hall, 2017). Learners can infer and guess the meanings of complicated morphological words based on the root words and constituent morphemes (Booij & Audring, 2017; Kiparsky, 2018). Knowledge of multiple morphemic meanings and root words

can significantly improve reading comprehension performance. According to the empirical findings of this current research, the internal mental lexical representation is considered as a causal factor for reading comprehension. The pupils in the experimental group had undergone explicit morphological instruction during the reading lesson. Due to this intervention, the pupils might have sharpened their words' meaning deciphering skills which in turn improved their reading comprehension performance. Learners' reading comprehension skill can be increased and sharpened when they have been explicitly demonstrated how to apply certain strategies to decipher meanings of words and texts (Deacon et al., 2014; Zhang, 2016). Explicit teaching of morphology had developed pupils' morphological linguistic schemata. The intervention programme had enabled them gain the skill to analyse the internal structure of words (grammar of words), advanced the decoding of words' meanings which lead to successful comprehension of texts.

Increased awareness of morphology among young ESL or EFL learners has been proven associated directly with reading comprehension (Bae & Joshi, 2017; Zhang, 2016; Zhang et al., 2014; Zhang & Koda, 2013). Bae and Joshi (2017) confirmed that morphological awareness has not only made a noteworthy contribution towards reading comprehension but vocabulary development as well. This association was still significant after the effects of phonological and orthographic awareness had been controlled. Therefore, morphological awareness is considered as a universal skill that can enhance reading comprehension performance, regardless of learners' L1 backgrounds (Zhang, 2016; Zhang et al., 2014; Zhang & Koda, 2013).

As been reported by Goodwin et al. (2013), although explicit instruction on morphological awareness has potential advantages associated with reading comprehension among young ESL learners, this awareness only had a significant effect if the participants' reading vocabulary also has been developed parallel to it. Therefore, the target morphemes should be acquired according to the contexts of reading texts. Definitions of words will be deciphered from smaller morphemic meanings to whole words, then extend to entire sentences and paragraphs. Provide regular and repeated practice at morphological analysis through a series of marginally diverse consecutive activities. Perform the process again and again with the principal aim to improve the morphological knowledge, yet every process must be varied in terms of difficulty levels, contexts, examples, ideas or concepts.

Implications

Explicit teaching of morphology has to be conducted with the principal objective of reading and comprehension of texts (Kirby et al., 2012; Zhang & Koda, 2013). The series of explicit teaching of morphology can be started with the familiar and high-frequency affixes (Hedgcock & Ferris, 2018). The teaching of root words vocabulary knowledge also part of the critical feature (Rastle, 2018). Teachers must provide clear and practical hints while guiding learners to use their prior knowledge of morphology during reading tasks. The hints should provide an explicit reference to the correct morphological knowledge to clear the misconceptions. Both similarities and differences of morphemes provide a reasonably comprehensive view of the target morphemes (White, 2017). By directing learners' attention to the dissimilar features of language item also will enhance the transferability of the particular language item.

Young learners should acquire and build up their morphological structure awareness (less language-specific facet), then focus on the developing of morphological decoding and analysis (more language-specific facet) later (Bae & Joshi, 2017; Carlisle & Kearnes, 2017; Kim et al., 2015). Overall, the facets and dimensions of morphological awareness can holistically improve reading comprehension.

The outcomes of this study would provide significant benefits to the primary ESL curriculum makers, syllabus creators and learning materials developers. Through this study, the curriculum and policymakers would be able to develop a more solid national primary school English language curriculum. Furthermore, English morphology could be featured significantly in primary level English language syllabuses.

Publishers could incorporate additional and beneficial materials that can be used to further morphological understanding which would lead to better reading comprehension.

Limitations and Future Research

The current research indicates several important findings in the linguistic field of English language morphological awareness and reading comprehension. However, in the research process, several limitations have been acknowledged. Firstly, the data were collected from a sample of only 125 primary five ESL pupils from two Chinese National-Type schools in Malaysia. Therefore, the findings cannot be generalised to all young ESL learners in Malaysia as well as other settings or contexts. Although the current study has yielded significant findings to validate the potential beneficial impacts of explicit teaching of morphology, future studies should recruit a larger number of participants. Furthermore, future similar studies should be reproduced by involving geographically and culturally diverse groups. The results would be more reliable and generalizable if participants come from different states, races, L1s, and even age or proficiency levels.

Although the researchers had used the statistical control method Analysis of Covariance (ANCOVA), two different schools, and conducted pre-tests to minimise the research threats, it is advisable for future studies to replicate the present study using a randomised experimental study to increase the reliability of results. Last but not least, the length of the study covered a twelve-week intensive treatment. Moreover, due to time constraints, the study only managed to cover several selected target morphemes. If there was a longer treatment period, and more contents were included, the results might have been more comprehensive and conclusive. This particular type of study could yield more comprehensive findings if the intervention and the post-test stage could be carried out longitudinally. Hence, a delayed post-test and longitudinal study might be able to ascertain further the effects of explicit morphological instruction on morphological awareness and reading comprehension efficiently.

Conclusion

The statistical data analysis found that there was a significant difference in reading comprehension performance between the experimental and control groups after explicit instruction in morphology. The explicit instructional approach can enhance reading comprehension skill among Malaysian ESL learners. Learners' reading comprehension skill can be sharpened when they have been demonstrated how to apply specific strategies explicitly to decipher the meanings of words and texts.

Young learners should acquire and build up their morphological structure awareness (less language-specific facet), then focus on the developing of morphological decoding and analysis (more language-specific facet) later. Overall, the facets and dimensions of morphological awareness can holistically improve reading comprehension. In the light of previous findings and current findings, it is clear that explicit teaching of English language morphology deserves attention and can be advanced further. Morphological awareness has potentially positive effects on reading outcome beyond word-level performance. Morphological awareness research has significant and far-reaching implications for classroom pedagogies, especially the teaching and learning of reading comprehension.

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References

- Asher, S. R. (2017). Topic interest and children's reading comprehension. In R. J. Spiro, B. C. Bruce, & W. F. Brewer (Eds.), *Theoretical issues in reading comprehension* (pp. 525-534). London, UK: Routledge.

- Bae, H. S., & Joshi, R. M. (2017). Role of morphological awareness in biliteracy development: Within- and cross-language perspectives among Korean ESL learners in grades five and six. *Contemporary Educational Psychology, 49*, 21-31.
- Booij, G., & Audring, J. (2017). Construction morphology and the parallel architecture of grammar. *Cognitive science, 41*, 277-302.
- Borer, H. (2017). Morphology and syntax. In A. Spencer & A. M. Zwicky (Eds.), *The handbook of morphology* (pp. 149-190). New Jersey, USA: Wiley.
- Campbell, D. T., & Stanley, J. C. (2015). *Experimental and quasi-experimental designs for research*. Cambridge, UK: Ravenio Books.
- Carlisle, J. F., & Kearnes, D. M. (2017). Learning to read morphologically complex words. *Theories of Reading Development, 15*, 191-214.
- Cheng, C., Wang, M., & Perfetti, C. A. (2011). Acquisition of compounding words in Chinese-English bilingual children: Decomposition and cross-language activation. *Applied Psycholinguistics, 32*(3), 583-600.
- Chin, C. S., Zainuddin, S. Z., & Pillai, S. (2019). The relative efficacy of recasts and prompts on past tense use of ESL learners. *The Journal of Asia TEFL, 16*(2), 485-498.
- Choi, Y. H. (2015). Roles of L1 and L2 derivational morphological awareness in L2 reading through the mediation of L2 vocabulary knowledge. *The Journal of Asia TEFL, 12*(3), 81-114
- Deacon, S. H., Kieffer, M. J., & Laroche, A. (2014). The relation between morphological awareness and reading comprehension: Evidence from mediation and longitudinal models. *Scientific Studies of Reading, 18*(6), 432-451.
- Eng, L. S., Mohamed, A. R., & Ismail, S. A. M. M. (2016). Systematic tracking of Malaysian primary school students' ESL reading comprehension performance to facilitate instructional processes. *International Journal of Instruction, 9*(1), 149-162.
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1-4.
- Gu, Y. (2018). Cognitive academic language learning approach (CALLA). *The TESOL Encyclopedia of English Language Teaching, 2*(4), 1-6.
- Hall, G. (2017). *Exploring English language teaching: Language in action*. London, UK: Routledge.
- Hasan, M. (2016). Conceptualization of depth of vocabulary knowledge with academic reading comprehension. *PASAA: Journal of Language Teaching and Learning in Thailand, 51*, 235-268.
- Haspelmath, M., & Sims, A. (2013). *Understanding morphology*. London, UK: Routledge.
- Hayashi, Y., & Murphy, V. A. (2013). On the nature of morphological awareness in Japanese-English bilingual children: A cross-linguistic perspective. *Bilingualism: Language and Cognition, 16*(1), 49-67.
- Hedgcock, J. S., & Ferris, D. R. (2018). *Teaching readers of English: Students, texts, and contexts*. London, UK: Routledge.
- Hendrix, R. A., & Griffin, R. A. (2017). Developing enhanced morphological awareness in adolescent learners. *Journal of Adolescent & Adult Literacy, 61*(1), 55-63.
- Jackendoff, R., & Audring, J. (2016). Morphological schemas. *The Mental Lexicon, 11*(3), 467-493.
- Jamaludin, K. A., Alias, N., Mohd Khir, R. J., DeWitt, D., & Kenayathula, H. B. (2016). The effectiveness of synthetic phonics in the development of early reading skills among struggling young ESL readers. *School Effectiveness and School Improvement, 27*(3), 455-470.
- Kim, T. J., Kuo, L. J., Ramirez, G., Wu, S., Ku, Y. M., de Marin, S., ... & Eslami, Z. (2015). The relationship between bilingual experience and the development of morphological and morpho-syntactic awareness: A cross-linguistic study of classroom discourse. *Language Awareness, 24*(4), 332-354
- Kiparsky, P. (2018). Morris Halle (1923-2018). *Studia Metrica et Poetica, 5*(2), 113-124.

- Kirby, J. R., Deacon, S. H., Bowers, P. N., Izenberg, L., Wade-Woolley, L., & Parrila, R. (2012). Children's morphological awareness and reading ability. *Reading and Writing: An Interdisciplinary Journal*, 25(2), 389-410. doi: 10.1007/s11145-010-9276-5
- Koda, K. (2015). Development of word recognition in a second language. In X. Chen, V. Dronjic, & R. Helms-Park (Eds.), *Reading in a second language: Cognitive and psycholinguistic issues* (pp. 70-98). London, UK: Routledge.
- Landi, N., & Ryherd, K. (2017). Understanding specific reading comprehension deficit: A review. *Language and Linguistics Compass*, 11(2), 1-24.
- Lieber, R. (2015). *Introducing morphology*. Cambridge, UK: Cambridge University Press.
- Liu, Y. (2015). An empirical study of schema theory and its role in reading comprehension. *Journal of Language Teaching and Research*, 6(6), 1349-1356.
- Mansur, U., & Samad, A. A. (2015). Views of educators: Assessment preference in reading skills for Malaysia primary school. *International Journal of Information*, 5(2), 35-43.
- Marimuthu, R., Muthusamy, C., & Veeravagu, J. (2016). Metacognitive strategy training through the cognitive academic language learning approach (CALLA) as a way to improve reading comprehension performance among students of an English language course at UiTM Penang. *Malaysian Journal of ELT Research*, 7(1), 65-93.
- McCutchen, D., & Logan, B. (2011). Inside incidental word learning: Children's strategic use of morphological information to infer word meanings. *Reading Research Quarterly*, 46(4), 334-349. doi: 10.1002/RRQ.003
- Mohanna, K., Chambers, R., & Wall, D. (2016). *Your teaching style: A practical guide to understanding, developing and improving*. Florida, USA: CRC Press.
- Ness, M. K. (2016). Reading comprehension strategies in secondary content area classrooms: Teacher use of and attitudes towards reading comprehension instruction. *Reading Horizons*, 49(2), 5-25.
- Plag, I. (2018). *Word-formation in English*. Cambridge, UK: Cambridge University Press.
- Rastle, K. (2018). *The place of morphology in learning to read in English*. London, UK: Cortex.
- Spiro, R. J., Bruce, B. C., & Brewer, W. F. (2017). *Theoretical issues in reading comprehension: Perspectives from cognitive psychology, linguistics, artificial intelligence and education*. London, UK: Routledge.
- Tighe, E. L., & Schatschneider, C. (2015). Exploring the dimensionality of morphological awareness and its relations to vocabulary knowledge in adult basic education students. *Reading Research Quarterly*, 50(3), 293-311.
- Tracey, D. H., & Morrow, L. M. (2017). *Lenses on reading: An introduction to theories and models*. New York, USA: Guilford Publications.
- Valente, M. J., & MacKinnon, D. P. (2017). Comparing models of change to estimate the mediated effect in the pretest-posttest control group design. *Structural Equation Modeling: A Multidisciplinary Journal*, 24(3), 428-450.
- Varatharajoo, C., Asmawi, A. B., & Abedalaziz, N. A. M. (2015a). Morphemic analysis awareness: Impact on ESL students' vocabulary learning strategy. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 9(9), 3263-3269.
- Varatharajoo, C., Asmawi, A. B., & Abedalaziz, N. A. M. (2015b). The awareness of morphemic knowledge for young adults' vocabulary learning. *Malaysian Online Journal of Educational Sciences*, 3(2), 45-56.
- Wang, M., Lin, C. Y., & Yang, C. (2014). Contributions of phonology, orthography, and morphology in Chinese-English biliteracy acquisition: A one-year longitudinal study. In X. Chen, Q. Wang, & Y. C. Luo (Eds.), *Reading development and difficulties in monolingual and bilingual Chinese children* (pp. 191-211). Heidelberg, DE: Springer Netherlands.
- White, L. (2017). Some puzzling features of L2 features. In J. Liceras, H. Zobl, & H. Goodluck (Eds.), *The role of formal features in second language acquisition* (pp. 300-326). London, UK: Routledge.

- Xue, J., & Jiang, X. (2017). The developmental relationship between bilingual morphological awareness and reading for Chinese EFL adult learners: A longitudinal study. *Reading and Writing, 30*(2), 417-438.
- Yun, G. (2019). Lexical processing of English derived words by Korean EFL learners and NSE. *The Journal of Asia TEFL, 16*(4), 1182-1200.
- Zhang, D. (2016). Derivational morphology in reading comprehension of Chinese-speaking learners of English: A longitudinal structural equation modeling study. *Applied Linguistics, 20*(4), 72-95.
- Zhang, D., & Koda, K. (2013). Morphological awareness and reading comprehension in a foreign language: A study of young Chinese EFL learners. *System, 41*(4), 901-913.

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